



Analysing regional policy initiatives

Showcasing our regional CGE on the Canterbury rebuild

20 March 2015



1. POLICY EVALUATION MEANS UNDERSTANDING REGIONAL TRADE-OFFS

Many policies have a regional angle

	Good for...	Could be bad for...?
Wellington Convention Centre	Wellington	Queenstown, Auckland
Christchurch re-build	Christchurch	Rest of NZ
Urban drift	Main centres	Zombie towns
Zero Fees	Southland	Other university towns

Regulatory Impact Analysis needs to consider:

- Opportunity costs
- Distributional effects
- Winners and losers

We need to be careful about robbing Peter to pay Paul...

- Labour, capital and ideas are mobile in the long run, but usually sticky/fixed in the short term



...so inter-regional transfers matter

- NZ Inc evaluations must consider how increased activity in one region affects activity elsewhere
- Effects can be:
 - negative (e.g. cannibalisation of existing activity); or
 - positive (e.g. upstream or downstream spillovers)
- These trade-offs are important for identifying unanticipated impacts

NZ Inc evaluations need to look at regional winners and losers



2. OUR LATEST CGE PROVIDES CRITICAL REGIONAL ANALYSIS

Numerous tools exist for policy analysis

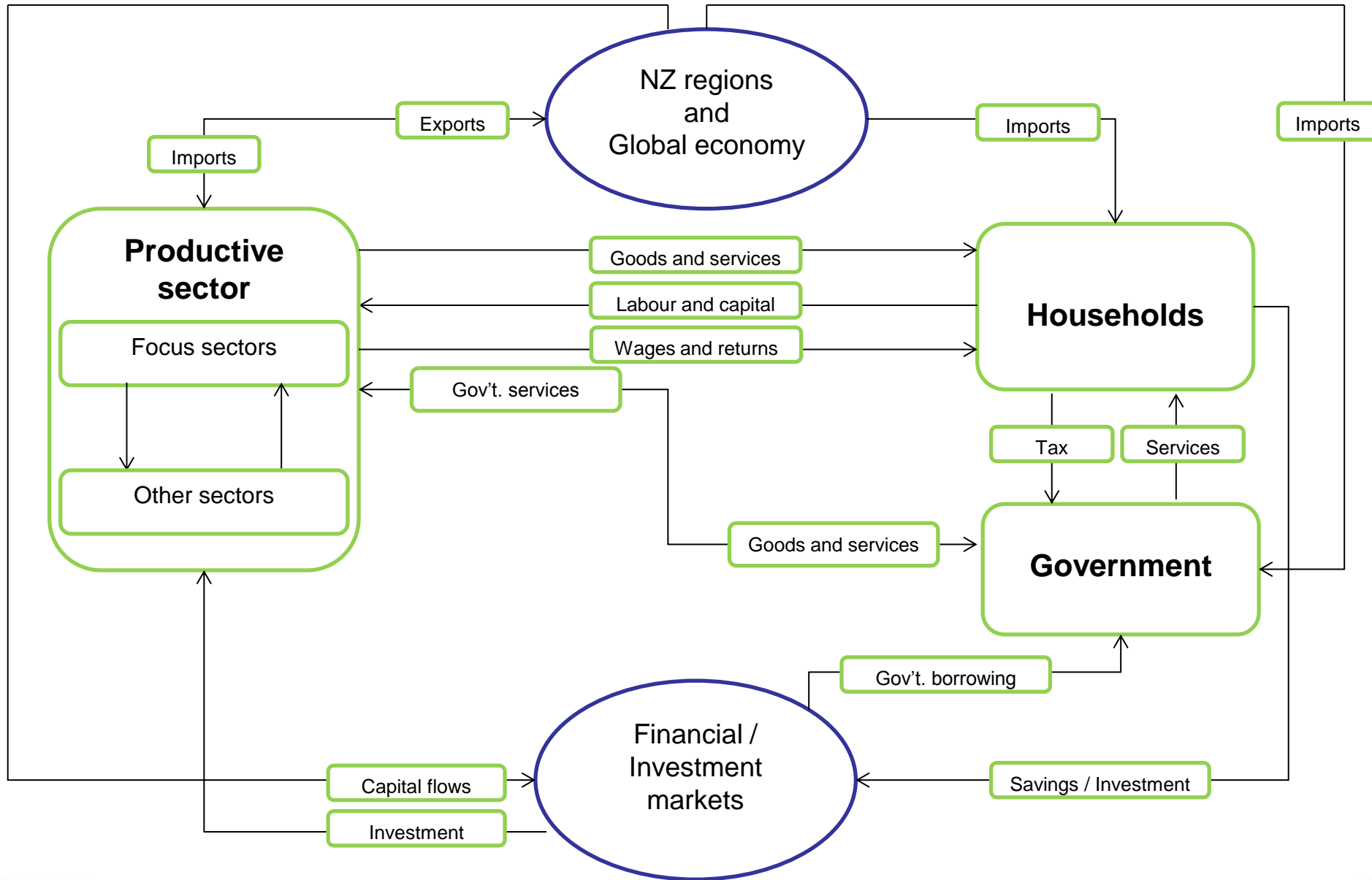


Technique	Strengths	Limitations
Cost Benefit Analysis	Widely used; considers impacts over time; RoI; non-market effects	Regional spillovers and distribution hard
Multipliers	Cheap; easy to do; big numbers	No resource constraints; no regional spillovers; widely discredited
Financial modelling	Simple; RoI	Hard to get to trade-offs
Econometrics	Gets to drivers; can forecast	Regional interactions and sector impacts tricky
Descriptive	Can cover wide range of effects; not constrained by data or capability	Lacks persuasive numbers on trade-offs
Computable General Equilibrium (CGE) modelling	Robust; internally consistent; resource, region & sector trade-offs	Requires investment; data-intensive



