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NEW ZEALAND INSTITUTE OF ECONOMIC RESEARCH

Economic contribution of the NZ Possum fur industry

NZIER report to the New Zealand Fur Council

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Authorship

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Key Points

The current New Zealand possum fur industry

The New Zealand possum fur industry currently generates retail sales of possum-related garments of between $100 and $150 million per year, with international tourists accounting for 85% of total retail sales. The industry employs about 1,500 workers. It also contributes to the conservation of natural flora and fauna through the reduction of approximately 2 million possums per year.

The industry seeks consents to double the volume of possum takes and the production of possum-related garments.

Expansion in the possum fur industry will add $58.5 million and 760 jobs to the New Zealand economy each year

We use a computable general equilibrium model of the NZ economy to quantify the wider economic benefits of expansion in the possum fur industry, in terms of GDP, exports, and consumption. We find that an expansion in the possum fur industry would contribute to:

- a national real gross domestic product (GDP) increase of $58.5 million (0.04%) when compared to the case without industry expansion
- a national consumption increase of $39.0 million – this is an indication of how much better-off New Zealand is
- an increase in possum fur-related direct exports (fibre, hides, and garments) of $35 million
- an additional 760 jobs for the New Zealand economy.

Additional benefits will flow to a variety of industries

The supply of hides and skins grows by $10.1 million (1.7%), while supplies of yarn and wool increase by $9.9 million (1.6%) and $6.6 million (0.3%) respectively. The largest direct impact is on the retail sector: $13.4 million (0.05%).

The entire services sector expands as a result of possum fur industry expansion. For example, property and business services expand by $31.7 million (0.01%) and the electricity, gas and water sector benefits from increased usage ($9.1 million).

Other services sectors that expand include insurance ($7.9 million), freight and transport ($3.3 million) and communication services ($2.4 million).

Grocery wholesaling grows by $27.9 million (0.08%) through higher household income, which in turn is driven higher employment and increased returns to both capital and land.

There will also likely be additional benefits that are outside the scope of this modelling exercise, such as improved preservation of New Zealand's national forest.

1. Introduction

1.1. The New Zealand Fur Council (NZFC)

The New Zealand Fur Council (NZFC) seeks to quantify the wider economic benefits to New Zealand of an expansion in the possum fur industry.

Estimates from the NZFC suggest that retail sales of possum-related garments are between $100 and $150 million per year, with international tourists accounting for 85% of total retail sales. The industry employs about 1,500 workers. It also contributes to the conservation of natural flora and fauna through the reduction of approximately 2 million possums per year.

The industry seeks appropriate consents to double the volume of possum takes and the production of possum-related garments. We use a computable general equilibrium (CGE) model to calculate the economy-wide benefits of this potential expansion of the industry.[1]

1.2. Industry structure

We model the possum fur industry based on data provided by the NZFC (Table 1). NZFC suggest that the possum fur industry contributes $127 million to the New Zealand economy each year.[2]

Table 1 Possum fur industry estimates from NZFC

Description	Amount in (NZ$ millions)
Fibre exports to China (44,000 kilograms at $130)	5.72
Garments produced (457,850 at approximate retail price of $250) - based on 56,000 kilograms of domestic fibre at 35% blend)	114.46
Hides for exports (30,000 at $18)	0.54
Hides for domestic use (70,000 at $100)	7.0
Total value of possums	**$NZ 127.72**

Source: New Zealand Fur Council (November 2013)

[1] See Appendix A for an overview of the modelling approach and scenario design. More details on the model structure and data are available on request.

[2] Validating these figures was outside the scope of this report. If the industry delivers more or less output and export value, then clearly the economic benefits in this report will change.

2. Modelling results

We report the economic impacts of doubling the possum fur industry's size as percentage changes from the case expansion.

