

Employment impacts of a global trade shock

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Model overview

- Static computable general equilibrium (CGE) model simulated for 2025
- Represents eight regions and 33 sectors
- The model is calibrated to the benchmark year using the Global Trade Analysis Project (GTAP) Database
- The model is calibrated to 2025 using projections (GDP, labour force, land use etc.) from the C-PLAN model and other sources

Abbreviation	Region
nzl	New Zealand
aus	Australia (& Pacific Islands)
eur	Europe
jpk	Japan & South Korea
asa	Rest of Asia
nam	North America
sam	South and Central America
afm	Africa & Middle East

Sectors

Agriculture, forestry & fishing	Energy-intensive manufacturing
Dairy farming	Chemical, rubber & plastic products
Beef and sheep farming	Cement manufacturing
Other animal products	Non-ferrous metals (e.g., aluminium)
Fruit and vegetables	Iron & steel
Other horticulture	
Forestry	Other manufacturing
Fishing	Mining of metal ores
	Dairy products
Energy extraction & distribution	Meat products
Crude oil extraction	Other food processing
Refined oil products	Wood and paper products
Coal extraction	Textiles, clothing & footwear
Natural gas extraction and distribution	Motor vehicles and parts
Electricity, transmission and distribution	Other manufacturing
Transport	Construction & services
Road Transport	Construction
Air transport	Accommodation and food services
Water transport	Business services
Private transport	Other services

Model specifications and closures

- Decision making is based on real prices (there are no nominal prices in the model)
- Flexible real wages
- Full employment in some scenarios and unemployment in others
- Fixed capital account balance and adjustments in the (implicit) real exchange rate
- Endogenous government deficits (surpluses) funded by lump sum transfers from (to) households

Benchmark representation of the global economy

Baseline external drivers

e.g., GDP and land use projections

Baseline representation of the global economy in
2025

Trade shock

e.g., new tariffs

Global economy in 2025 with trade shock

Supply chain disruption scenarios

- A 25% tariff imposed by Rest of Asia on all imports (both goods and services) from: New Zealand, Australia, Japan & South Korea, North America
 - The proportion of workers who lose their jobs that become unemployed varies from 0% to 50%
 - Alternative government responses:
 - No response
 - Output subsidy
 - Labour subsidy
- To hold employment constant at baseline levels for selected sectors

Scenarios considered

Scenario	25% tariffs	Displaced workers unemployed	Government response
baseline	No	-	-
t25	Yes	None	None
t25_ue10	Yes	10%	None
t25_ue30	Yes	30%	None
t25_ue50	Yes	50%	None
t25_os	Yes	None	Output subsidy
t25_ue50_os	Yes	50%	Output subsidy
t25_ls	Yes	None	Labour subsidy
t25_ue50_ls	Yes	50%	Labour subsidy

Share of New Zealand exports shipped to Rest of Asia, 2025 baseline, selected sectors

