

Factors associated with financial performance of independently owned companion and mixed animal veterinary practices

Lynn E. Dodge MS

Stephen R. Koontz PhD

Joleen C. Hadrich PhD

From Pilgrim's Pride Corp, 1770 Promontory Cir, Greeley, CO 80634 (Dodge); the Department of Agricultural and Resource Economics, Colorado State University, Fort Collins, CO 80523 (Koontz); and the Department of Applied Economics, University of Minnesota, Saint Paul MN 55108 (Hadrich).

Address correspondence to Dr. Hadrich (jhadrich@umn.edu).

OBJECTIVE

To identify factors associated with financial performance of independently owned companion and mixed animal veterinary practices.

SAMPLE

Financial statements (ie, annual balance sheets and income statements for 3 consecutive years) were obtained from 45 practices.

PROCEDURES

Ratio analysis of financial statements was performed with the DuPont Model, and practices were grouped into 4 financial performance groups on the basis of return on equity. Liquidity and solvency ratios and debt management and asset investment practices were then compared among financial performance groups

RESULTS

Financial liquidity was low across all financial performance groups, but most practices were solvent, with assets exceeding liabilities. Debt management was found to be a limiting factor for financial success, with lower-performing practices using credit cards and lines of credit to purchase capital assets. Practices that were not solvent owed debts on the purchase of intangible assets and had higher owner withdrawals, compared with other practices. Practices that built productive capacity by borrowing and investing in productive assets had higher long-term returns.

CONCLUSIONS AND CLINICAL RELEVANCE

Results suggested that proper debt management coupled with prudent asset investment was associated with higher financial performance for independently owned companion and mixed animal veterinary practices. (*J Am Vet Med Assoc* 2019;255:805–811)

As the veterinary industry changes and evolves, it is becoming more difficult for veterinarians to be successful in private practice on the basis of their medical knowledge alone. Increasing corporate consolidation has put financial pressure on independently owned practices,¹ and some research suggests that the supply of veterinarians may have outpaced the demand, at least in locations where there are high densities of veterinarians.^{2,3}

At the same time, concerns about the need to increase veterinarian income have taken center stage, and substantial research has been dedicated to understanding barriers to increasing veterinarian income.^{4–6} However, whereas previous research sought to explain income gaps and quantify market-level effects of supply and demand on income, we propose that improving financial management may increase the income of veterinarians currently engaged in private practice.^{7–9}

ABBREVIATIONS

ROE Return on equity

Efforts to improve the financial acumen of veterinarians have been promoted by Veterinary Management Groups, professional consultants, and the AVMA Veterinary Economics Division through financial research studies and financial education workshops for veterinarians. However, focusing on profitability alone ignores the roles that asset and debt management play in earnings potential. Profitability measures the short-term management of revenues and expenses, whereas asset and debt management determine the resource base and long-term financial position.

Understanding financial statements and how the information included in them reflects the overall success of a veterinary practice creates an opportunity to identify financial management factors that may contribute to the long-term success of independently owned practices. For the present study, ratio analysis of financial statements from companion and mixed animal practices was performed with the DuPont Model, and practices were grouped on

the basis of ROE. Liquidity and solvency ratios and debt management and asset investment practices were then compared among financial performance groups to identify differences that could potentially account for the differences in financial performance among groups.

Materials and Methods

Financial statements (ie, annual balance sheets and income statements) were obtained from 45 independently owned companion and mixed animal practices through a collaborative effort between the University of Georgia, AVMA, and Colorado State University. Each practice provided financial statements for 3 consecutive years between 2011 and 2016. In general, practices that were enrolled earlier in the study provided financial statements for 2011 through 2013, and practices that were enrolled later in the study provided financial statements for 2014 through 2016.

Assets and liabilities listed on the balance sheets were categorized on the basis of the amount of time they would be used by the practice as current or short term (< 12 months) versus fixed or long term (> 12 months). Total assets and liabilities were used to determine whether a practice was solvent, with a practice considered to be solvent if assets exceeded liabilities. Equity was calculated as the amount that assets exceeded liabilities.

