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VALUATION

A Recent Comparison of Industry Classification Schemes Using Publicly Traded Firms

By Ryan Casey, PhD, CPA; and Philipp Schaberl, PhD

An industry classification scheme is used to identify firms that are sufficiently similar to justify benchmarking. Allocating firms into homogenous groups based on readily available industry classification schemes is a commonly used approach among finance and valuation professionals. Selecting firms that are sufficiently similar can be a challenging task when conducting a firm valuation. Industry classification has been a problem in academic research for as long as these schemes have been available. In this paper, we evaluate the primary classification schemes by comparing the performance of each scheme at the sector and industry level. In the context of this study, better performance means that a classification scheme yields a more homogenous group of firms that are similar in terms of valuation multiples, selected financial ratios, and future sales growth.

There are three main classification schemes used by valuation practitioners and academics: the Standard Industry Classification (SIC), North American Industry Classification System (NAICS), and the Global Industry Classifications Standard (GICS).[1] Academic research has explored the four broadly available industry classification schemes. Bhojraj, et al., (2003),[2] use a variety of tests which show that the GICS classification outperforms the alternative classification schemes in several ways. They demonstrate that GICS classifications are much better at explaining stock return movement, as well as cross-sectional variations in valuation multiples, forecasted and realized growth rates, research and development expenditures, and other financial ratios. These authors also note that the GICS system performs consistently better from year to year, and that this advantage is more pronounced for large firms.

Although the results presented by Bhojraj et al., (2003) are well established, we re-examine the performance of the industry classification schemes for several reasons. First, our aim is to reproduce the analysis by Bhojraj et al., in order to confirm that these results still hold more than a decade later. Secondly, the sample data utilized by Bhojraj et al., end in 2001. Utilizing a more current dataset could yield distinct findings compared to prior research. Third, we extend their analysis by examining the performance of the different industry classification schemes at the narrower industry level in addition to the wider sector level. We include industry-level analysis because we believe that for a valuation practitioner it is more important to have a higher degree of similarity between the peer firms and the firm of interest than having a large number of firms in the comparison group. Lastly, our findings are intended for the financial practitioner audience rather than the academic audience. Bhojraj et al., is focused on influencing research applications encountered by financial academics, not the practitioner audience.

1 We have omitted the Fama and French industry classification algorithm because it is mainly geared for applications in the asset pricing literature. For more details see Fama, E. F., & French, K. R. (1997). Industry costs of equity. *Journal of Financial Economics,* 43(2), 153–193.

2 Bhojraj, S., Lee, C. M. C., & Oler, D. K. (2003). What's My Line? A Comparison of Industry Classification Schemes for Capital Market Research. *Journal of Accounting Research,* 41(5), 745–774.

BACKGROUND

SIC Codes

The SIC system was established in the 1930s under the directive of the Central Statistical Board. This board was backed by the U.S. Federal Government and was tasked with the development and promotion of a system to classify firms into industry groups. The goal of this board was achieved and the SIC system became the primary procedure for allocating firms into industry groups. The system was periodically updated based on changes to the make-up of the economy. The last revision was made in 1987 in anticipation of the forthcoming NAICS classification system.

NAICS Codes

In an effort to respond to the rapidly changing world economy, statistical agencies in the U.S., Canada, and Mexico jointly developed a uniform industry classification scheme, NAICS. The primary goal of this agency was to promote a model of industry classification that was accepted, in not just the U.S., but also across the rest of North America. The NAICS was expected to replace the SIC system; however, data vendors continued to carry both codes in their databases. Additionally, users familiar with the old SIC system were reluctant to convert to the new NAICS method. SIC and NAICS share many of the same attributes and were both developed based on a production-oriented economy. Neither system is designed with a particular concern for the information needs of financial and valuation professionals.

GICS Codes

The GICS was developed with a modern approach that puts a stronger emphasis on the information needs of the financial community. The GICS system is the result of collaboration between Standard and Poors (S&P) and Morgan Stanley Capital International. As leading providers in the financial sector, both of these organizations have an interest in serving investors and financial analysts. According to the GICS guidebook, firms are delineated based on their primary business activity. In making these assignments, GICS analysts consult financial statement information, as well as investment research reports. In their specific assignments, the sources of revenue and earnings play important roles. The approach of the GICS thus varies considerably from the SIC and NAICS, which rely on a production-oriented or supply-based approach to defining industry groups. Another difference of the GICS is the attempt to classify firms that do not fall neatly into a single category. A company that is diversified across three or more

DATA SELECTION AND SAMPLE DESCRIPTION

In our analysis, we focus on several dimensions of homogeneity within sectors/industries. The first dimension of homogeneity we analyze is the extent to which the market assigns similar valuation multiples to firms' key accounting metrics. The valuation multiples are defined as follows:

- The stock variables are measured at the end of fiscal year t while the flow variables are measured for the fiscal year ended at the end of year t.[3]
- BP refers to the book-to-price ratio which is calculated as book value of equity divided by market cap.
- EP refers to the earnings-to-price ratio, which is calculated as net income before extraordinary items divided by the market value of the firm's equity (henceforth market cap).
- OP refers to the operating income to price ratio, which is calculated as operating income divided by market cap. In this context, operating income is calculated as operating income of a company after deducting expenses for cost of goods sold, selling, general and administrative expenses, and depreciation.
- CP refers to the cash flow to price ratio, which is calculated as the cash flow from operations divided by market cap.
- EVS refers to the enterprise value divided by sales. Enterprise value is calculated as the sum of a firm's market cap, long-term debt, and debt in current liabilities.

The second dimension of homogeneity we analyze is the degree to which firms are similar in terms of their operating characteristics as measured by a set of financial ratios.

- RNOA refers to the return on net operating assets, which is calculated as operating income divided by net operating assets. Operating assets are defined as the sum of property plant and equipment, and current assets minus current liabilities.
- ROE refers to the return on equity, which is calculated as net income before extraordinary items divided by the book value of equity.
- ATO refers to the asset turnover, which is calculated as sales divided by assets.
- PM refers to profit margin, which is calculated as net income before extraordinary items divided by sales.
- LEV refers to leverage, which is calculated as debt divided by assets.

Continued on page 8

3 Unless indicated otherwise.

DATA SELECTION AND SAMPLE DESCRIPTION *continued from page 7*

The sales growth metrics SG1, SG2, and SG3 are calculated as follows:

- SG1 is the difference between sales in year *t+1* and year *t*, divided by year *t* sales.
- SG2 is the difference between sales in year *t+2* and year *t*, divided by year *t* sales.
- SG3 is the difference between sales in year *t+3* and year *t*, divided by sales in year *t*.

We obtain our data from the Compustat database using the Wharton Research Data Service (WRDS). We limit our sample period to the years 1990 to 2012 to ensure that each industry classification scheme yields a sufficient number of firms. To avoid the inclusion of penny stocks, we only include firms with a market capitalization (MKTCAP) of at least five million dollars and a book value of equity (CEQ) of at least three million dollars.

For variables that relate to performance, such as cash flows from operations, net income, or operating profit we impose the additional constraint that the performance measure has to be positive. These sample selection criteria yield a total of 176,242 firm-year observations. The number of firm-years used in the various regressions differs by the metric used with a maximum of 176,242 for BP and a minimum of 89,575 for RNOA. Table 1 displays the descriptive statistics for the valuation ratios, the financial ratios, and the sales growth metrics examined in this study.

TABLE 1: DESCRIPTIVE STATISTICS

Variable	N	Mean	Std Dev	25th Pctl	50th Pctl	75th Pctl
BP	176,242	0.740	0.660	0.345	0.583	0.918
EP	126,450	0.072	0.060	0.038	0.061	0.087
OP	123,344	0.138	0.130	0.065	0.108	0.168
CP	109,907	0.154	0.194	0.057	0.102	0.178
RNOA	89,575	0.109	0.083	0.054	0.090	0.142
ATO	161,796	0.820	0.779	0.173	0.636	1.204
PM	123,258	0.176	0.157	0.064	0.126	0.248
LEV	175,720	0.674	1.180	0.006	0.266	0.818
SG1	135,505	0.201	0.574	−0.019	0.088	0.246
SG2	122,993	0.430	1.143	−0.017	0.174	0.475
SG3	110,300	0.665	1.703	0.000	0.259	0.697

sectors is either classified as an Industrial Conglomerate or a Multi-Sector Holding.

Sectors and Industries

In a prior academic paper, Bhoraj et al., (2003) use what we refer to as sectors to compare the explanatory power of the SIC, NAICS, and GICS classification schemes. More specifically, they compare sectors based on the first two SIC digits (SIC2), the first three NAICS digits (NAICS3), and the first six GICS digits (GICS6). We follow this classification structure for our first analysis. It is important to keep in mind that the paper by Bhoraj et al., examines the performance of the different classification schemes in an academic context, which requires a large number of observations per category to allow for statistical analysis. However, in a more applied context, a more restrictive category might be preferable. Hence, our second analysis is based on what we will refer to as industry level. More specifically, industry is defined as the first four SIC digits (SIC4), the first five NAICS digits (NAICS5), and the first eight GICS digits (GICS8).

Table 2 presents the number of functional categories per sector and industry under the different classification schemes. Table 2 also displays descriptive statistics of the number of firms per sector and industry. To calculate a meaningful

sector/industry average, we follow Bhoraj et al., (2003) and exclude non-functional categories, i.e., categories with fewer than five firms in a given year. For our first round of analysis, utilizing sectors, we obtain sixty-four, seventy-five, and sixty-six functional categories in the SIC2, NAICS3, and GICS6 sector definitions, respectively. The second set of analyses is based on industries, and we obtain 258, 222, and 150 in the SIC4, NAICS5, and GICS8 industry definitions, respectively.

TABLE 2: FUNCTIONAL CATEGORIES

		Number of functional categories	Number of firms per functional category					
	# Digits		Avg.	Min	P25	P50	P75	Max
SIC	1	10	732	24	249	580	971	2407
	2	64	114	5	21	38	99	1252
	3	184	39	5	8	15	26	908
	4	258	27	5	7	11	21	908
NAICS	2	23	318	8	54	145	325	1972
	3	75	97	6	18	36	78	1338
	4	180	39	5	8	14	28	1222
	5	222	30	5	7	11	22	904
GICS	2	10	732	101	348	696	763	2314
	4	24	305	47	143	191	381	1263
	6	66	109	7	30	52	131	945
	8	150	49	5	15	28	51	876

METHODOLOGY

We follow a methodology, used in prior literature, to quantify the level of homogeneity within a sector/industry. Specifically, we measure the extent to which a sector/industry average explains the cross-sectional firm-level variation in several valuation ratios, financial ratios, and in future realized sales growth. In this context, the larger the proportion of cross-sectional variation explained by the sector/industry average, the better the classification. We estimate annual coefficients of determination (R^2s) as measures of explanatory power. More specifically, we regress the firm-year observations ($Y_{f,t}$) for firm f in year t on the applicable sector/industry average ($X_{i,t}$) calculated for sector/industry i in year t as shown in the following regression equation:

$$Y_{f,t} = \beta_0 + \beta_1 X_{i,t} + \varepsilon$$

This process yields twenty-three annual R^2s. Next, we use two-sided t-tests to compare the average R^2s, of each industry classification scheme, based on the sample distribution of annual R^2 estimates. These estimated R^2s are bound between zero (no explanatory power) and 100% (full explanatory power). Prior literature has documented that firm-size can influence the performance of different classification schemes. To account for this effect, we conduct our analysis for the full sample as well as for different size-terciles (groupings into thirds) based on the market capitalization of the sample firms.

RESULTS BASED ON SECTORS

Table 3 (see page 11) displays the time-series averages of the annual cross-sectional regressions R^2s with the sector average as the explanatory variable. For all the following tables, superscript 1 indicates that SIC2 is significantly different from NAICS3; superscript 2 indicates that NAICS3 is significantly

different from GICS6; and superscript 3 indicates that GICS6 is significantly different from SIC2.[4] For the full sample, we find that the GICS6 sector classification performs best in terms of its explanatory power for valuation ratios. Once we conduct our analysis separately for each size tercile, we find that this effect becomes less pronounced. For the large firm tercile, we still find that GICS6 outperforms the other classifications when using BP, EP, and CP. However, this effect becomes statistically insignificant when we compare the industry classifications for small firms. Overall, these findings are consistent with the findings by Bhoraj et al., (2003). One potential explanation for this result is that smaller firms are more likely to operate in a single line of business. To the extent that SIC2 and NAICS3 do a reasonably good job of grouping these firms into homogenous categories, one would expect the relative performance of these classification schemes to improve. Another potential explanation is that the GICS classification scheme has been designed based on the kind of activities that larger firms with large market capitalizations engage in. As a result, the GICS classification might not work well when it comes to identifying an industry for smaller firms.

