

NEW ZEALAND DAIRY FARM DEBT

Bruce Greig
Farm Management Department, Lincoln University, 2010

Introduction

New Zealand dairy farmers have long enjoyed worldwide recognition for their dairy farm systems, farm profitability, responsiveness to change and wealth creation from farming. The world economy and local conditions are changing and New Zealand farmers face new challenges. Dairy debt in New Zealand is rising and this has many implications.

The rapid expansion in dairy has largely been debt funded, to the extent that dairy farming comprises 64% of agricultural debt in NZ. A number of commentators (Wills, 2009; Ridden, 2009; Wallace, 2009; Russell, 2009; Gaynor, 2009) have expressed concern about dairy debt and its distribution across dairy farmers.

Debt funding is an essential part of modern dairy farming. Prudent borrowing can be highly profitable and wealth creating. However there are negative aspects to debt financing that have consequences for liquidity, solvency and profitability.

Dairy farming trends

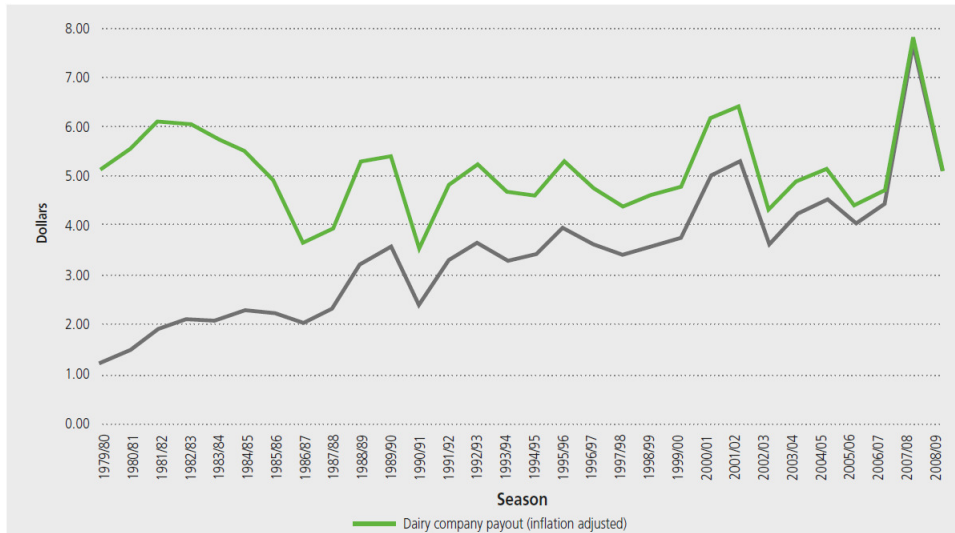
Dairy farming in NZ has undergone changes over the last 10 years. Farm numbers are declining but herd sizes are increasing. Land prices, farm working expenses, stocking rate, debt and debt servicing have all increased dramatically.

Table 1. Ten year trend in dairy statistics

	1998-99	2008-2009	% change
Dairy Herds	14400	11400	-21%
No. cows milked	3.3m	4.2m	27%
Average herd size	229	364	59%
Average stocking rate	2.5	2.8	12%
Milksolids per herd	70000	120000	94%
National production	880m	1393m	58%
Land Price \$/kg MS	18.4	50.8	176%
FWE/kg MS	2.13	3.85	81%
Liabilities/kg MS	8.03	19.87	147%
DS:GFR	14.9	28.3	90%