Initial examination of the financial statements indicated that all 45 practices reported transactions on a cash basis, meaning that financial transfers were recognized when money exchanged hands, rather than on an accrual basis, which would have recognized financial transfers at the time service was provided, rather than when payment was received. This tended to maximize profit while minimizing tax liability (ie, accounting profit) but ignored the long-term usefulness of assets and liabilities in the practice (ie, economic profit). To account for the differences between accounting and economic values, adjustments were made to the tax-based balance sheets provided by participating practices.

First, assets were adjusted by calculating economic depreciation with the straight-line method, which assumed, on the basis of an expected 5-year life span and no salvage value, depreciation of 20% of the purchase price of the asset annually. This increased the value of assets reported on the balance sheet, because most participating practices had used the modified accelerated cost recovery system for depreciation to minimize taxes, which decreased the assets' reported values more quickly.

Second, the value of intangible assets was updated so that they could be included in asset calculations. However, intangible asset value was removed when calculating practice equity, because these assets generally could not be sold or used as collateral for a loan.

Third, many veterinary practices did not report a value for the building in which the practice operated, because it was leased from another organization or held by another business entity owned by the practice. If the building was owned by the practice but held by a different business entity, it was important to include its value in the balance sheet to provide a comprehensive estimate of the practice's overall value. On the basis of accounting records showing that a building is typically valued at 7.5 to 8.5 times the annual rental expense,¹⁰ the value of the practice building was included in the balance sheet at 8 times the reported rental expense.

Finally, liabilities were adjusted, with any payments due in the next 12 months (eg, lease payments associated with the building or rental expenses) considered a current liability.

Once information provided in the financial statements was adjusted, the DuPont Model^a was used to assess the financial performance of the participating veterinary practices (**Appendix**). All ratios were calculated as 3-year averages for each practice. The operating profit margin, asset turnover ratio, and leverage multiplier were multiplied to calculate the ROE, which represented the rate at which equity (value) was being created.

For these calculations, operating profit was defined as the difference between revenue and cash expenses, as reported on the income statement. Depreciation was added back to profit because it was considered a noncash expense. As indicated by the fundamental accounting equation, equity was defined as the difference between assets and liabilities. Total revenue included cash generated from the sale of goods and services, and total assets included all purchased investments of monetary value that produced revenue.¹⁰

After DuPont Model ratios were calculated, participating veterinary practices were categorized into 4 financial performance groups on the basis of the calculated ROE. Practices in the high financial performance group had an ROE > 0.4, practices in the middle-high financial performance group had an ROE > 0.2 but ≤ 0.4, practices in the low-middle financial performance group had an ROE > 0 but ≤ 0.2, and practices in the low financial performance group had an ROE ≤ 0.

Results and Discussion

The 45 practices included in the study employed a mean of 3.68 veterinarians (median, 3 veterinarians; range, 1 to 7 veterinarians). Mean ± SD annual total revenue for the 45 practices (ie, cash generated from the sale of goods and services) was \$1,641,690 ± \$874,688; mean annual cash costs was \$1,463,052 ± \$755,957.

Mean ± SD value of current assets for the 45 practices was \$177,221 ± \$225,005, mean value of fixed assets was \$85,392 ± \$126,532, and mean value of intangible assets was \$64,559 ± \$188,610. Mean value

of total liabilities was \$209,003 ± \$284,189, which represented the sum of current liabilities (\$62,244 ± \$55,564) and long-term liabilities (\$146,759 ± \$251,713). For the study population, mean equity was \$125,402 ± \$272,373.

Number of veterinarians employed by each practice was only weakly correlated with ROE. Practices in the low and high financial performance groups had lower mean numbers of veterinarians than did practices in the low-middle and middle-high financial performance groups (**Table 1**), suggesting that asset and debt management had more important influences on practice financial performance than did practice size.

Examination of the DuPont Model ratios suggested that practices in the high financial performance group had the highest profit, as indicated by the operating profit margin ratio, and highest asset efficiency, as indicated by the asset turnover ratio, with a fairly large proportion of debt (Table 1). In general, the purchase of productive assets increases capacity, which generates higher profits. Examples of productive assets include, but are not limited to, technology (eg, radiology and dental equipment), software (eg, client-management programs that generate reminders to clients), and space (eg, square footage and location). In contrast, practices in the low financial performance group also had high debt, but this was related to the purchase of intangible assets. Examples of intangible assets include investments in human capital and advertising. These types of assets are important to a business's success but are more difficult to measure quantitatively. Returns on these assets are used to pay debts, which will improve equity, but not productive capacity. Therefore, returns will be lower. Practices in the low-middle and middle-high financial performance groups (ie, ROE > 0 but ≤ 0.4) had lower amounts of debt and had lower asset turnover ratios, but this was because returns had been withdrawn from the practice rather than invested in productive capacity, which lowered the potential for subsequent profit.