Focus of this presentation

CGE models show the whole economy

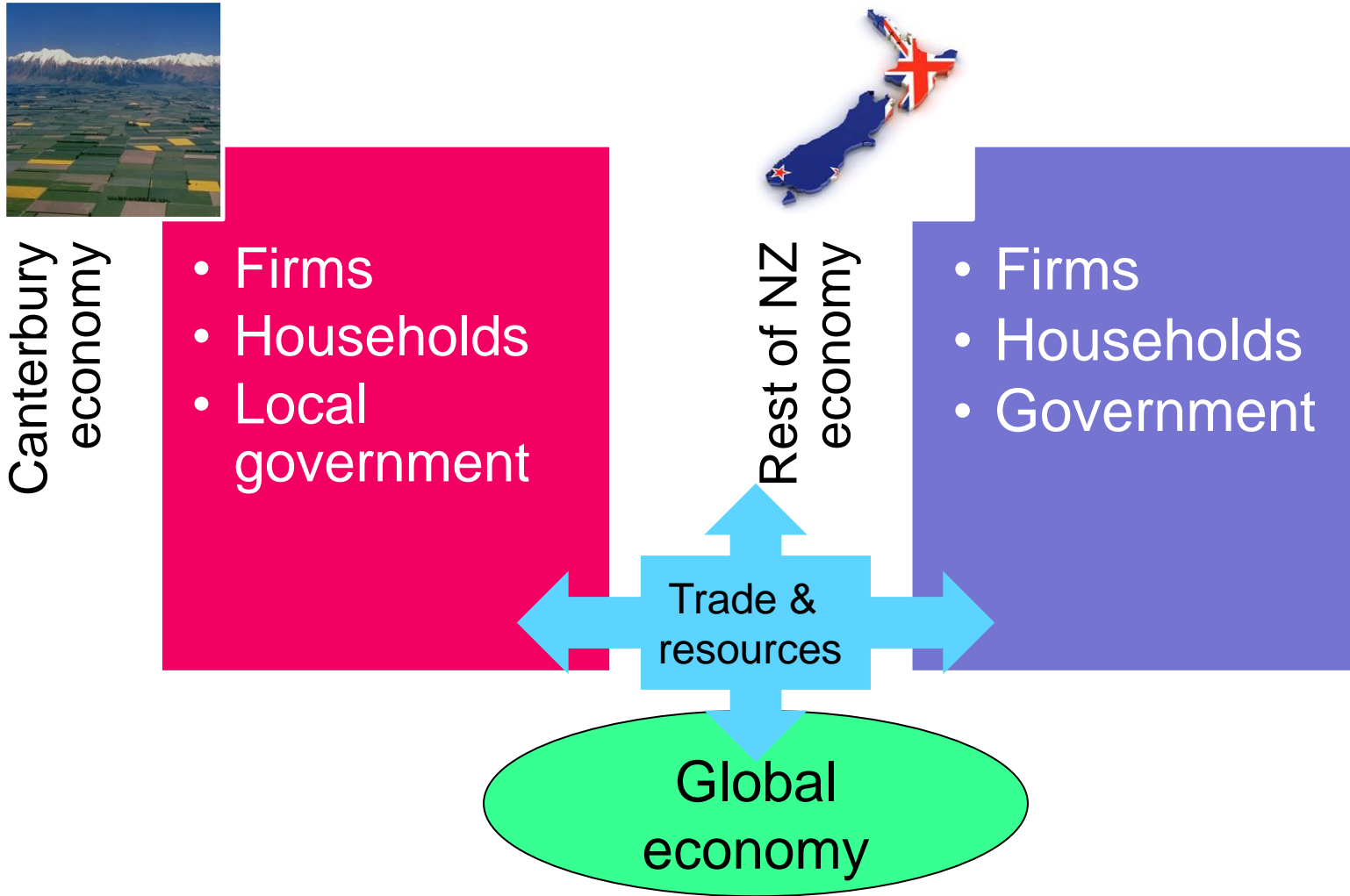


NZIER's suite of CGE models*

- GTAP model of global economy
- ORANI-NZ and ORANI-NZ-Green
 - Comparative-static (with top-down regional extension); ORANI-NZ-Green for Greenhouse Gas policy analysis
- MONASH-NZ
 - Recursive dynamic (with top-down regional extension)
- **TERM-NZ (The Enormous Regional Model)**
 - Each region has its own economy, but all are regions are linked via regional trade and movements in factors of production

* More information on the GTAP model is available at www.gtap.agecon.purdue.edu; background on ORANI, Monash and TERM models can be found at www.copsmodels.com

Our TERM CGE model captures inter-regional flows from the bottom up



TERM-NZ contains a lot of detail

- 15 regional economies in New Zealand
- 106 industries
- 205 commodities
- Based on Statistics New Zealand 2007 input-output tables, updated and modified to 2014
- Regional economies linked by:
 - Inter-regional trade in commodities
 - Movement in labour and capital between regions
- A first in New Zealand as far as we are aware

3. OUR CGE IN ACTION: CANTERBURY REBUILD

Canterbury rebuild: a regional super shock

- Simulation
 - Increased residential and non-residential construction in Canterbury (~ \$7.4 billion in 2015)
 - Assume rest of New Zealand is business as usual (to identify effects of rebuild alone)
 - Aggregate database to 4 regions for simplicity (Canterbury, Auckland, Rest of NI, Rest of SI)
- Analysis
 - National and regional impacts
 - How does the additional activity affect other regions?
 - How does the Canterbury rebuild affect price inflation in the NZ economy?

Summary of results

- New Zealand economy grows
 - Canterbury and Rest of South Island GDP expands; other regions contract
 - Resources (labour and capital) reallocate towards Canterbury
- Cost of domestic production goes up
 - Driven by higher wages and returns to capital
