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The Impact of Rising Interest Rates on Agriculture

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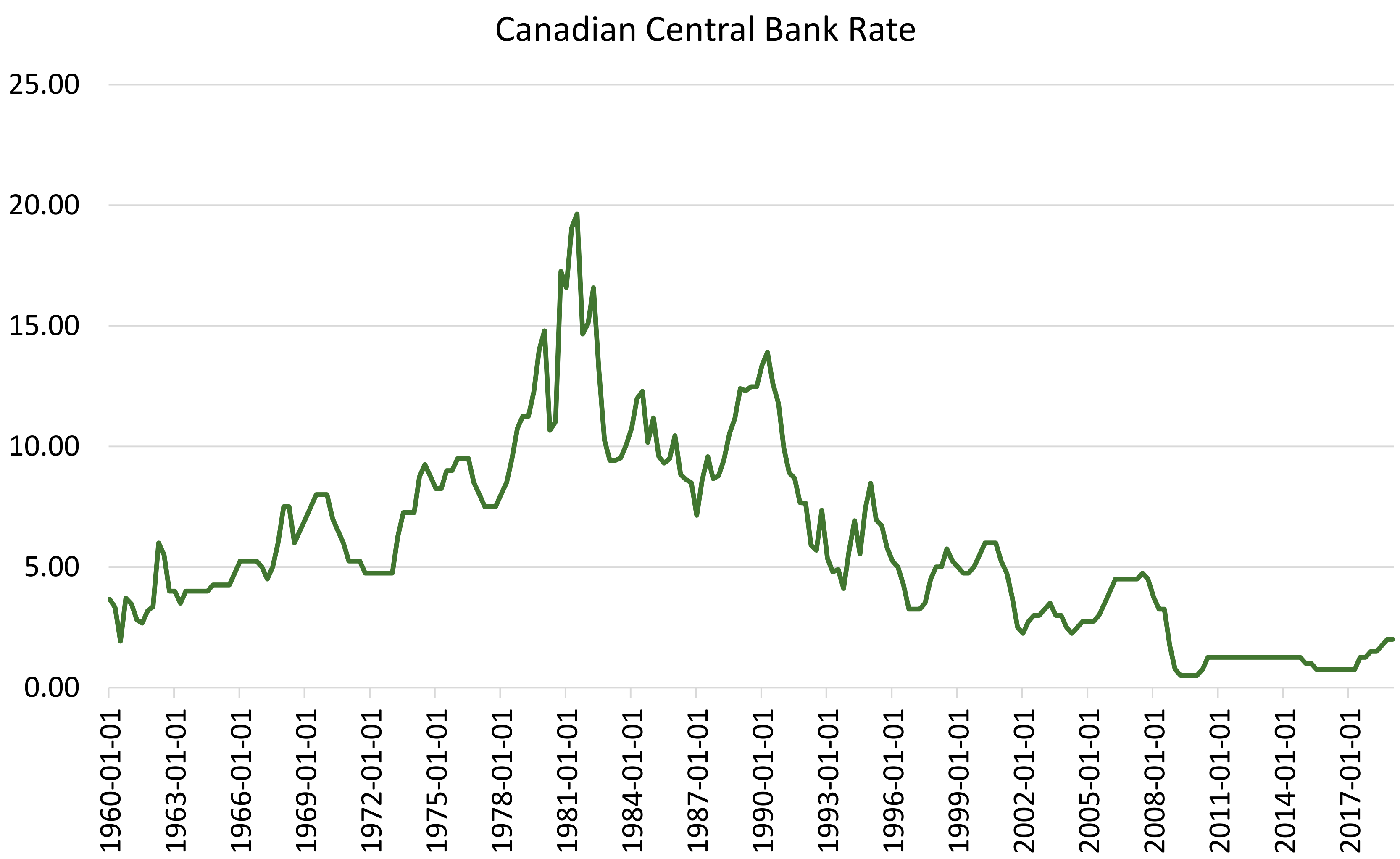
AgriService BC Webinar Series

