UNIVERSITY OF CALGARY
HASKAYNE SCHOOL OF BUSINESS

Investments & Portfolio Management

Macro Overview

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The standard of living is driven to a large extent by how well resources are allocated to their best use over time (optimal allocation).

- Pareto optimal: "...impossible to reallocate so as to make any one individual or preference criterion better off without making at least one individual or preference criterion worse off."
- Resources are re-allocated as consumers' preferences evolve, new goods and services become available, new technologies emerge, etc.
- If industry A loses relevance to industry B, A will use less resources while B will use more.

Other key factors also influence the average standard of living

- Quantity and quality of resources: human, institutional, natural, ...
- New technologies, public policies, trade, ...

Distributional issues can arise (how the 'cake' is divided influence its size).

Opportunity to create value if re-allocation is correctly anticipated, and vice-versa.

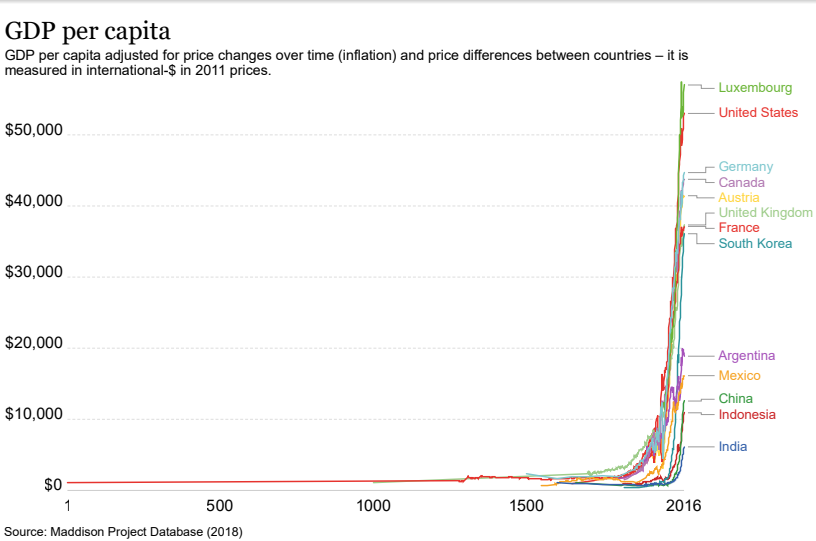
Economic perspective: mis-allocation of resources

A number of factors might divert resources from their best use.

- 'Acts of god' (hurricanes, fires, earthquakes, floods, etc.)
- Armed conflicts (wars between countries, civil wars, anarchy, etc.)
- 'Power grabs' (dictatorship, authoritarianism, ideology, etc.)
- Market failures (mitigation requires: central banks, securities commissions, warranties, 'polluter pays', labor laws, etc.)
- Market inefficiencies (ill-advised public policies, lack of institutional capital, corruption, vested interests, outdated cultural norms, discrimination, behavioral biases, etc.)
- Market frictions (asymmetric information, incomplete contracts, search costs, transaction costs, bankruptcy costs, taxation, etc.)
- Inertia, plain stupidity, and misplaced good intentions.

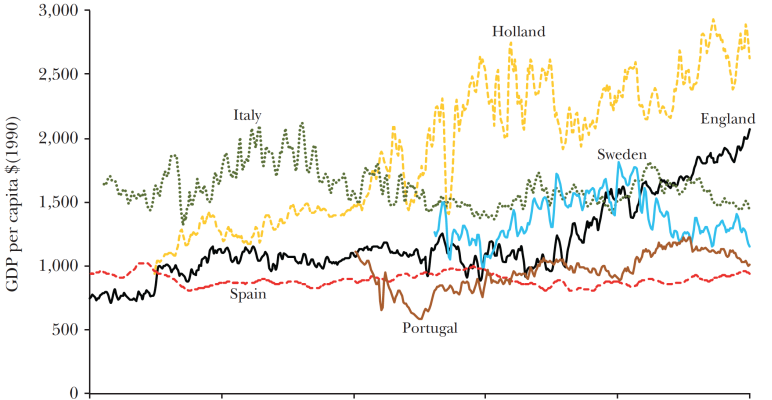
All of the above can result in value destruction and/or prevent value creation from happening (and therefore result in a lower standard of living than it would be otherwise the case).

