
A quantitative “health risk check” for credit risk assessment

24 June 2014

Miranda Meuwissen & Rick Dijsselhof, Wageningen University, BEC



Towards a tailor-made tool?

- Reduced availability of capital for agriculture
- Banks need to assess portfolio risks
- Outside equity investors look for risk-return info

- Previously:
 - Cash flow statements & what-if scenarios
 - Sector prognoses
 - Qualitative management capacity assessments



Our AIM

- Analyse impact of key risks on repayment capacity of individual farms
- Simulate impact of risk management strategies
- (work in progress “alternative finance”)



Important risks & RM for dairy farms

Risks

Risk management

Market and price risk

- Increasing feed price
- Increasing land lease prices
- Reduced land availability
- Decrease in milk prices
- Decreasing margins
- Production costs

Production risk

- Weather conditions
- Diseases
- Milk yield

Institutional risk

- Reduction in direct payments
- Increasing regulations

Risk reduction

- Liquidity management
- Avoiding debt
- Strict hygiene rules
- Certification

Risk mitigation

- Contracts
- Sales through cooperatives
- Futures and options market
- Insurances

Risk coping

- Financial reserves
- Business growth
- Cost reductions
- Specialization
- New technologies
- productivity increases



Our approach

Data:

- + Net farm income from operations
- + Total non-farm income
- + Depreciation/amortization expense
- Total income tax expense
- Owner withdrawals (total)
- + Interest expense on term debt

Repayment capacity

	2006	2007	2008	2009	2010	2011	2012
Number of farms	126	126	126	126	126	126	126
Number of cows	81	86	90	96	99	102	107
Number of young cattle	61	64	69	76	82	85	88
Milk produced (L.FPCM)	654,171	708,410	733,870	801,923	850,796	881,122	928,440
Milk/cow (L.FPCM)	8,006	8,188	8,140	8,286	8,478	8,584	8,563
Number of used hectares	43	44	47	49	49	51	51
Milk production/hectare	15,384	16,105	15,504	16,518	17,280	17,345	18,049
Repayment capacity (€100 L.FPCM)	15.93	21.48	15.66	8.06	14.72	16.00	11.55



Parameterisation

Source of risk	Related variable	Unit of measurement	Variable average [*]	Absolute/ relative Δ	Parameterization	
					Sample [*]	Experts ^{**}
Increasing feed prices	Compound feed	(€100 L.FPCM)	6.47	Relative	17 %	+20 %
	Purchased roughage	(€100 L.FPCM)	0.65	Relative	14 %	+15 %
Loss of land	Utilized hectares	Hectares	48	Relative	9 %	-20 %
Decrease in milk price	Milk price	(€100 L.FPCM)	31.23	Absolute	27 €	28 €
Diseases (BVD)	BVD-costs	(€/cow/year)		Absolute		400 € ^{***}
Not meeting production targets	Production per cow	(L.FPCM)	8,320	Relative	5 %	-20 %
	Number of cows	Cows	95	Relative	12 %	-10 %
Reduction in direct payments	Direct payment	(€/hectare)	700	Relative	13 %	-30 %
Rising costs of manure sales	Manure sales	(€/m ³)	6.43 ^{****}	Absolute		15 €/m ³



Impact on repayment capacity

Farm characteristics:

Number of cows: 95

Number of young cattle: 75

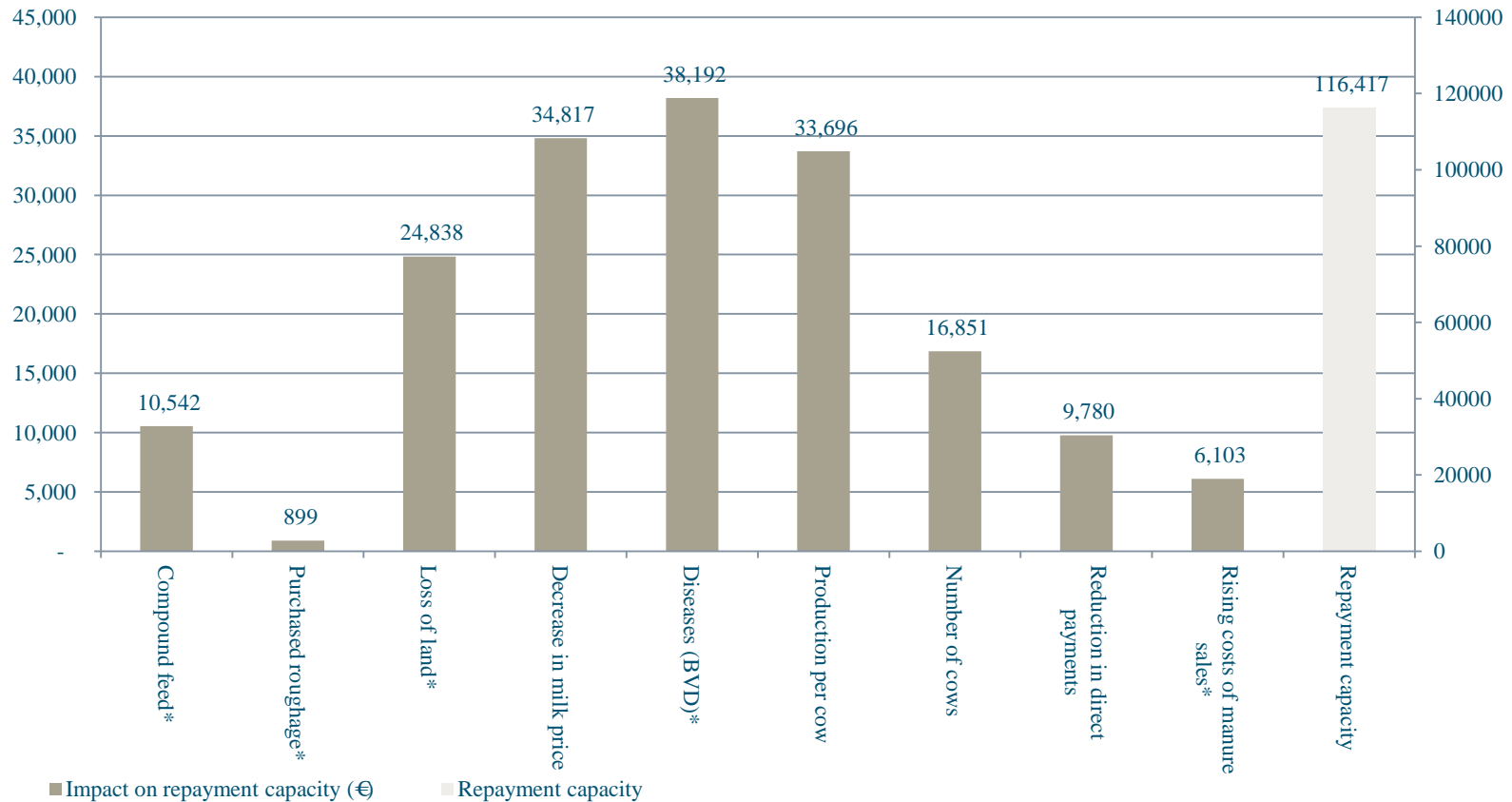
Milk produced (L.FPCM): 794,104

Milk/cow (L.FPCM): 8,320

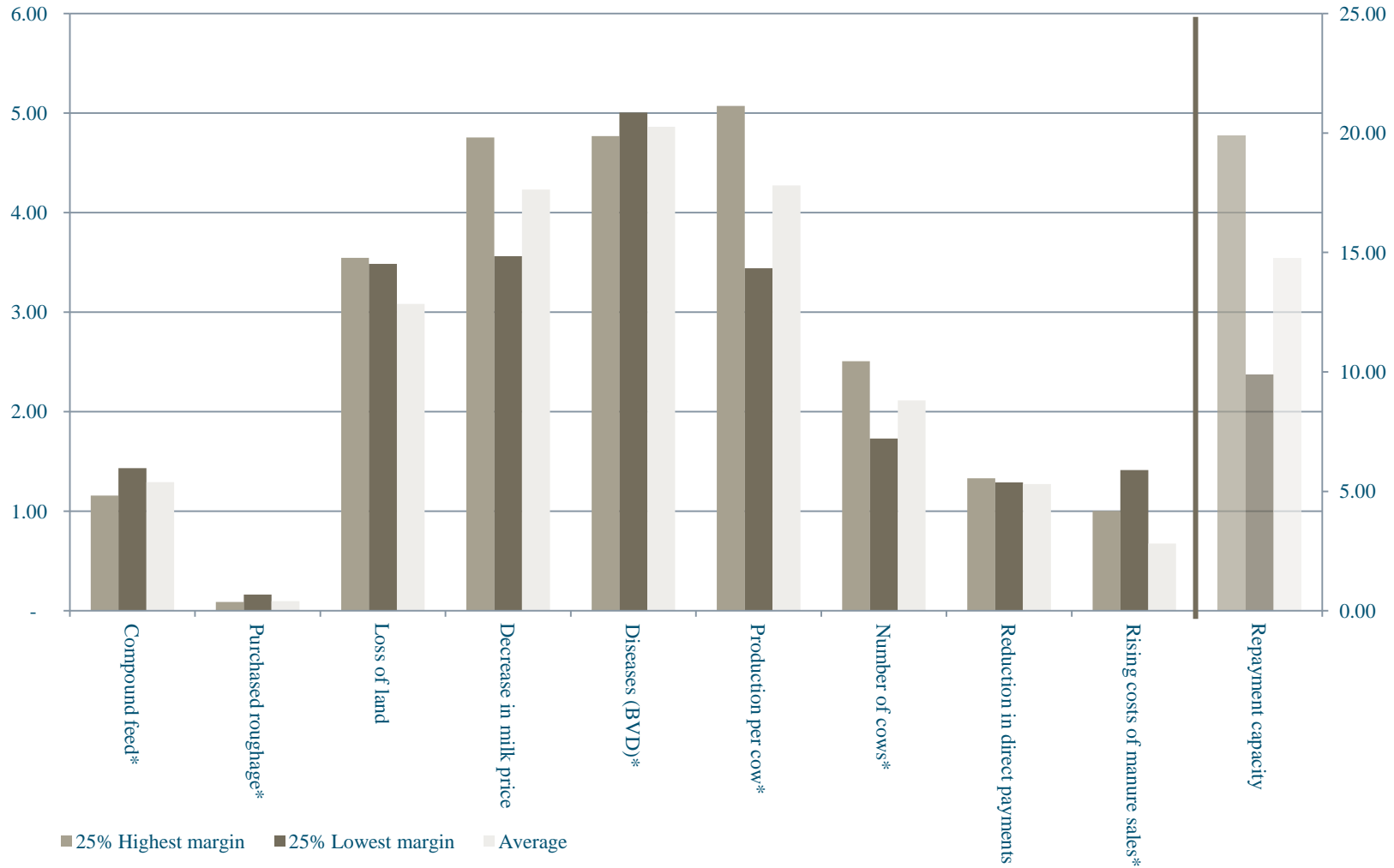
Utilized hectares: 48