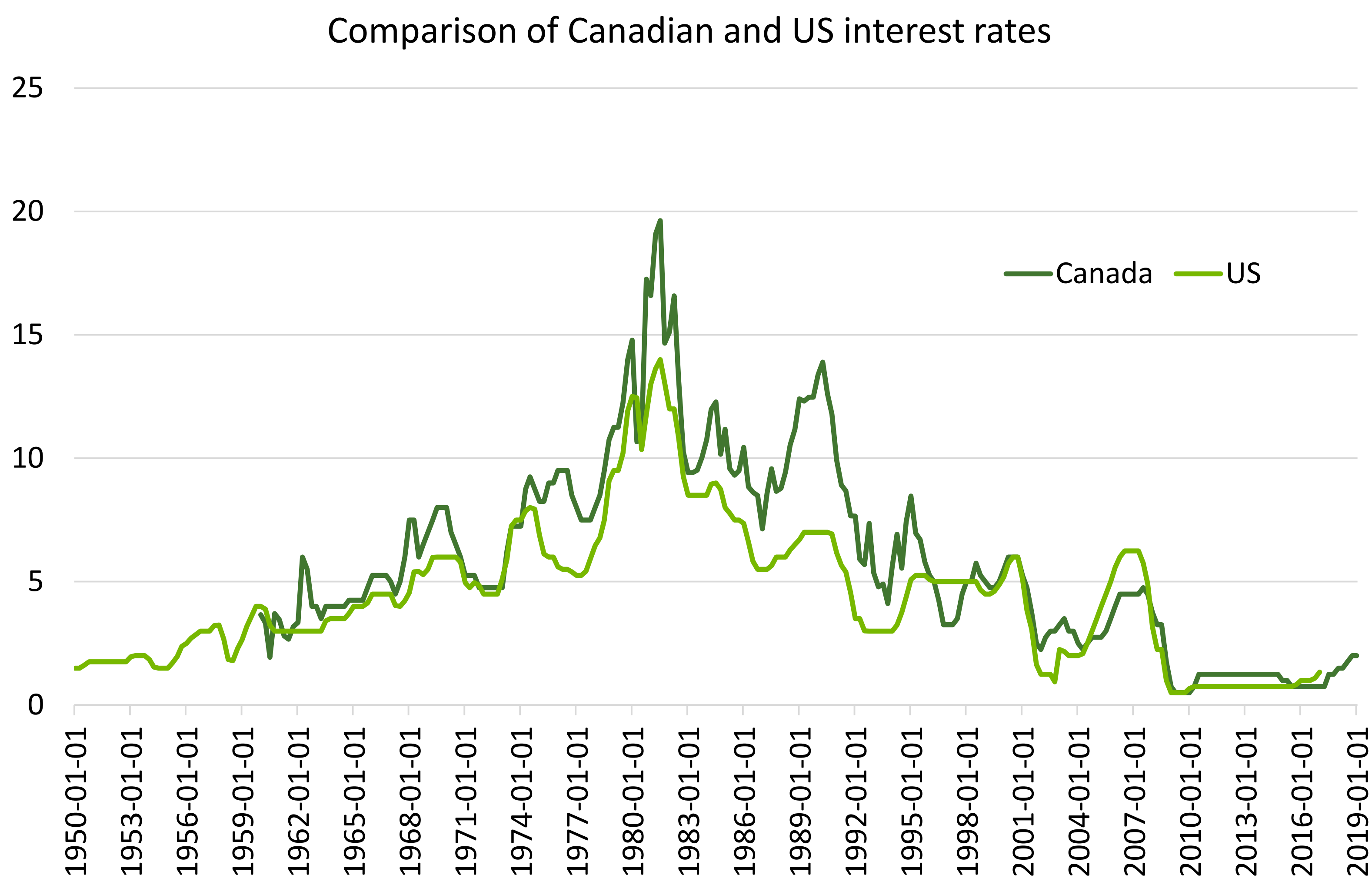
Macroeconomic and microeconomic effects

- Interest rates, while determined by macro-level economic (and political) forces, can have both **macroeconomic** and **microeconomic** effects
- In this webinar, we'll discuss both, proceeding as follows:

1. Macroeconomic indicators and evidence
2. Determinants of interest rates
3. Micro (farm)-level impacts
    a) BC-specific micro-concerns

Are interest rates rising (yet)?




