DAIRY INVESTMENT AND RISK MANAGEMENT STRATEGIES, STAY AHEAD OF THE CURVES

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INTRODUCTION

When thinking of a dairy business, little thought is usually given to how the investment is structured, at least thought beyond how much debt is encumbered and the cash needed to service that debt in a timely manner. However, given recent dynamics associated with deregulation, urban encroachment, and lenders requiring greater due diligence for loan approvals, more emphasis will be placed on improving capital structure of dairy businesses to meet specified investment objectives.

Perhaps the biggest question in all of this is why have dairy business managers and advisers largely ignored the basic concepts that guide stock market investors? This is probably best explained by the fact that operations activities and tasks often overshadow and drown the investment perspective on most dairy businesses whereas active investors are constantly focused on investing activities and only concerned about operational performance when earnings reports are due. While each frame of reference has its limitations (i.e. the dot-com shock on the NASDAQ market in late 2000 and early 2001), the differences in perspectives are worth noting when assessing and positioning dairy businesses for better performance. The investment perspective needs to be more active, particularly when debt is encumbered on business assets.

INVESTOR CLASSES

When investing in the stock market, it is common for your adviser to explore and type you into an investor class. These classes integrate broad categories of investment objectives with the risk preference of the investor. While simplistic in categorization, the organization lends some use to the discussion on dairy investment strategies.

There are a couple of concepts that are useful from the categorization. First, the assessment of the risk preference is a key component of the investor classification. Without knowing the willingness or acceptance of risk (either by choice or de facto requirement of a debt covenant per se) it is difficult to best position the investment objective and subsequent blend of investments.

The second concept, and perhaps more important one, is that different investment objectives have different levels of risk associated with them. For instance, capital preservation is often the

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most conservative of investments, primarily because this can be achieved through zero to low risk instruments (savings, government bonds, and/or certificates, with the principal often guaranteed for a majority of the amount for loss). Conversely, the growth objective needs an aggressive risk preference, primarily because in this investment class few 'returns' (read cashflows) are realized, and the majority of gains are in increased valuation (i.e. appreciation).

Table 1. Investor Classes

	Risk Preference		
Investment Objective	Conservative	Moderate	Aggressive
Capital Preservation	XX		
Income	X	XX	X
Growth and Income		X	X
Growth			XX

As such, the ideal investment strategy is going to be a function of the risk preference and the investment objective of the investor. In reality, the portfolio is composed of a combination of investments which blends risk and returns across a variety of investments (capital asset pricing models and beta risk). The objective, then, is to craft strategies that combine investments with their desired returns and associated risks.

So what does this mean for dairy business owners and investors? Each individual business can be loosely categorized into an investor class dependent on the risk and investment objective. This classification, of course, varies by the investment life cycle, business life cycle, and personal preferences and/or goals. Nonetheless, the classification does give a general direction in for the investment strategy. Before specific investment examples are offered, a discussion of dairy investment portfolios is useful to set context for strategies.

THE DAIRY INVESTMENT MATRIX ©

In light of the above general investment objectives, assets on the typical dairy business can be categorized according to their performance. Based on experience and inherent asset dynamics, the following Dairy Investment Matrix (DIM) © demonstrates the broad differences that exist among assets.

	Investment Dynamics					
Asset Type	Revenue Generation Capacity	Asset Growth Potential	Depreciation Rate	Appreciation Rate	Equity Gains/ Losses	'Real Growth' Pressure
Cash	Neutral	Nil	N/A	N/A	Plus	Low
Purchased Inventory	Moderate	Low	N/A	N/A	Nil	Nil
Raised Inventory	Moderate	Moderate	Moderate	Moderate	Plus	Volatile
Livestock	High	Moderate	High	High	Plus	Volatile
Machinery/ Equipment	Nil	Nil	High	Low	Minus	Erosion
Buildings/ Improvements	Nil	Nil	High	Low	Minus	Erosion
Real Estate/Land	Low	Low	N/A	Moderate	Plus	Low

While the asset types are relatively self defining, the ensuing investment dynamics and their implications on overall dairy business performance bear some explanation.