Source: LIC Dairy statistics, DairyNZ economic surveys

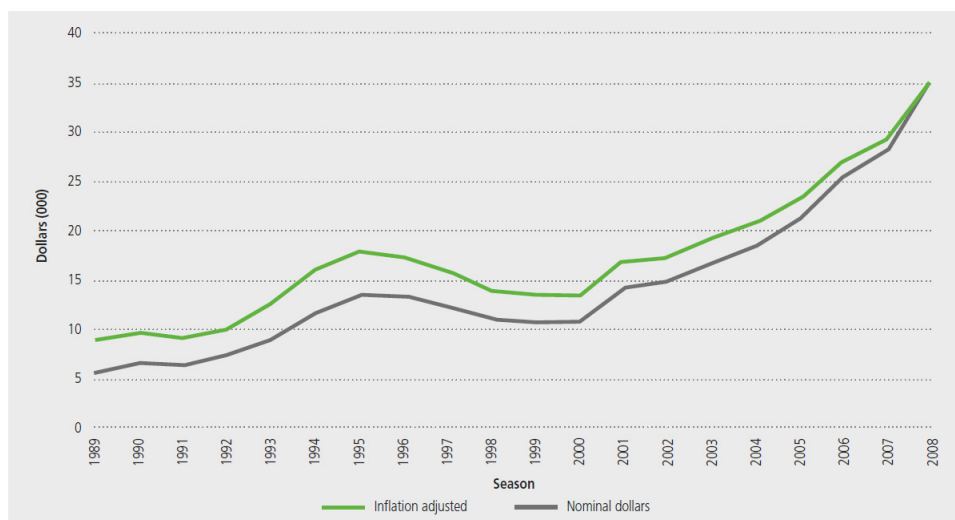
The dairy company payout is largely dependent on world milk commodity prices and the NZ:US dollar exchange rate. There is a wide variation in payout from year to year, and this volatility has increased over the last 3 seasons.



Source: LIC Dairy statistics, 2009

Figure 1. Trend in milksolids payout over 30 seasons

The price of dairy land is determined by a number of factors; including forecast milk payout, industry and investment confidence and the profitability of alternative land uses. Even in real terms dairy land has enjoyed year on year growth for a long time.



Source: LIC Dairy statistics, 2009

Figure 2. Trend in dairy land values (\$/ha) for the last 20 years

Agricultural debt in New Zealand

Currently the total agricultural debt in NZ is 47 billion dollars. Agricultural debt is increasing, but this increase has slowed in recent months. Other sectors of the economy however, namely business, housing and consumer debt are all experiencing negative growth.

Table 2. Sector credit (Resident NZ claims of registered banks and NBLIs)

	Agriculture		Business		Housing		Consumer	
	(\$m)	(Y/Y%)	(\$m)	(Y/Y%)	(\$m)	(Y/Y%)	(\$m)	(Y/Y%)
Jun 2005	25,215	15.3	52,274	15.6	112,028	15.9	10,551	8.9
Jun 2006	29,412	16.0	58,573	11.7	128,565	14.9	11,379	6.1
Jun 2007	33,308	13.3	69,143	17.8	147,134	14.4	11,982	3.8
Jun 2008	40,216	20.7	76,113	9.9	159,989	8.7	12,710	4.8
Jun 2009	46,078	14.6	78,806	3.5	164,449	2.8	12,286	-3.3
Nov 2009	47,108	9.3	77,193	-4.5	166,891	3.4	12,141	-5.0
Dec 2009	46,916	8.0	74,833	-7.5	166,956	3.3	12,139	-5.0
Jan 2010	47,054	7.1	75,296	-6.7	167,391	3.3	12,089	-4.5
Feb 2010	47,164	7.0	73,837	-8.4	167,694	3.2	12,046	-4.4
Mar 2010	47,287	5.7	73,400	-8.2	168,313	3.3	11,976	-4.0

Source: NZ Reserve Bank, 2010

Currently dairy farming represents 65% of agricultural debt, and in the 2009 year grew by 20%.

Table 3. Annual agricultural statistics to June 2009

Year	2003	2004	2005	2006	2007	2008	2009
Total agric debt \$mill	18,803	21,190	24,338	28,202	31,976	38,695	44,823
Total dairy debt \$mill	11,221	12,291	13,837	15,940	18,457	23,790	28,550
% dairy/total agric.	61.26%	59.49%	58.44%	58.43%	59.47%	62.90%	65.24%
% hort/ total agric.	6.68%	7.46%	7.67%	7.76%	7.78%	7.41%	7.30%
% grain, sheep, beef/total agric.	28.20%	29.49%	30.44%	30.64%	29.69%	26.66%	24.68%
% poultry/total agric.	0.84%	0.67%	0.76%	0.62%	0.58%	0.48%	0.44%
% other/total agric.	3.02%	2.88%	2.68%	2.56%	2.49%	2.56%	2.34%
	100%	100%	100%	100%	100%	100%	100%
dairy % Y/Y		9.53%	12.58%	15.20%	15.79%	28.89%	20.01%
total agric. Y/Y		13%	15%	15%	14%	22%	16%

Source: NZ Reserve Bank, 2010

The characteristics of NZ agricultural debt are:

- Total agricultural debt is rising
- Dairy debt is 65% of total debt and the proportion is rising
- Debt to Asset ratio has been stable, until land values decreased (Swallow, 2009)
- Debt servicing to Gross farm income is rising
- Land price has been increasing
- Payout is volatile
- Distribution of debt is normal, but with a slight positive shape

Dairy farm debt in New Zealand

Table 4. Financial characteristics of NZ dairying

Season	DS:GFR	DEBT\$/kg MS	Land price/kg MS	Payout ¹
90/91	19	4.65	12.5	2.42
91/92	15	4.61	12.5	3.34
92/93	12	5.36	13.3	3.66
93/94	11	5.44	17.8	3.32
94/95	13	6.01	24.1	3.4
95/96	14	6.44	24.2	3.99
96/97	17	7.6	22.7	3.63
97/98	18	7.96	18.3	3.42
98/99	19	8.9	19	3.58
99/00	15	8.05	18.8	3.78
00/01	11	8.81	19	5.01
01/02	11	9.26	22.6	5.35
02/03	16	10.06	26.7	3.66
03/04	17	10.59	28.1	4.25
04/05	17	12.16	31.7	4.58
05/06	23.5	13.99	36.2	4.1
06/07	24.2	14.81	37.4	4.46
07/08	17.5	18.68	50.8	7.67
08/09	32.3	21.93		5.14

Source: DairyNZ Economic survey, 2009

¹ nominal dollars

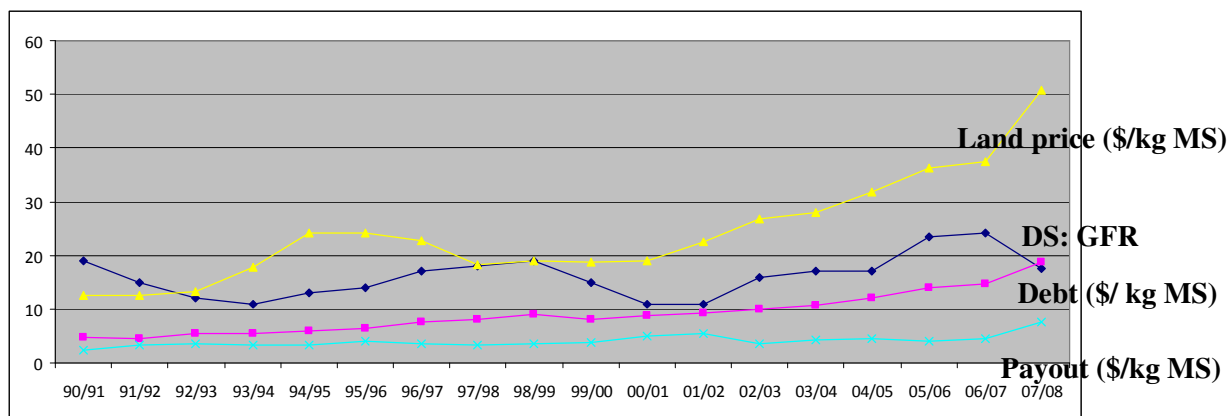


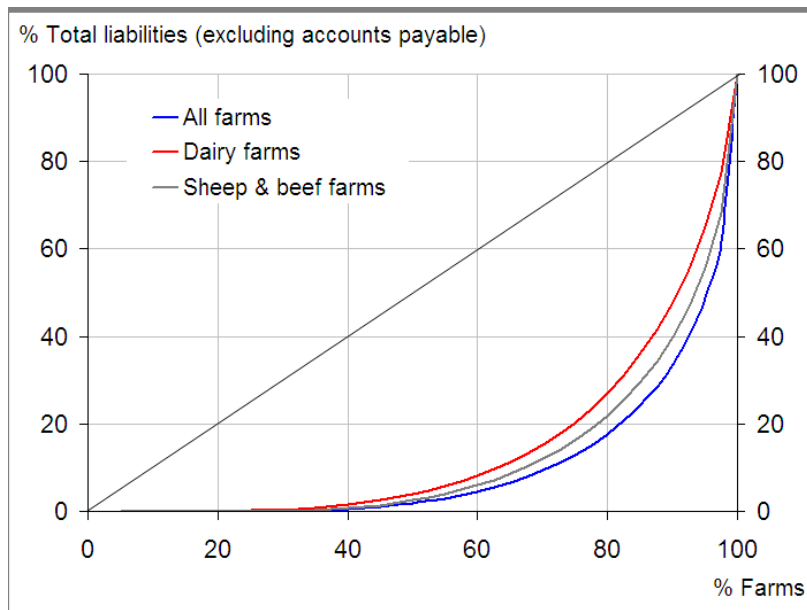
Figure 3. Financial characteristics of NZ dairying since 1990