Sustained economic growth is a recent phenomenon



GDP per Capita in Selected European Economies, 1300–1800

(three-year average; Spain eleven-year average)



Source: Fouquet and Broadberry (2015)

The Solow-Swan Growth Model (1956) - the basic reference model

$$Y(t) = F(K(t), A(t)L(t))$$

- Y: output (e.g. GDP)
- K: capital
- L: labor
- A: 'effectiveness of labor' or 'technology'

The size of the economy is a function of the amount of capital, labor and knowledge which together are combined to produce output.

A certain standard of living requires the accumulation of physical capital, either owned by individuals (capitalism), or by the state (socialism), or by individuals and the state (mixed economy). **But what drives such accumulation of physical capital?**

The output (GDP) is distributed between capital and labor

- as financial return to the owners of physical capital (real assets) and as wages to labor.

But physical capital depreciates from wear and tear as well as from technological obsolescence.

To maintain the stock of physical capital, a portion of output is used for new physical capital.

- A further portion of output is needed to increase the stock of physical capital.

The output being, in fine, all owned by households, they need to be induced into deferring consumption for a portion of output to be 'diverted' into the creation of new physical capital.

- The inducement offered to households is usually under the form of a promise of future consumption (e.g. saving for your retirement under the form of financial assets).

The above is referred to as '**capital formation**' (i.e. the net addition to the stock of physical capital). It leads to the creation of the financial economy and to the accumulation of wealth.

The standard of living today, as proxied by GDP per capita, is the result of past sustained economic growth which occurred over time.

There are enormous differences in standards of living across countries.

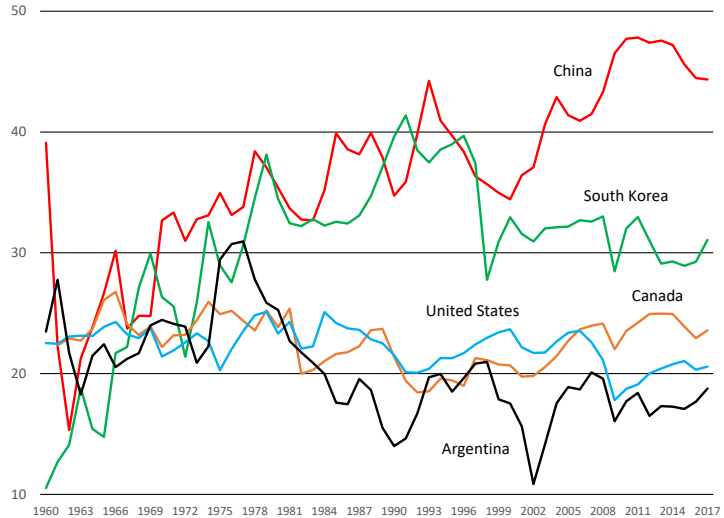
Growth miracles

- Japan (#24 $39,306)
- Singapore (#7 $64,041)
- South Korea (#28 $31,346)
- China (#67 $9,608)

Growth disasters

- Argentina (#59 $11,627)
- Venezuela (#121 $3,375)
- Mozambique (#180 $476)
- North Korea (?)

Gross capital formation for selected countries (as % of GDP)



Standard of living in Canada (as proxied by GDP)

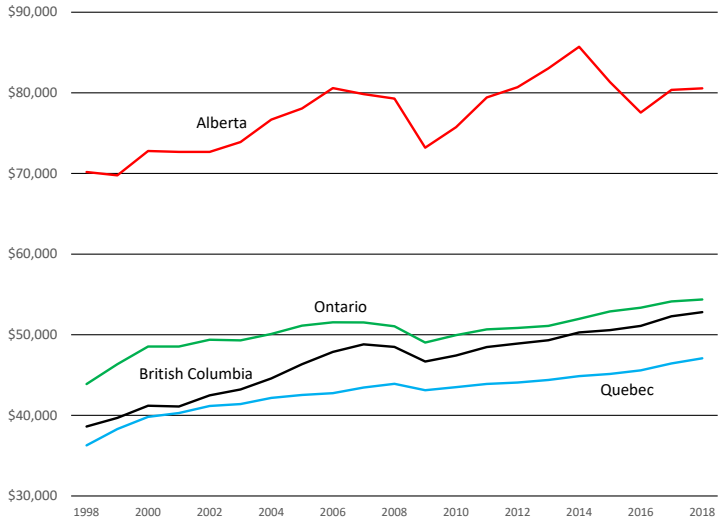
The standard of living in Canada, as proxied by GDP per capita, differs by Province.