- This results in reduced export competitiveness
 - Non-tradable sector (construction) growth makes tradable activity more difficult due to resource re-allocation and price effects
- CPI/Inflation pressures increase across New Zealand

Key CGE insight: trade-offs abound

All impacts measured against baseline, % change

Impact	New Zealand	Canterbury	Auckland	Rest of North Island	Rest of South Island
GDP	0.6	6.6	-0.5	-0.3	0.2
Household welfare	1.1	8.4	-0.3	0.1	0.9
Investment	15.9	123.6	-0.3	-0.2	0.3
Exports**	-6.1	-12.6	-4.6	-4.9	-5.9
Imports**	5.6	38.6	0.2	0.7	1.8
Employment	0.0	3.7	-0.7	-0.5	-0.1
Wages	2.9	3.2	1.1	1.3	1.7
CPI/Inflation	1.5	8.2	1.8	2.2	3.0
GDPPi***	2.1	5.4	1.4	1.6	2.1

** Overseas exports and imports; ***GDPPi means GDP price index

Key insight: Intra-regional trade changes

All impacts measured against baseline, % change

From... \ To...	Auckland	Canterbury	Rest of North Island	Rest of South Island
Auckland	-1.1	18.6	-0.1	1.3
Canterbury	-10.6	9.2	-12.5	-11.0
Rest of North Island	-1.9	19.8	-1.0	1.2
Rest of South Island	-3.4	21.7	-3.6	-0.9

4. KEY TAKEAWAY – OUR CGE MODEL HIGHLIGHTS THE RELEVANT TRADE-OFFS

Takeaways

1. Resources are constrained; there are always winners and losers
2. Traditional tools struggle with inter-regional transfers and trade-offs
3. NZIER's TERM-NZ model can show regional initiatives in a new light
4. Inter- and intra-regional effects are captured
5. Using TERM-NZ can help identify the full range of economic impacts of regional policy and industry initiatives

Future TERM-NZ developments

- Add dynamics to show effects over time
- Incorporate labour and migration module
- Add tourism as separate sector
- Consider impacts of irrigation
- Different types of households
- Extend to Territorial Level Authority level

Because there is (sadly) no money tree!



"IT'S THE SOLUTION TO ALL OUR PROBLEMS, MR. PRESIDENT."

For more information contact

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