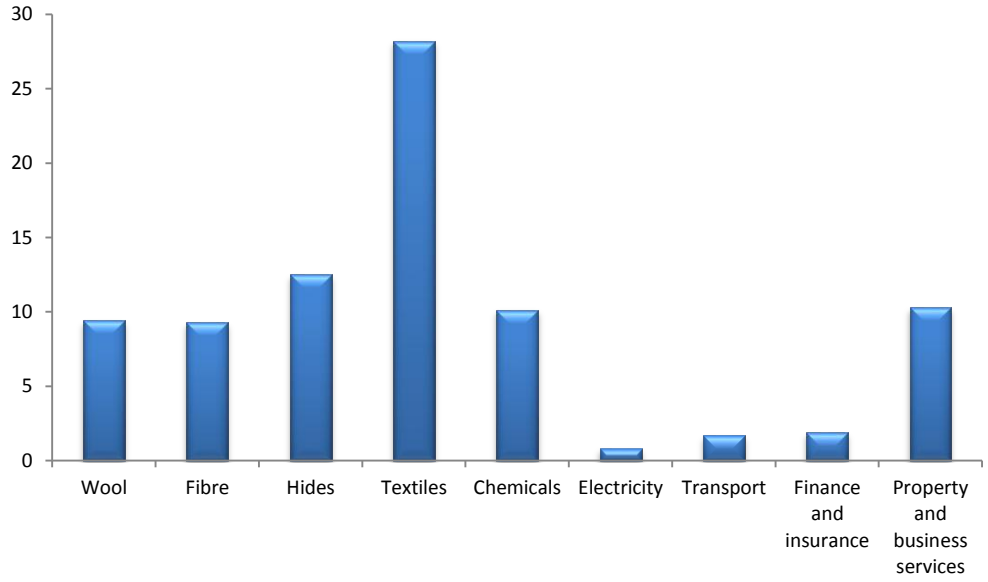
In analysing the modelling results, we track the impacts as they flow through the economy beginning with the direct impacts of expansion in the possum fur industry. We then consider how the growth in the possum fur industry impacts indirectly on other industries. Finally, the national results flow logically from the direct and indirect impacts.

2.1. Direct effects

The direct effect of the possum industry doubling its output value is an expansion in possum-related exports (fibre, hides, and garments) of $35 million. Higher output translates to higher spending on inputs such as: wool, fibre, hides, textiles, chemicals, electricity, finance and insurance, and property and business services (Figure 1).

Figure 1 Direct effects of possum fur industry expansion

Increase in value supplied to possum fur industry (in millions $NZ)



Source: NZIER

2.2. Indirect effects

To aid understanding, we split indirect impacts into the following categories and report the results (Table 2) for certain sectors in the model:

Supplying industries: Sheep and beef (wool) and freight are the two major supplying industries to the possum fur industry. These industries benefit from the possum fur industry expansion. Their value added (GDP) grows by 0.03% and 0.001%, respectively.

Household expenditure industries: industries that households spend money on are likely to benefit from the increased income that comes through higher wages, and increased returns to capital and land from a growing possum fur industry. Retail sales grow by 0.04%.

Government industries: industries that rely on government funding are positively impacted by a stronger economy and higher tax revenues. Central government spending increases by 0.001%.

Competing export industries: other exporting industries are negatively impacted by the growth in possum exports due to exchange rate appreciation and competition for labour input that pushes up costs. The industries affected are mainly export-oriented agricultural and mining industries.

Wool exports: Wool exports fall by 2% due to the slight exchange rate appreciation and increased domestic demand by the possum fur industry.

Table 2 Effects on industry-level GDP

Change in GDP (value-added), selected industries

Industry	Type	Impact on value added
Sheep and beef	Supplying	0.03%
Transport and freight	Supplying	0.001%
Retail	Household expenditure industries	0.04%
Real estate	Household expenditure industries	0.01%
Central government	Government industries	0.001%
Agriculture	Export-competing industries	-0.01%
Mining	Export competing industries	-0.003%
Metals manufacturing	Combination supplying/export competing	-0.02%

Source: NZIER

2.3. National results

At the national level, the expansion in the possum fur industry by $127 million results in gains for the New Zealand economy (Table 3). The national GDP increases by around 0.04% or $58.5 million. This captures the direct and indirect impacts of the expansion in possum fur industry—both positive and negative, on industries such as freight, agriculture and sheep and beef farming. GDP is a 'value-added' measure – it sums the extra value generated by the increased production after the costs of intermediate inputs have been accounted for.