Taken together, the DuPont Model ratios suggested that debt was an important tool for practices with both the highest and the lowest financial performance

and that investment in productive assets had the potential to increase future returns. Thus, the greatest opportunities for practices in the low, low-middle, and middle-high financial performance groups to increase returns would be in the areas of asset and liability management. Investment in productive capacity increases profit potential. But, although profits can be reinvested, they do not exist in the absence of an initial investment. Financial returns have 3 primary uses: they may be withdrawn by the owner, used to pay debt obligations, or invested to increase the productive capacity of the practice. Primarily, low financial performance was the result of diminished productive capacity because of low investment rates or was the result of high debt obligations, which also lower investment rates. On the other hand, prudent investment and borrowing for the purchase of assets led to the highest returns.

These findings emphasized the management of assets and liabilities and prompted further analysis of the balance sheets of participating practices to draw conclusions about the liquidity and solvency of these practices. Liquidity was assessed with the current and debt coverage ratios; solvency was evaluated with the debt-to-asset and debt-to-equity ratios (Appendix). Three-year averages for each ratio were calculated for each practice, and summary statistics for each financial performance group were calculated (**Table 2**).

Liquidity determines whether a practice can meet its short-term obligations by comparing current assets to current liabilities. The current ratio is the value of current assets divided by the value of current liabilities. For a practice to be considered liquid, the current ratio must be > 1. For the 45 practices included in the present study, only the middle-high and high financial performance groups had mean current ratios > 1 (Table 2). Notably, mean current ratio for the low financial performance group was higher than the mean ratio for the low-middle group, likely because of high owner withdrawals in the low-middle group. A current ratio > 1.25 would be considered a strong ratio, meaning that bills in the upcoming year could be paid, with some reserves for unforeseen cir-

Table 1—Summary statistics for DuPont Model ratios (calculated as 3-year averages) for 45 independently owned companion and mixed animal veterinary practices.

Financial performance group	No. of veterinarians/ practice	OPM	ATO	ROA	Leverage	ROE
Low (n = 8)	3.90 ± 2.08 3.67 (1.00 to 6.67)	0.12 ± 0.11 0.11 (-0.04 to 0.28)	1.07 ± 0.21 1.00 (0.87 to 1.51)	0.10 ± 0.10 0.10 (-0.07 to 0.26)	-108.55 ± 290.97 -3.55 (-828.48 to -0.46)	-0.97 ± 1.27 -0.55 (-3.81 to -0.02)
Low-middle (n = 13)	3.00 ± 0.74 3.00 (2.00 to 4.00)	0.04 ± 0.03 0.05 (-0.01 to 0.09)	1.04 ± 0.33 0.87 (0.57 to 1.71)	0.04 ± 0.03 0.04 (-0.01 to 0.11)	2.65 ± 1.23 2.41 (1.42 to 5.90)	0.10 ± 0.05 0.09 (0.03 to 0.18)
Middle-high (n = 12)	4.10 ± 1.95 4.17 (1.00 to 7.00)	0.13 ± 0.04 0.12 (0.06 to 0.20)	1.70 ± 0.62 1.66 (0.82 to 1.24)	0.20 ± 0.07 0.19 (0.12 to 0.35)	1.55 ± 0.40 1.49 (1.04 to 2.28)	0.29 ± 0.27 0.27 (0.21 to 0.40)
High (n = 12)	3.67 ± 1.94 3.00 (1.00 to 7.00)	0.16 ± 0.09 0.14 (0.04 to 0.35)	1.85 ± 0.67 1.61 (1.24 to 3.23)	0.32 ± 0.22 0.26 (0.06 to 0.68)	4.47 ± 4.53 2.03 (1.02 to 14.03)	0.78 ± 0.27 0.73 (0.44 to 1.24)

Data are reported as mean ± SD and median (range). Practices in the high financial performance group had an ROE > 0.4, practices in the middle-high financial performance group had an ROE > 0.2 but ≤ 0.4, practices in the low-middle financial performance group had an ROE > 0 but ≤ 0.2, and practices in the low financial performance group had an ROE ≤ 0.

