

10

The key tools of farm business analyses

This chapter explains the benefits of accurately documenting farm assets and liabilities, as well as farm costs and income, to monitor the business performance of the dairy enterprise and plan for future growth.

The main points in this chapter

- The four key tools of farm business analyses are:
 1. Balance sheets: to provide listings of the enterprise's assets and liabilities.
 2. Cash flow records: to indicate the flow of funds into and out of the business.
 3. Income statements: to convert cash flow to business earnings.
 4. Budgets: to organise information about the enterprise.
- Key data from these documents provide important insights into the business health of the dairy enterprise.
- Keeping financial records up-to-date provides early warning signs of impending financial difficulties.

The written documents of farm business analyses are the basic tools of decision making on dairy farms of any size and production system. Not only do they present farm finances in a logical and ordered way, these documents provide the essentials with which to monitor the business health of the dairy enterprise and to develop budgets to plan future farm development.

The tools of farm business management are:

- Balance sheets: to provide listings of the enterprise's assets and liabilities.
- Cash flow records: to indicate and project the flow of funds into and out of the business.
- Income statements or profit and loss statements: to convert cash flow into business earnings for the period of consideration, usually 12 months.
- Budgets: for planning future farm developments.

Analyses of these documents help determine the financial health of the business and the selection of the most appropriate changes in operations or organisational structure.

10.1 Balance sheets

Balance sheets assist in calculating growth in net worth of the business by calculating the change in assets less the change in liabilities. They represent the financial foundation on which the business is built and are simply a list of assets owned and debts owed, at a given time, with monetary values attached. They are then:

- Basic building blocks for financial analysis
- Pictures in time, usually at the end of the business financial year
- Indicators of the business's ability to handle risk
- The net result of past decisions
- Very important ways to track and monitor financial progress
- The first step in analysing the debt position of the business.

The term 'balance sheet' implies some sort of balance as part of the document. That balance represents the relationship between assets on one side, and liabilities on the other, and the basic accounting principle that assets always equal liabilities plus equity. Consolidated balance sheets reflect business and personal affairs, while personal balance



Figure 10.1 A proud farmer shows off his best cow (Sri Lanka)



10.2 Many smallholder farmers source forage from around cropping areas (Central Java, Indonesia)

sheets are limited to personal assets and liabilities. This book deals specifically with business balance sheets. The key items for inclusion in balance sheets are presented in Appendix 6.

10.1.1 Assets

Assets are those parts of the business that are owned or controlled. As well as any property owned by a person or business, they include cash, land, buildings, livestock, farm equipment and dairy-related shares. Details and terms commonly used when listing assets:

- Their value is measured at the end of two consecutive financial years.
- The main items of change are stock numbers, area of land owned, bank account balances and loans owed.
- *Current debt owed or current liabilities*: debtors paid during the year or yet to be paid even though their goods and services have been delivered.
- *Produce and materials on hand*: an inventory of goods, such as concentrates, forages and other farm materials should be undertaken.
- *Current assets* are those that can be easily realised, that is, converted to cash within 12 months, and may include cash, accounts received and money due within one year, short-term investments, inventories and pre-paid expenses. Inventory items (feed, fertiliser fuel) and livestock raised for sale are also current assets.
- *Intermediate assets* are those that can impact on the business after one year but within 10 years. This category includes assets used to produce income, such as breeding livestock, retirement accounts and longer-term securities. They also include plant

and equipment such as fixed farm machinery (milking machines, vats, forage and other feed-processing machinery), tractors, farm vehicles, motorbikes and also any equipment with a reasonable asset value, such as cultivation and spray equipment. These values are also used to calculate depreciation.

- *Long-term assets* are primarily land and improvements and their definition may depend on the term of any associated loan.
- *Non-farm assets*: if they are used in part for the farm business, a portion of their value should be included.

10.1.2 Liabilities

These are a measure of debt carried by the business at a given point in time. They include all short- and long-term loans, finance, lease and hire purchase debt balances, overdraft balances and trade creditors. They can be grouped either as secured or unsecured liabilities. Those secured are backed by other assets owned by the borrower, while unsecured loans do not have this backing, hence are higher risk to the lender and often attract higher interest rates and fees. Like assets, they can be categorised as current, intermediate or long-term using similar time-related definitions.