Milk production/hectare (L.FPCM): 16,543

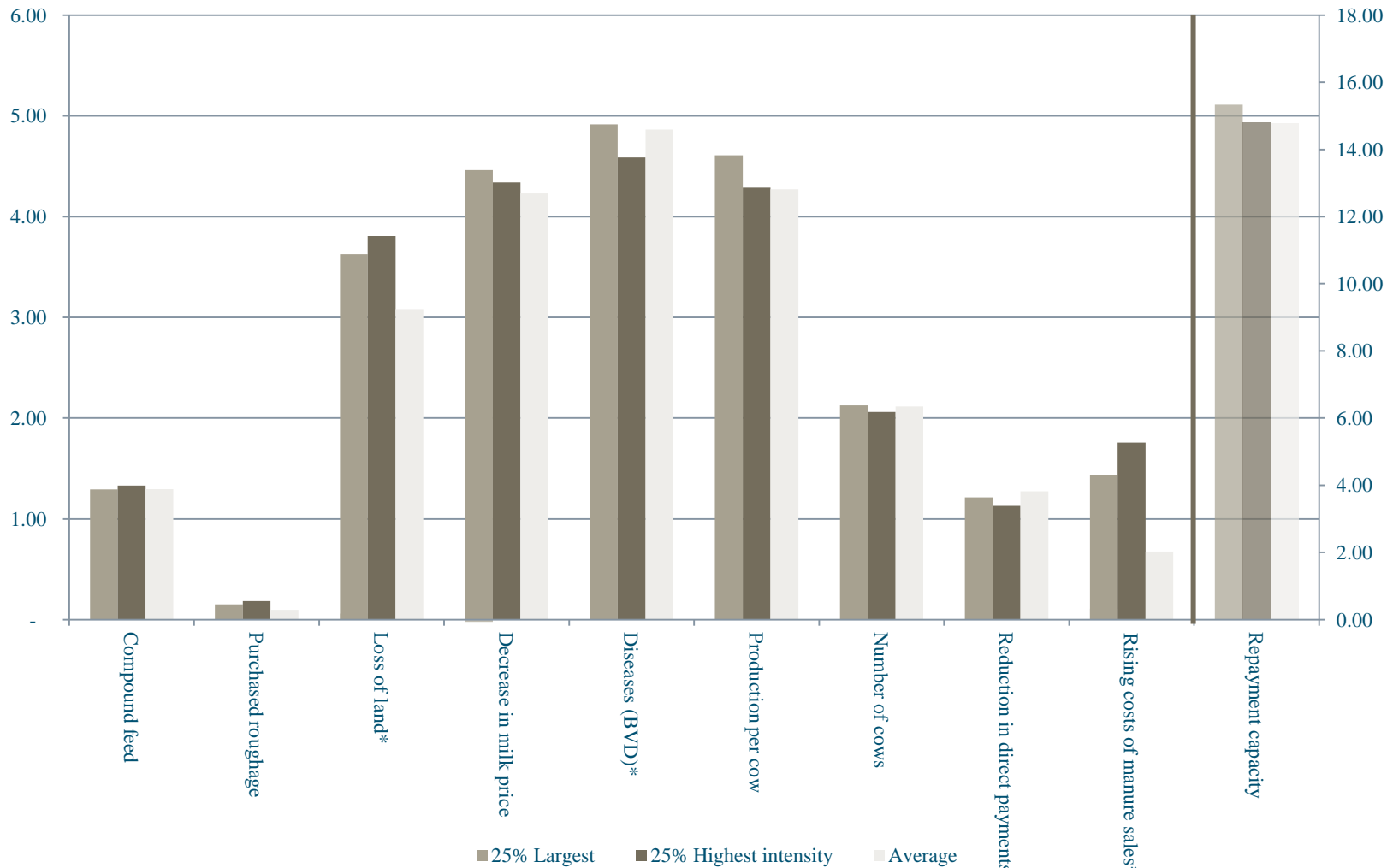
Repayment capacity (€/100 L.FPCM): 14,77



Impact for well vs low performing farms



Impact for large & intensive farms



Continuation

- Include probability distributions (“what is chance that loans can not be repaid”)
- Include impact of risk management strategies
- Test interpretation with farms & extension

- Rework towards risk/return for outside equity providers



Questions?