ATO = Asset turnover. OPM = Operating profit margin. ROA = Return on assets.

See Appendix for equations used to calculate financial ratios; ratios were calculated after adjustment of financial statements for economic depreciation, intangible assets, value of the practice building, and current liabilities.

Table 2—Liquidity and solvency ratios for the veterinary practices in Table 1.

Financial performance group	Current ratio	DCR	DCR (with owner withdrawals)	DCR (without depreciation)	D:A (without intangible assets)	D:A (with intangible assets)	D:E
Low (n = 8)	1.00 ± 0.76 1.02 (0.00 to 2.20)	1.30 ± 0.71 1.04 (0.03 to 2.42)	1.74 ± 0.74 1.88 (0.28 to 2.94)	0.87 ± 0.66 0.94 (-0.10 to 1.89)	1.49 ± 0.73 1.32 (0.77 to 3.17)	0.97 ± 0.31 0.94 (0.53 to 1.53)	-109.55 ± 290.97 -4.55 (-829.48 to -1.46)
Low-middle (n = 13)	0.87 ± 0.46 0.79 (0.28 to 1.80)	1.04 ± 0.36 2.96 (0.56 to 1.75)	2.19 ± 0.99 1.89 (0.89 to 4.35)	0.94 ± 0.36 0.87 (0.56 to 1.68)	0.59 ± 0.24 0.56 (0.29 to 1.19)	0.58 ± 0.24 0.55 (0.29 to 1.19)	1.65 ± 1.23 1.41 (0.42 to 4.90)
Middle-high (n = 12)	2.91 ± 5.25 1.53 (0.20 to 19.34)	3.34 ± 2.85 2.30 (1.26 to 11.46)	5.00 ± 3.12 4.16 (1.50 to 11.94)	3.34 ± 2.85 2.30 (1.26 to 11.46)	0.31 ± 0.16 0.32 (0.04 to 0.53)	0.30 ± 0.98 0.32 (0.04 to 0.05)	0.55 ± 0.39 0.49 (0.04 to 1.28)
High (n = 12)	2.23 ± 3.18 0.83 (0.01 to 10.67)	6.62 ± 10.49 2.79 (1.05 to 38.16)	7.99 ± 10.50 4.84 (1.57 to 38.16)	6.35 ± 9.99 2.73 (1.04 to 36.19)	0.54 ± 0.30 0.49 (0.02 to 1.00)	0.53 ± 0.27 0.49 (0.02 to 0.98)	3.46 ± 4.53 1.03 (0.02 to 13.03)

D:A = Debt-to-asset ratio. DCR = Debt coverage ratio. D:E = Debt-to-equity ratio. See Table 1 for key.

cumstances. However, even in the high financial performance group, the median current ratio was close to 1. Practices with a current ratio < 1 are not liquid and would have difficulty paying their debts on the basis of their current assets. Surprisingly, 24 of the 45 (53%) practices in the study were considered illiquid, with illiquid practices identified in all 4 financial performance groups.

A potential explanation of the low liquidity for practices in the study would be underreporting or overpurchasing of inventory. For the financial records, inventory reported as current assets was estimated by tax preparers, and detailed inventory records were not available. Recording inventory purchases and reconciling against sales at the end of each month could help improve this measurement. Importantly, some inventory is perishable. Vaccines and pet food, for example, can expire if not sold in a timely fashion, which results in a financial loss.

Responsible recordkeeping and reporting are another method to improve measurements of current liabilities. Nearly half of the practices did not list the current portion of their loans that were due on their balance sheets despite reporting having a long-term loan. If the current portion of a loan is not reflected in current liabilities, the current ratio will be inflated. Including the current loan portion in our analyses made the already poor liquidity position for these practices even worse. However, even though this was the case, it is important to have full information when making management decisions because debt solvency plays a critical role in the financial stability of firms over time.