The Reserve Bank (2008) reported on the distribution of agricultural debt in the year 2005-2006, as illustrated in Table 3 and Figure 6. This indicates that 20% of farms have 73 % of the total debt. This curve is the same shape for New Zealand sheep and beef farms (MWNZ, 2010).

Table 5. Distribution of dairy farm liabilities 2005/6

% of farms	Cumulative % of debt	proportion of debt
20	0	0
20	1.5	1.5
20	8.2	6.7
20	27	18.8
10	47.8	20.8
10	100	52.2

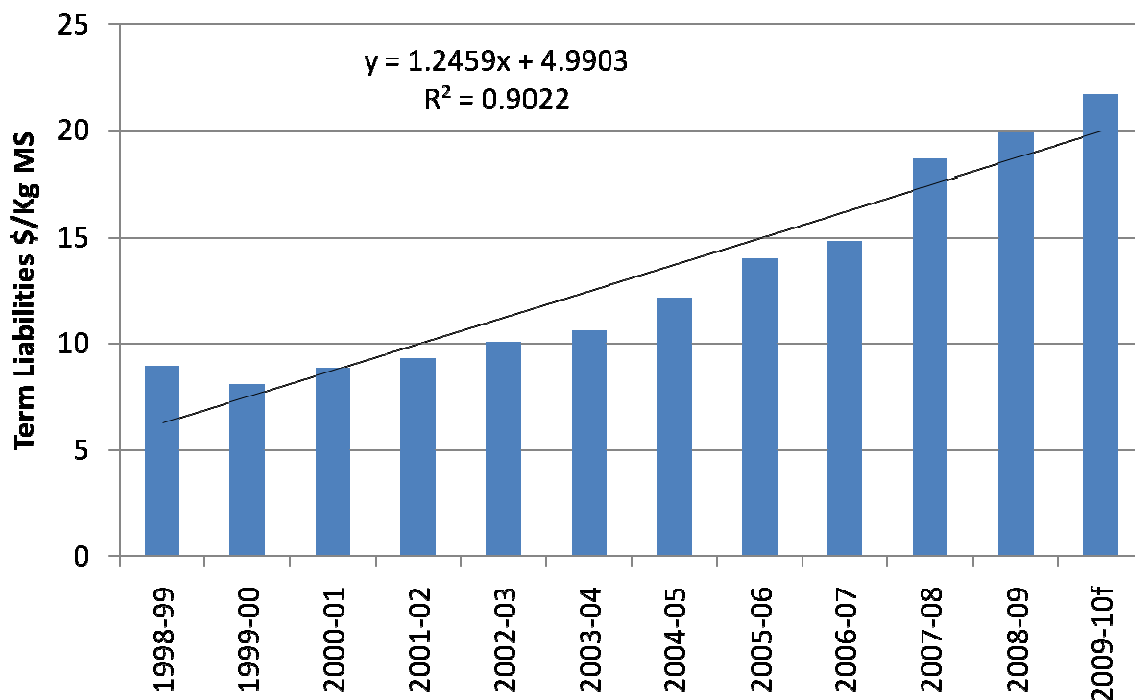
Source: Reserve Bank, 2008



Source: Reserve Bank, 2008

Figure 4. **Lorenz curve of agricultural debt**

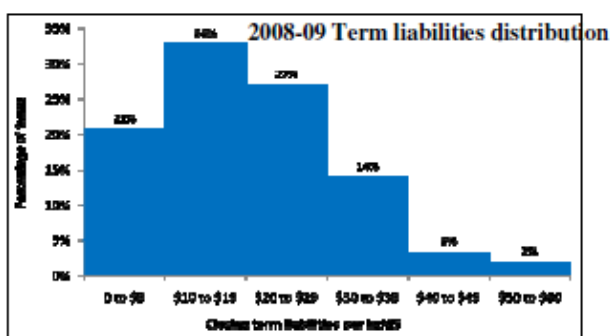
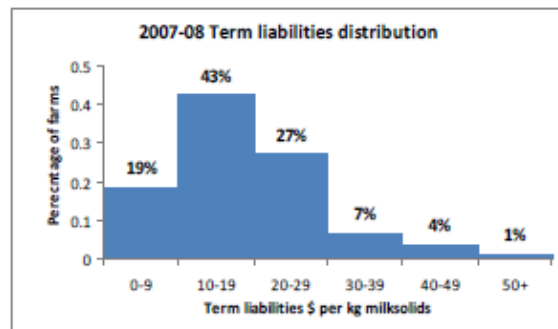