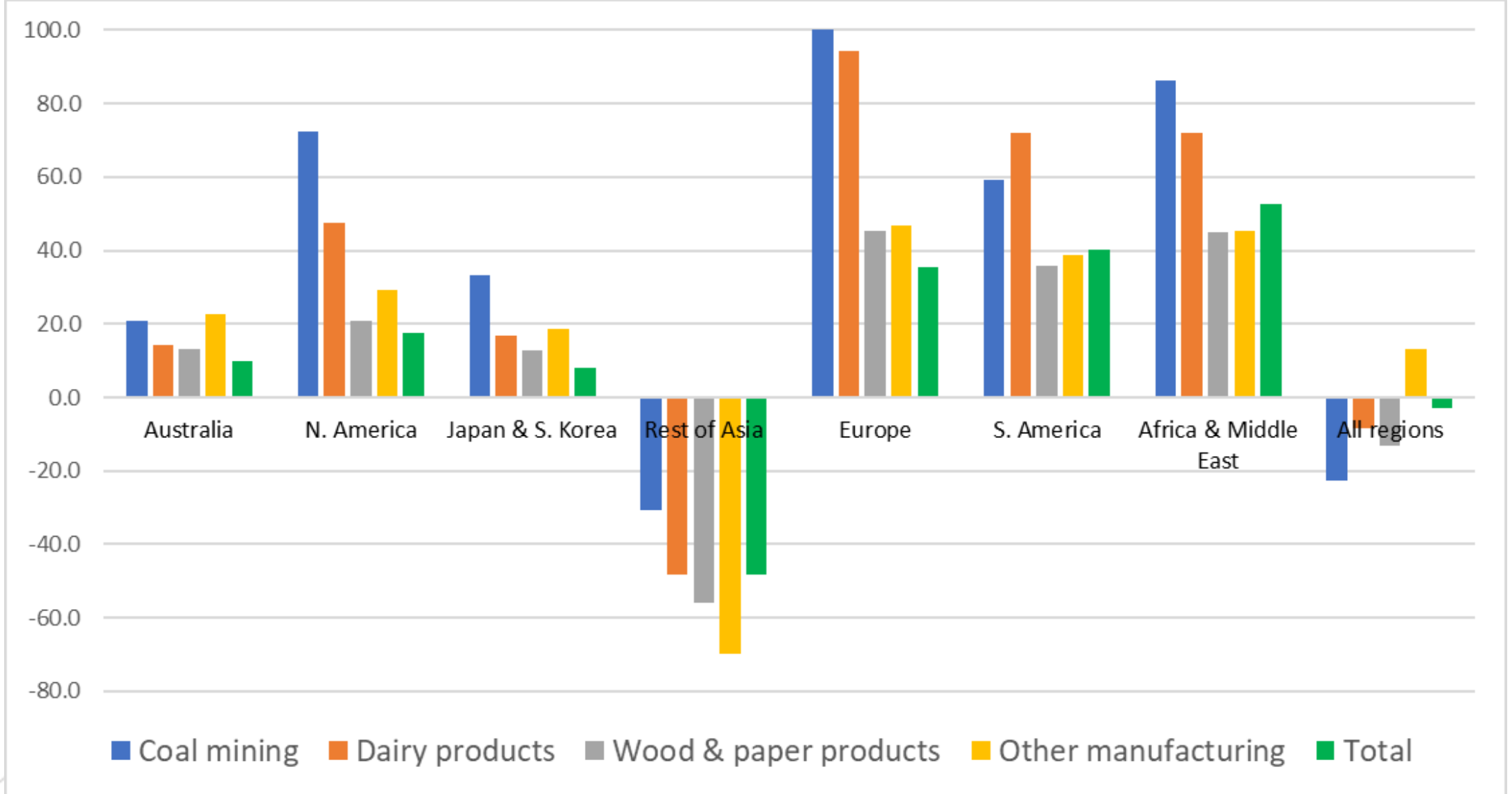
Sector	Share of exports to Rest of Asia
Coal mining	0.89
Other mining	0.87
Dairy products	0.63
Wood & paper products	0.42
All sectors	0.37
Meat products	0.31
Textiles, clothing & footwear	0.21
Other manufacturing	0.17
Motor vehicles & parts	0.13

