

# Regional economic accounts in Canada

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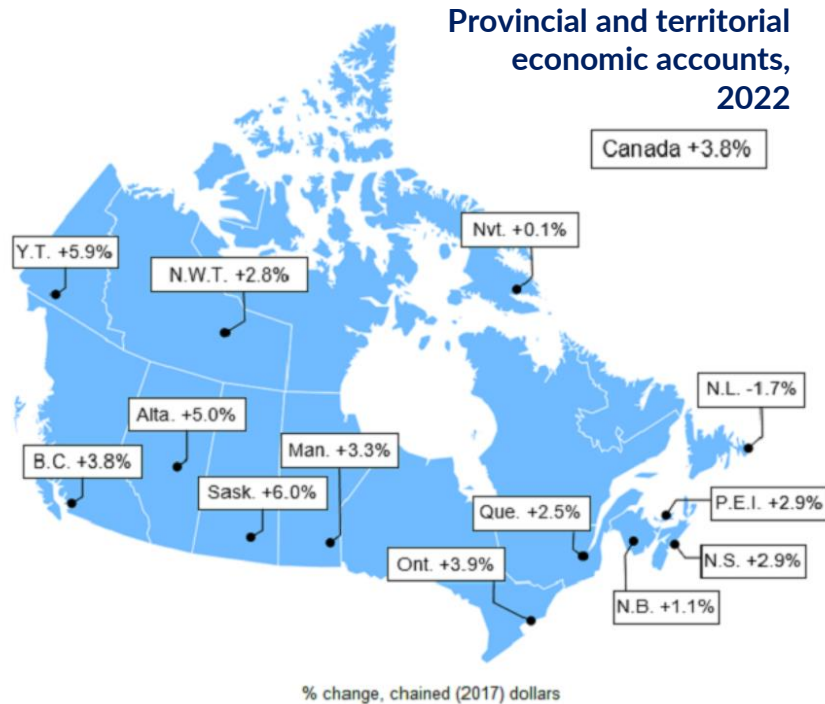
# Overview

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- Regional economic accounts in Canada
- Background of the PTEA
- Income and expenditure accounts
  - Data sources
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- Industry accounts
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# Regional economic accounts in Canada



- Regional economic accounts in Canada include:
  - Provincial-Territorial Expenditure account
  - Provincial-Territorial Income account
  - Provincial-Territorial Household Current and capital accounts
  - Provincial-Territorial Industry account
  - Provincial-Territorial Supply and Use tables;
- Time series consistent Income and expenditure accounts and household sector accounts for the 13 regions start in 1981\*;
- Industry accounts start in 1997, Supply & Use start 2010;

- Coordinated release in early November of each year: November 2023 included Supply Use tables for RY2020, regional Income, expenditure and sector accounts and Industry accounts up to RY2022

\*Regional incomes and expenditure accounts were originally available back to 1961, but these were discontinued with SNA1993 integration.



# Background of the PTEA

- The Income and expenditure accounts are fully consistent with the Supply and Use tables by province/territory for the SUT reference year and many series use the SUT estimate as the benchmark
  - Current period estimates use more timely data sources;
- The Industry accounts are a projection of the SUT estimates to the current period for value-added using a broad range of indicators (e.g., production, labour inputs, physical volumes, etc.)
  - Assumption of fixed technology in the short term for GDP;
- *Nominal* estimates of GDP by incomes and by expenditures are reconciled, whereas *volume* growth rates from GDP by expenditures and GDP by industry are reconciled
  - Real GDP by expenditure is a chained fisher estimate, where GDP by industry is a ‘simulated fisher’.

# Background of the PTEA, continued

- Provincial-territorial data sources underwent a massive overhaul in the 1990s with funding from the federal government under the ‘Project to improve provincial economic statistics’
  - Improvements to existing annual surveys to capture provincial-territorial information, development of enterprise-based business surveys;
- As a result, the PTEA estimates are used for the calculation of important financial transfers between federal and provincial/territorial governments
  - Allocation of sales tax revenues to jurisdictions participating in the Harmonized sales tax program (collected by federal government)
  - Fiscal arrangements allocation to provinces (through Equalization) and territories (through Territorial formula financing) to maintain an average fiscal capacity across all jurisdictions.



# Income and expenditure accounts (IEA)

- Presentation for Provincial-territorial (PT) income and expenditure accounts follows the same as the quarterly national program, except for interprovincial trade flows;
- Over 800 data (nominal) estimates by region within the IEA (*360 for trade alone*), approximately 500 volume estimates (and prices);
- Sequence of accounts is available for 14 regions (13 provinces & territories and outside Canada);
  - Sector accounts are only available for the household sector given that numerous corporations and non-profits would be considered national in scope;
  - Federal government is allocated to regions on an arbitrary basis (often using population) and is considered illustrative.



# IEA: regional data sources

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- Certain series (such as housing, compensation, rent) are developed *quarterly* by PT, where the national is the sum of the regions;
- Others have regional details on an annual basis for the current period;
- Series without data sources by PT use the benchmark shares from the SUT, projected forward using the national growth rate.