Understanding time horizons and their effects on asset and liability management can improve liquidity. In some instances, poor liquidity occurs because current liabilities are used to finance the purchase of capital (fixed or long-term) assets. If an asset has a useful life > 12 months, it should be financed with a loan of equal duration. Specifically, credit cards and lines of credit should not be used for the purchase of fixed or long-term assets. One constraint that practices may face is difficulty in obtaining a loan because of poor liquidity, which may result in using more short-term debt, like credit cards, to finance these investments. Additional short-term debt on fixed or long-term assets exacerbates the problem and creates a cycle of

business stress that can ultimately lead to bankruptcy. Education on the types of assets and how to obtain proper financing would help to improve liquidity.

To improve liquidity, additional revenue must be generated to offset expenses. Residual profits can be added as cash to the balance sheet and used to service debt. Debt service is the sum of accounts payable (ie, bills due), rental expenses, interest expenses, and loan principal that is due. The ability to repay these debts is measured by the debt coverage ratio, which compares operating profit to debt service. A ratio > 1 indicates that the practice generates enough profit to repay its debt during the year. The debt coverage ratio is an important component of profitability, because principal payments on loans are not considered expenses but result in cash leaving the business. When calculating operating profit, rental expenses and interest expenses are added back to operating profit, because these are expenses that have already been paid from revenue.

For practices in the present study, debt coverage ratios were better than current ratios, with each financial performance group having mean and median debt coverage ratios > 1. This means that most of the practices were generating sufficient revenue to pay their debts. However, some practices in the low and low-middle groups had debt coverage ratios < 1. We believe that improved management of debt and the funds paid out to owners could easily improve the debt coverage ratios for these practices.

Owner withdrawals differ from owner compensation and have a direct effect on a practice's ability to cover debt obligations. Owner compensation is defined as a salary or regular paycheck that is reported on the income statement as payroll. Owner withdrawals are cash withdrawals that can occur throughout the year, at the discretion of the practice owner. In some instances, a salary is not drawn over the course of the year, and owner withdrawals are used as salary for the practice owner. This strategy may result in financial distress for the practice owner in the event the practice is not generating sufficient profits to allow for owner withdrawals.

Most of the practices in the present study reported both payroll expenses and owner withdrawals. We were unable to determine whether the owner's salary was included in the payroll expenses, but

mean values for owner withdrawals, expressed as a percentage of gross revenue, varied among the financial performance groups (high group, 9.05%; middle-high group, 9.12%; middle-low group, 7.17%; and low group, 12.6%). The higher percentage for the low group may indicate these practices were using owner withdrawals for compensation on a more regular basis than the practices in the other groups were.

To have a more accurate depiction of the practices' ability to cover debt obligations, debt coverage ratios were calculated with annual owner withdrawals added back to operating profit (ie, debt coverage ratio if owner withdrawals had not occurred; Table 2). The absence of owner withdrawals improved debt coverage ability in every performance group. We do not recommend eliminating owner withdrawals, especially when a practice generates adequate returns. However, improved management of owner compensation through salary or payroll, rather than withdrawals, in the 2 lowest performance groups could allow for the servicing of all debts, which would lower the practice's financial stress. One possibility could be for the owner to be compensated with a minimum salary for living expenses, with a bonus system for owner withdrawals as a proportion of returns. Other strategies for improving debt coverage include cost management, increasing revenue by increasing the number of patients seen or raising prices, and refinancing debt.

Appropriately accounting for payments due in the next 12 months is an important part of good financial management. However, approximately half the practices in the present study did not report the current portion of principal due on long-term liabilities. Failing to report the principal and interest due in the next 12 months overestimates the practice's debt coverage ability. Thus, we also calculated debt coverage ratios with depreciation subtracted from operating profit (Table 2). Although not a perfect substitute, economic depreciation is approximately equal to the principal payment due. Debt coverage ratios adjusted for depreciation were qualitatively similar to unadjusted debt coverage ratios, with practices in the low and low-middle financial performance groups having lower ratios than practices in the middle-high and high financial performance groups. This suggested that practices in the low and low-middle groups needed to better manage their debt and owner withdrawals to improve liquidity. It is possible that practices in the low and low-middle groups made owner withdrawals before considering principal payments that were due or investing in new assets. We recommend that practices consider a different method of owner compensation to allow for debt servicing while improving liquidity. When it comes to owner compensation, living expenses and quality of life are important, but a balance is needed to protect the practice. Our findings suggested that investment in new assets was important to financial performance. Keeping earnings within the practice, at least in the short-term,

should lead to higher performance and better owner earnings in the long-term. High performance was driven by productive assets that resulted in profits high enough to allow for fair owner compensation and debt service.