Gross capital formation (i.e. capital spending) also varies between Provinces.

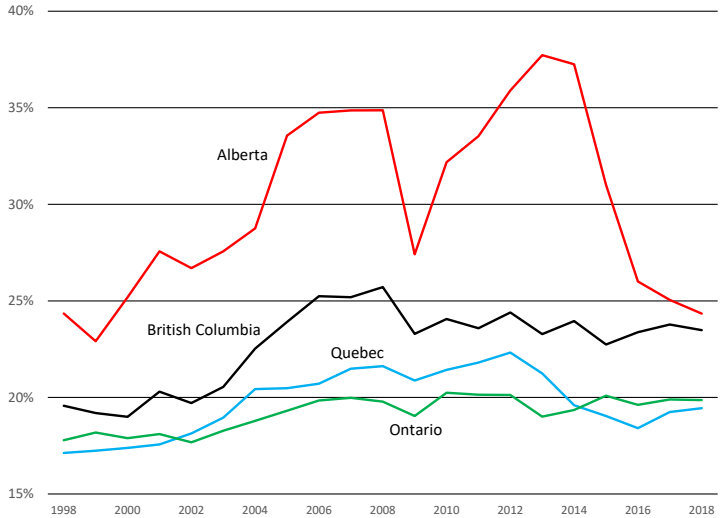
"Using data from the Canadian Productivity Accounts, Baldwin and Gu (2009) demonstrate that long-run changes in business sector productivity are primarily due to increases in capital intensity—in effect the volume of machinery and equipment (M&E) and structural assets that are available to support the production of goods and services, as measured per unit of labour worked. From 1961 to 2008, Canadian labour productivity grew on average by 2.0% per year, with 1.3% of this 2.0% annualized growth attributable to increases in capital intensity."

It illustrates how important the level of capital formation on the standard of living is over time.

Gross Domestic Product (constant $ per capita)



Gross capital formation (as % of GDP)



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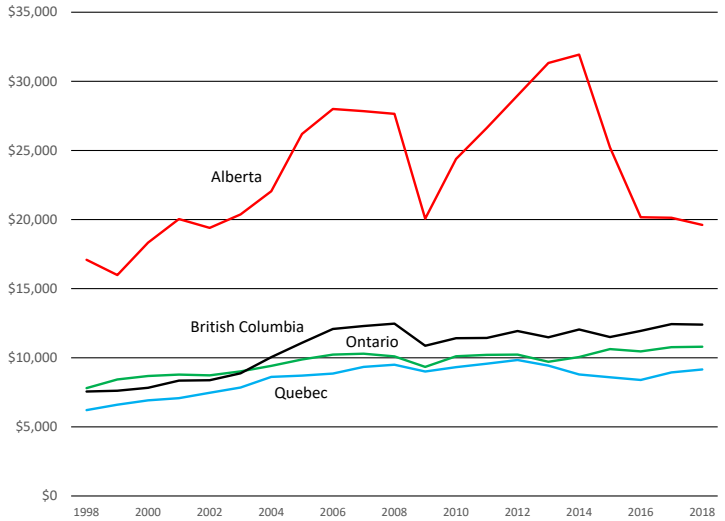
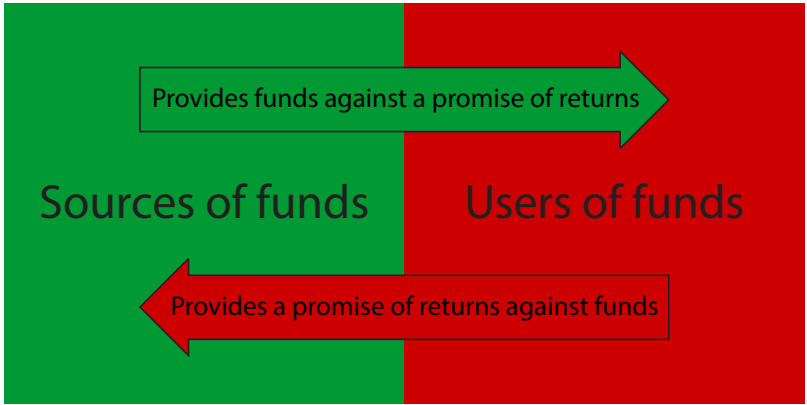