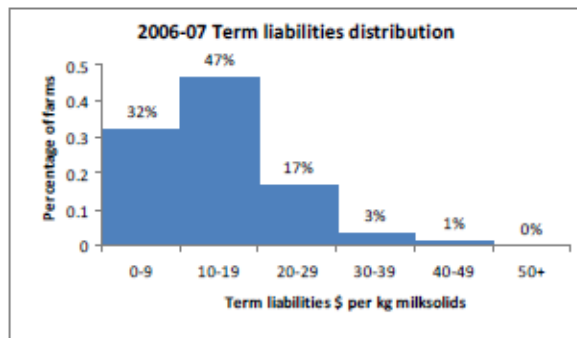
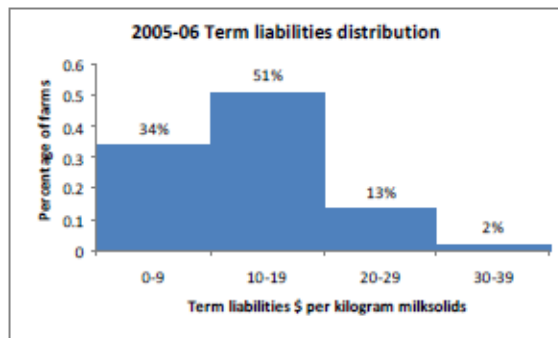
The DairyNZ survey (2009) reports a mean debt of \$18.68/kgMS. The national dairy model for MAF farm monitoring (MAF, 2009) has mean debt of \$17.57/kgMS. Redsky (2010) reports a mean from their dairy database of \$14/kgMS. A crude estimate using total dairy debt of \$28 billion, and milk solids production of 1,393 mill kg equates to an average debt of \$21.5/kgMS. In comparison ABARE (2009) reports Victoria dairy farm debt at the equivalent of NZ\$6.24/kgMS.



Source: DairyNZ Economics Group, DairyBase

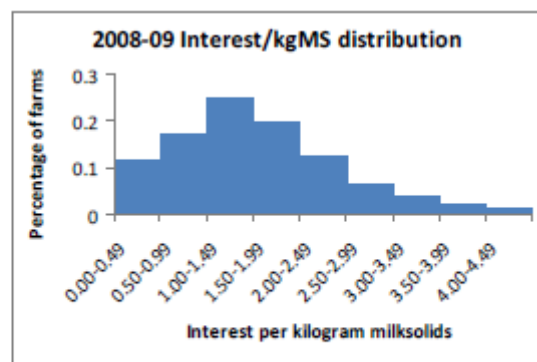
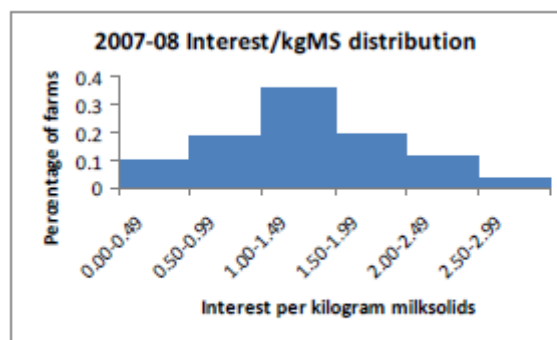
Figure 5. **Debt/kgMS more than doubled**