When listing such debts, principal repayments in any budget should be matched with reductions in liabilities between years. It is important to discriminate between these on-farm and other non-farm liabilities, such as property loans and hire purchase loans not related to the farm, car loans and credit card balances.

Working capital quantifies the amount of money readily available to operate the business, being what is available after meeting debts. This indicates the ability of the business to meet cash obligations as they come due without having to borrow money or cash in some of its medium and long-term capital. It is then a measure of liquidity or the ability to borrow further money. As a rough guide, it should be close to expected net farm income otherwise there may be insufficient investment in the farm.

$$\text{Working capital} = (\text{Current assets}) - (\text{Current liabilities})$$

10.1.3 Equity or net worth

Calculation of equity, or the owner's share of the farm assets, is one of the key functions of balance sheets. As equity (which is sometimes called net worth) is the difference between what you own and what you owe, it is the difference between total assets and total liabilities. If the equity is positive, the business is solvent.

Equity (and net worth) are expressed in monetary terms while equity can also be expressed as a percentage as follows:

$$\text{Net worth} = (\text{Assets}) - (\text{Liabilities}), \text{ in local currency units}$$

$$\text{Equity (\%)} = \frac{\text{Assets} - \text{Liabilities}}{\text{Assets}} \times 100$$

Some creditors use equity on property as a guide to how much liability (or mortgage) debtors can secure against the value of their land.

$$\text{Equity on property (\%)} = \frac{\text{Assets} - \text{Liabilities}}{\text{Value of land and buildings}} \times 100$$

10.1.4 Ratios to describe credit risk

There are various ways that debt and equity can be used to describe the risk that creditors face when lending money to a farm business.

The leverage ratio is a good measure of solvency as it measures the extent to which the creditors have financed the business compared to the owners. The greater the proportion of financing provided by the creditors, the higher the value of the ratio, which increases more rapidly as debt increases. If this ratio exceeds 100%, it means that the creditors have financed more of the business than the owner.

$$\text{Leverage ratio (\%)} = \frac{\text{Liabilities}}{\text{Equity}} \times 100$$

The debt to asset ratio measures the degree to which farm assets are financed by debt and is a second measure of solvency. It is sometimes called the net capital ratio and is a good way of expressing risk exposure of the farm business.

$$\text{Debt to asset ratio (\%)} = \frac{\text{Assets}}{\text{Liabilities}} \times 100$$

The debt structure ratio quantifies the ability of the business to meet its current liabilities:

$$\text{Debt structure ratio (\%)} = \frac{\text{Current assets}}{\text{Total liabilities}} \times 100$$

The current ratio measures the current assets as a proportion of the current liabilities. This provides a guide to the overall financial management of the business, because a very low current ratio could indicate poor liquidity whereas a large current ratio may indicate poor management of working capital.

$$\text{Current ratio (\%)} = \frac{\text{Current assets}}{\text{Current liabilities}} \times 100$$

Because cows are the major income generators in a dairy enterprise, debt per cow is frequently used by creditors as a measure of risk or the ability of the debtor to repay the loan.

$$\text{Debt per cow} = \frac{\text{Total liabilities, in local currency units}}{\text{Herd size}}$$

10.2 Cash flow records

Analyses of cash flow are based on transactions in which cash is transferred. They provide an opportunity to examine cash inflows and outflows from the farm business. They are useful when:

- Monitoring cash flows into and out of the farm on a monthly, quarterly or annual basis
- Borrowing money
- Estimating the time required to pay off the capital invested in a farm change
- Examining decisions on financial management and repayments, such as when the peak debt occurs, if sufficient funds are available, when the net cash flow will become positive, when the loan can be paid off.

In cash flow analyses, all cash income and expenses are included. Income includes sales of farm produce and capital items, non-farm income and personal income. Expenses include farm expenses, personal expenses, capital expenses, such as machinery purchases, tax charges and returns, interest charges and loan repayments. Non-cash items such as depreciation or non-paid family labour are not included. The key items for a cash flow statement are presented in Appendix 6.