- Revenue Generation Capacity: This is the ability of the asset to generate revenues in the regular operations of the business. Revenue generation capacity is independent from capital transactions (i.e. gains/losses on sales) with the exception of purchased livestock (FFSC, 1995). Depending on the turnover and intensity of the business, these rates, of course, vary widely among management styles/abilities and productions systems. However, for the purposes of categorization among asset types, the capacity designations will generally hold across businesses. High revenue generation capacity contributes to the potential of profit generation. Low or nil rates generally encumber revenues, particularly if liabilities are associated with the respective asset. Moderate levels generally contribute, but at a reduced level.
- Asset Growth Potential: This is primarily defined as the ability of the asset to grow the business' balance sheet through a gain in intrinsic value and/or counts. This categorization is analogous to the 'value' stocks predominantly traded on stock markets. Since value is inherently tied to the revenue generating capacity and the net present value of gains/losses on sales, each asset carries varying levels of growth potential. This value is a function of the timing, magnitude, and certainty of growth.
- Depreciation Rate: Since depreciation is the net cost associated with the gradual depletion of the asset's value over its useful life. As such it is a function of the useful life and the initial value. Since it is a loss in the valuation, it is truly an expense of the business and appropriately recognized by mainstream accounting standards and schema. In reality, accelerated depreciation schedules shift 'depletion' into the earlier stages of the useful life, often creating material valuation gaps in highly depreciated assets. As such, assets with high depreciation rates pressure equity gains due to both accelerated schedules and sometimes short useful lives.

- Appreciation Rate: In lieu of depreciation, appreciation is the gain in nominal asset value prior to sales or disposition. This is wholly akin to intrinsic valuation and a function of the assets' worth in the market. Depending on local market dynamics, assets can and do fluctuate in valuation. However, some assets have greater propensity than others to gain in value over the initial investment (i.e. cost). Appreciation is rarely a considered aspect in dairy investment strategies, primarily due to investment turnover and current portfolio structures.
- Equity Gains or Loss Pressure: At the end of the fiscal period, the dynamic owners are most concerned about is whether or not equity indeed grows over time. Since this is a function of profits (i.e. revenues, depreciation, and some valuation), asset growth, depreciation, and appreciation, the aforementioned dynamics play into overall equity growth. Best understood in the concept of 'pressure', the assets have different net contributions to overall equity growth (prior to debt service). Gains contribute favorably to equity whereas losses can certainly diminish the equity position of the business.
- 'Real' Growth Pressure: In economics, there is always a distinction between nominal and real growth. This is due to inflationary rates, which have variegated impacts on asset valuation across time. While currently low, inflationary gains, compounded across time, still impact the balance sheet with certainty. Real growth will be in excess of inflated values and is certainly time sensitive.

These concepts are useful when understanding the dynamics of individual dairy assets:

Cash: Obviously the most liquid of dairy assets, cash deserves some mention in investment dynamics even though it is a relatively boring asset type. Since taxing authorities view cash as the primary wealth accumulator, the tax implications of excess cash are obvious.

The investment implications are just as severe, given a potential tax shield, which if aggressively pursued, can lead to an investment rate at one minus the marginal tax rate. However, cash, by itself, cannot gain in value unless reinvested in another instrument or investment on/off business. Equity gains are favorable through cash accumulation. Yet, the tax implications of accumulation of the cash account are severe, hence the real growth of a cash account is only through reinvestment in other assets, earning a low 'real growth' designation.

Purchased inventory: While often ignored in the causal dairy analysis process, the magnitude and timing of inventory purchases and management is a key trait to document and understand. On some dairy business, annual inventory turnover is several millions of dollars with stock on hand a critical trait of efficient operations. The implications on investment are less clear, primarily because dairy business have embraced risk management to a lesser degree than their beef feedlot components.

However the buy versus sell price (i.e. gross margin) is a reality even if the feed is merely converted into animal products (hence the moderate revenue generating capacity), explaining the efficiency of certain by-product feedstuffs. With well-developed futures markets for some feed commodities and the ability to secure long-term forward contracts, revenue generation by proxy is a key investment dynamic. Moreover gains/losses on futures contracts and pre-paid inventory

for tax management lends itself to indirect equity growth, although this usually surfaces in operations rather than accumulation of inventory value.

Raised Inventory: Often a key trait of highly profitable dairies, the ability to grow revenues year over year is highly driven by the accumulation of raised inventories. Depending on the farming system (i.e. grazing, crops, feedlot, or other) these growth areas can be in different areas at different magnitudes. For instance, gains in raised crop/forage inventories are appropriately recognized as revenues (FFSC, 1997) in the accrual system. The ability to grow these inventories impacts revenue generating capacity, growth capacity, and subsequent gains in equity.