Table 4 (See next page) displays the time series averages of the annual cross-sectional regressions with the sector average as the explanatory variable. For the full sample, we find that NAICS3 mostly performs best in terms of its explanatory power for financial ratios. For the large firm tercile, this effect still persists for RNOA, ATO, and PM, while for the small firm tercile this effect only holds for ATO and LEV.

Table 5 (See next page) presents the time series averages of the annual cross-sectional regressions with the sector average as the explanatory variable. For the full sample, we find that GICS6 performs best in terms of its explanatory power for sales growth. For the large firm tercile, this effect persists. In contrast, we do not find a significant difference in the small firm tercile.

In summary, our analysis at the sector level demonstrates that GICS6 outperforms the other classification schemes for the valuation ratios and sales growth metrics. However, NAICS3 performs best for the financial ratios. As mentioned previously, we believe that an analysis based on narrower classifications could be more relevant when one tries to express a valuation opinion. Consequently, we conduct our second round of analysis at the industry level.

RESULTS BASED ON INDUSTRIES

Table 6 (See next page) displays the time-series averages of the annual cross-sectional regressions R^2s with the industry average as the explanatory variable. For all the following tables, superscript 1 indicates that SIC4 is significantly different from NAICS5; superscript 2 indicates that NAICS5 is significantly different from GICS8; and superscript 3 indicates that GICS8 is significantly different from SIC4. For the full sample, we find that the SIC4 industry classification performs best in terms of its explanatory power for valuation ratios. Once we conduct our analysis separately for each size tercile, we find that this effect persists. For the large firm tercile, we still find that SIC4 outperforms the other classifications when for EP, OP, and CP. However, this effect does not persist for the small firm tercile.

Table 7 (See page 12) presents the time series average of the annual cross-sectional regressions with the industry average as the explanatory variable. For the full sample, we demonstrate that SIC4 performs best for RNOA, ATO, and PM in terms of its explanatory power. For the large firm tercile, this effect persists for ATO and PM. For the small firm tercile, this effect only holds for PM.

Table 8 (See page 12) displays the time series averages of the annual cross-sectional regressions with the sector average as the explanatory variable. For the full sample, we find that SIC4 performs best in terms of its explanatory power for sales growth two and three years ahead. For the large firm tercile, this effect still persists. In contrast, we do not find

4 Most differences are significant at that one percent level. For ease of exposition, we use the ten percent level or better as the threshold of significance in these tests.

TABLE 3 - SECTORS - VALUATION RATIOS

	BP			EP			OP			OP		
	SIC2	NAICS3	GICS6	SIC2	NAICS3	GICS6	SIC2	NAICS3	GICS6	SIC2	NAICS3	GICS6
Full	7.4%	7.3%[2]	8.7%[3]	7.8%[1]	8.2%[2]	9.4%[3]	11.0%[1]	12.4%[2]	13.1%[3]	9.2%[1]	10.0%[2]	11.3%
Large	7.5%	7.0%[2]	9.0%[3]	10.1%[1]	11.2%[2]	12.9%[3]	14.6%[1]	16.7%	18.0%[3]	12.4%[1]	13.8%[2]	16.6%
Med	10.6%	10.9%	11.8%[3]	9.5%	9.7%[2]	11.0%[3]	12.8%[1]	13.9%	14.1%[3]	10.4%	11.0%[2]	12.5%
Small	7.6%	7.9%	7.4%	5.6%	5.4%	5.6%	7.9%[1]	9.3%	9.0%	7.3%	8.1%	8.1%

TABLE 4 - SECTORS - FINANCIAL RATIOS

	RNOA			ATO			PM			LEV		
	SIC2	NAICS3	GICS6	SIC2	NAICS3	GICS6	SIC2	NAICS3	GICS6	SIC2	NAICS3	GICS6
Full	13.2%[1]	15.0%[2]	12.7%	37.6%[1]	40.5%[2]	35.6%[3]	24.4%	24.7%[2]	20.1%[3]	9.5%[1]	11.2%[2]	9.9%
Large	17.1%[1]	20.2%[2]	18.8%[3]	43.3%[1]	45.3%[2]	42.9%	24.4%[1]	25.5%[2]	20.1%[3]	10.3%[1]	11.8%	11.1%[3]
Med	12.3%[1]	14.0%[2]	9.9%[3]	35.6%[1]	39.0%[2]	32.5%[3]	27.1%	26.9%[2]	20.3%[3]	9.3%[1]	11.2%[2]	8.6%
Small	7.4%	7.1%[2]	4.7%[3]	29.9%[1]	32.9%[2]	23.4%[3]	20.3%	20.1%[2]	16.5%[3]	7.4%[1]	9.3%[2]	7.1%

TABLE 5 - SECTORS - SALES GROWTH

	SG1			SG2			SG3		
	SIC2	NAICS3	GICS6	SIC2	NAICS3	GICS6	SIC2	NAICS3	GICS6
Full	5.1%[1]	5.9%[2]	7.1%[3]	4.7%[1]	5.5%[2]	6.5%[3]	4.3%[1]	5.4%[2]	6.0%[3]
Large	5.6%[1]	6.5%[2]	8.6%[3]	4.3%[1]	5.5%[2]	7.4%[3]	3.9%[1]	5.2%[2]	6.9%[3]
Med	5.6%[1]	6.7%	7.0%[3]	6.0%	7.0%	7.2%[3]	5.3%[1]	6.6%	6.5%[3]
Small	4.4%	4.7%	5.4%	4.7%	4.9%	5.0%	5.1%	5.5%	4.6%

TABLE 6 - INDUSTRIES - VALUATION RATIOS

	BP			EP			OP			CP		
	SIC4	NAICS5	GICS8	SIC4	NAICS5	GICS8	SIC4	NAICS5	GICS8	SIC4	NAICS5	GICS8
Full	13.9%	13.3%[2]	11.4%[3]	16.4%[1]	15.7%[2]	12.8%[3]	21.0%[1]	20.4%[2]	17.7%[3]	17.9%[1]	17.0%[2]	14.2%[3]
Large	13.7%	13.6%[2]	11.8%[3]	19.0%[1]	18.1%	17.7%[3]	26.0%[1]	24.4%	23.8%[3]	21.6%[1]	20.3%	19.7%[3]
Med	16.7%	16.4%[2]	14.3%[3]	17.5%	17.3%[2]	14.4%[3]	21.8%	21.4%[2]	19.3%[3]	18.9%	19.1%[2]	15.3%[3]
Small	13.9%	14.9%[2]	9.7%[3]	14.6%	13.4%[2]	7.9%[3]	18.8%	18.9%[2]	12.8%[3]	16.6%	15.5%[2]	10.9%[3]

1 indicates that SIC≠NAICS.
2 indicates that NAIC≠GICS.
3 indicates that SIC≠GICS.

TABLE 7 - INDUSTRIES - FINANCIAL RATIOS

	RNOA			ATO			PM			LEV		
	SIC4	NAICS5	GICS8	SIC4	NAICS5	GICS8	SIC4	NAICS5	GICS8	SIC4	NAICS5	GICS8
Full	24.3%[1]	23.8%[2]	18.1%[3]	53.1%[1]	51.6%[2]	47.3%[3]	34.7%[1]	31.6%[2]	26.9%[3]	17.0%	17.1%[2]	13.3%[3]
Large	30.6%	30.1%[2]	25.9%[3]	59.7%[1]	57.4%[2]	55.7%[3]	36.4%[1]	33.6%[2]	29.2%[3]	18.2%	18.6%[2]	14.9%[3]
Med	22.0%	21.1%[2]	13.9%[3]	50.8%	49.8%[2]	44.1%[3]	36.8%[1]	34.2%[2]	26.0%[3]	15.9%	15.7%[2]	12.2%[3]
Small	14.2%	14.1%[2]	7.4%[3]	43.2%	43.0%[2]	34.0%[3]	27.2%[1]	24.2%[2]	20.0%[3]	13.1%	12.3%[2]	8.9%[3]

TABLE 8 - SECTORS - SALES GROWTH

	SG1			SG2			SG3		
	SIC4	NAICS5	GICS8	SIC4	NAICS5	GICS8	SIC4	NAICS5	GICS8
Full	10.0%	9.7%[2]	8.5%[3]	9.7%[1]	8.9%[2]	8.0%[3]	9.6%[1]	8.8%[2]	7.5%[3]
Large	11.1%	10.6%	10.2%	10.4%[1]	9.1%	9.0%[3]	10.0%[1]	8.5%	8.6%[3]
Med	10.3%	10.1%[2]	8.5%[3]	10.7%	10.0%[2]	9.0%[3]	10.5%	9.9%[2]	8.1%[3]
Small	8.0%	8.4%[2]	6.5%[3]	7.8%	8.6%[2]	6.0%[3]	8.4%	9.1%[2]	5.8%[3]

a significant difference in the small firm tercile. However, GICS8 consistently displays the lowest performance for SG2 and SG3.

CONCLUSION

This article compares the various industry classification schemes to determine which yields more homogenous, and therefore more comparable, groups of firms in terms of valuation multiples, selected financial ratios, and future sales growth. Specifically, we compare the SIC, the NAICS, and GICS classification schemes. Our findings demonstrate that at the more broadly defined sector level the GICS classification scheme outperforms the SIC and NAICS classification in terms of homogeneity of valuation ratios and for sales growth. At the more narrowly defined industry level, the SIC scheme outperforms NAICS and GICS in terms of homogeneity for valuation ratios, financial ratios, and for sales growth. The superior performance of GICS at the sector level may be due to better sector assignment at this level of aggregation. A team of specialists at Standard & Poor's and Morgan Stanley are tasked with assigning firms based on a rigorous process using financial data. The superiority of the SIC scheme at the industry level is likely due to the fact that at the industry level (SIC4), the SIC utilizes a narrower definition of industry relative to the GICS and NAICS. Proper industry classification is critical in fundamental analysis and other valuation-based tasks. Hence, we hope that the results presented in this study provide a basis for selecting an appropriate classification scheme for valuation professionals. An important limitation of this study is that our analysis is based solely on publicly traded firms. We leave it up to the reader to assess how far the results presented in this study can be generalized to privately held firms. VE



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VALUATION

Accounting Standards Reduce Valuation Work

By James M. Sausmer, CPA, ABV, CVA

In December 2014, the Financial Accounting Standards Board issued Accounting Standards Update No. 2014-18 (the Update) titled, "Accounting for Identifiable Intangible Assets in a Business Combination". The purpose of the Update was to reduce the cost and complexity of accounting for identified intangible assets in a business combination by nonpublic entities. The Update provides an accounting alternative that enables a company to eliminate the work associated with estimating the value of certain customer relationships and covenants not to compete, including the calculations for an in-place workforce, that arise when performing a purchase price allocation for a business combination.

This article will discuss accounting requirements for business combinations, explain the new alternative procedures provided in the Update, and discuss the impact it has on valuation work.

BACKGROUND

Under ASC 805-20-30-1, a company is required by Generally Accepted Accounting Principles (GAAP) to record the assets and liabilities received in a business combination at fair value. Fair value is defined by GAAP as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Fair value is determined based on valuation techniques that employ the income, market, or asset approach. The first step is to determine the fair value of the acquired net assets as a whole and recognize any gain or loss that might have resulted from the transaction. This might include a bargain purchase gain or an overpayment loss.

The second step is to allocate the fair value of the acquired net assets (often the purchase price) to the tangible and intangible assets identified by management in the transaction. At this point, the fair value of each of the identified tangible and intangible assets would be determined. Any excess would be goodwill.

NEW ALTERNATIVE

The new alternative permits the acquiring company to combine customer relationships and covenants not to compete with goodwill instead of performing separate valuations of these assets. This reduces the cost and complexity of valuation for a business combination. For customer relationships to qualify for this treatment, they must not be capable of being sold or licensed independently from the other assets acquired, even if the buyer does not intend to sell them. These relationships tend to not be contract related and involve situations where the customer decides whom he will do business with. Mortgage servicing rights is an example of a customer-related intangible that could be sold and would not qualify. The customer list of a distributor would generally qualify.

Additional requirements of this new alternative include:

1. Once this alternative is elected, all future acquisitions will require this treatment.
2. The buyer must amortize the goodwill over ten years in accordance with ASC 350-20 of the FASB Accounting Standards Codification.
3. Existing goodwill should be amortized over ten years or its estimated useful life if shorter.

CONSIDERATIONS

Thus, instead of goodwill being subject to only annual impairment testing, which might leave it intact if the acquired assets generate the cash flows they were meant to, the goodwill is amortized each year. The effect is to reduce assets and equity that may not have been reduced under the other method.

The Private Company Committee that authored the new procedures acknowledged that the users of nonpublic financial statements (banks and other lenders) tended to focus on tangible net assets and tangible net worth. They eliminate the goodwill and intangible assets when setting financial covenants in loan agreements.