The trade shock with full employment

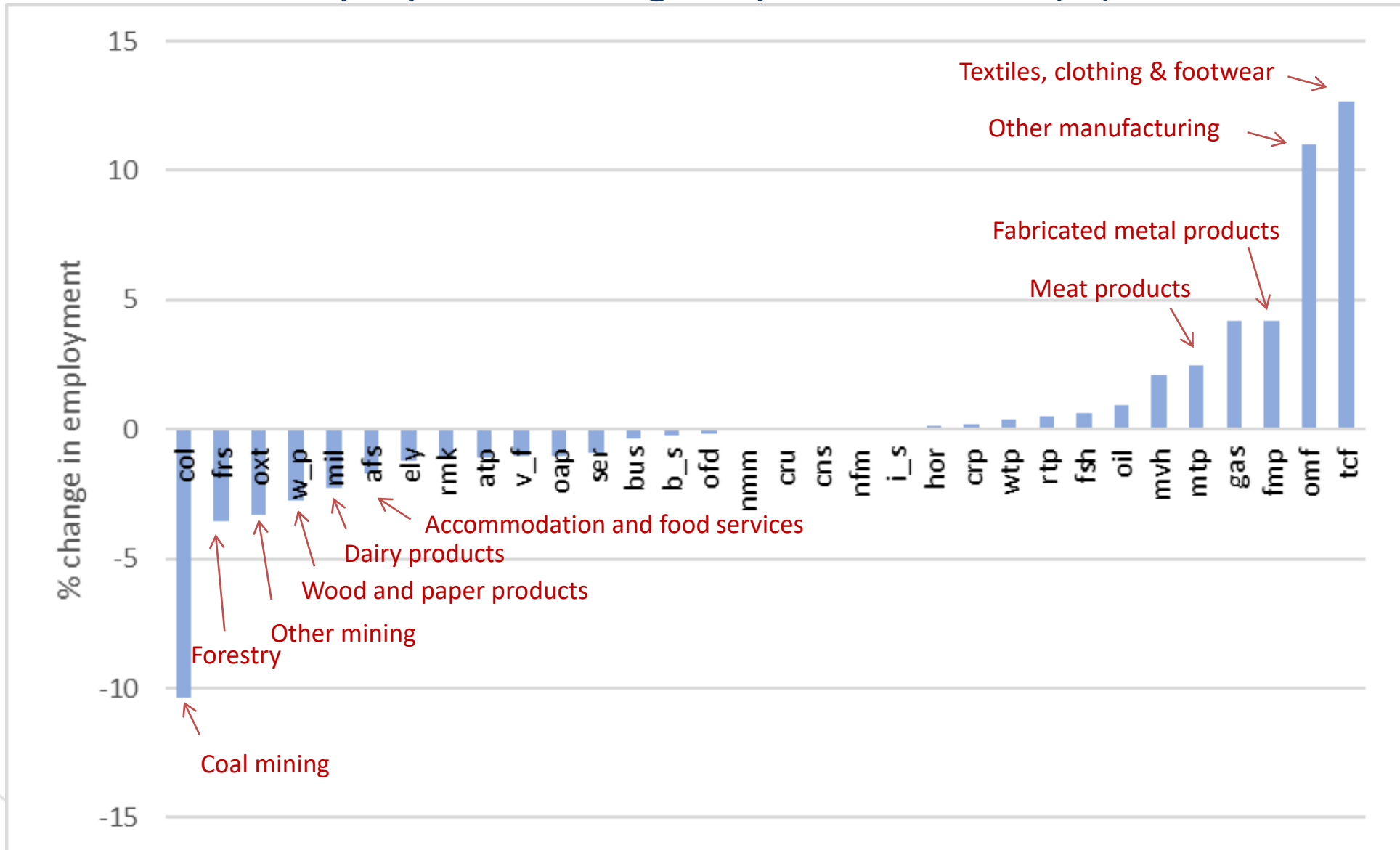
The trade shock when there is full employment

- Results are reported for:
 - **baseline**: Business as usual in 2025
 - **t25**: 25% tariff with no unemployment and no government response
- The impacts of the tariffs are evaluated by comparing results for the **t25** scenario to the **baseline** scenario

Change in New Zealand exports (%)