Dairy debt distribution

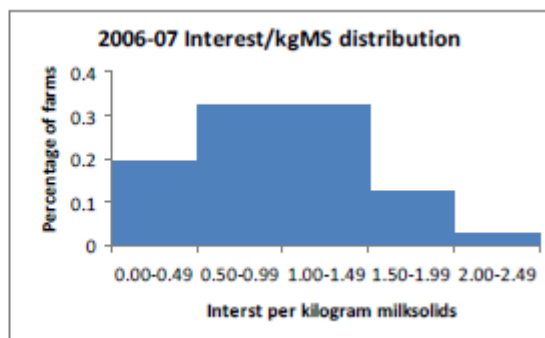
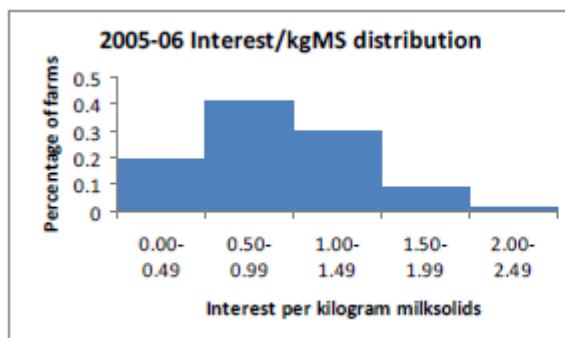


Source: DairyNZ Economics Group, DairyBase

Debt servicing distribution



Source: DairyNZ Economics Group, DairyBase



Local and international comparisons

Table 6. Sheep and Beef vs. Dairy comparisons

	DS:NCI		FWE:NCI		DEBT \$/Kg MS and /SU		Equity %	
	S and B	Dairy	S and B	Dairy	S and B	Dairy	S and B	Dairy
05-06	13%	14%	64%	61%	93.38	7.77	88	78
06-07	14%	18%	59%	65%	108.59	9.78	88	76
07-08	17%	14%	63%	46%	114.91	12.2	88	73
08-09	15%	25%	55%	70%	135.2	16.37	89	69
09-10f	16%	24%	63%	66%	138.24	16.64	87	63

Source: MAF pastoral monitoring (2009)

Table 7. International comparisons

	Milk Price	Cost of Production	Farm Assets	Land price	Increase in land price 2005-2008	Debt
	US \$/100 kg	US \$/100 kg	US \$/100 kg	US \$/ha	%	US \$ /100 kg
New Zealand	\$44	\$25	250	20730	11.8	125
Argentina	\$29	\$17	120	8995	28.7	
Poland	\$44	\$42	190	5790	19.2	
Australia	\$37	\$27	140	9976	10.3	46 ¹
United Kingdom	\$53	\$33	190	16685	1.1	
United States	\$44	\$37	80	7336	12.1	

Source: IFCN, 2009

¹Dairy Australia, 2009

Why is debt a problem?

Farm debt represents a financial risk to a farm business. For this reason it must be expertly managed. The level of debt and its servicing have a number of implications:

- it affects farm business survivability
- it is a fundamental part of cash flow
- usually increased leverage leads to greater risk
- with lower returns, debt servicing impacts on drawings and a farmers standard of living
- increased volatility in prices, with fixed debt commitments increases risk
- for the industry access to credit has an impact on asset values especially land prices
- if the proportion of those heavily in debt is rising, this debt distribution may have impacts beyond the farm
- impact on New Zealand economy
- political and social implications (tall poppy and anti-dairy)
- effect on individuals, families, industry and economy
- may lead to bankruptcy, mortgagee sales and declining land prices
- misallocation of capital

The case of New Zealand

- There has been a rapid expansion in dairying in recent years, especially as a result of farm conversions from other less profitable land uses
- Industry optimism and optimistic payout predictions
- Land value gains
- Favourable banking system
- Access to credit
- Easy credit/payout/capital gain expectations/lower risk premium lead to higher land prices
- Wasn't a problem until the economic crisis resulted in lower payout (declining commodity prices), increased interest rates, and contraction of bank financing
- Illiquid assets are harder to sell and therefore increase leverage and risk.
- The question is: is it a debt, income or asset value problem?
- Is short term debt being converted to term debt at end of season as a result of sustained cash losses
- Currently land values declining, this decreases equity and increases leverage and risk

What are the options?

- reduce debt, pay down principal from cash flow or other equity sources
- Sell farm

- Increase income
- Reduce cost of production and or modify farm system
- Restructure funding structure
- Acquire equity capital
- If still solvent, trade out of debt
- Both solvency and liquidity issues

What are the motives to borrow?