Cash flow statements are historic records from previous months while cash flow budgets are projections into the future. It is useful to prepare cash flow statements from the same months in previous years to more accurately develop budgets, because some expenditure, such as rates or insurance, occur at the same time each year, so the statement can serve as a prompt to the types of expenses likely to occur during the ensuing year. Preparing overoptimistic budgets to impress creditors is unrealistic and pointless.

Because of the seasonal nature of farming, balance statements and budgets should be completed on a monthly basis because they provide valuable business information such as:

- Total income projection each month
- Total expenditure each month
- Surplus or deficit each month
- Regular bank balances
- Comparing predicted against actual income and expenditure
- Predicting the time of peak cash deficit so it can be accommodated within future bank overdrafts.

Cash flows also quantify the surplus or deficit each year to provide each farmer with his unique debt management policy. Predicting the size of the surplus will assist in planning for future:

- Debt servicing
- Income tax
- Capital investment, including new equipment and farm development
- Personal expenses.

The net cash surplus is the spare cash remaining after paying for these four items. It provides a margin to cover future downturns in the industry and can be used to spread risk by diversification of investments. It can also be used for extra on-farm investments

in ‘good’ years that will allow for less on-farm investment in ‘not so good’ years, such as building up stores of fertilisers, feed or other consumable items.

Cash flow says nothing about the profitability of the business; that is only available from the income or profit and loss statements (see below). Cash flow includes no consideration of inventory change, accounts payable or receivable or depreciation. The absence of the important adjustments means that profitability decisions based on cash flow will be grossly misleading.

Caution must be exercised when using cash flow to evaluate the health of a farm business. Cash flow can only indicate if current returns will pay current expenses, debt, family living and other current obligations included in the cash flow document. An analysis of business health should include a review of the balance sheet and income statement, as well as the cash flow.

A farm cash flow analysis can be divided into five broad areas:

1. Income: from all sources, but not to include any off-farm income unless it is directly related to the farm business
2. Operating activities: cash production costs such as herd, shed and feed costs
3. Financing activities: debt servicing such as interest payments and lease costs
4. Investment activities: cash investments on-farm in the form of capital (stock purchase, machinery and improvements) and/or off-farm investment
5. Personal expenses.

Cash is the lifeblood of any farm business, hence careful management of cash flow is critical to its survival. In a ‘perfect world’, cash flows would be predictable, but in reality and especially in farming, they rarely are. Therefore cash flow budgeting should involve sensitivity analyses in which the impact of the key profit drivers can be assessed. Sensitivity analyses can be used to predict changes in cash flow and net cash surplus when economic or seasonal conditions change for the better or worse, and so provide a business risk profile. They involve predicting cash inflows and outflows, hence balances as key variables change. For example, predictions could be made for changes in cash flows when milk prices or feed prices increase or decrease by say, 10 or 20% or when bank interest rates increase by say, 1 or 2% units. Sensitivity analyses are discussed along with farm budgets in Chapter 15.

10.2.1 Cash operating surplus

The cash operating surplus (COS) is the difference between farm cash income and working expenses. It does not include any imputed income or costs or any debt payments, tax expenses, capital purchases or personal drawings. COS can be expressed in monetary terms or as a percentage of farm income.

$\text{COS} = (\text{farm cash income}) - (\text{farm cash costs}), \text{ in local currency units}$

$$\text{COS (\%)} = \frac{\text{COS}}{\text{Farm cash income}} \times 100$$

10.3 Income statements

The income statement is the only tool of farm business analyses that measures profitability. Budgets, the balance sheet and cash flow projections are essential management tools, but do not indicate if the business is profitable. Income statements are also called profit and loss statements.

The income statement measures business earnings resulting from business operations as opposed to business ownership. While appreciation in value of the business may increase its net worth, that source of funds is only available if the business is liquidated. In contrast, the earnings reflected on the income statement are the result of operations which may be used for current expenditures or as an addition to the farmer's equity (Jenkins 2008).

Most income statements are computed annually which is consistent with the production cycle for livestock and crop enterprises and with calendar (or financial year) record keeping and tax filing obligations. This approach permits comparison of farm profitability from one year to the next.

There are three major sections of the income statement, namely receipts, expenses and adjustments. The adjustments are necessary to convert cash flow to annual earnings by including inventory change, accounts payable and receivable and depreciation. Key items for inclusion in an income statement are presented in Appendix 6, which includes a full description of the relevant adjustments.

