

The Effect of the Proposed Hydro Rate Increase on the Manitoba Economy

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Overview

The economy is a complex web of interactions and a change in one sector creates ripples through the rest of the economy as households and industries adjust.

- Estimate the effect using the **Input-Output Model** of the Manitoba economy to determine the impact of proposed real price increases on the Manitoba economy.
- The real price increase (adjusting for inflation) leads to decreased spending on other goods and services in the economy. Since the revenue raised is not returned to the economy, the reduction in spending on other goods and services is a **withdrawal** from the economy. We estimate the full effect of the withdrawal of these funds on provincial GDP, employment and output.
 - Revenue is designated for the Bipole III deferral account and to avoid incremental borrowing. No evidence that the additional cash flow generated from the rate increases above inflation will be reinvested in the Manitoba economy.
- The model allows us to estimate the impact of the price increase while holding other variables constant. Because there are uncountable factors influencing the economy, it is often difficult to tease out the effect of one policy. The model assumes everything else is held constant – other prices, other policies, etc. – and provides an estimate of the impact of the rate increases alone.

Data

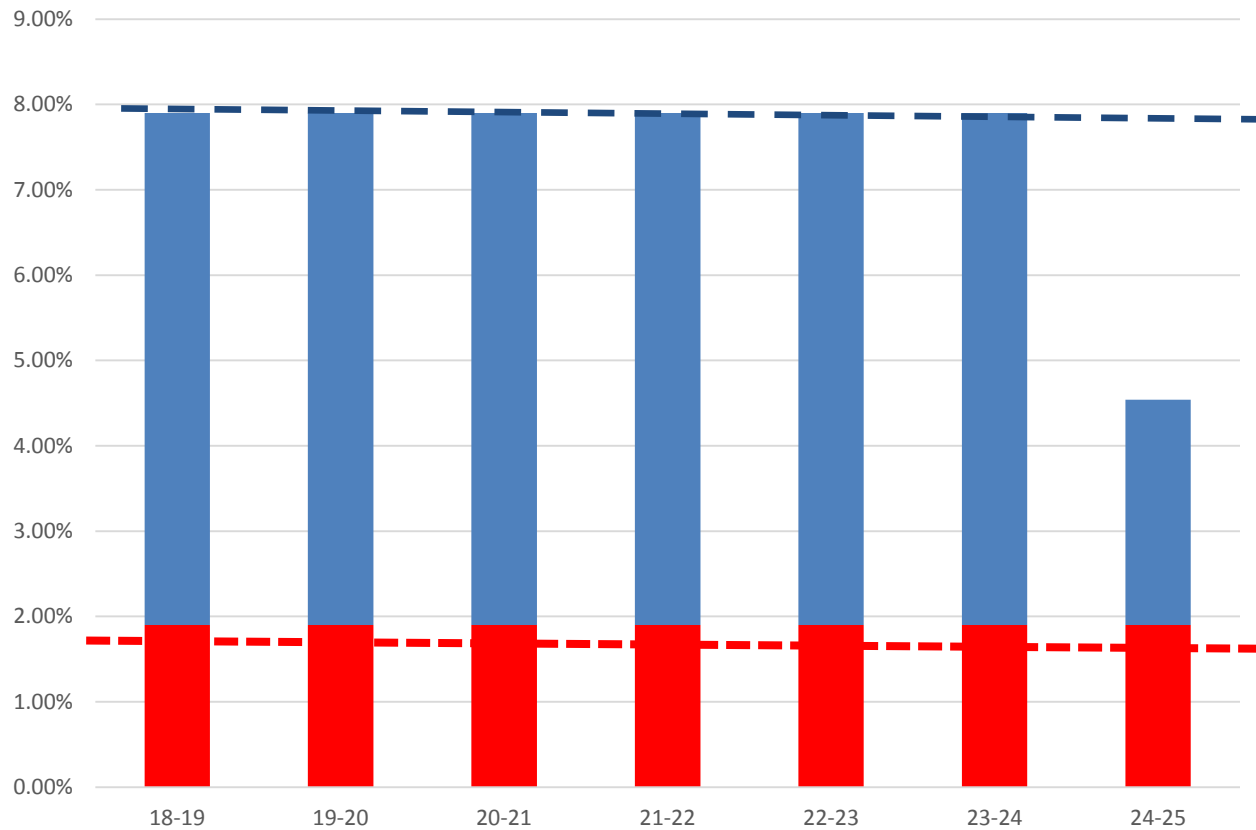
Data: Statistics Canada Supply and Use Tables outline all inputs and outputs for Manitoba, 2013.