Some companies like the idea of systematically writing off goodwill over an estimated useful life to reduce the potential for a large impairment write down in the future. Since their lenders eliminate it from their balance sheet anyway, they select this alternative. Other companies do not want to reduce their assets and equity when their purchase is generating the revenue and cash flow it is supposed to.

In January 2014, FASB Accounting Standards Update No. 2014-02, "Intangibles-Goodwill and Other (Topic 350)" provided the accounting alternative of amortizing goodwill over ten years (or less if more appropriate). This alternative eliminates the requirement for annual impairment testing by only testing goodwill for impairment when a triggering event occurs that indicates that the fair value of an entity or a reporting unit may have dropped below its carrying amount. When this occurs and a valuation is performed to determine fair value, step two of impairment testing is not required. This step normally involves the recalculation of all the identifiable intangibles. As such, the change to amortizing goodwill created by the alternative in the Update will reduce cost and complexity by similarly reducing impairment testing work.

If it were estimated that the customer relationships acquired would be a significant portion of the goodwill recorded under the new alternative, then there would probably not be a significant difference between the two accounting options since customer relationships would be amortized in both cases. If the value of customer relationships is estimated to be a small portion of the goodwill, then the company may be better off not reducing assets and equity before it is necessary. Leave the goodwill to be subject to impairment.

The new alternative only pertains to nonpublic entities. A nonpublic company that selected the new alternative but later decides to go public would have to reevaluate the prior acquisitions to change the accounting to the other method. Thus, the new alternative is best suited for private companies with no intension of going public. A private company that is acquired by another company will not have an issue since the goodwill and intangibles would be recorded at fair value at the time of that acquisition.

The effective date of this alternative is for fiscal years beginning after December 15, 2015. However, with early adoption permitted, the effective date was really December 2014 (the issuance of the standard) for any interim and annual financial statements that were not yet made available for issuance.

CONCLUSIONS

A company that is entering into a business combination must carefully review the effects of choosing the new alternative over the old method and determine which will be in their best interests. Valuation companies submitting proposals to perform this work should discuss the needs of the company with management to determine the extent of valuation work that will be required depending on whether customer relationships and covenants not to compete will need to be calculated. The audit firm will also probably need to be consulted in order to plan for the proper valuation and accounting treatment. Reducing the cost and complexity of valuation procedures may not always be what is best for the company. VE



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VALUATION

The Four Pillars of Healthcare: Part IV TECHNOLOGICAL ADVANCEMENTS IN THE HEALTHCARE INDUSTRY

By Robert James Cimasi, MHA, ASA, FRICS, MCBA, CVA, CM&AA; and Todd A. Zigrang, MBA, MHA, FACHE, ASA

The term "technology" has a broad meaning in the healthcare industry. It can range from the tangible tools, pharmaceuticals, and software that healthcare providers utilize when providing care and managing patient records, to the procedures that standardize the course of care.

This article, the fourth and final article in the series "The Four Pillars of Healthcare," will broadly discuss some of the recent technological advancements in the healthcare industry, addressing both management technology and clinical technology. The article will also discuss the changing demand for various aspects of healthcare technology, including demographic and access differences, and the advanced capabilities of healthcare research to develop rapidly developing areas of medicine.

MANAGEMENT TECHNOLOGY

The patient demand for healthcare services is increasing at a rapid rate, due to: improved access to care; the growth of the general population;[1] the enlarged number of individuals over the age of sixty-five;[2] and, the worsening physician manpower shortage.[3] Particularly due to the recent influx for previously uninsured individuals (an estimated twenty million adults have gained insurance since the implementation of the Patient Protection and Affordable Care Act [ACA]),[4] providers will have to implement methods of managing added patient throughput. This growth in demand for healthcare services is a significant driver of more sophisticated patient management technologies, as well as the infrastructure for gathering and interpreting quality and outcomes data to support evidence-based performance metrics as the foundation for value-based reimbursement. The demand for management technology *vis à vis* the current U.S. healthcare delivery system was characterized in the 2012 *Futurescan Report*, to wit:

> The healthcare industry cannot bend the cost and quality curve without relentless technology-enhanced innovation—a constant stream of new ideas, new methods, and new ways of providing and payment for care. Such innovations will be most effective if it comes from healthcare executives and clinicians 'in the trenches' who are no longer willing to do things in ways that clearly have been shown not to work.[5]

1 "Population" in "Statistical Abstract of the United States: 2015" U.S. Census Bureau, Washington, DC, 2014, p. 9.

2 "Why Population Aging Matters: A Global Perspective" National Institute on Aging, National Institute of Health, the United States Department of Health and Human Services, http://www.nia.nih.gov/sites/default/files/WPAM.pdf (Accessed 05/14/12).

3 "Physician Shortages to Worsen Without Increases in Residency Training" Association of American Medical College, 2010, https://www.aamc.org/download/286592/data/physicianshortage.pdf (Accessed 8/2/12).

4 "20 Million People Have Gained Health Insurance Coverage Because of the Affordable Care Act, New Estimates Show" U.S. Department of Health and Human Services, HHS Press Office, March 3, 2016, https://www.hhs.gov/about/news/2016/03/03/20-million-people-have-gained-health-insurance-coverage-because-affordable-care-act-new-estimates (Accessed 1/24/17).

5 "Chapter 1: Healthcare Reform: The Transformation of America's Hospitals: Economics Drives a New Business Model" in "Futurescan 2012: Healthcare Trends and Implications 2012–2017" By Kenneth Kaufman and Mark E. Grubs, Irving, TX: VHA Inc. (2012), p. 8–9.

Management technologies include: the processes and procedures through which providers organize patient encounters, charge entry, and the billing process; and the software and devices that support these activities. While there are myriad methods through which a healthcare enterprise may choose to approach management, the most publicized involve the interoperable exchange and consolidation of patient data and treatment standards. Most of the current management systems are implemented as a single package, and many contain:

- electronic health records (EHRs)
- computerized physician order entry (CPOE)
- billing components

Although the 2012 Institute of Medicine (IOM) report entitled, *Best Care at Lower Cost: The Path to Continuously Learning Health Care in America*, did not specifically define the concept of technology as process, it nevertheless recommended several steps to facilitate the development of relationships between technology and providers if the U.S. healthcare delivery system is to learn from its past errors, asserting that:

"…[t]o help achieve a learning healthcare system, digital technology developers need to play the following roles:

- Ensure that electronic health record systems and other digital technologies capture and deliver the core data elements needed to support knowledge generation.
- Partner with patients, the delivery system, insurers, researchers, innovators, regulators, and other stakeholders.
- Collaborate in the development of core data sets for different diseases and conditions to support clinical care, improvement, and research.
- Develop tools that assist individuals in managing their health and health care and that provide opportunities for building communities to support patient efforts.

DEFINITION OF TERMS

Typically, the term "medical technology" conjures images of large, industrial machines or complex computer programs used to organize and track patient data. While this article focuses on management and clinical technologies, the term healthcare technology goes beyond the hardware and software utilized by providers, and includes intangible concepts such as healthcare processes.

Process technologies can affect the manner and structure by which healthcare is delivered and measured on both a clinical and management level, including treatment protocols, care mapping, and case management. For example, a three-year study of a pediatric intensive care unit found that more rigorous hand hygiene, oral care, and central-line catheter care protocols reduced hospital-acquired infections (HAIs) and associated healthcare costs, as patients spent, on average, 2.3 fewer days in the hospital.[6]

Management protocols, on the other hand, aim to reduce the cost of healthcare without lowering the level of quality care delivered by establishing protocols that allow providers to appropriately identify those procedures in which the expected treatment benefits to the patient are outweighed by the costs of delivering such care,[7] including early prostate cancer detection testing, routine EKGs, or annual Pap smears.[8] In addition to the utilization of such management technologies by providers, payors may also influence providers in this regard. For example, in 2008, Medicare began withholding payments for the treatment of conditions arising from twenty-eight "never events," [9] defined by the National Quality Forum (NQF) as: serious medical errors, such as performing the wrong surgical procedure; product or device events, such as contaminated drugs or devices; and criminal events, such as abduction of a patient.[10]

6 "Strict Hand Hygiene and Other Practices Shortened Stats and Cut Costs and Mortality in a Pediatric Intensive Care Unit" By Bradford D. Harris, et al., Health Affairs, Vol. 30, No. 9 (September 2011), p. 1751.

7 "Is Health Spending Excessive? If So, What Can We Do About It?" By Henry J. Aaron and Paul B. Ginsberg, Health Affairs, Vol. 28, No. 5 (September/October 2009), p. 1273.

8 "Let's (Not) Get Physicals" By Elisabeth Rosenthal, The New York Times, June 2, 2012.

9 "Strict Hand Hygiene and Other Practices Shortened Stats and Cut Costs and Mortality in a Pediatric Intensive Care Unit" By Bradford D. Harris, et al., Health Affairs, Vol. 30, No. 9 (September 2011), p. 1751; "State Medical Director Letter" By Herb B. Kuhn, Centers for Medicare & Medicaid Services, To State Medical Director, July 31, 2008, http://downloads.cms.gov/cmsgov/archived-downloads/SMDL/downloads/SMD073108.pdf (Accessed 10/07/12).

10 "Never Event Fact Sheet" By The Leapfrog Group, March 2008, http://www.leapfroggroup.org/media/file/Leapfrog-Never_Events_Fact_Sheet.pdf (Accessed 2/8/11).

- Consider interoperability and integration in clinical workflows in designing digital health systems."[11]

Further, the 2012 IOM report emphasized the importance of maintaining a "digital infrastructure" as the backbone for U.S. healthcare delivery, and recommended that the U.S. healthcare system: "Improve the capacity to capture clinical, care delivery process and financial data for better care, system improvement, and the generation of new knowledge. Data generated in the course of care delivery should be digitally collected, compiled, and protected as a reliable and accessible resource for care management, *process improvement*, public health, and the generation of new knowledge."[12] [Emphasis added.]

The digital infrastructure utilized by some U.S. healthcare entities may include EHRs, CPOE, and billing components. An EHR is an electronic version of a patient's medical history, maintained by the provider over time, and may include all of the key administrative clinical data relevant to that person's care under a particular provider.[13] EHRs usually include: demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data, and radiology reports.[14] This automated access to information has the potential to streamline the clinician's workflow, support other care-related activities, and reduce the incidence of medical error.

CPOE allows physicians and providers to electronically order laboratory, pharmacy, and radiology services, with the objective of minimizing error by eliminating the difficulties and ambiguity associated with handwritten orders.[15] CPOE can help reduce errors related to poor handwriting or transcription of medication orders; for instance, one study published in the Journal of the American Medical Informatics Association found that CPOE lowered the chance of an error occurring on that order by forty-eight percent.[16] Implementation of CPOE has been highly encouraged by CMS, as it is a major requirement for the achievement of meaningful use under the Health Information Technology for Economic Clinical Health (HITECH) Act, which requires Medicare providers to obtain "meaningful use" of EHR by the end of 2014 to avoid reimbursement penalties and provides both financial incentives and programmatic support to overcome obstacles that have previously kept providers from adopting some form of an electronic record system.[17]

Billing components are also typically used in conjunction with EHRs in managing healthcare entities, and generally allow for automated billing processes.[18] These components allow staff to enter, among other items, prices for services, insurance discounts, and additional charges.[19] Each charge is typically matched with a service or treatment performed on a patient, and then the charge is entered using certain codes, which codes have associated fees.

TECHNOLOGY

In addition to the development and utilization of healthcare management and process technologies and management protocols, there have also been advances in the development of clinical technology, which have led to numerous treatment discoveries and innovations. Clinical technology encompasses any method or device used in patient treatment procedures, e.g., pharmaceuticals, surgical devices, and minimally invasive techniques. Notably, in an effective and efficiently operated healthcare enterprise, management and clinical technologies complement each other and may, in many cases, overlap.

