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Money, sunshine, and rain: Exploring the drivers of rural land values in New Zealand over time and space

Corey Allan and Suzi Kerr, Motu Economic and Public Policy Research

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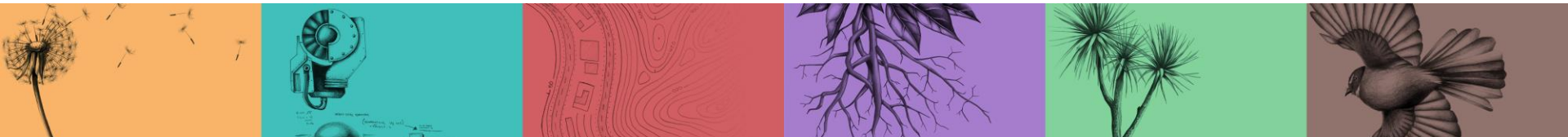


Key questions

Does the value of farmland in New Zealand reflect the prospects facing the agricultural sector?

Does the effect of climate on rural land values work through agricultural profitability or another channel? (Schlenker et al 2005, 2006)

Is there evidence that amenities/urban conversion options play a role in determining rural land values?

Data

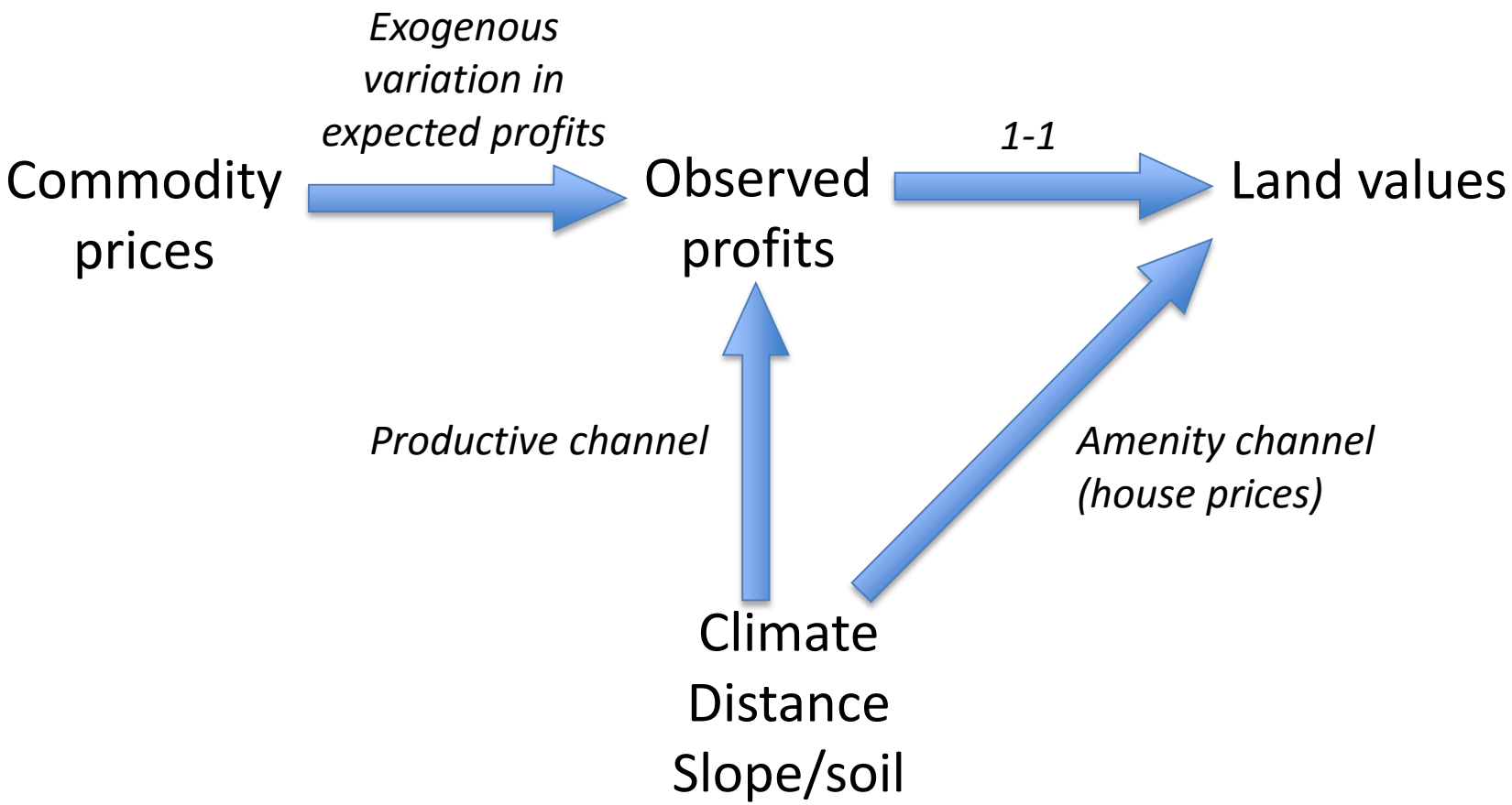
Panel

- MB farmland valuations data (QVNZ)
- Panel of 4,218 MBs, each observed once per 3-year valuation cycle
- Dairy, sheep/beef, and forestry profitability and commodity prices
- All variables are land-use weighted at MB level

Cross-section

- Growing degree days (GDDs), days of soil moisture deficit, irrigation, soil quality, slope, distance to school, town, port, local house prices

Empirical framework graphically



Empirical framework

2-step estimation procedure

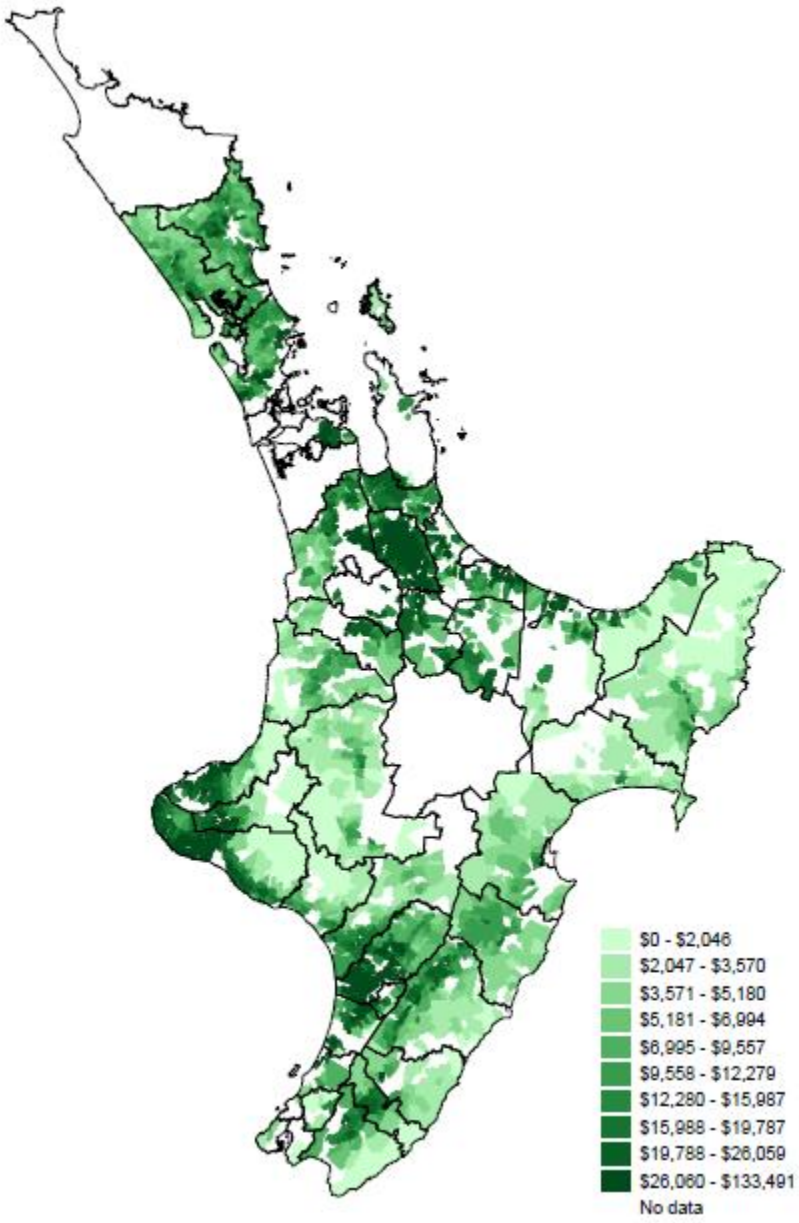
- Observed profits provide a noisy measure of *expected* profits