# IEA: Income accounts data sources

GDP by income	
Compensation of employees	income tax data includes the province of employment, whereas province of residence is used for sector accounts
Operating surplus of corporations	establishment based surveys, tax filings, energy surveys, projected from SUT benchmark
Consumption of fixed capital	from capital stock model, built using PT data on investments, depreciation profile in national by asset, prices are PT by industry
Gross mixed income (non-farm, non-rent)	tax filings (business declarations), labour force indicators used for some industries
Gross mixed income (rent)	developed at the PT level using a variety of data sources (housing stock in units, average rent from CPI, etc.)
Gross mixed income (farm)	compiled at the PT level from our Agriculture division (farm cash receipts, expenses)
Taxes less subsidies	reported data for local and provincial/territorial governments, federal government spread based on population





# IEA: Expenditure accounts data sources

GDP by expenditure	
Household consumption	survey of household spending, vehicle purchases by registration, surveys on retail and restaurants, energy admin data, financial based on bank filings & employment, insurance based on employment (as examples)
Government final consumption	by level of government (local, provincial/territorial), federal government split arbitrarily
NPISH final consumption	based on tax filings for non-profits
Capital investment: construction	sub-annual surveys for buildings has PT details, engineering from annual CAPEX survey with PT details
Capital investment: M&E	annual CAPEX survey, projected forward from SUT benchmark
Capital investment: IPP	PT ratios projected from SUT benchmark using national level surveys, own-account using PT jobs and wages
Non-farm inventories	business establishment-based surveys, energy surveys, tax data
International trade	Canada's trade with rest of world is total, PT splits are based on SUT benchmark projected using Final demand and energy/mining surveys
Interprovincial trade	SUT benchmark projected forward using Final demand and energy/mining surveys

# IEA: Deflation of expenditures

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In most cases, the nominal is derived first which is deflated with prices to estimate the volumes;

Examples of prices with provincial-territorial dimension:

- Consumer price index
- Machinery and equipment price index (by industry, by PT)
- Building construction price index
- Own-account capital uses movement of wages

➤ *There is no data source for prices of trade flows by region, national prices are used for the most part*

# IEA: Trade flows by region

- **Inter-provincial trade** flows measure the annual sales of goods and services *among* the provinces and territories, whereas **international trade by province** reflects annual sales between individual provinces/territories and the *rest of the world*
  - Both are estimated for Expenditure based GDP by region;
- Developed by balancing the supply and demand for goods and services by province and within the SUT framework; beyond the SUT year, the modelled flows are confronted against energy/mining surveys and final domestic demand;
- Nuances with PT trade flows:
  - *definition* of certain services is different in national versus provincial system therefore international trade of services is not equal between the two systems (total international trade is),
  - Inter-provincial *services* require special attention: for example, insurance – there could be a disaster in one province, but the insurance company (and staff) are in another province. Therefore, we estimate an interprovincial trade flow of insurance services.

# Industry accounts (IA)

- GDP by industry, by province and territory is estimated for 226 industries plus 111 aggregates thereof, including special aggregations such as ‘goods-producing industries’, ‘energy sector’, ‘public sector’ for each region
  - various levels/aggregations permit targeted analysis and industrial performance reviews
- Estimation method:
  - SUT year – Gross output (GO) and GDP from SUT
  - Beyond SUT year – project GO and GDP in real terms using various indicators, national totals benchmarked to monthly GDP by industry.



# Industry Accounts: key concepts and data sources

- Assumption of fixed real technology coefficients -> changes (real) in the indicator used (output, labour or usage) correspond to changes in (real) value added
- Due to limited data sources, cannot estimate value-added directly so partial indicators of an industry's production function are used
  - Principal outputs, employment, some intermediate inputs
- Deflation: unit values (where quantities and prices are available) or price indexes
- Main data sources:
  - Supply and use tables for SUT reference year
  - Output indicators (Statistics Canada surveys, financial reports), employment, GST, price indexes, etc.
  - Use of Income and expenditure accounts components: Gross output indicators such as investment (construction), household final consumption expenditures (personal services industries), government labour income and depreciation.



# PTEA: Challenges

Although having three measures of GDP (income, expenditure and production) is a source of strength in the PTEA, it can also pose unique challenges:

- Some regions are relatively small and/or are focused in one or two main sectors, in these cases, it is tricky to come to the correct growth rate, adjusting these small regions can also be tricky;
- Derived estimates can show conflicting signals (for example surplus, gross output and trade);
- For years beyond the SUT year, the importance of an industry or sector at the PT level might not always be apparent within the national estimates (PT IA is benchmarked to the national GDP by industry), and so when provincial has a certain target growth there can be a trade-off between revisions at the national level or another region compensating;

# PTEA: Challenges, cont.

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The pandemic introduced new challenges with regional estimation:

- Supply chain disruptions were particularly difficult in smaller regions including rapid price increases
    - Using a national deflator would minimize these regional impacts;
  - Large impacts were felt in services industries
    - regions that are heavily dependent on those industries had a more difficult experience both during the pandemic and with the recovery;
- *Given the projection beyond the SUT year, revisions are larger than before the pandemic and quite different across regions.*

# Additional information

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## PTEA annual releases:

- Provincial and territorial economic accounts, 2022: <https://www150.statcan.gc.ca/n1/daily-quotidien/231108/dq231108b-eng.htm>
- Provincial and territorial economic accounts: Interactive tool: <https://www150.statcan.gc.ca/n1/pub/71-607-x/71-607-x2019022-eng.htm>
- Gross domestic product (GDP) by industry, provinces and territories: Interactive tool: <https://www150.statcan.gc.ca/n1/en/catalogue/71-607-X2019024>
- Supply and use tables, 2020: <https://www150.statcan.gc.ca/n1/daily-quotidien/231108/dq231108f-eng.htm>

## Sub-annual components:

- Stock and consumption of fixed capital (quarterly capital stock program): <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3410016301>
- Wages and salaries: <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3610020501>
- Housing stock in units: <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3610068801>