One significant effect of clinical technology advancements is the transition to more procedures being offered in outpatient

11 "Best Care at Lower Cost: The Path to Continuously Learning Health Care in America" By Mark Smith et al., Institute of Medicine, Washington, DC: The National Academics Press, 2012, p. 10–21 (pre-publication copy-uncorrected page proofs).
12 *Ibid*.
13 "Electronic Health Records" Centers for Medicare and Medicaid Services, March 26, 2012, https://www.cms.gov/Medicare/E-Health/EHealthRecords/index.html?redirect=/ehealthrecords (Accessed 1/25/17).
14 *Ibid*.
15 "Computerized Physician Order Entry (CPOE)" By Alex DelVecchio and Brian Eastwood, HealthIT, November 2014, http://searchhealthit.techtarget.com/definition/computerized-physician-order-entry-CPOE (Accessed 1/25/17).
16 *Ibid*.
17 "Computerized Physician Order Entry (CPOE)" By Alex DelVecchio and Brian Eastwood, HealthIT, November 2014, http://searchhealthit.techtarget.com/definition/computerized-physician-order-entry-CPOE (Accessed 1/25/17); "American Reinvestment and Recovery Act, Sec. 13101," Pub. L. 111-5, 123 Stat 115 (February 7, 2009), p. 231; Paul Tang, "Meaningful Use of Health Information Technology: From Public Policy to Changing Care," Future Scan 2011: Healthcare Trends and Implications 2011–2016, 2011, p. 33.
18 "What are the Important Components of Medical Practice Management Software?" Top Master's in Healthcare Administration, 2017, http://www.topmastersinhealthcare.com/faq/what-are-the-important-components-of-medical-practice-management-software/ (Accessed 1/25/17).
19 *Ibid*.

settings.[20] Specifically, advancements have resulted in less invasive procedures, shorter recovery times, and lower probability of complications; all of which have allowed for procedures that have traditionally been performed in an inpatient setting to be offered on an outpatient basis. Outpatient growth is projected to grow by seventeen percent from 2013–2023, while inpatient projections remain much more modest and even shrink in some service lines.[21] The increased costs associated with inpatient care, as well as the overall increase in healthcare demand, have contributed to increased outpatient service utilization from 366 million visits in 1993 to over 677 million in 2013,[22] a growth pattern that will likely continue in response to persistent cost containment pressures[23] and the advancements in technology that have facilitated the shift from inpatient to outpatient.

As technology has advanced, so too has the way patient care is viewed, leading to technological developments related not only to the treatment setting (e.g., movement from inpatient to outpatient), but also how diseases are understood and treatments are managed by providers. Recent developments regarding genetics, gene therapy, and personalized medicine have largely been made possible by the science of genomics.

THE GATEWAY: GENETICS, GENOMICS, AND GENOME TECHNOLOGY

The term personalized medicine has been used in several venues, such as customized pharmaceuticals and customized diagnoses. The landmark discoveries accompanying the advent of genome sequencing was the first step toward much of the technological advancement that served as the basis for a new genre of pharmaceutical and therapeutic medicine. In 2003, the Human Genome Project at the National Institutes of Health completed the initial mapping of the human genome, a milestone that fueled interest in the field of genomics.[24] The technological advancements that followed served as the foundation for a new genre of pharmaceutical and therapeutic medicine. Biotechnology and biopharmaceuticals are influential drivers in today's market, accounting for the highest valued mergers and acquisitions in healthcare in 2016.[25]

20 "ASCs: A Positive Trend in Health Care" ASCA's Campaign for Advancing Surgical Care, http://www.ascassociation.org/advancingsurgicalcare/aboutascs/industryoverview/apositivetrendinhealthcare (Accessed 1/25/17).

21 "The New Normal? Shift to Outpatient Care, Payer Pressure Hit Hospitals" By Beth Kutscher and Melanie Evans, Modern Healthcare, August 10, 2013, http://www.modernhealthcare.com/article/20130810/MAGAZINE/308109974 (Accessed 1/25/17).

22 "Table 3.4: Outpatient Utilization in Community Hospitals, 1993-2013" in "Trendwatch Chartbook 2015: Trends Affecting Hospitals and Health Systems" American Hospital Association and Avalere, 2015, retrieved from http://www.aha.org/research/reports/tw/chartbook/ch3.shtml (Accessed 3/26/15), p. A-29.

23 "Payments to Hospitals for Inpatient Hospital Services" 42 U.S.C. § 1395(ww)(b)(2) (2010).

24 "Human Genome Project: Fact Sheet" By National Institutes of Health, October 2010, http://report.nih.gov/NIHfactsheets/Pdfs/HumanGenomeProject(NHGRI).pdf (Accessed 3/19/15), p. 1.

25 "US M&A News and Trends" BY FACTSET, Flashwire US Monthly, January 2017, https://www.factset.com/mergerstat_em/monthly/US_Flashwire_Monthly.pdf (Accessed 1/24/17), p. 6.

WHAT IS GENOMICS?

Genomics is the evaluation of the hereditary information provided by an organism's DNA and the application of research findings to the fields of genetic engineering and enhancement, cloning, stem cell research, and eugenics.[26] The National Center for Human Genome Research Institute (NCHGRI) is comprised of more than fifty researchers who are dedicated to specific facets of genetic and genomic research and contribute accordingly to one of seven branches of the NCHGRI: 1) Cancer Genetics; 2) Genetic Disease Research; 3) Genetics and Molecular Biology; 4) Genome Technology; 5) Inherited Disease Research; 6) Medical Genetics; and 7) Social and Behavioral Research.[27]

Several areas of genomics, cell-based therapies, and molecular targeting therapies also seem to hold promise for future advancements in the treatment of cardiac disease.[28] For example, pharmacogenomics applies the "genetic variability in patients' responsiveness to a drug in order to inform clinical decisions about dosing and

26 "Talking Glossary of Genetic Terms: Genomics" By National Human Genome Research Institute, http://www.genome.gov/Glossary/index.cfm?id=532 (Accessed 3/19/15); "Biomedical Research Issues in Genetics" By the National Human Genome Research Institute, January 6, 2009, http://www.genome.gov/10001740 (Accessed 6/29/09).

27 "Overview of the Division of Intramural Research" By National Human Genome Research Institute, August 27, 2009, http://www.genome.gov/10001634 (Accessed 11/25/09).

28 "A Tale of Coronary Artery Disease and Myocardial Infarction" By Elizabeth G. Nabel and Eugene Braunwald, The New England Journal of Medicine, Vol. 366, No. 1 (January 5, 2012), p. 61.

selection."[29] A "broader vision for personalized medicine extends beyond the development of individual treatment [plans] to individualized [disease] prevention [and early intervention] strategies, e.g., Type 2 diabetes."[30]

29 *Ibid*.

30 "Personalized Medicine to Identify Genetic Risks for Type 2 Diabetes and Focus" By Allen M. Spiegel, and Meredith Hawkins, Health Affairs, Vol. 31, No. 1 (January 2012), p. 44; "Improving Health by Taking It Personally" By Ralph Snyderman, and Michaela A. Dinan, Journal of the American Medical Association, Vol. 303, No. 4 (January 27, 2010), p. 363.

One means of achieving the vision of personalized medicine may be by mobile medical applications (m-health apps), which may be downloaded on smartphones and computer tablets. It is hoped that these m-health apps, which have expanded rapidly in the marketplace, will allow healthcare providers to efficiently develop and distribute "best-practice" standards and treatment protocols to providers.[31] Additionally, m-health apps are beginning to be utilized by patients to monitor chronic conditions by reporting such information as blood pressure levels or sugar levels to their physicians.[32]

Genomic understanding has given pharmaceutical companies new therapeutic targets, as well as the ability to improve existing drugs.[33] It is possible that genetic composition may be at least partly responsible for some adverse drug reactions, and understanding that composition may allow pharmaceutical companies to design more compatible drugs or to identify those patients who should not be given particular therapies.[34] In recent years, certain genes have been associated with an increased risk of developing particular diseases or conditions, and the identification of such genes may allow individuals to take preventative measures against such conditions, particularly various forms of cancer. However, other findings indicate that such unsubstantiated information may present more harm than good,[35] e.g., stress on the individual being diagnosed, or unnecessary medical procedures such as premature mastectomies.

As the market for personalized medicine expands, and additional research related to genetic diagnoses saturates consumer driven healthcare channels, several companies offering personalized genetic mapping, known as genotyping, have appeared, e.g., 23andme.com. These direct-to-consumer genetic testing companies sell genetic kits that take a small sample of cells, typically via a cheek swab, and generate a genetic profile for the customer, which may indicate any diseases to which the individual may be prone.[36] The FTC and CDC have warned that some of these at-home genetic testing kits lack scientific validity and caution against reviewing test results without a doctor's counsel.[37] Some states, such as California and New York, have intervened in the distribution of an individual's genetic profile and potential future diseases without physician direction, and have sent cease and desist letters to several companies.[38] Additionally, four states, i.e., California, Nevada, Nebraska, and Pennsylvania, have passed legislation prohibiting misleading advertisements for genetic tests.[39]

31 "Chapter 1: Healthcare Reform: The Transformation of America's Hospitals: Economics Drives a New Business Model" in "Futurescan 2012: Healthcare Trends and Implications 2012-2017" By Kenneth Kaufman and Mark E. Grubs, VHA Inc., Irving, Texas (2012), p. 8; "Beyond UX: Best Practices for Medical App Development" By Mithun Sridharan, Innovation Insights, August 4, 2014, http://insights.wired.com/profiles/blogs/beyond-ux-best-practices-for-medical-app-development#axzz3UleZE3Fn (Accessed 3/18/15).

32 "5 Critical Technologies Health Systems Should Require" By Michelle McNickle, Healthcare IT News, July 30, 2012, http://www.healthcareitnews.com/news/5-critical-technologies-health-systems-should-require (Accessed 9/21/12).

33 "Technology and the Boundaries of the Hospital: Three Emerging Technologies" By Jeff Goldsmith, Health Affairs, Vol. 23, No. 6 (2004), p. 150.

34 *Ibid*.

35 "Letting the Genome Out of the Bottle: Will We Get Our Wish?" By David J. Hunter, et al., New England Journal of Medicine, Vol. 358, No. 2 (January 10, 2008), p. 106-107.

36 "How does 23andMe genotype my DNA?" 23andme Customer Care, https://customercare.23andme.com/entries/21263328 (Accessed 9/26/12).

37 "Direct-to-Consumer Genetic Tests" Federal Trade Commission: Consumer Information, January 2014, http://www.consumer.ftc.gov/articles/0166-direct-consumer-genetic-tests (Accessed 3/18/15).

38 "Federal and State Responses to Dangers of At-Home Genetic Testing" By Sara Hoverter and Danielle Perlman from Georgetown School of Law, Memorandum to Steve Sakamoto-Wengel, Maryland Office of the Attorney General Paul Ballard, Maryland Office of the Attorney General, February 4, 2011.

39 "Federal and State Responses to Dangers of At-Home Genetic Testing" By Sara Hoverter and Danielle Perlman from Georgetown School of Law, Memorandum to Steve Sakamoto-Wengel, Maryland Office of the Attorney General Paul Ballard, Maryland Office of the Attorney General, February 4, 2011; West's Annotated California Business & Professional Code § 17508(a); Nevada Revised Statutes Annotated § 598.0925(1)(a); Nebraska Revised Statute § 87-302(a)(14); 18 Pennsylvania C.S.A. § 4107 (a)(10).

The realities of personalized medicine produce a multitude of regulatory and reimbursement issues. Although the Health Insurance Portability and Accountability Act of 1996 (HIPAA) was designed to protect individual health information, the advancement of genetic testing has surpassed the regulatory standards as set forth under HIPAA. Subsequent legislation has attempted to protect an individual's genetic information while allowing for the furtherance of personalized medicine.[40] Similar to HIPAA, The Genetic Information Nondiscrimination Act of 2008 (GINA), enacted on May 21, 2008, was promulgated to protect against the misuse of their personal health information.[41] GINA prohibits the use of genetic information for discriminatory purposes by employers and health insurance companies, and amends both the Employee Retirement Income Security Act and the Internal Revenue Code.[42]

STEM CELL RESEARCH

Within any living organism, each cell is specialized to a specific biological system. Stem cells are "unspecialized cells capable of renewing themselves through cell division, sometimes after long periods of inactivity", and adapting their function to accommodate a certain type of tissue or organ under the proper conditions.[43] The unique regenerative capacity of stem cells has the potential to change the way health problems, e.g., diabetes and heart disease, are treated. As such, efforts to advance reparative medicine (therapies that heal the body's natural tissue) by developing efficacious cell therapies are at the forefront of medical research.[44] In June 2011, the first completely synthetic human organ (a trachea) was successfully grown from human stem cells and transplanted.[45] However, synthetic organs only function at a fraction of their natural counterparts, e.g., a synthetic lung grown from stem cells functioned at approximately five percent of the effective rate of a natural lung when tested in rats at Yale University.[46]

On January 23, 2009, the first human embryonic stem cell (hESC)-based therapy was approved for clinical trial when Geron Corporation announced the clearance of their Investigational New Drug (IND) application for the clinical trial of GRNOPC1, which manipulates the growth-stimulating properties of nerve cells to aid in rehabilitating acute spinal cord injuries.[47] Stem cell research is also being used to investigate the causes of birth defects, enhance drug development by providing molecular insight, and expedite the drug approval process through the facilitation of preliminary drug testing.[48] Additionally, understanding the differences between embryonic and nonembryonic stem cell proliferation may be the key to understanding—and treating—cancer.[49] Recent trends and advances in stem cell technology have proved promising, with approximately forty-eight adult stem cell clinical studies completed, eight actively underway, another ten currently recruiting volunteers, and four approved for conducting a clinical study but not yet recruiting volunteers as of January 2017.[50]

DIAGNOSTIC MEDICINE AND TECHNOLOGY

Diagnostic medicine is utilized in both acute and chronic care for the purposes of prevention, screening, monitoring of health conditions, and disease detection and management. This staple of healthcare claims that, "A penny of prevention is worth a pound of cure…The pharmaceutical industry has long been focused on treatment of disease but it will be far more cost-effective to prevent disease than cure it, and this will be

40 "Personalized Medicine-Part 2: Ethical, Legal, and Regulatory Issues" By F. Randy Vogenberg, et al., Journal of Pharmacy and Therapeutics, Vol. 35, No. 11 (November 2010), p. 629.