There are potential impacts on depreciation (if raising expenses are capitalized into the valuation) and appreciation (intrinsic value and or shrink/wastage). However, real equity growth is dependent upon marketing conditions, which are often tied directly to the revenue generating capacity of the complementary enterprise (and the appropriate investment focus should be thereupon). This earns the asset a volatile designation, particularly in light of weather and marketing risks.

Livestock: There are numerous investment dynamics interacting with operating efficiency, particularly the permutations among purchased and raised livestock, the full breadth of which is best understood under separate cover (see Hoekema et al., 2000). However, the basic investment dynamics can be understood in this setting.

It is clear that the revenue generating capacity on the dairy is driven by the amount of livestock on the farm. Some debate can be had on the appropriate level of heifers to cows (again, separate in-depth issue given its strong interaction with expense structures) and should be duly examined. However the relationship between the amount of livestock to the remaining assets is a key profitability and liquidity trait for a variety of reasons:

- Asset growth, in the appropriate dynamics, is clearly possible if herd turnover (i.e. cull rate) and facility/site constraints are not limiting. This ability is probably the closest investment the dairy industry has to 'value' stocks and can/should be utilized if growth is an investment objective.
- Conversely, depreciation rate can also high, particularly if herd turnover and reliance on outside purchases is high. However, appreciation can be just has high, particularly if the business is efficient in procuring the aforementioned asset growth. This relationship, computed as a gain/loss on livestock sales (FFSC, 1995, Hoekema et al., 2000), highly impacts the ability to gain equity.
- Tax liabilities are often effectively managed through rates of herd growth and the equimarginal tax shield of herd expansion. This dynamic is probably the highest impact area on equity.

Real growth in livestock, however, is subject to the same risks and pressures as other investments. While growth is the most aggressive of investment objectives, it often has the highest level of risks (in the form of herd turnover). Since the valuation and revenue generation capacity of livestock is dependent on markets, there is substantial risk through the ancillary

markets. Inflation impact is low due to the relatively high turnover. However, lags in markets (i.e. heifer market versus milk prices) can create substantial gaps in valuation as compared revenues (a mini price-earnings ratio gap if you will), making the present value of cashflows a more pressing issue.

Machinery/Equipment: The dynamics of the machinery and equipment investment are largely one of necessity, want, and depreciation. This category of investment rarely makes any sense unless is supports a revenue generating activity and should be properly gauged as such. In any effect, on most dairies, machinery and equipment rarely generate any direct revenues, appreciate in value, nor gain valuation due to changes in intrinsic value (with the duly noted exception of antique items). As such, the investment applies pressure for equity losses and hampers real growth due to the depreciation level.

Buildings/Improvements: There is some argument (similar although less valid for machinery/equipment) that improvements and buildings can indeed by revenue generating since they are so related to the complementary livestock investment that a portion is afforded to revenue generation. However, the concept of complementary investments suggests that this is indeed the case, but direct attribution of revenues to the investment on a material basis (compare open housing versus building-confinement) is indeed difficult to disaggregate on a material basis. That noted, there are certain comfort-enhancing investments which indeed enhance/promote revenue generation. However, akin to the purchased inventory discussion, the revenues are indeed generated by another asset.

Revenue generation aside, the high depreciation level and nil appreciation (at least in dairy-related facilities) are comparable to machinery/equipment. The difference is usually the useful lives are much longer, having a 'diluted' impact on the investment dynamics (dependent on the portfolio allocation and age). Both nominal and real gains in equity are thus challenged by this asset.

Real Estate/Land: Perhaps the most dynamic asset in production agriculture, land ownership an acquisition has been a common investment objective of generations of production agriculture businesses, sometimes in lieu of profitable operations. In fact, the notion of land acquisition was identified as a factor of the U.S. Agricultural Lending Crisis in the early 1980's. However, real estate as an investment in the current dairy production system and marketing dynamics, needs to be reevaluated on the merits of its respective investment dynamics.

Continual debate surrounds the notion on the revenue generating capacity of land. In some cases it can be argued that land directly generates revenues on the dairy business, particularly if the system includes high levels of grazing and cropping activities. However, this argument needs to shift to the level of revenues that are generated in respect to the asset's value (i.e. asset turnover ratio), which at best argues for real estate to be categorized as a low revenue generating asset and in most cases nil.