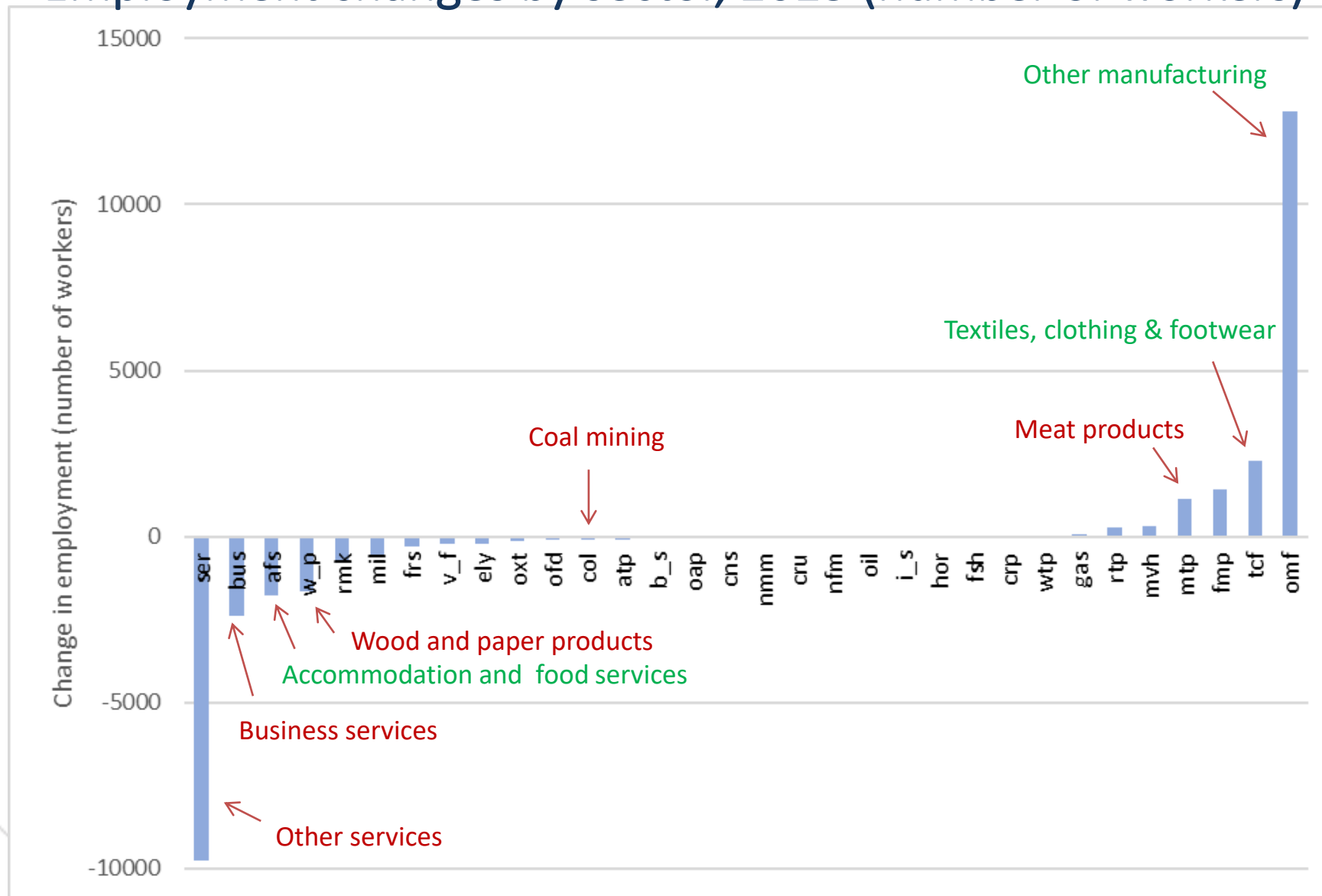
Employment changes by sector, 2025 (%)



Employment changes vs. share of exports to Rest of Asia



Employment changes by sector, 2025 (number of workers)



Summary: Tariff impacts with full employment

- The tariffs decrease New Zealand exports to Rest of Asia and increase New Zealand exports to other countries
 - Proportional export increases to 'neutral' are larger than those to 'targeted' countries
- Proportional changes in sectoral employment are negatively related to exposure to Rest of Asia
- In general, the tariffs increase employment in manufacturing sectors and decrease employment in primary industries and services
 - New Zealand (and other regions) must become more self sufficient