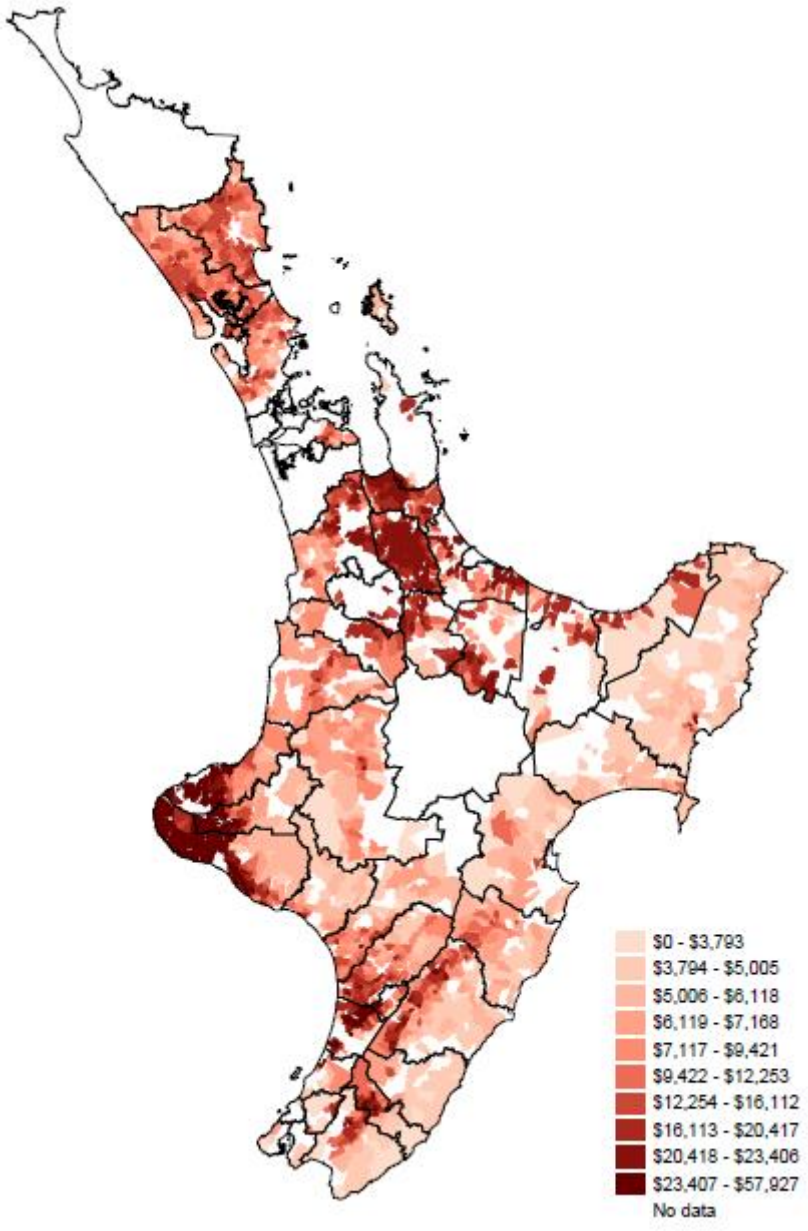
$$\text{PV}\,\pi_{it} = \alpha_0 + \alpha_1 p_{it} + \theta X_i + \psi_t + \eta_{it}$$

$$\text{Value}_{it} = \beta_0 + \beta_1 PV\,\hat{\pi}_{i,t-1} + \gamma X_i + \lambda_t + \varepsilon_{it}$$

X_i contains variables describing climate, land quality, and distance to amenities, house prices

Land values and profits





Ricardian estimates

	$Values_{it}$ (2SLS – 2nd stage
PV $\widehat{Profits}_{i,t-1}$	0.996*** (0.04)
log(PV $\widehat{Profits}_{i,t-1}$)	
$GDDs_i$ (00s)	
$GDDs_i^2$	
Days soil moisture $deficit_i$	
log(House $prices_{kt}$)	
R^2	
MB fixed effects	YES
Year fixed effects	NO
Distance, soil, slope	NO

Conclusion

Relationship between land values and profits 1-for-1 as expected

- In the long run, land values are driven by economic fundamentals

Impact of climate on land values works through hypothesised profitability channel

Amenities/urban conversion option also play a role