Statistics Canada tables allow us to identify the flows of expenditure between industries, households and government.

For each industry, we can determine how much is spent on inputs (including hydro), and the destination of its outputs. We can also identify which industries the inputs come from, and whether they are produced in Manitoba.

We calculate the impact of the proposed hydro rate increases for the one year proposed 7.9% nominal price increase, and also for the planned seven year rate hikes.

Manitoba Hydro is Proposing Significant Rate Increases Above Forecast Inflation



Increases:
6% Annually
Above CPI to
23/24, 2.64%
24/25, or
45.6%
18/19-24/25

CPI Forecast:
1.9%
(Appendix
3.2, p. 10)

Input-Output Model

The Initial (or Direct) Effect

The input-output model is most widely used in estimating the effect of a specific injection into the economy (e.g. a large firm moving into the province) or a withdrawal from the economy (e.g. the closing of a large firm).

In this case, when looking at the impact of hydro price increases, the initial withdrawal from the economy is widespread rather than concentrated in one industry.

- Industry, Government Services, and Households reallocate their budgets in response to the increased spending on hydro.
- Spending on hydro increases, spending on other goods and services declines.
- The input-output model allows us to estimate how much spending falls on other goods and services.

Input-Output Model

Households: Increased spending on hydro is offset by reduced spending on other goods and services.

(1) Assume price elasticity of demand (PED) equal to 0.29: for every percentage increase in hydro prices, hydro use declines by 0.29%.

- 7.9% Real → 6.0% real → 4.26% increase in spending
- Hydro began at 2.2% of household spending → increases by 0.09%
- Other spending has to decrease by 0.09%.

(2) Apply Income elasticities of demand - spending is not reduced proportionally. Demand for some goods (necessities) will not decline as much as demand for other goods (luxuries).

Input-Output Model

Industry & Government Services: Hydro is an input to production. Increased spending on hydro is offset by reduced spending on other inputs.

- Estimated both with zero price elasticity of demand and $PED=0.29$.

The reduced demand for other goods and services by households, industry and government is the direct, initial effect of the rate increases.

Input-Output Model

Secondary (Indirect) Effects

The reduced demand for intermediate goods (from industry and government) and the reduced demand for final goods (from household) leads to lower output in the economy.

This creates a cascading effect. Due to the initial decline in output, industry will further their reduce their demand for inputs, which further reduces output, which further reduces demand for inputs, etc. In this way, **the initial shock is multiplied as it ripples through the economy.**

The size of the secondary effect depends on the proportion of goods and services that are imported from other provinces or countries. Since some goods and services are imported, the size of the secondary effect gets smaller and smaller each round. If the proportion imported is r , then **the multiplier is $1/(1-r)$** . When this is multiplied by the initial shock, we arrive at the final effect on the economy.

This is captured by what is known as the simple (or Type I) multiplier.

Input-Output Model

Induced Effects

Additionally, the fall in industry demand may lead to lower wages, fewer jobs and the closure of some vulnerable companies. This will further reduce household demand for goods and services, creating an additional impact on the economy. This is termed the “induced effect.” Total (or Type II) multipliers capture both indirect and induced effects.

These multipliers have been calculated by Statistics Canada for all industries and government categories in Manitoba.

For the total economy, the simple multiplier is approximately 1.35 and the total multiplier is 1.5. This implies that for every dollar withdrawn from the economy due to the increase in real (after inflation) hydro rates, there will be an additional \$0.35 decline in GDP or labour income due to indirect effects and \$0.50 from total effects.