The trade shock with unemployment

The trade shock with unemployment

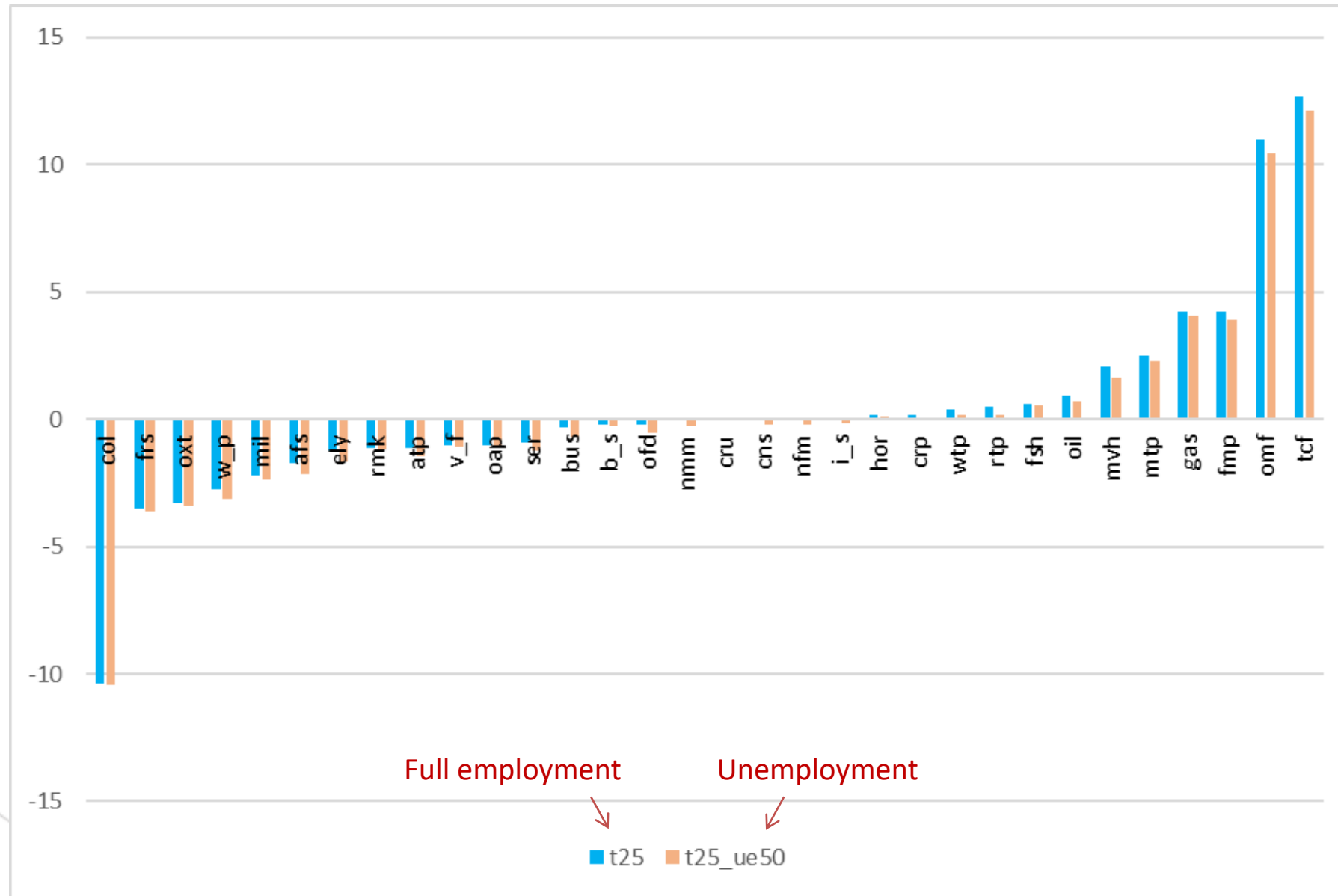
- Results are reported for:
 - **t25**: 25% tariff with no unemployment and no government response
 - **t25_ue50**: 25% tariffs with 50% of displaced workers becoming unemployed and no government response

New Zealand GDP and welfare, % change relative to baseline

	Full employment (t25)	Unemployment (t25_ue50)
GDP	-1.71%	-1.87%
Welfare	-3.12%	-3.40%

- In 2025, without unemployment, the tariffs reduce New Zealand GDP by 1.71%
- Welfare is measured using the Hicksian equivalent variation in income
 - The change in consumer income that would have the same effect on consumer welfare as the tariff

Employment changes by sector, 2025 (% relative to baseline)