However, that is not to say that this asset is not worthwhile or necessary. Depending on the location and investment objective of the business, potential exists for intrinsic asset growth and long-term appreciation. This can translate into equity gains in the longer term (and sale to be

realized. if ever). However, a good case can be made that 'real' equity growth, adjusted for inflation, taxes, and overall time value discounted to the present, may not be substantive.

THE CURVES

Given the above individual asset dynamics, it becomes apparent that several underlying ancillary issues which need constant attention when making investment decisions. Coined 'curves', these concepts apply varying degrees of equity eroding pressure on the investment to perform. The most destructive of these economic realities are depreciation, inflation, and tax liabilities.

The easiest to manage but perhaps most destructive 'curve' is depreciation. A function of asset value, useful life, and salvage value, depreciation erodes any equity in the investment in an accelerated manner, working against profitability and equity growth. Figure 1 displays the depreciation 'curve' for a $100,000 investment using both accelerated (double declining balance) and straight-line methods across its seven year useful life.

Two concepts are illustrated with the chart. First, the accelerated manner is often the market value reality of the investment, suggesting that highly depreciable assets lose value at a higher rate earlier in their lives than later. Second, a 'gap' exists between straight-line (a common understanding of asset valuation) and the reality of acceleration. This gap places substantial pressure on profits (i.e. higher depreciation expense) and equity growth. This gap is accentuated if useful life is less (i.e. cows with a 3-5 year life).

While depreciation may be dismissed as economic nonsense (particularly since in isolation it is non-cash and can create a tax-shield, in effect creating a tax benefit), the economic reality, if ignored, can create huge holes in the balance sheet of businesses and erode equity in the process. It is worse if a liability is encumbered, as an instantaneous 'gap' is created between the asset value and loan principal (as evident by the sale of 'gap insurance in leasing scenarios).

Combating the depreciation curves is indeed a challenge. The method of highest impact is to minimize the level of highly depreciable assets (i.e. 8-15% of total assets as machinery/equipment and 10-15% composed of buildings/improvements). However specific levels is highly dependent on the investment objective and stage of business life cycle. A second but lower impact method is to invest in growth assets (i.e. livestock) in order to dilute the impact of depreciation across time.

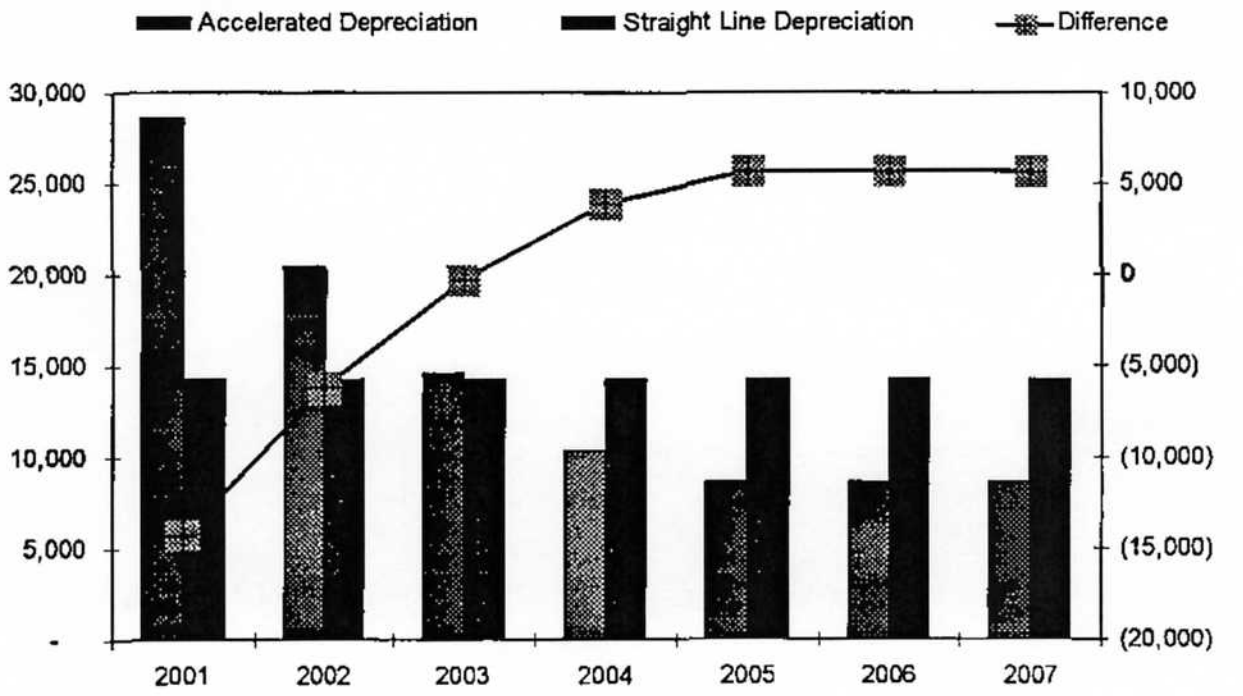

Figure 1. Depreciation 'curves' of a $100,000 investment with 7-year useful life and zero salvage value.