- Expand business
- Greater income
- Increase return on own equity (leverage)
- Scale increases efficient use of machinery, labour etc.
- When returns are high (ROA > cost of capital) it pays to increase leverage and borrow, but with a decreased payout and increasing farm working expenses and loss of capital gain changes that.

How much debt can I afford?

- Function of income, cost of production, debt and equity level and interest rates
- Liquidity
- Solvency
- Risk attitude
- Personal attributes
- Banker confidence

Table 8. Liquidity effects of debt servicing

	2006-07	2007-08	2008-09e	2009-10f
	\$/Kg MS	\$/Kg MS	\$/Kg MS	\$/Kg MS
Cash Income	4.43	7.79	5.40	5.05
- Farm Working Exp	2.73	3.92	3.70	3.30
Cash Op Surplus	1.70	3.88	1.70	1.75
- Interest and rent	1.12	1.39	1.40	1.45
COSARI	0.58	2.49	0.30	0.30
- Tax	0.13	0.46	0.20	0.10
- Drawings	0.65	0.69	0.65	0.60
Remaining for development/ repay debt	-0.20	1.34	-0.55	-0.40

Source: Dairy NZ

Acknowledgment: Matthew Newman and Angie Fisher, DairyNZ

What risk management strategies exist?

- Risk involves elements of uncertainty and variability
 - Can manage costs and improve returns over fixed commitments
 - Even out price and production variability
 - First approach - alter the variability in business risk
 - Second approach - accept business risks and lower fixed cost (debt servicing commitments)
- (Shadbolt and Martin, 2005)



Source: Dairy NZ

Acknowledgment: Matthew Newman and Angie Fisher, DairyNZ

Figure 6. Farms with significant liquidity risk

Conclusions

The recent world economic crisis has affected NZ dairy farmers. Volatile milk prices, increasing farm working expenses, and declining land prices have had solvency and liquidity implications.

Farmers need to change their business strategy from farming for capital gain and refocus on profitability and positive cash profits. It is also likely that the rural lending environment and bankers attitudes will change. Once again farmers will need to respond to these changes.

References

Dairy Australia, 2009. Dairy Industry farm monitor project - Summary of results 2008 -2009.

Accessed 1/02/2010. Department of Primary industries.

ABARE, 2009. http://www.abareconomics.com/interactive/09_SeriesPapers/Dairy/

RBNZ, 2010. Agriculture credit by registered banks - detailed industry breakdown:

<http://www.rbnz.govt.nz/statistics/monfin/agfarm.xls#Table 4 - industry breakdown!A1>. Accessed 30/4/2010

RBNZ, 2008. Agriculture sector indebtedness pg 22. Reserve Bank of New Zealand: *Financial Stability Report, May 2008*

- DairyNZ, 2010. DairyNZ Economic survey 2008 - 2009
- DairyNZ, 2009. DairyNZ Economic survey 2007 – 2008
- Shadbolt and Martin. 2005. Farm management in New Zealand. Chapter 10 - Martin, Sandra. Risk Management in: *Farm management in New Zealand*. Oxford University Press.
- Swallow. 2009. Land price correction underway. Rural Press 25 February 2009.
- Wills B. 2009. In: Farm debt levels a major concern. Richard Rennie. Countrywide pg.39.
- Ridden C. 2009. In: Analyst warns of dairy debt tsunami. *The New Zealand farmers Weekly*, January 19, 2009. pg. 40
- Wallace N. 2009. Bank warning over dairy debt. Published on Otago Daily Times Online news 13/11/2009.
- Russell B. 2009. In: Bank instrument creates sour note. Countrywide
- Gaynor B. 2009. Farm Debt – The next major crisis? June 15, 2009. Accessed from <http://www.briangaynor.co.nz/blog/2009/6/15/farm-debt-the-next-major-crisis.html>.
- MAF. 2009. Pastoral Monitoring report – national dairy 2009. Ministry of Agriculture and Forestry.
- Redsky. 2010. Accessed from website: <http://redskyagri.com>
- IFCN. 2009. Dairy Report 2009. International Farm Comparison Network. Editor Torsten Hemme. Published by IFCN Dairy Research Center, Schauenburgerstrabe, Germany.
- LIC. 2009. New Zealand Dairy Statistics 2008-09. Livestock Improvement Corporation. Newstead, Hamilton.
- MWNZ. 2010. Meat and Wool New Zealand economic service.