- Gross farm operating receipts. These include cash receipts from sale of farm produce, government payments and other sources of cash.
- Gross farm operating expenses. These include outlays for seed, fertilisers, chemicals, machine hire, feed, veterinary bills, interest and other cash operating costs. These do not include finance costs to service loans.
- Adjustments. These affect farm earnings but are not reflected in cash transactions. They include (1) value of farm products consumed by the farm family (to accurately reflect total farm production), (2) changes in the farm inventory (such as feed and fertilisers reserves, livestock and land and improvements), (3) changes in accounts payable and receivable (to accurately reflect the annual farm finances) and (4) depreciation. The adjustments are calculated by summing the first three items then subtracting the fourth item.

10.3.1 Key measures from income statements

Gross farm income (GFI) is the sum of the cash generated from the sale of farm produce and the changes in inventories (stock and land), whereas net farm income (NFI) takes into account farm operating costs.

Gross farm income = (farm cash income) + (adjustments), in local currency units

$$\begin{aligned} \text{Net cash farm operating income} &= (\text{gross farm operating receipts}) \\ &\quad - (\text{gross farm operating expenses}) \end{aligned}$$

$$\begin{aligned} \text{Net farm income} &= (\text{gross farm operating receipts}) - (\text{gross farm operating expenses}) \\ &\quad + (\text{adjustments}) \end{aligned}$$

NFI is the ‘bottom line’ of the farm business and represents return to unpaid farm family (imputed) labour, equity capital and management. Over the long term, net farm income is the amount available for discretionary use by the family and for business development. If a withdrawal for family living is made, then this represents the amount available for business expansion and risk taking.

The finance cost ratio measures the ability of the farm to repay the total finance costs (interest and lease costs but not principal repayments). The lower this ratio, the less the business will be adversely affected by interest rate rises. Businesses with higher COS (as a percentage of farm income) can commit a greater proportion of their income to servicing loans.

$$\text{Finance cost ratio (\%)} = \frac{\text{Finance costs}}{\text{Gross farm income}} \times 100$$

The total debt servicing ratio includes any principal repayments in servicing of the loan.

$$\text{Total debt servicing ratio (\%)} = \frac{\text{Finance costs} + \text{principal repayment}}{\text{Gross farm income}} \times 100$$

The operating ratio and margin can be used to evaluate NFI. The operating margin represents the share of income available to cover family living, business fixed obligations and business expansion.

$$\text{Operating ratio (\%)} = \frac{\text{Total operating expense}}{\text{Gross farm income}} \times 100$$

$$\text{Operating margin (\%)} = \frac{(\text{Gross farm income}) - (\text{Gross farm operating expenses})}{\text{Gross farm income}} \times 100$$

Rate of return on total capital is a third analysis variable computed by making minor adjustments to NFI.

$$\text{Rate of return on capital (\%)} = \frac{\text{NFI} + \text{interest paid} - \text{operator labour}}{\text{Average capital investment}} \times 100$$

This can be compared with off-farm securities such as shares, property or other investments. However, it is a valid comparison only if the farm business is liquidated to realise appreciation of land, stock and other long-term assets. Comparisons with similar farms must be undertaken with caution because it is essential that such operations have similar livestock (and crop) programs, using similar technology and located in similar climatic and soil areas.

10.3.2 Anticipating problems by interpreting farm business data

There are certain finance signals that provide early warning of impending financial difficulties. Keeping up-to-date financial records allows them to be identified early and addressed quickly. These include:

1. Increasing ‘Accounts payable’ or inability to pay bills on time. Lack of sufficient funds for payment of bills for feed, fertilisers and fuel may indicate more severe problems in the not too distant future.

2. Shortage of working capital, difference between current assets and current liabilities, could lead to problems in obtaining short-term credit.
3. Failure of earning (that is NFI) to grow from one year to the next is another early warning sign of potential difficulty. The manager should also establish if the earnings result in a positive cash flow or if the deficiency is such that existing income will not pay operating costs, family living, debt repayments and fixed obligations such as tax.

The income statement is the focal document in considering problems with earnings. It is the only financial tool that provides information about business profitability. NFI and return to capital are two key derived variables that should be reviewed. Once the scope of the problem has been established, it should be addressed. For example, is it due to temporary or permanent influences? Temporary influences include low yields (due to weather, insects, disease), prices fluctuations or inventory changes. Permanent influences relate to basic management decisions, which can be caused by organisational or operation problems.