TIME VALUE AND INFLATION

Another economic reality is the impact that time value and inflationary forces have on the balance sheets of any business. Most business valuation methodologies are quite sophisticated when it comes to valuing investments and their performance across time. Production agriculture, at best, is marginally effective at generating a balance sheet let alone one that stands up to the rigors of time-value valuation techniques. That said, it is still a valid management objective when crafting a strategy which either preserves equity or aggressively grows (depending on the investment objective).

Figure 1 displays the investment dynamics for a $250,000 long-term investment financed with a 10-year note at 9% and appreciating at 2% per year. As shown in the chart, the cashflows require $38,003 per year to service the loan while equity gains are negative in years one and two, increasing by year and approaching $40,000 in year 10.

While on the surface, it looks like a favorable investment, adjusting values to 'real' levels which factor inflation and appreciation may bring a slightly different dynamic. Using a 10% discount rate, the marginal cashflows from this investment over the 11 year decision horizon selling the investment for its appreciated value (in this case $335,979) the cashflows are worth $113,982 or a –2% internal rate of return. On the equity side, the real equity gain (factoring in 2% per year inflation) was $151,993 although this discounted back to $50,042 in present dollars (10% discount rate).

This brief exercise demonstrates several concepts. One, the time value of cashflows, particularly in lending on equity preservation investments with limited cashflows have substantial liquidity constraints costing a great deal in present value dollars. When capital and cashflows are constrained, long-term equity preservation investments from debt capital may not be justifiable from a working capital perspective.