Real, Cumulative Effect of Rate Increase on Expenditure on Hydro

Table 1: Cumulative Change in Hydro Spending

(A)	(B)	(C)	(D)	(E)	(F)	(G)
Fiscal year ending	Nominal Rate Increase	Real Rate Increase	No behavioural response, % Change in Expenditure on Hydro	Elasticity	Price induced change in Quantity demanded	W/ Behavioural response, % change in Expenditure on Hydro
2019	7.90	6.00	6.00	0.29	-1.74	4.26
2020	7.90	6.00	12.36	0.29	-3.58	8.78
2021	7.90	6.00	19.10	0.29	-5.54	13.56
2022	7.90	6.00	26.25	0.29	-7.61	18.64
2023	7.90	6.00	33.82	0.29	-9.81	24.01
2024	7.90	6.00	41.85	0.29	-12.14	29.71
2025	4.54	2.64	45.60	0.29	-13.22	32.38

Input-Output Model

Model Limitations:

- (1) Constant structure of the economy
- (2) Economy operates under conditions of excess capacity – all demand can be met.
- (3) Does not include relative price changes .

Selected Results

	First Year Effect				After Seven Years			
	Output	GDP	Labour Income	Jobs	Output	GDP	Labour Income	Jobs
Assuming Price Elasticity of Demand = 0.29 on households only								
Direct and Indirect Effect (using Simple Multiplier)	-0.06	-0.08	-0.08	-95	-1.95	-2.59	-2.63	-2974
Direct, Indirect and Induced Effect (using Total Multiplier)	-0.07	-0.11	-0.11	-126	-2.12	-3.41	-3.39	-3862
Lower Bound (Assuming PED=0.29 on all sectors)								
Direct and Indirect Effect (using Simple Multiplier)	-0.05	-0.07	-0.07	-79	-1.62	-2.16	-2.19	-2480
Upper Bound (Assuming PED=0.29 on household, plus a 10% decline in top 10 Hydro Intensive Industries)								
Direct, Indirect and Induced Effect (using Total Multiplier)	-0.07	-0.11	-0.10	-126	-2.33	-3.63	-3.52	-4105

In perspective

- The decline of GDP of 2.16% - 3.63% suggests that over the seven years, the rate increases will create a loss of approximately one years growth in the Manitoba economy.
- The job loss of 2480-4105 jobs is a permanent fall in jobs relative to the counterfactual of inflationary growth.
- Over the past ten years, the average monthly growth in the economy was 467 individuals, thus the seven year rate increases are estimated to cost the economy approximately 5-8 months of employment growth.

Rate Proposal Comparisons

	Coalition/MH II-19 Alternative			Coalition/MH I-34 Alternative		
Fiscal year ending	Nominal Rate Increase	Real Cumulative Increase in Spending, No PED	Real Cumulative Increase in Spending With PED = 0.29	Nominal Rate Increase	Real Cumulative Increase in Spending, No PED	Real Cumulative Increase in Spending With PED = 0.29
2019	4.14	2.24	1.59	3.95	2.05	1.46
2020	4.14	4.53	3.22	3.95	4.14	2.94
2021	4.14	6.87	4.88	3.95	6.28	4.46
2022	4.14	9.27	6.58	3.95	8.46	6.00
2023	4.14	11.71	8.32	3.95	10.68	7.58
2024	4.14	14.22	10.09	3.95	12.95	9.19
2025	4.14	16.77	11.91	3.95	15.26	10.84

Comparison to Alternative Rate Proposals

	First Year Effect				After Seven Years			
	Output	GDP	Labour Income	Jobs	Output	GDP	Labour Income	Jobs
Hydro Proposal, Lower Bound (Assuming PED=0.29 on all sectors)								
Direct and Indirect Effect (using Simple Multiplier)	-0.05	-0.07	-0.07	-79	-1.62	-2.16	-2.19	-2480
Direct, Indirect and Induced Effect (using Total Multiplier)	-0.06	-0.09	-0.09	-104	-1.86	-2.89	-2.80	-3273
Coalition/MH II-19 Alternative (Assuming PED=0.29 on all sectors)								
Direct and Indirect Effect (using Simple Multiplier)	-0.02	-0.03	-0.03	-29	-0.58	-0.77	-0.78	-884
Direct, Indirect and Induced Effect (using Total Multiplier)	-0.02	-0.03	-0.03	-39	-0.66	-1.03	-1.00	-1167
Coalition/MH I-34 Alternative (Assuming PED=0.29 on all sectors)								
Direct and Indirect Effect (using Simple Multiplier)	-0.02	-0.02	-0.02	-27	-0.53	-0.70	-0.71	-806
Direct, Indirect and Induced Effect (using Total Multiplier)	-0.02	-0.03	-0.03	-36	-0.60	-0.94	-0.91	-1064