Organisational problems involve the way resources (land, labour, capital) are used and may require a redistribution of farm resources or even of on-farm enterprises. Operational problems relate to day-to-day decisions, such as when tasks are completed, how technology is used and the amount of variable input to be applied to fixed resources. The three basic principles required to address any identified operational problems are:

1. Do a better job than what is now being done by improving efficiencies and management to increase earnings per unit through increasing yields, improving marketing or reducing costs of production.
2. Do more (or less) than what is now being done by reallocating resources.
3. Liquidate the enterprise and redirect the use of resources. This is a drastic and usually stressful change which may involve a complete reorganisation of the business assets and liabilities.

Severe financial problems have no easy solutions and are usually related to financial difficulties rather than management of production. Some possible solutions include:

- Increasing income without incurring added expenses. The magnitude of debt on some farms makes this less feasible, but it is possible through substituting paid labour with family labour and/or seeking off-farm income to reduce debt.
- Maintaining a good working capital position. This can be accomplished by restructuring debt, say to maintain a better balance of short-term and long-term debt, although this may not be easy with very low working capital.
- Refinancing. However, initially, the underlying production management or financial management problems must be found and corrected. Some creditors view refinancing as the first step towards business liquidation.
- Obtaining lower interest rates. This may be possible but unlikely.
- Selling unproductive assets, such as waste land or underutilised machinery, which will reduce debt without reducing income.

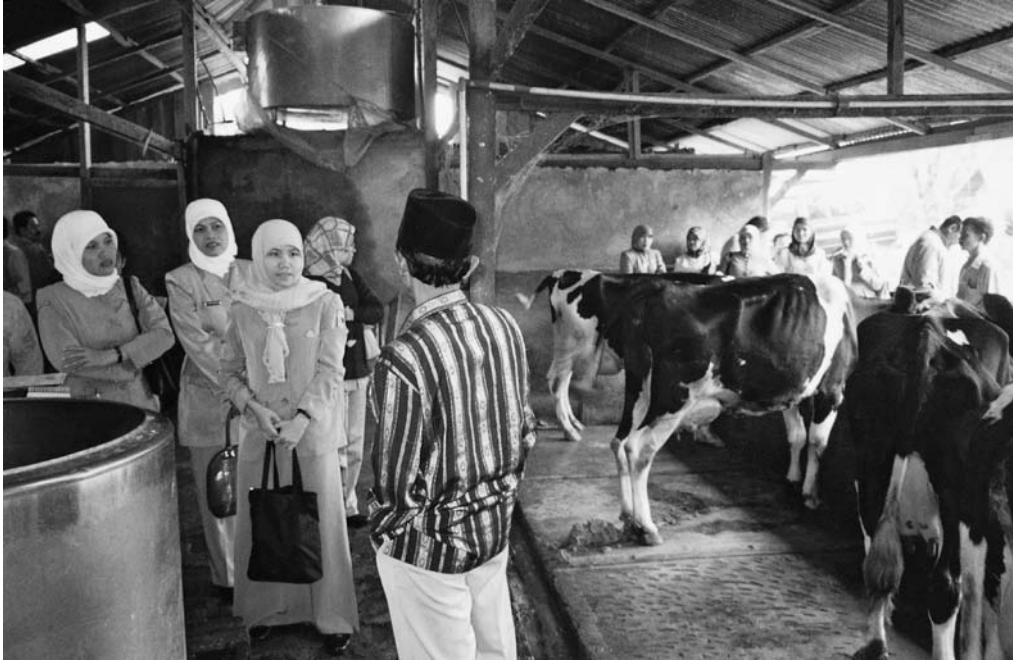


Figure 10.3 Advisers at a dairy production course in Sumatra, Indonesia

- Selling productive assets to reduce the size of the business, which can reduce interest and principal repayments. However, scaling back can create new problems, such as matching large machinery with a small operation. With a partial liquidation of business assets, it is crucial that expenses are reduced more than income.

The fourth major tool of farm business analyses, namely budgets (for planning future farm developments) is discussed in Chapter 15.