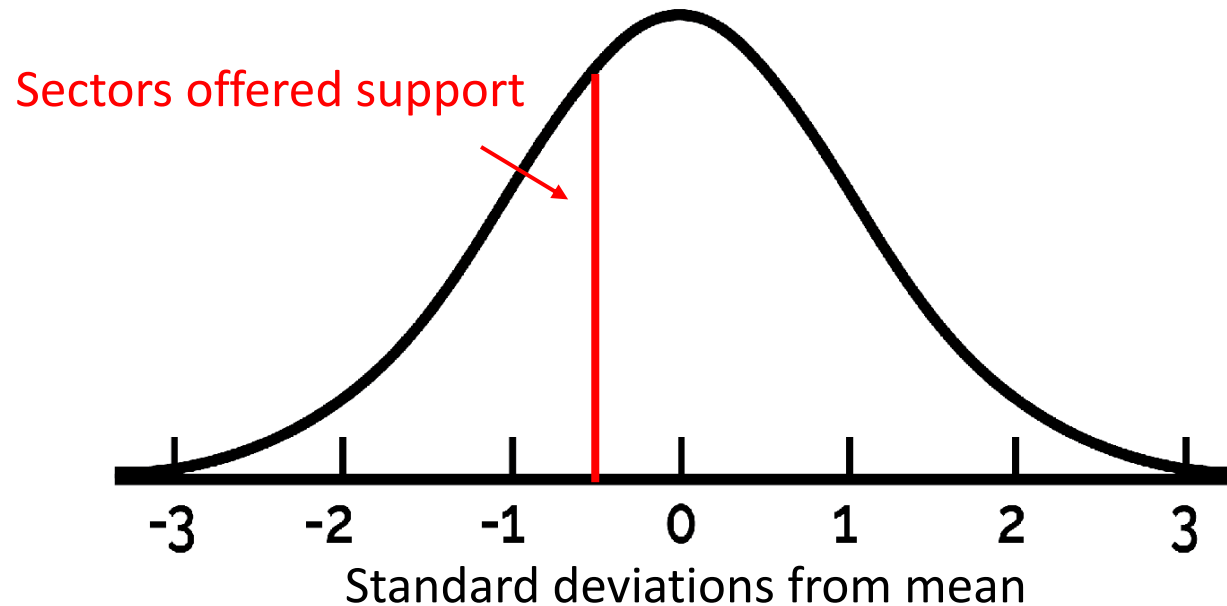
Summary: When there is unemployment...

- The tariffs result in larger reductions in New Zealand GDP and welfare
- There are smaller employment increases in expanding sectors
- Overall impacts on the economy are similar to the case with full employment