Comparison of Canadian and US interest rates
25
20
15
10
5
0
Canada
US
1950-01-01
1953-01-01
1956-01-01
1959-01-01
1962-01-01
1965-01-01
1968-01-01
1971-01-01
1974-01-01
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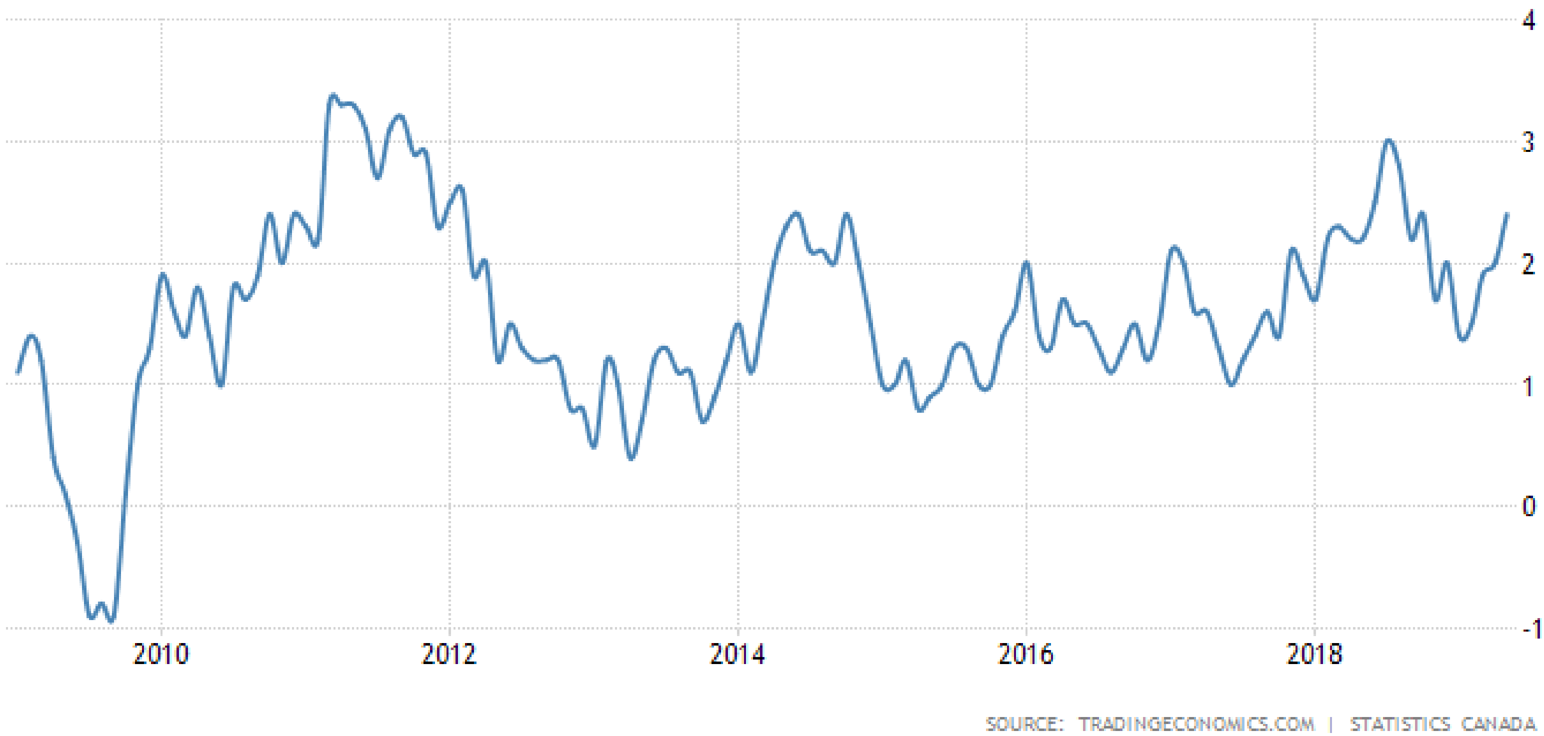
2013-01-01
2016-01-01
2019-01-01

What about real interest rates?