41 "Genetic Information Nondiscrimination Act" Pub. L. No. 110-233, 112 Stat. 881 (May 21, 2008).

42 *Ibid*.

43 "Stem Cell Information: Stem Cell Basics" National Institutes of Health, U.S. Department of Health & Human Services, April 28, 2009, http://stemcells.nih.gov/staticresources/info/basics/SCprimer2009.pdf (Accessed 3/19/15), p. 1–2.

44 "Stem Cell Information: Stem Cell Basics" By the National Institutes of Health, U.S. Department of Health & Human Services, April 28, 2009, http://stemcells.nih.gov/staticresources/info/basics/SCprimer2009.pdf (Accessed 3/19/15), p. 2.

45 "World's First Synthetic Organ Transplant" Discovery News, July 8, 2011, http://news.discovery.com/human/first-artificial-organ-transplant-110708.html (Accessed 3/19/15).

46 "Scientist Are Solving Our Donor Crisis with Lab-Grown Organs" By Jennifer Welsh, Business Insider, August 28, 2012, http://www.businessinsider.com/lab-grown-organs-2012-8?op=1 (Accessed 3/19/15), p. 2.

47 "Geron Receives FDA Clearance to Begin World's First Human Clinical Trial of Embryonic Stem Cell-Based Therapy" Geron, Press Release, January 23, 2009, http://ir.geron.com/phoenix.zhtml?c=67323&p=irol-newsArticle&ID=1636192 (Accessed 4/1/15), p. 1.

48 "Stem Cell Basics" National Institutes of Health, U.S. Department of Health & Human Services, April 28, 2009, http://stemcells.nih.gov/staticresources/info/basics/SCprimer2009.pdf (Accessed 3/19/15), p. 2, 14.

49 "Stem Cell Basics" National Institutes of Health, U.S. Department of Health & Human Services, April 28, 2009, http://stemcells.nih.gov/staticresources/info/basics/SCprimer2009.pdf (Accessed 3/19/15), p. 14.

50 "List of Studies for Adult Stem Cell" National Institutes of Health, January 25, 2017 https://clinicaltrials.gov/ct2/results?term=%22adult+stem+cell%22 (Accessed 1/25/17); Author looked up current status of clinical trials at the U.S. National Institutes of Health website, ClinicalTrial.gov, by searching "*Adult Stem Cell*".

a driver of innovation."[51] Recent diagnostic advances support an attitude of prevention that, though inherently accepted, has not been practiced sufficiently in healthcare to date.

In addition to diagnostic medicine, diagnostic technology is the backbone of much technological advancement, including, but not limited to: 1) minimally invasive surgery; 2) preventative procedures; 3) telemedicine; and 4) therapeutics. Diagnostics may also play an important role in the advancement of current quality metrics reporting and associated value-based purchasing initiatives. While these characteristics provide clinical benefits to providers, patients, and payors, the economic value metrics of diagnostic imaging is unclear, as the technology is also associated with patterns of overuse and increased healthcare costs.[52]

THERAPEUTIC TECHNOLOGY

The range of prescripted use for therapeutic technologies has grown substantially over the last century, and innovation in the arena continues to lead to groundbreaking medical discoveries for therapeutic treatment in the fields of molecular pharmacology, radiation therapy, robotics and surgical technology, e.g., minimally invasive surgery, transplant technologies, home infusion therapy, and pain management.

HOME HEALTH TECHNOLOGY

In 2013, approximately 4.9 million patients (roughly 1.5 percent of the U.S. population) were discharged from home health agencies.[53] Additionally, the growing segment of older Americans will invariably contribute to the increased use of home infusion therapies. Although the U.S. Census Bureau predicted in 2014 that, between 2015 and 2035, the U.S. population would increase by fifteen percent,[54] the number of Americans age sixty-five and older is anticipated to reach 88.5 million in 2050, with the "oldest old," those age eighty-five and older, expected to triple from "6.3 million in 2015 to 17.9 million in 2050, accounting for 4.5% of the total population."[55] Approximately sixty-nine percent of those receiving home care services are older than age sixty-five.[56] In addition, the aging baby boomer population will continue to inflate the number of candidates for home healthcare as they become eligible for Medicare, with the first cohort of that population reaching eligibility in 2011.[57]

CONCLUSION

The scope of medical technology has changed dramatically since the origins of medical practice in ancient Greece. Technological advancement began slowly at first, and then more rapidly upon the commencement of the Industrial Revolution. Following World War II (WWII), the U.S. healthcare delivery system saw the rapid advent of new medical technologies, through the "arms race" in which providers engaged to develop and adopt the latest technology before any of its competitors, resulting in higher levels of health and an increased life expectancy, accompanied by a significant increase in medical costs.[58] Associated with these rising costs has been a decline in infant and child mortality and increased longevity, which, in turn, led to an increase in the overall population and the number of individuals needing care and treatment.[59] Post-war discoveries of new medical therapies, such as sulfa drugs and penicillin, quickly reduced infectious disease rates, with these rates decreasing to current levels within two decades.[60] Similarly, longer lifespans resulted in a more aged population, and shifted the focus of medicine toward expensive treatments

51 "Biomarket Trends: Pharmaceutical Industry Undergoing Transformation, Companies Must Start Preparing Now for Changes to Come in 2020" By Steve Arlington and Anthony Farino, Genetic Engineering and Biotechnology News, Vol. 27, No. 15 (September 1, 2007), http://www.genengnews.com/articles/chitem.aspx?aid=2197 (Accessed 2/2/10).

52 "Expanding Use of Imaging Technology and the Challenge of Measuring Value" By Laurence C. Baker, et al., Health Affairs, Vol. 27, No. 6, November/December 2008, p. 1467–68, 1471–72.

53 "Long-Term Care Providers and Services Users in the United States: Data from the National Study of Long-Term Care Providers, 2013-2014" Vital and Health Statistics, Centers for Disease Control and Prevention, Series 3, No. 38 (February 2016) https://www.cdc.gov/nchs/data/series/sr_03/sr03_038.pdf.

54 "Table 1: Projections of the Population and Components of Change for the United States: 2015 to 2060" U.S. Census Bureau, 2014.

55 "The Next Four Decades – The Older Population in the United States: 2010 to 2050" By Grayson K. Vincent and Victoria A. Velkoff, U.S. Census Bureau, May 2010, https://www.census.gov/prod/2010pubs/p25-1138.pdf (Accessed 1/25/17).

56 "Basic Statistics About Home Care, Updated 2010" National Association for Home Care & Hospice, Washington, DC: National Association for Home Care & Hospice, 2010, http://www.nahc.org/assets/1/7/10HC_Stats.pdf (Accessed 3/23/15), p. 6.

57 "The Nation's Health Care Conundrum: Where Do We Go from Here" By David Kroitz, The Concord Coalition, May 15, 2009, http://www.concordcoalition.org/issue-briefs/2009/0515/nations-health-care-conundrum-where-do-we-go-here (Accessed 12/10/09).

58 Healthcare Valuation: The Financial Appraisal of Enterprises, Assets, and Services" By Robert James Cimasi, MHA, ASA, FRICS, MCBA, AVA, CM&AA, Hoboken, NJ: John Wiley & Sons (2014), p. 536.

59 "Epidemiology in the United States After World War II: The Evolution of Technique" By Mervyn Susser, Epidemiology Reviews, Vol. 7 (1985), p. 149–150.

60 "The Determinants of Mortality" By David Cutler, et al., Journal of Economic Perspectives, Vol. 20, No. 3 (2006), p. 103.

for degenerative age-related diseases, e.g., heart disease, stroke, cancer, and senile dementia, treatment of which increased overall costs due to the long-term nature of the care.[61]

In contrast to other industries in which technological advancements are generally associated with greater output and equal or lesser input, the wave of medical technological advances following WWII correlated with a steady increase in medical costs. It has been estimated that more than fifty percent of the total rise in real medical care costs may be attributable to technological advances.[62] Since the 1970s, the perceived excessive rate of growth of healthcare spending—attributed in part to technological investments—has been acknowledged as a serious problem by the government, insurers, employers, and individuals.[63]

The establishment of many certificate of need (CON) laws restricting the construction and expansion of healthcare technology, facilities, and services was driven in part by this perceived excessive rate of growth of healthcare spending, as well as the "Roemer Effect." [64] In their 1959 study, Roemer and Shain argued that hospital beds would be intentionally filled by providers who induce ill-informed patients into hospital stays.[65] While the basis of the argument for this set of circumstances, i.e., "supply and demand," may have been valid during the "cost-plus reimbursement era" before the implementation of the prospective payment system (PPS) for hospitals in 1983, it is widely asserted that it has not been demonstrated to be the case today, in a value-based reimbursement environment characterized by the shifting of financial risk to providers.[66]

Over the course of human history, healthcare trends have been driven by advances in our medical capabilities, which are largely dependent on our technological progress. Current total spending on healthcare is 17.8% of GDP and grew at a rate of 5.8 percent in 2015 to an estimated $3.2 trillion.[67] This growth is driven in part by the perpetual technological advancement, dynamic availability of the most accelerated technologies, fear of potential malpractice suits, and efforts to procure economic gain that support the necessary supply factors to perpetuate this invincible expansion. With the current market demand for both chronic and acute services undergoing continuous growth, available technologies, as well as future technological developments, will augment the healthcare practice with the clinical and administrative tools necessary to provide efficient, effective, and affordable healthcare services. VE



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61 "Epidemiology in the United States After World War II: The Evolution of Technique" By Mervyn Susser, Epidemiology Reviews, Vol. 7 (1985), p. 149–150.

62 "The Dynamics of Technological Change in Medicine" By A. Gelijns and N. Rosenberg, Health Affairs, Vol. 13, No. 3 (1994), p. 29; "Medical Care Costs: How Much Welfare Loss?" By Joseph P. Newhouse, Journal of Economic Perspectives, Vol. 6, No. 3 (1992).

63 "Unfinished Journey—a Century of Health Care Reform in the United States" By Jonathan Oberlander, New England Journal of Medicine, Vol. 367, No. 7 (August 16, 2012), p. 585.

64 "Excess Capacity: Markets, Regulation, and Values" By Carolyn W. Madden, Health Services Research, Vol. 33, No. 6 (February 1999), p. 1653.

65 *Ibid*.

66 "The U.S. Healthcare Certificate of Need Sourcebook" By Robert James Cimasi, ASA, CBA, AVA, FCBI, CM&A, CMP, Washington, DC: Beard Books (2005), p. 2.

67 "National Health Expenditures 2015 Highlights" Centers for Medicare & Medicaid Services, December 6, 2016, https://www.cms.gov/research-statistics-data-and-systems/statistics-trends-and-reports/nationalhealthexpenddata/nationalhealthaccountshistorical.html (Accessed 1/25/17).



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ACADEMIC REVIEW

Contemporary Research in Valuation and Forensic Accounting

By Peter L. Lohrey, PhD, CVA, CDBV

The purpose of this column is to provide the readers of *The Value Examiner*, summaries of contemporary research in valuation and forensic accounting. The manuscripts covered are selected from numerous academic research outlets that include relevant topical coverage of valuation and related forensic accounting issues. The objective is to illustrate the core of this novel research while increasing awareness among the community of the subject matter.

As this column evolves, I encourage the readership to forward relevant manuscripts or working papers for consideration. Please send links and/or files to: jim@dmcpa.com or digabrielej@montclair.edu with ***Academic Research Briefs*** in the subject line.

DO U.S. COMMERCIAL BANKS USE FAS 157 TO MANAGE EARNINGS?

Authors: Gin Hong, Henry Huang, and Yi Zhang, Prairie View A&M University

Source: *International Journal of Accounting and Information Management*, Vol. 20, (1), pp.78–93, (2012).

https://www.researchgate.net/publication/235277447_Do_US_commercial_banks_use_FAS_157to_manage_earnings

Summary

This paper investigates whether U.S. commercial banks manage earnings through their use of Level 3 inputs under SFAS 157/ASC 820. The authors examine whether the association between banks' performance (measured by return on assets, cash flows, and provisions for loan loss [PFLL]) and the frequency of Level 3 input use are inversely related. They also question whether a bank's size (based on total assets) is directly related to the frequency the use of Level 3 inputs for the valuation of their assets and liabilities.