Solvency represents a practice's ability to meet its total debt obligations and is assessed with the debt-to-asset ratio (Appendix). A practice is solvent if total assets exceed total liabilities; therefore, a debt-to-asset ratio > 1 indicates that debts exceed assets and the practice is insolvent. For the present study, we calculated debt-to-asset ratios with and without the inclusion of intangible assets (Table 2). It is recommended that intangible assets be removed for calculation of debt-to-asset ratios because these assets cannot be sold and, thus, do not contribute to the practice's ability to cover its debts. However, we calculated debt-to-asset ratios both ways to test the sensitivity of our results to the intangible assets and demonstrate the consistency of results.

In general, veterinary practices included in the study were solvent. Not surprisingly, however, many practices in the low financial performance group were insolvent, and this group had the highest mean debt-to-asset ratio. For practices in the low financial performance group, a large proportion of their assets were categorized as intangible assets, and removal of intangible assets from the debt-to-asset ratio demonstrated that these practices had total liabilities greater than the net worth of their real assets. The middle-high performance group had the strongest solvency position. We expect that these practices were mature practices that used little debt. Practices in the high performance group had more debt and were attempting to grow. Despite the debt for practices in the high performance group, assets exceeded liabilities, suggesting that debt was being used as a tool for growth and had not placed extensive stress on the practices.

For the low-middle, middle-high, and high financial performance groups in the present study, adjusted debt-to-asset ratios (ie, ratios calculated with intangible assets included) were not substantially different from the unadjusted ratios (ie, ratios calculated without inclusion of intangible assets), indicating that a relatively low proportion of the assets reported on the balance sheets for these practices were intangible assets. In contrast, for practices in the low financial performance group, adjusted debt-to-asset ratios were substantially lower than the unadjusted ratios. We hypothesized that debt owed on intangible assets had created financial stress for these practices, which were forced to take on additional debt to pay for real assets, limiting future investment and owner compensation.

Practice solvency was also evaluated by calculating the debt-to-equity ratio, which represented the degree to which practices were leveraged or the amount of debt used to finance purchases as a function of equity (Table 2). As with the debt-to-asset ratio, the debt-to-equity ratio was calculated after sub-

traction of intangible assets, which decreased total equity. Total liabilities (or debt) were increased by inclusion of rental expense reported on the income statement. However, building and loan value were not included in this calculation owing to a lack of reported information.

Practices in the low financial performance group in the present study had negative debt-to-equity ratios because of negative equity following the removal of intangible assets. For these practices, profit was used to service debts rather than to reinvest and build equity. Mean and median debt-to-equity ratios for practices in the low-middle and high financial performance groups were > 1 , indicating that these practices typically had more debt than equity, but practices in the middle-high group had mean and median ratios < 1 , indicating that they had more equity than debt. Practices in the high financial performance group used more debt than those in the low-middle and middle-high groups and less debt than those in the low group. Some level of debt is helpful and healthy, but if debt becomes too high, repayment requirements can put stress on the practice.

Together, our findings indicated that debt was an important tool for practices with both the lowest and the highest financial performances, but in very different ways. Practices in the low financial performance group commonly reported a large amount of intangible assets and had debt associated with the purchase of these assets, putting a financial strain on the business. In contrast, practices in the high financial performance group had purchased productive assets that created profits greater than the cost of borrowing.

Conclusions

Financial management decisions are only as good as the information on which they are based. Our study of financial records from 45 independently owned veterinary practices indicated that debt and asset management were important indicators of financial performance, measured as ROE. However, numerous adjustments and estimations were required before we could perform our calculations. Additional research on the financial performance of veterinary practices is needed before making recommendations regarding methods of debt and asset management that will improve profits without affecting owner compensation. Improved financial recordkeeping would help aid this future research.

Results of the present study suggested that independently owned veterinary practices face liquidity constraints, but most of the practices we examined were solvent, with total assets exceeding total liabilities. For practices that were not solvent, a large proportion of assets on their balance sheets were intangible assets. Intangible assets are difficult to quantify and thus put unnecessary strain on the financial position of the practice when they are bought or sold.