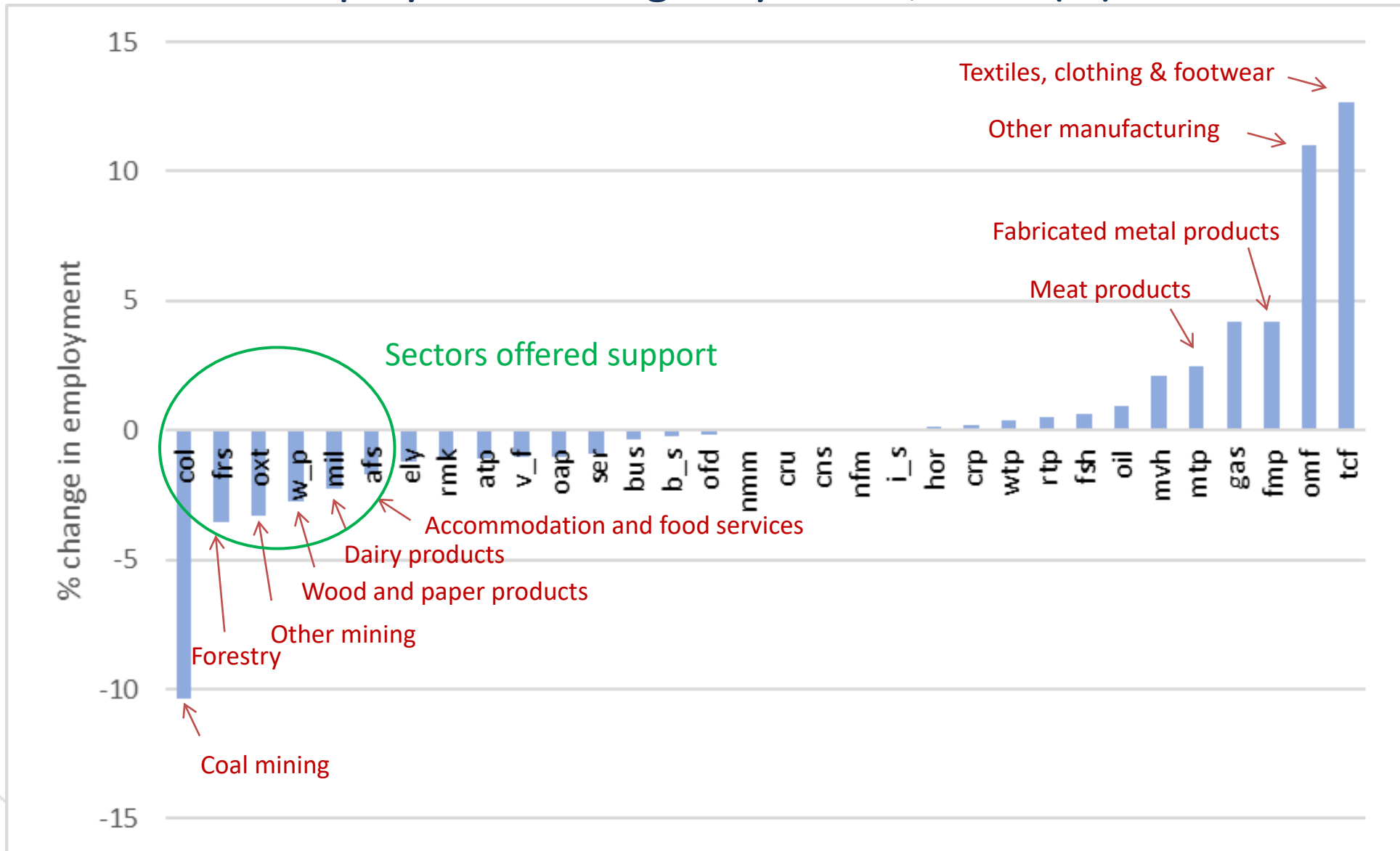
Support for selected sectors

Support for selected sectors (1)

- Government support to hold employment constant for selected negatively-impacted sectors
- Offered to sectors with proportional employment decreases more than 0.4 standard deviations from the mean



Employment changes by sector, 2025 (%)



Support for selected sectors (2)

Results are reported for:

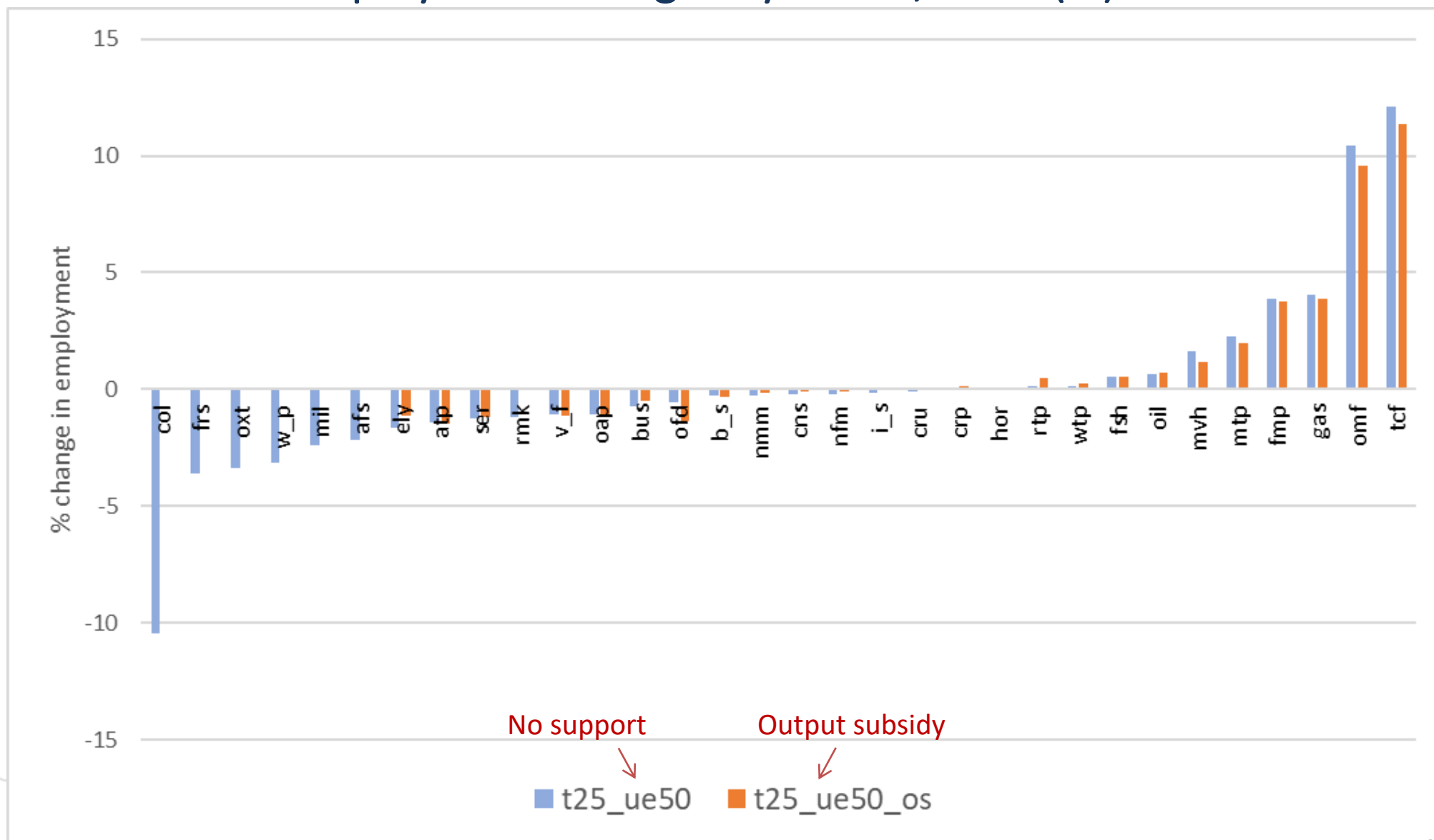
- **t25_ue50**: 25% tariffs with 50% of displaced workers becoming unemployed and no government response
- **t25_ue50_os**: 25% tariffs with 50% of displaced workers unemployed and *output subsidies* to maintain baseline employment in selected sectors
- **t25_ue50_ls**: 25% tariffs with 50% of displaced workers unemployed and *labour subsidies* to maintain baseline employment in selected sectors