Hong, Huang, and Zhang (HH&N) extracted their information from all 10-Q reports filed during the first two quarters of 2008 by U.S. national commercial banks (SIC Code 6021). The authors hypothesize that because Level 3 inputs provide the highest level of managerial discretion, they will be most frequently used by larger banks with poor earnings performance. A multivariate regression model was used to find that U.S. commercial banks were more likely to use Level 3 inputs when they were larger in size, and performed more poorly in terms of profitability.

Literature Considered in the Study

The introduction of SFAS 157/ASC 820 has created a great deal of controversy over the last ten years. HH&N point out that the market to model approach (Level 2 and 3 inputs) is subject to more earnings management than the mark to market approach (Level 1 inputs). Specifically, when it comes to bank asset valuation strategies, the discretionary use in the choice of models and input assumptions provides bank managers with a greater degree of freedom (Turner, 2008; Vernon 2008; Goh et al., 2009).

During periods of financial crisis (which took place during the sample period used for this study) it is essential that banks maintain their capital ratio and investor confidence (Scanell, 2008). This in turn provides managers with greater incentive to engage in asset value management (Song et al., 2010, Barth et al., 1990; Moyer, 1990). This fact prompted HH&N to assess the magnitude of commercial banks, especially ones that are performing poorly, who adopt Level 3 inputs for earnings management purposes. Hence, HH&N

expect banks that perform poorly will be more likely to engage in income-increasing earnings management (Becker, et al., 1998).

Lastly, Watts and Zimmerman (1978) concluded that a firm's size was positively associated with political costs. This gives larger firms greater incentives to undertake earnings management because of potential political costs and the bad publicity that is associated with negative earnings. Thus, HH&N believe that large banks will be more likely to use Level 3 inputs to classify their total assets.

Design and Execution of the Study

CHZ used the first two quarters of 2008 because this represents the first two reporting periods after SFAS 157/ASC 820 went into effect. Of the 233 banks with SIC Code 6021 who filed 10Q reports during this period, 199 (eighty-five percent) used fair value assertions under SFAS 157/ASC 820. Out of these 398 quarterly observations, sixty-nine of them did not contain all of the variables used in their multivariate regressions. This left 329 quarterly observations.

A multivariate regression model was used to test for the relationship between assorted firm attributes and firms' classifying their assets and liabilities using Level 3 inputs. Four financial measures were used as independent variables to explain the percentage of assets measured using Level 3 inputs (the dependent variable). CHZ hypothesized that return on assets (ROA) and operating cash flow (OCF) would be negatively associated with the percentage of Level 3 inputs for valuing assets and liabilities (H1 and H2). They hypothesized that PFLL and firm size (logarithm of total assets [LGTA]) would be positively associated with the percentage of Level 3 inputs for valuing assets and liabilities (H3 and H4).

Digest of Findings and Conclusions

Using their 329 quarterly observations, CHZ found that 10.2% of the assets used Level 1 inputs and 6.4% of the assets used Level 3 inputs. Banks used Level 2 inputs for valuing most of their assets (83.4%). It is also noteworthy they found that after the top twenty-fifth percentile, no banks used Level 1 or Level 3 inputs.

Their results supported H1 and H2—the percentage of Level 3 inputs was significantly and negatively associated with ROA and OCF. This indicates that poor-performing banks tended to use Level 3 inputs more often than strong-performing banks. They also supported H3—as they found a higher PFLL with a higher percentage of Level 3 inputs. Finally, H4 was also supported, for the LGTA or when bank size was larger, the percentage of Level 3 inputs was also higher.

In conclusion, CHZ found that only twenty-one percent (199 out of 960) of the commercial banks had adopted SFAS 157/ASC 820 for the first two quarters that it went into effect. Second, they discovered that most banks (83.4%) used Level 2 inputs to value their assets and liabilities. Third, they found that banks have a large incentive to manage their earnings. Poor performing banks (based on ROA and PFLL) used Level 3 inputs more often than more profitable ones. Larger banks also used a higher percentage of Level 3 inputs than smaller banks.

It should be noted that this study should be taken with a grain a salt, as it suffers from severe data limitations (it only uses the first two quarters of SFAS 157/ASC 820 when into effect) and it is limited to just one industry—banking. Finally, there are several avenues upon which to expand on this study. Examining items such as: audit firm identity, the use of an audit committee, and investigating the frequency of Level 3 input usage across various types of industries are just a few examples.

UNDERSTANDING BANK VALUATION: AN APPLICATION OF THE EQUITY CASH FLOW AND THE RESIDUAL INCOME APPROACH IN BANK FINANCIAL ACCOUNTING STATEMENTS

Author: Eleftherios Aggelopoulos, University of Patras, Rio-Patras, Greece.

Source: *Open Journal of Accounting,* Vol. 6, pp. 1-10, (2017). http://www.scirp.org/journal/ojacct

Summary

This paper presents a framework for bank valuation based on two widely used valuation models that are not limited to banks: the Discounted Equity Cash Flow to Equity (ECF) and the Discounted Residual Income (RI). Bank valuation, especially in Greece, can be quite challenging. For quite often there is inadequate information on bank financial data—especially for items such as loan portfolio quality. Consequently, estimates based on assumptions must be created, and this paper attempts to provide an analytical guideline to do this. Aggelopoulos shows that both the ECF

and RI valuation models yield equal values of bank equity. He provides a transparent outline for measuring the value of a bank and emphasizes that this is a critical need—given the continuing financial crisis in Greece.

Motivation for the Study

Aggelopoulos begins by stating that the ECF method should be used in place of an enterprise Discounted Cash Flow (DCF). This is due to the fact that banks' operating and financing decisions are inseparable. Hence, interest income and expense are irreplaceable elements of bank income.

He then applies the RI approach to corroborate Koller, Goodhart, and Wessels' (2005) claim that both models will yield the same results. These models include estimates of a bank's capital sufficiency by utilizing information about risk weighted assets and Basel Tier 1 capital adequacy—comprising shareholders' equity and retained earnings.

Digest of Findings

Aggelopoulos uses several assumptions to estimate future balance sheets and income statements in order to project future cash flows under the ECF method. He points out that predicting future macroeconomic factors such as interest rate changes, and capital market volatility, etc. make it quite difficult to assure the quality of the projected future cash flows. In addition, there are differences among researchers as to the length of time to use to projected future cash flows. Some studies use five years, while others use a ten-year period to project future operating cash flows. Aggelopoulos ends up choosing eight years of operating cash flows before estimating the terminal value cash flow.

Unfortunately, he also makes numerous unsupported assumptions about future asset balances (such as customer loans, loans to other credit institutions and the value of securities and investments). Aggelopoulos also assumes a fixed ratio of loans to deposits equaling ninety percent for future liabilities. This leads to additional unproven assumptions regarding risk weighted assets that he uses to estimate the amount of future bank capital needed to comply with minimum capital requirements required by Basel.

Projected future income statement assumptions are equally presumptuous, with very little empirical support for expense and profit margins. Future income taxes are assumed to be applied at a twenty-five percent rate. These assumptions again appear to be overly simplistic, and a sensitivity application at various assumed rates would have led to a much-improved tutorial.

Aggelopoulos' RI method is not as subjective, yet it does contain three or four critical underlying assumptions. His measure for residual income is defined as the difference between net operating profits after taxes and the cost of equity capital—based on the Capital Asset Pricing Model (CAPM). Yet, there are several weaknesses when applying the CAPM empirically, especially when it comes to estimating betas for Greek banks.

The final step under this method applies the sum of projected values of the residual income with the value of a given bank's equity at the beginning of the period. This also contains a significant probability of error when estimating future residual income values.

Conclusions and Implications

This tutorial attempts to provide analytical instruction for bank valuation. It utilizes two valuation methods: the ECF and the RI. The results show that both models lead to the same equity value for a bank, thus providing theoretical validation of the work done by Koller, Goedhar, and Wessels (2005). Aggelopoulous concludes that high yields on invested capital along with more developed bank operations provide high cash flows and annual residual incomes that increase a bank's value. VE



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LITIGATION CONSULTING

Court Corner

S-CORPORATION VALUATION DEBATE – THE IMPACT OF *CECIL V. COMMISSIONER*

By Robert James Cimasi, MHA, ASA, FRICS, MCBA, CVA, CM&AA; and Todd A. Zigrang, MBA, MHA, FACHE, ASA

In 1999, the federal tax case, *Gross v. Commissioner of Internal Revenue*, brought the issue of the impact of taxes on the value of subchapter S corporations (S corporations) to the forefront of consideration within the valuation community. In that case, the court rejected "tax affecting" (i.e., "allowing a deduction for taxes on corporate earnings")[1] for S corporations. The decision spawned much debate in the valuation profession, including the development of four models to utilize in valuing interests in S corporations.[2] The court has again taken up the issue of valuing S corporations in the pending case, *Cecil v. Commissioner of Internal Revenue*, which involves a bequest of shares in the Biltmore Company, the operator of the historic Biltmore estate in North Carolina.[3]

This article on the valuation of common stocks for S corporations will briefly discuss the debate surrounding tax affecting S corporations, as well as how the *Cecil* case may impact the resolution of this issue.

In the *Gross* case, the petitioners, shareholders of G & J Pepsi-Cola Bottlers, Inc. (G & J), gifted minority interest S corporation shares to their children.[4] One of the shareholders, Walter Gross, gifted 124.5 shares (0.63 percent of the outstanding shares of common stock) to each of his three children. [5] On the same day, a separate shareholder, Patricia Linnemann, gifted 187.5 shares (0.95 percent) of common stock to each of her two children.[6] The gifts were valued at $5,680 per share and reported to the IRS using this value.[7] The IRS noted a tax deficiency for each of the gifts, arguing that the fair market value (FMV) of each share was not $5,680, but instead, $10,910 per share.[8]

According to the Tax Court, the "most significant differences between the parties' expert witnesses" regarded whether to adjust G & J's earnings by tax affecting such earnings when determining the discounted cash flows in performing the FMV analysis.[9] During the trial, the petitioners' expert witnesses argued it was necessary to tax affect the earnings of an S corporation in order to reflect how S corporations are "committed to making distributions to shareholders to cover individual tax liabilities on allocated S corporation earnings."[10] The petitioners argued that this distribution is similar to C corporations making tax payments to the IRS, in that such remittances "represent[] a known payment which reduces the availability of cash which could otherwise be used to maintain or expand existing operations."[11] In contrast, the expert witness for the IRS refused to tax affect the earnings of G & J, noting the company would remain an S corporation indefinitely and all earnings would be distributed to shareholders.[12] The Tax Court agreed with the IRS's position against tax affecting the earnings of G & J, opining that the *"principal benefit that shareholders expect from an S corporation election is a reduction in the total tax burden imposed on the enterprise."*[13] [Emphasis added]

Subsequent to the 1999 decision in the *Gross* case, four models have been developed to value minority interests in S corporations:[14]

(1) The S Corporation Economic Adjustment Model (SEAM) by Daniel R. Van Vleet, ASA;

(2) The Quantitative Marketability Discount Model (QMDM) by Z. Christopher Mercer, FASA, CRA, ABAR;

(3) The model set forth by Roger J. Grabowski, FASA; and,

(4) The model set forth by Chris D. Treharne, ASA, MBA, BVAL.[15]

1 "Taxes and Value: The Ongoing Research and Analysis Relating to the S Corporation Valuation Puzzle" By Nancy J. Fannon and Keith F. Sellers, Portland, OR: Business Valuation Resources, 2015, p. 12.

2 "Business Valuation and Federal Taxes: Procedure, Law, and Perspective" By David Laro and Shannon P. Pratt, Hoboken, NJ: John Wiley and Sons, 2011, p. 99.