Productive capacity drives financial returns by effectively using a practice's physical assets to generate revenue that can be used to service debt over time. Debt can be used to fund investment, but decisions regarding debt must be made carefully. Profit that is consistently generated by a practice can be a source of funds for investment. However, if owners withdraw disproportionate amounts of profit from the practice, productive capacity and future profits will suffer. When profits leave the practice, either through debt service or owner withdrawal, there is lost productive capacity. This can start a cycle that will lead to low performance. Conversely, the earlier and more regularly investment occurs, the higher performance will be, allowing debts to be adequately serviced while leaving sufficient profit for new investment and owner withdrawals.

Use of the DuPont Model in the present study illustrated that successful practices efficiently use their profit to manage the practice's assets and liabilities. The highest performing practices used debt as a tool to achieve growth by borrowing to purchase productive assets to increase short-term returns, which in turn increased the long-term value of the practice. Prudent investment and financing by veterinarians will place veterinary practices in a better financial position, improve liquidity and solvency, and ultimately increase the long-term value of the practice.

Acknowledgments

Funded by a grant from the AVMA and completed through a collaborative agreement between the AVMA and the Colorado State University Department of Agricultural and Resource Economics.

Ms. Dodge was a graduate research assistant and Dr. Hadrich was an associate professor in the Colorado State University Department of Agricultural and Resource Economics when this research was completed.

Private financial statements were collected by the University of Georgia College of Veterinary Medicine through practice management rotations. The authors thank Jeff Sanford, program director for the University of Georgia Small Business Development Center, for supplying context on how veterinary practice financial statements were generated and used.

Footnotes

- a. Dodge LE. A Dupont Model approach to financial management: a case study of veterinary practices. MS thesis, Department of Agricultural and Resource Economics, Colorado State University, Fort Collins, Colo, 2017.

References

1. Gyles C. Corporate veterinary medicine. *Can Vet J* 2014; 55:515-518.
2. Neill CL, Holcomb RB, Brorsen BW. Current market conditions for veterinary services in the US. *Appl Econ* 2018;50:6501-6511.
3. Neill CL, Holcomb RB, Raper KC, et al. Effects of spatial density on veterinarian income: where are all of the veterinarians? *Appl Econ* 2019;51:1532-1540.
4. Brown JP, Silverman JD. The current and future market for veterinarians and veterinary medical services in the United States. *J Am Vet Med Assoc* 1999;215:161-183.

5. Dicks MR, Bain B, Knippenberg R. *AVMA 2015 report on veterinary debt and income*. Schaumburg, Ill: AVMA, 2015.
6. Neill CL, Holcomb RB, Brorsen BW. Starting on the right foot: does school choice affect veterinarian starting salaries? *J Agric Appl Econ* 2017;49:120-138.
7. Burge GD. Six barriers to veterinary career success. *J Vet Med Educ* 2003;30:1-4.
8. Cron WL, Slocum JV Jr, Goodnight DO, et al. Executive summary of the Brakke management and behavior study. *J Am Vet Med Assoc* 2000;217:332-338.
9. Volk JO, Felsted KE, Cummings RF, et al. Executive summary of the AVMA-Pfizer business practices study. *J Am Vet Med Assoc* 2005;226:212-218.
10. Helfert EA. *Techniques of financial analysis: a guide to value creation*. 10th ed. New York: Irwin McGraw-Hill, 2000.

Appendix

Equations for calculation of DuPont Model, liquidity, and solvency ratios for assessing financial performance of veterinary practices.

Financial ratio	Calculation	Financial indicator
DuPont Model ratios		
ROE	= Operating profit ÷ equity	Value
Operating profit margin	= Operating profit ÷ total revenue	Profitability (operations)
Asset turnover ratio	= Total revenue ÷ total assets	Efficiency (investment)
Return on assets	= Operating profit ÷ total assets	Efficiency and profitability
Leverage multiplier	= Total assets ÷ equity	Leverage (financing)
Liquidity ratios		
Current ratio	= Current assets ÷ current liabilities	Liquidity
Debt coverage ratio	= Operating profit ÷ debt service	Liquidity
Solvency ratios		
Debt-to-asset ratio	= Total liabilities ÷ total assets	Solvency
Debt-to-equity ratio	= Total liabilities ÷ equity	Leverage