Canadian CPI, 2009-2019



Inflation: high variance, but steadily rising since 2016

If inflation rises faster than the bank rate, the **real** interest rate will erode

Land values

- One of the biggest consequences of interest rate changes is the impact on land values.
- For most operations, land represents the highest valued asset—major driver of farm equity.
- Land valuation—capitalization model:

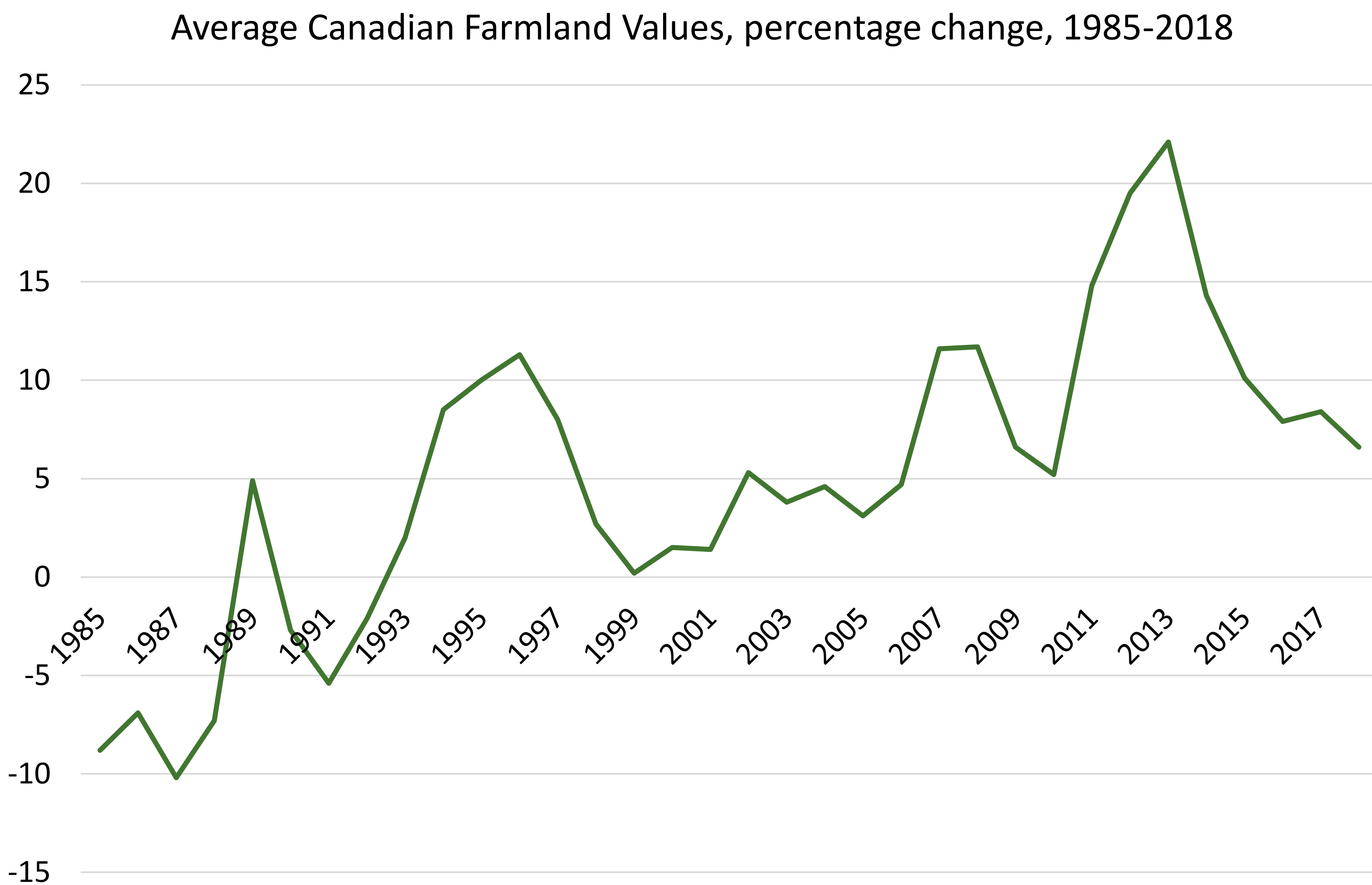
$$\text{Land value} = \frac{A}{i}$$

where A represents location, land quality, water availability, drainage, proximity to urban centers, **profitability of farming**, etc.,

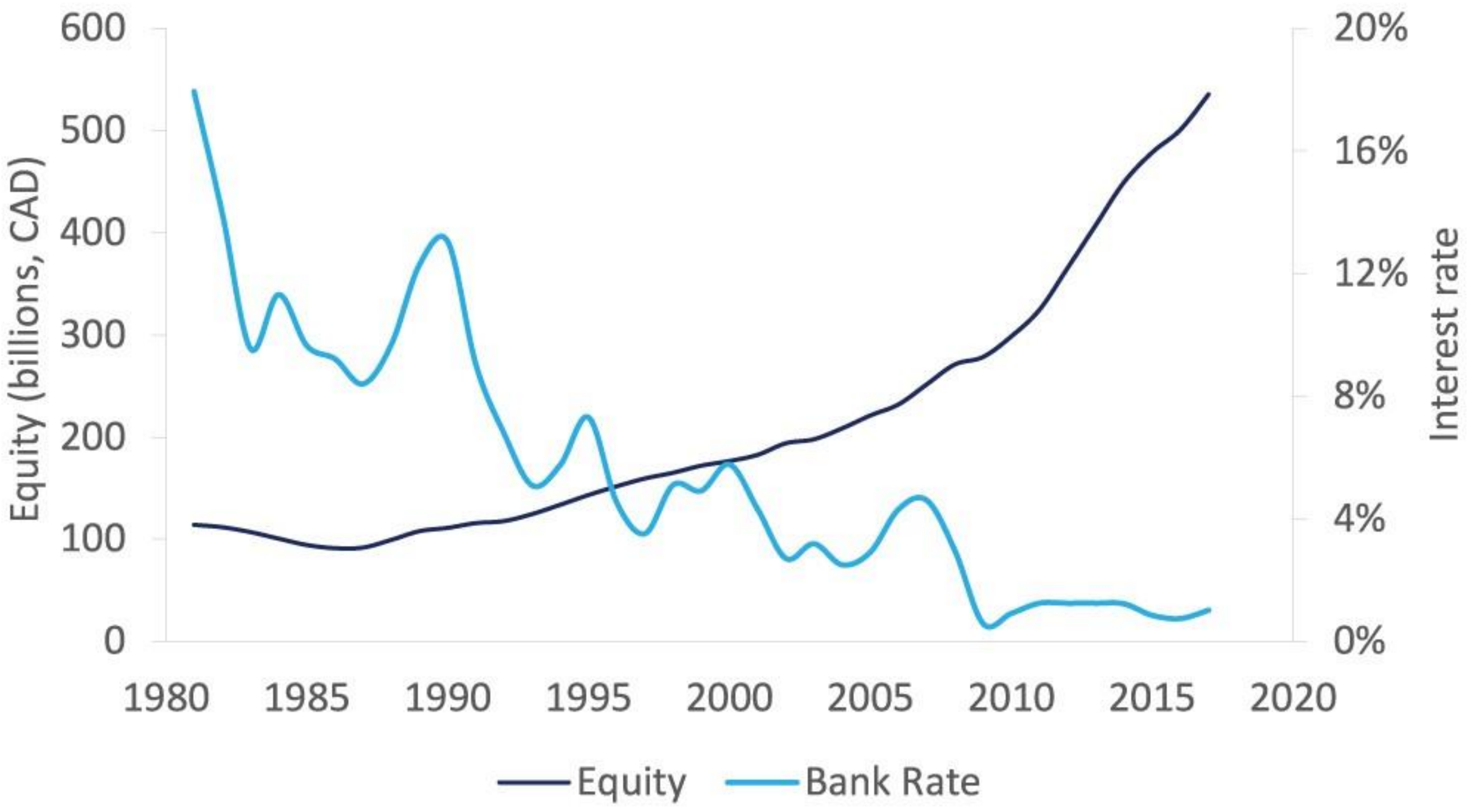
and i is the **interest rate**.