3 "S Corp Model Now in Tax Court" By Andy Dzamba, Business Valuation Resources, June 30, 2016, https://www.bvresources.com/blogs/bvwire-

While each model employs the standard of FMV,[16] Tax Court Judge David Laro and Dr. Shannon Pratt, in their book entitled, *Business Valuation and Federal Taxes*, note that these models differ as to the following issues:

a) The starting point for the valuation

b) The extent to which current cash distributions affect value

c) The impact on value of retained cash flow (basis)

d) The extent that shareholder benefits (i.e., personal taxes saved) impact the value determination

e) The amount, extent, and manner that discounts are taken against the value determined by the model

f) The impact of today's value of the asset sale amortization benefit resulting from future transactions.[17]

Judge Laro and Pratt note that an appraiser's selection of the appropriate model to value a minority interest in an S corporation "may depend on the extent to which the facts and circumstances fit with a particular model."[18]

For example, Judge Laro and Dr. Pratt note the valuation of controlling interests in S corporations have distinct issues that must be addressed by the appraiser. These issues include:

1. *Some empirical studies of C and S corporation transactions in the marketplace do not support the notion that S corporations are worth more than C corporations; in fact, they point to the opposite conclusion. However, given the complexity of the corporate transaction structuring, not everyone agrees that this evidence is conclusive.* [Emphasis added] *A 100 percent ownership interest in an S corporation does not necessarily come with a bundle of rights and obligations attached to it any more than does a 100 percent ownership interest in a C corporation. This is distinctly different than a minority interest in an S corporation or a C corporation*." [Emphasis added] *The controlling shareholder can mimic the favorable tax characteristics of an S corporation (i.e., avoid the double-taxation disadvantage of C corporation dividends by paying additional salary).* [Emphasis added] *Buyers will not pay for an election that they can make themselves for free, unless it has some value to them. Grabowski points out that in some instances, buyers will pay a premium for the possible benefits that come with an old-and-cold S corporation*." [Emphasis added];

2. *S corporations logically make distributions of funds necessary to support taxes on corporate earnings. This is no different from a C corporation; in either case, the money is gone and no longer available for corporate investment and growth*." [19] [Emphasis added]

However, Judge Laro and Dr. Pratt note that, in the context of valuing a controlling interest in an S corporation:

[T]he experts generally agree that there may be no difference in value between S corporations and C corporations. Logically, the experts' consensus is that C corporation valuation methods may be used for valuing controlling ownership interests in S corporations.[20] [Emphasis added]

The pending *Cecil* case may address many of the issues relating to the valuation of interests in S corporations that have developed since the *Gross* case. *Cecil* related to a dispute regarding the gifting of shares in the Biltmore Company.[21] The owners of the Biltmore Company valued the gift at $20.88 million; however, the IRS disputed the figure, arguing that the FMV of the gift was $95.29 million.[22] Notably, both experts in the case tax affected the earnings in the Biltmore Company when performing their valuation analysis, in contrast to the *Gross* case, in which the IRS's expert did not tax affect the earnings of the S corporation in question.[23] The Tax Court held a hearing in the *Cecil* case in February 2016, and the case is currently in deliberations.[24]

Commentators on the case have noted that the case may provide insight on two issues: 1) whether the valuation of

***Court Corner** continued on page 35*

news/2016/06/30/s-corp-model-now-in-tax-court (Accessed 1/5/17).
4 "*Gross, et al. v. Commissioner of Internal Revenue*" 78 T.C.M. (CCH) 201, (U.S. Tax Ct. 1999), p. 2.
5 *Ibid.*
6 *Ibid.*
7 *Ibid.*
8 *Ibid,* p. 3.
9 *Ibid,* p. 8.
10 *Ibid,* p. 10.
11 *Ibid.*
12 *Ibid.*
13 *Ibid.*
14 "Business Valuation and Federal Taxes: Procedure, Law, and Perspective" By David Laro and Shannon P. Pratt, Hoboken, NJ: John Wiley and Sons, 2011, p. 99.
15 "Pass Through Entity Tax Affecting for Business Valuations" By Rudolf P. Armbruster, ASA, CVA, Cherry Bekaert, March 17, 2014, http://www.cbh.com/guide/pass-through-entity-tax-affecting-for-business-valuations/ (Accessed 1/26/17).
16 "Business Valuation and Federal Taxes: Procedure, Law, and Perspective" By David Laro and Shannon P. Pratt, Hoboken, NJ: John Wiley and Sons, 2011, p. 99.
17 *Ibid,* p. 106.
18 *Ibid.*
19 *Ibid,* p. 108–109.
20 *Ibid,* p. 110–111.
21 Dzamba, June 30, 2016.
22 *Ibid.*
23 Frazier, Ross, August 29, 2016.
24 *Ibid,* p. 5.



PRACTICE MANAGEMENT

Tips for Practitioners

WAYS TO IMPROVE YOUR PARTNER COMPENSATION PLAN

By Stephen D. Kirkland, CPA, CMC, CFC, CFF

One key difference between successful and unsuccessful financial service firms is the way partner compensation amounts are determined. Successful firms have strong compensation plans that help retain their top performers and motivate all partners to do their best. Other firms have plans that encourage average or below average performers to stay and send the best looking for greener pastures.

The partner compensation plan serves many purposes and risk mitigation may be the most important. Business valuators understand that all professional service firms face many risks and the defection of a top performer can be one of the most difficult risks to manage.

WORST CASE SCENARIO: EQUAL PAY FOR SPOTTY RESULTS

One of the worst ways to compensate partners (or other owners) may be to share pay equally regardless of individual results. "When performance is irrelevant to compensation, the organization gets less than it pays for," says E. James Brennan,[1] an independent compensation expert based in Bellingham, Washington.

This type of plan is not a motivator and does not give everyone enough incentive to go the extra mile. In today's highly competitive environment, each owner needs to be fully incentivized. Although there are exceptions, firms paying all owners equally usually do not achieve the long-term stability, growth, or profitability that the owners desire. Even for those who are not motivated primarily by money, being paid equally can be a powerful de-motivator.

A BETTER PLAN: PAY FOR PLAY

A better approach may be to keep base salaries (aka show-up pay) to no more than about seventy percent of total expected pay. This allows for sizeable bonuses, which are powerful motivators.

Incentive bonuses are effective not only because of the financial reward, but also because everyone appreciates having their hard work recognized and rewarded. Well-designed incentive bonuses can bring out the best in everyone. Alan Weiss, an advisor to consultants,[2] warns against trying to manage (lower) the amount paid to a partner. Instead, he suggests trying to manage (raise) the partner's value. Weiss also reminds firms to design their plans for the future, not for the past.

DESIGNING AND UPDATING PARTNER COMPENSATION PLANS

One of the first questions to answer is, who will design and update the partner compensation plan? "You want to foster an environment where everyone believes that one partner's success is best for the firm rather than detrimental to another partner," says James "Jim" George, CPA, CVA, JD, founder and CEO of Massachusetts based firm, JAGPC. Larger firms often have an executive committee or a compensation committee which is charged with that responsibility. For smaller firms, it may be most appropriate for the managing partner to make these decisions. Regardless of who handles this important task, the following reminders may be helpful:

1. **Pay bonuses often.** Annual bonuses are golden handcuffs which may keep employees on board until

1 E. James Brennan, "Performance Management Workbook," October, 1989, Amazon.com.

2 Alan Weiss is CEO of Summit Consulting Group, Inc. His clients include Merck, Hewlett-Packard, GE, Mercedes-Benz, State Street Corporation, Times Mirror Group, The Federal Reserve, The New York Times Corporation, Toyota, and over 500 other leading organizations.

the annual bonuses are finally paid. But in today's want-it-now society, a year can be a long time. More motivation can be derived from quarterly bonuses because the longer the interval between the desired performance and its reward, the less effective the bonus is. Paying a bonus as soon as practical after the amount has been determined will surely help morale. One CPA firm saw attitudes sour quickly when they postponed payment of "tax season" bonuses until June.

Early in my career, I learned the hard way that coming between someone and their paycheck was a quick way to lose a friend. Once someone feels that they have earned their money, they do not want to wait for a committee to meet or for any other delay.

2. **Customize.** Although it takes some time and thought, the best way to achieve fairness and maximize profitability is to customize a bonus plan for each owner annually. All owners do not perform the same services or bring the same amount of value to the firm. Someone spends more time on administrative matters, for example, and deserves to be paid for that. Another may be the best rainmaker and someone else will have the most billable hours. Therefore, one bonus plan may not fit all.

   Start by determining what is needed from each partner. This usually includes a mix of client service, recruiting, staff development, business development, and firm administration. The priorities may change from one year to the next. This year the firm may need extra attention on business development, and the next year it may need more emphasis on recruiting. Just be careful what you promise to pay for, because you will surely get more of it, and you probably prefer quality over quantity.

   Mike Gregory, CVA, an ASA, and a Qualified Mediator with the Minnesota Supreme Court, founder of Michael Gregory Consulting, LLC and now Michael Gregory Institute—Tax Topics and Leadership Topics, championed the IRS team on reasonable compensation years ago. He says, "We get what we measure. If a partner is being given an incentive to prioritize certain actions, ensure the actions are clearly articulated orally and confirmed in writing."

3. **Try to balance fairness, simplicity, and transparency.** It is best for everyone if bonus plans are kept simple. For good reasons, professionals are skeptical of anything they do not fully understand. You also want the plan to be straightforward so you can compute bonus amounts quickly after quarter end.

   Jim George adds, "I would make sure that any creative bonus plans are in writing and explain the rationale for how they are calculated. This will be important later if any disputes arise between partners or if the partnership needs to be valued. Many times disputes occur, and without proper documentation it may be difficult to remember or justify why a certain partner's bonus was larger than others."

THINGS TO CONSIDER

As with other aspects of managing a firm, transparency among the partners is also important. Here are some important factors to consider when constructing a plan:

Components. Despite the need for simplicity, a bonus plan could be made up of multiple components. Therefore, each bonus could actually be a combination of small amounts from the various components. For example, one owner may have a component for client service, and that may be measured in part by billings and collections. That component of her bonus may be equal to thirty percent of the amount by which her collections exceed her target for the quarter. When designing the components, remember that most workers focus their attention on the specific areas that directly affect their compensation. And be sure that bonuses are based on individual performance, not on seniority or equity ownership.

Business development. To encourage on-going business development, consider a component that pays the generating partner five to ten percent of any fees collected from a new client during the first year. This strongly encourages the rainmaker to help get invoices out, and cash payments in, during that first year. However, since it is easy to bring in poor-paying clients, it may be wise to provide that the ten percent is not paid if realization on a client is below a set level.

However, there may be disputes when new clients come in. Perhaps two or more owners may each claim that they helped attract a new client. To avoid fistfights, it may be feasible to split the bonus component between them. However, one successful firm simply assigns each new client to the person who "received the initial e-mail or answered the phone call." Other firms have allowed their managing members to determine which owner was the principal rainmaker in these situations. Just decide how you to want to handle this scenario, put it in writing, and then follow your policy. And do not forget to prepare for those situations when a member of your staff, and not an owner, is really the one who brought in the new client.

Recruiting. For many financial service firms, attracting great employees is currently a significant challenge. To encourage owners to help find qualified candidates, bonuses could include a component which is based on the starting salary

of any new hires they personally locate. The amount may not need to be more than thirty percent of what would have been paid to a placement firm. Consider paying this component on the six-month anniversary of the new employee's start date and make it contingent on that new employee performing satisfactorily up to that time.

Use the bonus plan to unify, not divide, your team. Even though each owner does not have the same bonus terms, be sure each plan includes firm-wide incentives. To create a team that works together, the bonus plans must give each owner an incentive to see that the whole firm succeeds. Otherwise, you may be creating a collection of sole proprietors.

One way to create teamwork is to agree that every owner's bonus will include a component each time the firm's collections exceed the total for the same quarter of the prior year by more than ten percent. This is demonstrated below:

Example 1	
Collections in Q2 of current year	$1,000,000
Collections in Q2 of prior year	800,000
Increase	200,000
10% of prior year collections	80,000
Increase in excess of 10%	120,000
Bonus divided among the owners (50%)	$60,000

If every owner gets a cash bonus when the whole firm exceeds budget, they will pull together. Even a small cash bonus can be a big motivator since it acknowledges successful effort.

Client service. Owner bonuses should also reflect client service. One component I seldom see, but highly recommend, is based on client satisfaction surveys. Consider having your managing member send out client surveys regularly, or use an independent firm to perform the survey. Add a certain amount to the bonus of the owner receiving the highest scores each quarter.

Flexibility. Include some flexibility and subjectivity so the managing partner or executive committee can adjust the amounts upward or downward for hard-to-measure attributes like ethics and attitude. You do not want to be contractually committed to paying a bonus to someone who undercut team incentives for personal benefit. One firm was contractually obligated to pay a large bonus to a former partner who had just been kicked out of the firm for committing an ugly crime.

It really is the thought that counts. Give the managing member the authority (and the responsibility) to award small, impromptu bonuses. These "spot bonuses" quickly recognize someone's unexpected, extraordinary performance through an at-the-moment reward. These bonuses are effective in showing immediate appreciation for exceptional accomplishments. They should be completely subjective.

Minimize risk. To help encourage owners to exercise due care, consider requiring the responsible owner to pay all or most of the deductible if and when a lawsuit is filed against the firm. Such payment could be made by reducing that person's next bonus by the amount of the deductible. If one owner is negligent, or agitates a client, the other owners will not want to share in the payment of the deductible.

Delivery. Rather than simply having the net bonus amounts electronically deposited, consider hand-delivering paper checks. The managing member could look the other owners in the eyes, shake their hands, and say, "Thank you!" while handing them their checks. Or, she could mail hand-written notes to their homes with the checks. We live in an electronic age and that makes the old-fashion personal touch more special.