New Zealand GDP and welfare, % change relative to baseline

	No response (t25_ue50)	Output subsidies (t25_ue50_os)	Labour subsidies (t25_ue50_ls)
GDP	-1.87%	-1.74%	-1.59%
Welfare	-3.40%	-3.24%	-2.93%

- Both the output subsidies and the labour subsidies improve national outcomes
 - Labour in contracting sectors is no longer unemployed
 - Offsets some of the distortions caused by the tariffs
- GDP and welfare are higher when there are labour subsidies than when there are output subsidies

Employment changes by sector, 2025 (%)



Subsidy rates (%) and values (NZD million/year)

	Output subsidy			Labour subsidy		
Sector	Percent	Total value	Value per job saved	Percent	Total value	Value per job saved
Coal mining	13.6	112.2	1.06	77.5	44.6	0.422
Forestry	13.1	594.1	1.91	22.2	110.2	0.355
Other mining	8.7	147.0	1.18	17.7	37.5	0.301
Dairy products	5.1	1019.6	1.67	3.9	60.3	0.099
Accommodation & food services	1.9	308.4	0.17	2.1	120.6	0.068
Wood & paper products	1.1	169.3	0.10	3.2	107.1	0.065
Total/average	3.3	2350.7	0.51	6.2	480.3	0.105

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Summary: Government support

- Subsidies to maintain employment in highly impacted sectors lead to higher GDP and welfare
- Maintaining employment in certain sectors leads to smaller employment decreases in expanding sectors (even when there is unemployment)
- It is more expensive to maintain employment with output subsidies than labour subsidies
 - Targeted policies are preferable

Conclusions

- The trade shock reduces New Zealand annual GDP by 1.7%
- Impacts (in proportional terms) are largest in sectors that export a high share of exports to Rest of Asia
- Economy-wide impacts in cases with full employment were similar to cases with unemployment
- Support for selected sectors improves national outcomes but reduces employment increases in expanding sectors
- Targeted support has a lower fiscal cost (to achieve the same outcome)
- Detailed distributional impacts will be estimated by the Distributional Impacts Microsimulation for Employment (DIM-E) module

Additional results

- Additional results are provided in Excel Pivot tables:
 - Employment by sector
 - Bilateral exports by sector
 - GDP
 - Welfare
 - Subsidy information

Backup slide(s)

New Zealand Labour payments by sector in 2025, %