This equation is the fundamental reason behind the inverse relationship between the interest rate and farmland values.

Interest rates and land prices



Equity grows as bank rate falls (Courtesy FCC)



Quick note on the relationship to exchange rates

- In theory, there is a strong connection between interest and exchange rates.
- In practice, the relationship is difficult to quantify and separate from outside influences
- The thinking goes like this:

> Country A increases interest rates $\Longrightarrow$ Increase in foreign direct investment (country A's assets provide a (relatively) better return) $\Longrightarrow$ Increase in the demand for country A's currency $\Longrightarrow$ Appreciation in Country A's currency

- High exchange rates can have a negative impact on agricultural exports, as our goods become (relatively) more expensive on the world market.

Determinants of interest rates

- Econ 101: Supply and demand of money
- Indicator of the real productivity of capital

In practice:

- Outsize US influence, for better or for worse…
- Relative US/CAD inflation rates
- Relative stances of each country’s monetary policy

Micro (farm)-level impacts

Farm growth

- Simplified equation of farm growth (percentage change in equity):

$$\text{Rate of growth on equity capital} = (rP_a - \boldsymbol{i}P_d)k$$

where $k = (1 - t)(1 - c)$ and:

r = the average net rate-of-return

$\boldsymbol{i}$ = the average interest rate paid on debt

t = the average rate of income taxation

c = withdrawals for family consumption,

P_a = the ratio of assets to equity

P_d = the ratio of debt to equity

Leverage and interest rate risk

- The preceding formula is often used to study the influence of leverage on growth

- As long as rP_a exceeds iP_d, increasing leverage can increase growth

- Even though we have (relatively) accurate predictions for changes in the interest rate, at least in the short run, the variance in the interest rate poses additional risk for the farmer.

- As leverage increases, so does the impact of **interest rate risk** on the total risk the farmer is exposed to.