However, even with these minor details, there are advantages and disadvantages to every option. For example, one valuation professional heard of a company who once mailed bonus checks to the employees' homes thinking it would impress their spouses and make the employees feel more proud. Instead, one employee's spouse asked how many other bonuses the employee had received over the years that she did not know about. She discovered that the prior bonuses had been deposited into a secret account that had never been disclosed to her, and the valuation professional got to work on their divorce case!

Delays. If bonuses must be delayed for some reason, be very careful. Employment agreements and state laws may limit an employer's ability to postpone payment of wages. Also, strict requirements must be met to avoid tax problems associated with nonqualified deferred compensation (see Internal Revenue Code section 409A).

Compliance. Get legal counsel on any obligation your firm makes to its owners (or other employees) and be sure your firm keeps the right to modify the incentive plan going forward.

FINAL THOUGHTS

Give all owners a chance to provide their input on any changes to the compensation plan. Be sure it is clear and put in writing. Ensure that you are paying for performance and avoiding perverse consequences such as encouraging internecine warfare or intra-employee rivalry. Teamwork is the foundation of profitability. VE



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Court Corner *continued from page 31*

pass-through entities using the income approach should involve tax affecting; and 2) the potential validity of utilizing the SEAM model under the facts and circumstances of the case.[25] Of note, both experts in the *Cecil* case utilized the SEAM model during their FMV analysis; the Tax Court's opinion may address the validity of adjustments utilized in this model to reflect tax affecting issues under the facts and circumstances of the case.[26] Valuation professionals would be well-served to monitor developments in the *Cecil* case in order to determine the potential effect of the outcome of the litigation on the valuation of S corporations. VE



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25 *Ibid.*
26 *Ibid.*

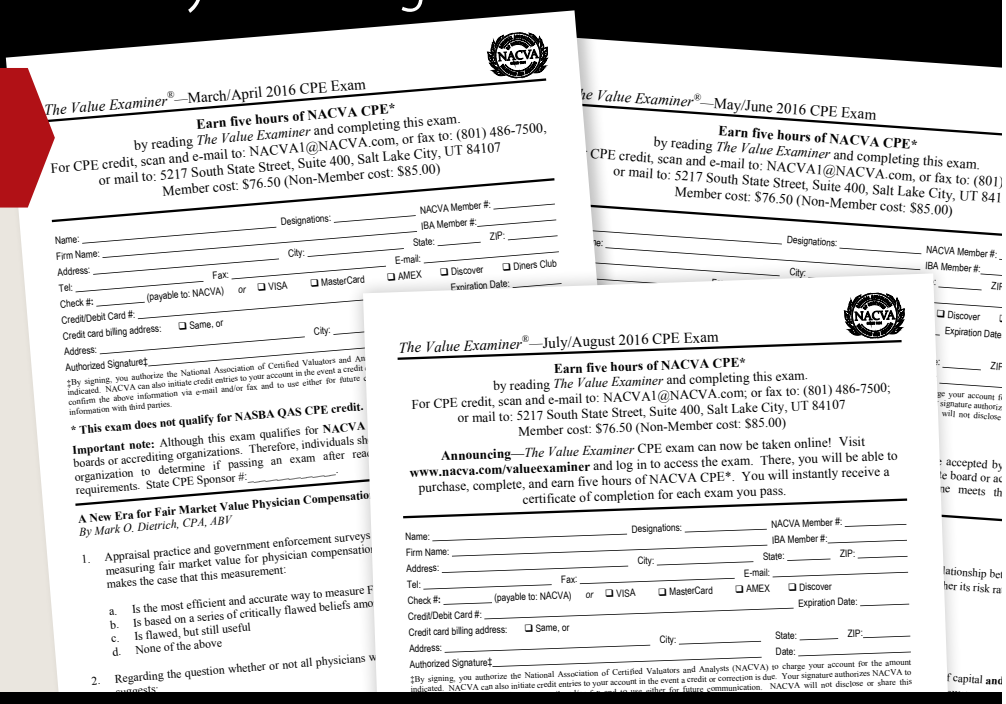
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PRACTICE MANAGEMENT

Practicing Solo

"Practicing Solo" features interviews with our industry's seasoned sole practitioners. If you are itching to join the solo ranks, or striving to be more efficient and effective in your established one-person firm, this column offers you practical advice, steeped in experience from the trenches, that can move you forward.

By Rod P. Burkert, CPA, ABV, CVA

INTERVIEW: MARGARET MCDONNELL

I hope you enjoyed last issue's interview with Michael Molder. Our interview series continues, with this issue featuring Margaret McDonnell, CPA, ABV, CFF, CVA. Margaret hails from North Fayston, Vermont (that's south and east of Burlington).

Margaret has been on her own since June 2015, so her practicing solo memories are still fresh in her mind. You can find her at McDonnell Tax & Consulting, PLLC (mcdonnelltax.com). She is also the NACVA state chapter president for Vermont.

Margaret's valuation practice sweet spot is small business and family law involving companies up to the five-million dollar revenue range.



Margaret McDonnell

Rod: What was your first year like, and what would have made it better?

Margaret: My first year was harder than expected. During my last year at Keurig (see more info on this below), I had two large valuation projects that included expert testimony, both of which concluded in the spring of 2015, just when I was leaving Keurig. And tax season had just ended. I felt lost. Instead of juggling tax and valuation work around a full-time job, I had to fill forty hours of work on my own. I took in consulting work and new business set-up projects wherever I could find them. I set up appointments with tax clients I had worked with for years but never met in person. I even did a few payrolls over that first summer. And while my revenues were less than projected, I felt liberated and free from a crushing schedule for the first time in a long time.

Work has since picked up, and I'm working with many new law firms, banks, and CPA firms. Valuation work has always been "feast or famine" for me, but I knew if I was patient the jobs would come. And they have. My client base has increased almost exclusively from word of mouth referrals.

Rod: Did you have a formal (or even semi-formal) business plan?

Margaret: I would call it a semi-formal plan. I budgeted what I expected to earn as a full-time practitioner and the additional expenses I would incur, including website development and health insurance, which was the largest monthly expense.

Rod: How did you first attract clients, and how did that strategy evolve over time?

Margaret: I started my accounting career late in life—at age forty-two—when I joined a large, public accounting firm in Vermont as a tax staffer. Within three years, I earned my CPA, ABV, and CVA designations. I loved the simplicity of numbers and the client interaction. I have since earned an MBA in Accounting, a QuickBooks Pro Advisor status, and the CFF designation.

After spending five years in public accounting, I was enticed by the CFO of Green Mountain Coffee Roasters (now Keurig

Green Mountain) to establish an internal audit function at the then newly publicly traded company. After three years passing SOX audits, I transitioned from internal audit and created an internal tax department, bringing all tax-related work in-house.

Throughout my time at Keurig, I maintained my credentials and continued to do tax and valuation work on the side. After ten and a half years, I left Keurig in the spring of 2015 to go out on my own. I had reached the tipping point of working full-time and doing tax and business valuation work on the side. It was now or never. During the summer of 2015, I redesigned my logo, set up my website, and reached out to current and prospective clients.

I didn't feel like I was starting a new business. It was more like I finally have the time to devote to a neglected child. During that first summer, I took the time to meet with attorneys and tax clients, attend a few CPE classes, and present at one or two seminars.

Rod: Do you practice in a specialized niche today?

Margaret: My primary focus is family law, but I also work dissenting shareholder cases. Non-trial work includes succession planning, gifting, and equity transactions. My experience has been that family law attorneys are faithful clients, and once you've proven yourself, you can expect future engagements.

Rod: What has been your best marketing tactic?

Margaret: My best marketing tactic has been recognizing and rewarding referral sources. I always make sure to ask new clients how they heard of me, and I e-mail that referral and thank them. Over the Christmas holiday, I send small boxes of chocolates with a few business cards and a handwritten note thanking major clients for their business.

Rod: How do you price work?

Margaret: I have a set rate for valuation work and expert witness work but use a sliding scale for small projects and tax work. I enjoy working with startups and small clients that may not have the resources to hire larger firms.

Rod: How do you differentiate yourself from larger firms?

Margaret: My favorite part of being self-employed is the ability to set fees and hourly rates. This has given me an edge over larger firms with overheads to cover. My clients know they are dealing directly with me and appreciate the confidentiality of a one-on-one relationship. I'm usually able to respond to a client's request within a day or two, and clients know they can give me a call at most any time to ask a question or two without seeing an invoice.

Rod: Do you work from a home office or an "office" office?

Margaret: I work out of a home office in Fayston, Vermont… located minutes from the Sugarbush ski area. Most of my clients are law firms located in the larger Vermont towns of Burlington, Rutland, and Middlebury.

Rod: What is your current mobile device?

Margaret: I use an iPhone 5 to keep in touch with phone calls and e-mails.

Rod: Describe your current computer workstation set up.

Margaret: I use an HP Pavilion desktop with dual monitors and several printers. I also have a laptop that I take to client meetings. They both run Office 8.0.

Rod: Besides your phone and computer, any office hardware or software that you just couldn't live without?

Margaret: I have a set of valuation templates that I put together over the years and which I use for just about every engagement. I used boxed valuation software for a time, but when I upgraded Microsoft Office a few years back, the valuation software was no longer functional. I like to know where all my numbers come from and my templates provide that assurance. I also live and die by my Outlook calendar.

Rod: What do you listen to while you work?

Margaret: I like to listen to the local news and weather in the morning. During the workday, I'll sometimes listen to music, but most of the time I like a quiet environment.

Rod: What tool(s) do you use to manage your to-do list?

Margaret: I keep a running list using a small 5x8 notebook. In this age of constant communication, it's easy to forget something you've promised to do for someone or to return a call. I'll jot down something that needs to be done and then cross it off when it's completed. Doing this in a chronological fashion shows me which chores I am procrastinating over and makes me feel guilty until I get them done.

Rod: Early bird or night owl—what's your sleep routine?

Margaret: I am definitely an early bird, going back to the days when our children were at home, mornings were always quiet and I was at my most productive. I try to end my day

between four and five in the afternoon so that I have time to relax and read the newspaper.

Rod: Do you have liability insurance?

Margaret: Yes, I carry E&O insurance through the AICPA.

Rod: Do you have any office/admin staff?

Margaret: Other than my husband running errands like banking and mail, I work alone.

Rod: Do you have a support group to call on?

Margaret: There are a few practitioners that I reach out to from time to time. Vermont is a relatively small market, and I often face the same opposing experts in the courtroom. For this reason, my support group is practitioners in New Hampshire and Massachusetts.

Rod: Who reviews your work?

Margaret: For several years, I worked closely with a Vermont practitioner who did no courtroom work, and he and I would review each other's work. He has since become the CFO of one of his clients and refers most of his valuation work to me. Since then, I've pretty much been on my own. I try to stay within my comfort zone on valuation work and refer those out of my realm to others.

Rod: How do you stay technically current with changes in the profession?

Margaret: I attend NACVA and AICPA conferences and read articles of interest in *The Value Examiner* and other industry publications.

Rod: What non-BV business book have you read most recently or want to get to, and why?

Margaret: I recently finished *Navigate the Noise* by Richard Bernstein. Although it's a bit dated (2001), it reminds us "more is not better" when it comes to media hype and information overload around the stock market.

Rod: What's your work-life balance like?

Margaret: Adjusting my work-life balance was probably the single largest factor in my decision to go solo. I'd reached the point in my career when money was not the driving force behind business decisions. My husband was a building contractor all his life and is semi-retired. I envied his daily routine and ability to ski or golf when the weather cooperated. Since going solo, my work-life balance has dramatically improved—from three-mile runs with the dog in the morning to USTA tennis year-round, golf in the summer, and skiing in the winter. I find it much easier to focus on work after I've exercised in the morning, or knowing that if I work today, I can play tomorrow. Staying fit and disciplined gives me confidence and keeps me healthy. It also gives me a sunny disposition and lots of energy!

Rod: What practice areas do you think offer the most promise to someone going solo now?

Margaret: The unique thing about the valuation industry is that you can go solo in almost any practice area that interests you and in which you are proficient. Family law often involves court testimony, and attorneys like to have experts they know and can depend on. A good day of testifying has resulted in repeat work from most attorneys and even a retainer or two from the opposing attorneys. That's when you know you were an effective witness!

Rod: Finish this sentence: If I knew then what I know now, I would…

Margaret: …have gone out on my own just before tax season instead of just after! I also wished I had given my clients advanced notice of my pending transition, which might have decreased the lag time between working "on the side" and going solo with a forty-hour workweek. VE

That's a wrap! Do you have a Practicing Solo issue you would like me to address? E-mail me at rod@rodburkert.com.



Rod Burkert, CPA, ABV, CVA, is a practice development coach who helps overwhelmed BVFLS practitioners create more margin in their practices and their lives so they have the freedom to do the things that matter most to them. Mr. Burkert works with entrepreneurially-oriented professionals who have one thing in common: they want to move the needle on their practices further, faster.

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