The growth in exports leads to a slight exchange rate appreciation of 0.0004% relative to a baseline without possum fur industry expansion. Household consumption increases by $35.4 million through increased employment, and higher returns to capital (0.025%) and land (0.019%).

Government consumption rises by $3.6 million from increased taxation from a growing economy. Total exports increases by $13.7 million mainly due to possum fur-related exports.

Table 3 National impact

Change versus baseline without possum fur industry expansion

Parameter	Impact (value $m)	Impact (%)
GDP	58.5	0.04%
Household consumption	35.4	0.03%
Government consumption	3.6	0.01%
Exports	13.7	0.02%
Imports	5.0	-0.01%
Aggregate employment		0.04%
Exchange rate		-0.0004%

Source: NZIER

2.4. Summary

Overall we find the New Zealand possum fur industry makes a small but significant contribution to the wider New Zealand economy. Expanding the industry by allowing further possum takes would increase New Zealand's GDP, exports and household income, and provide flow-on impacts to a variety of up- and downstream industries.

There would also be additional biodiversity benefits and implied monetary savings to the Department of Conservation (DOC) of increased possum takes. Quantifying these benefits is beyond the scope of this report.[3] Further work on economic valuation is therefore essential to quantify these additional benefits.

[3] The Department of Conservation (2009) estimates biodiversity benefits of up to $8.2 million per year as a result of vector control work to reduce possum populations. See Animal Health Board (2009). National Bovine Tuberculosis pest management strategy: An amendment proposal by the Animal Health Board Incorporated. Available at http://www.tbfree.org.nz/Portals/0/AHB%20NPMS%20Proposal%2009.pdf

Appendix A Methodology

A.1 The ORANI-NZ model

The methodology we use to calculate the impact of the possum fur industry expansion is the ORANI-NZ computable general equilibrium (CGE) model. The ORANI-NZ CGE model in its basic form contains information on 105 industries and 206 commodities.

CGE modelling is a highly-respected and well-developed technique that has a rich history for assessing policy, regional and industry questions. Our model was developed in close collaboration with Monash University, a global leader in building and applying CGE models. It captures the various inter-linkages between these 105 sectors, as well as their links to households (via the labour market), the government sector, capital markets and the global economy (via imports and exports).

A benefit of the CGE model is that it is based on an empirical database that identifies the structure of the industries involved. Simulating the expansion in possum fur industry leads to increased returns to capital and higher tax receipts for the government.

A second key benefit of a CGE model is that it considers both the first round effects of the project – increased production and increased returns to capital within the possum fur industry – and the flow-on impacts that this first round effect has on the rest of the New Zealand economy. For example, it explicitly calculates the flow-on impacts on suppliers to the possum fur industry and on sectors that might benefit from the higher wages that come from the increased demand for labour.

A.2 Modelling scenario and closure

Using data from the NZFC we impose a 100% increase in the output value of the possum fur industry. The overall results can then be interpreted as the overall change in the New Zealand economy due to the expansion in the possum fur industry.

We do not explicitly model the *timing* of the developments. We simply compare the New Zealand economy with and without the expansion of the possum fur industry. Typically such expansion has specific costs and revenues each incurred at different periods. A more sophisticated, dynamic modelling approach would be required to capture these timing effects.

Our analysis focuses on the short run impact of the possum fur industry expansion. Therefore we use a standard short term model closure. We allow labour to move in response to growth but fix total capital supply given the possum fur industry's ability to meet increased supply in the short run. Real wages are also fixed, reflecting the ample capacity in the labour market.