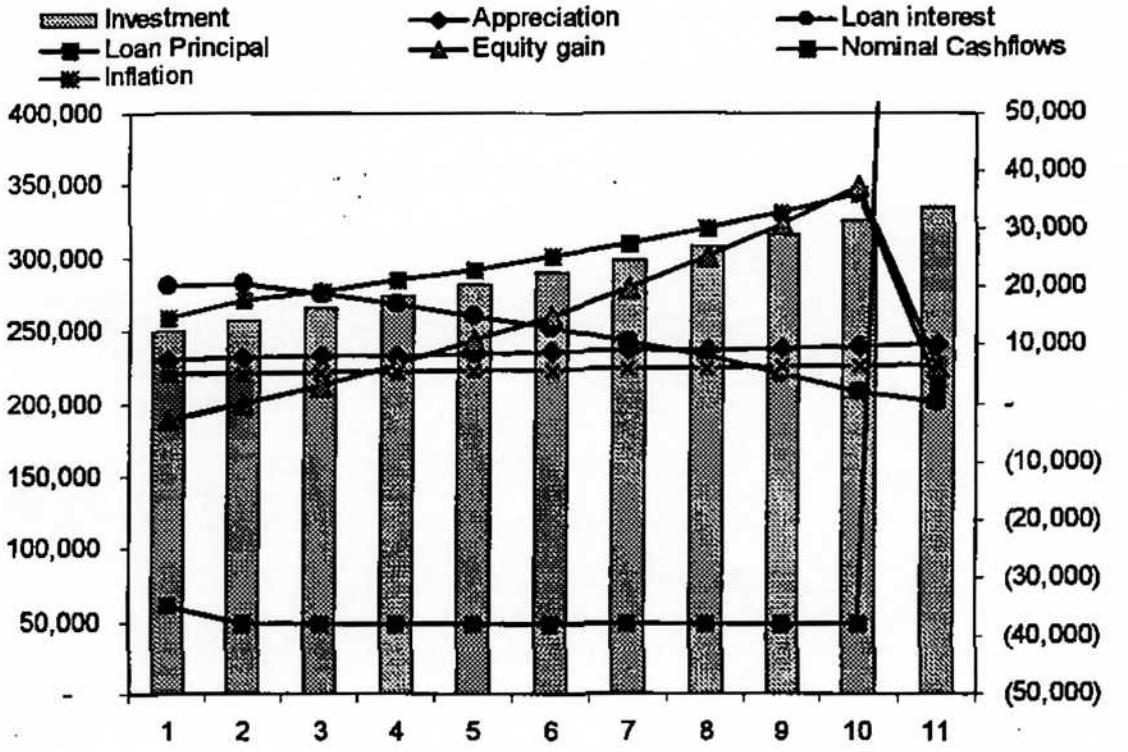

Figure 2. Cashflows and equity gains on a $250,000 investment appreciating three percent yearly and a nine percent 10-year loan amortization.

Second, while equity gains can indeed be real when adjusted for inflation, real equity gains when adjusted for loan amortizations are not until later in the investment decision horizon. This means that in situations of equity constraints, preservation or growth investments without cashflows and/or rapid appreciation may be of limited success in the near term since present value dollars are working against the investment. Moving both equity and cash flows closer to the present will allow investments to stay ahead of these curves to some extent.

TAX LIABILITIES

Always a consternation of liquid and equity gaining businesses, the tax liability for dairy business is no less a serious challenge on business growth and equity gains. Sustainable growth theory (Higgins, 1995) suggests a fine line between sufficient cashflows and tax liabilities (i.e. excess cash). That suggests that some level of investment growth is needed just to manage the tax liability, which is indeed the case on profitable dairy businesses.

Working in reverse to the loan amortization, however, deferring taxes to the future, if just for one year, will result in more dollars freed in the present for reinvestment (hopefully in revenue generating/equity building assets). Under current tax code dynamics, livestock and purchased inventory purchases favor this activity the most for growing business and allows investment behind a favorable tax-shield (at 1-marginal tax rate). If this is compounded across time, investments can rapidly grow behind this shield, allowing for much faster business growth than if this shield is not utilized.

INVESTING AHEAD OF THE CURVES

Given the above dynamics, it becomes much easier to focus a portfolio to meet the investment objectives of the dairy investor/owner. Two issues are prevalent to the business, equity and cashflows, constraints in either present considerable pressures on business functionality and long-term growth as well as tax liability implications. What follows are broad descriptions and recommendations for various investment objectives positioned using the following common dairy business types.

Steady-state herd:

- If profitable: The business is probably cash rich with a high tax liability on both ordinary income and capital gains. If not willing to grow dairy business, look to value investments with a transferable depreciation base to lower tax liability. Pay attention to present value of equity gains.
- If unprofitable: The business is probably low in cash and may have a tax liability on capital gains. Equity may be stagnant unless value/preservation investments are growing without cash contributions. Look to supplement cashflows with profitability gains, and if solvent, borrow for revenue generating assets. Stay away from value investments as it would be difficult to cashflow.

Growing herd:

- If profitable: The business probably has a steady cash balance, although may need seasonal or growth capital needs to borrow for. Gains in herd size allow for tax liability management, which could probably be fine tuned with depreciation schedule management. Control the tax liability with further livestock purchases. Value stocks are a push since tax liability control is probably needed as much today as it is tomorrow although they compete directly for cash.
- If unprofitable: Cash deficits are common and equity may be eroded with heavy depreciation schedules and constant operations borrowing. Additional resources need to be utilized on increasing revenue-generating assets. If equity is constrained, this is a difficult line to manage, potentially requiring a partial liquidation of value (not revenue generating) assets. Stay away from depreciation and tax shield assets as liquidity is the common concern. Evaluate growth rates and herd turnover for possible adjustment.

Individual circumstances and objectives are always paramount when investing money or making changes to your business. Consult your investment planning professional and tax adviser prior to making changes or investing money.

Zero to limited growth situations are always a difficult investment strategy to work with, primarily because it is not one. Inflation, depreciation, tax liabilities, and equity erosion on present value rates of return are challenged in no-growth cases. Even if at inflation levels, moderate growth allows for many dairy investments to compete favorably with most capital preservation, income, and some growth and income stocks.

SUMMARY

By refocusing management on investment strategies, it is much easier to position the business to meet investment objectives. But this is best done when understanding the investment objectives, risk preference, and matching the appropriate asset levels with these goals. Obviously, different assets have different investment dynamics. Matching and mixing these assets in an appropriate portfolio consisting of your investment objectives will better meet your investment needs, control your tax liability, and grow the equity of your business.

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