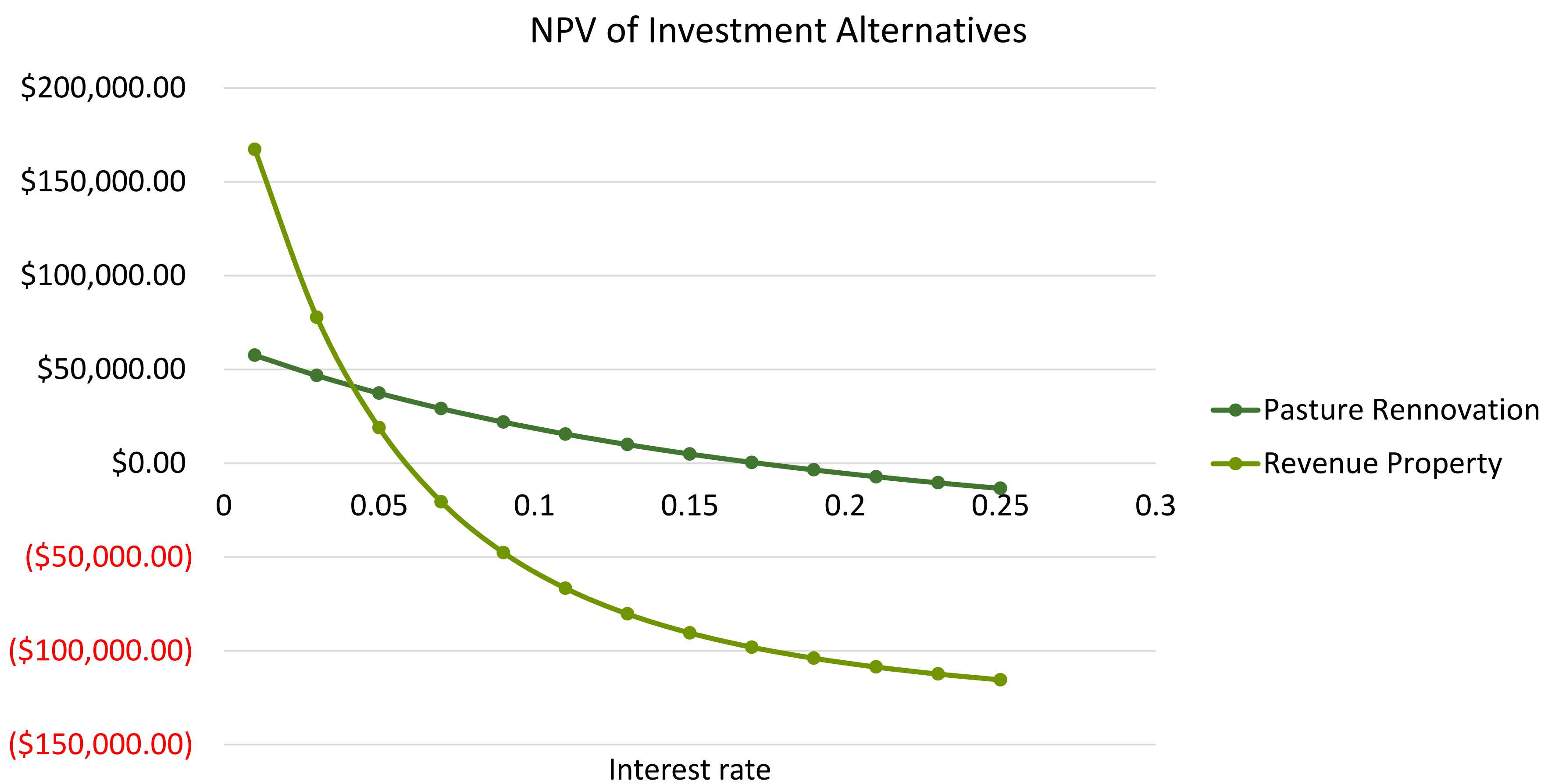
Investment decisions (Net Present Value)

- One of the most common investment analysis frameworks, net present value, depends critically on the interest rate, asking the question:

Will the rate of return on the investment under consideration exceed the interest rate?

- Decision rule: If yes, invest; if not, **don't invest**
- This decision rule drives monetary policy
- Consider the following graph:

Investment decisions (Net Present Value)



Debt

- Rising interest rates increase the cost of current liabilities
- The opportunity cost of holding inventory increases as well (what could I get if sold X?)
- Often requires changes in debt structuring, shifting short-term to long-term debts
- If interest rate increases are expected, sometimes it makes sense to lock in low interest rate operating loans before the rate hikes occurs. This is notoriously difficult to achieve in practice.
- Notable impacts to cash flow budgeting (changes to cash required at multiple points in the operating year)
- Changes to debt repayment capacity
    - Increases the importance of interest-rate sensitivity analysis

The influence of BC labour shortages

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British Columbia

Farming industry facing huge labour shortage, new study finds

Farmers switching to less labour-intensive crops, facing financial losses due to labour shortage, study says

CBC News · Posted: Nov 22, 2016 12:35 PM PT | Last Updated: November 22, 2016

Workers harvest cranberries on a farm in Richmond, B.C. The Lower Mainland of British Columbia produces 20 per cent of the world's cranberries. (Darryl Dyck/The Canadian Press)

The influence of BC labour shortages

- What's the optimal response to a shortage of labour?
- Shift to a production process requiring less labour and more capital
- But wait, what's the price of capital? The interest rate…
- Rising interest rates will make it more difficult for BC farmers to substitute away from labour-intensive production processes, slowing technical change and exacerbating existing labour problems.

Thanks for your time. Now I have a few minutes for questions.

If I don't get to your question, feel free to contact me at

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Or

306-966-4537