The financial economy is the clearinghouse of capital



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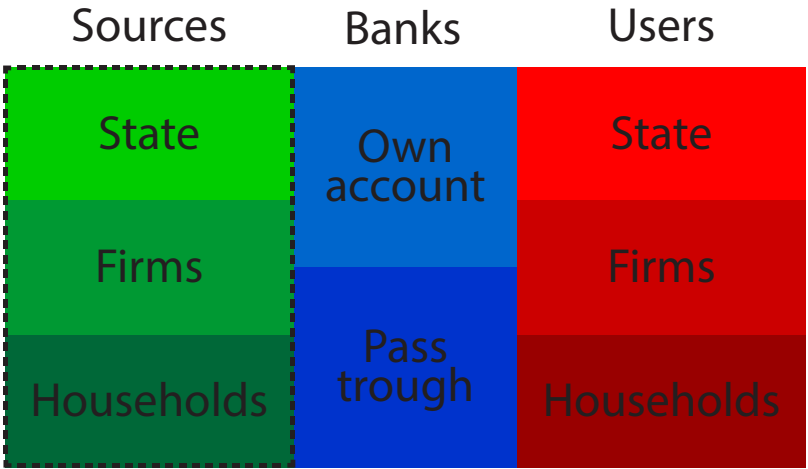

The roles played by the financial economy

The informational role and separation of ownership and management

- Capital flows to its best use (e.g. to companies with best prospects), requiring enormous amount of information to flow through the financial economy, ensuring 'market efficiency'.
- Allows for separation of ownership and management required for large economies of scale.

Consumption timing

- Securities can be used to store wealth and transfer consumption from the present to the future or from the future to the present (allowing useful consumption smoothing).

Provision of liquidity

- Securities can be bought and sold quickly and at low cost.
- Banks provides liquidity notably through lines of credit and the repo market.

Allocation of risk

- Investors can select securities and construct portfolios consistent with their risk tolerance.
- It allow risk (all kind of) to be borne by investors most capable and willing to bear risk.
- Risk can be shared and netted via the financial economy (e.g. using swaps and futures).

Financial assets

Money

- Gold and silver coins
- Paper money backed by gold
- Paper money backed by the full faith of the state

Debt (aka Fixed Income)

- Loans, bonds, convertible bonds, all kinds of exotic bonds

Equity

- Common and preferred shares

Derivatives

- Options, futures, swaps, forwards, etc.

Packaging and structuring

- Mutual funds, ETFs, REITS, securitizations, etc.

A short history of finance know-how and knowledge

Prior to the rise of academic finance (aka financial economics)

- Know-how developed by trial and error, descriptive knowledge

The rise of financial economics (as a branch of microeconomics)

- Based on expected-utility (von Neumann-Morgensen 1944), state prices (Arrow-Debreu 1954), and equilibrium by arbitrage-free pricing
- Present value (Fisher 1907) and separation theorem (Fisher 1930)
- Modern portfolio theory (Markowitz 1952)
- Capital structure (Miller-Modigliani 1958 and 1963)
- CAPM (Sharpe 1964), efficient markets (Fama 1970), APT (Ross 1976)
- Derivatives (OPT, Black-Sholes-Merton 1973)
- See https://en.wikipedia.org/wiki/Financial_economics

Limits and criticisms of financial economics

- Often relies on strong assumptions (complete markets, no frictions, etc.)
- Actual behavior (Allais 1953) and limited cognition (Simon 1955)
- Rise of behavioral finance as a modern version of rationality
- 'The Limits of Arbitrage' Shleifer and Vishny (1997)
- Quite a large number of 'anomalies' (e.g. the equity premium puzzle)

How well does traditional academic finance delivers?

One can have academic academic finance work very well most of the time.

- By using 'latest generation' models and methods
  - Rather than CAPM, use multi-factor models (3, 4, and 5 factors);
  - Use OPT model with stochastic volatility (do not assume constant volatility).
- By 'calibration' (bridge empirical delta if small and shows regularity)
  - If beta mean revert to 1, adjust estimated beta according to mean-reversion within given forward-looking time frame;
  - Calibrate interest rate model to information contained in current market conditions.

Beware that sometimes or in some circumstances it does not work well...

- During a sustained 'bubble', like the internet and MBS bubbles;
- During short but extreme herding episodes (e.g. flash crashes);
- Unexpected consequences of financial innovation;
- When wise people take advantage of naive people.

How important is finance today?

Finance is the main driver of the optimal allocation of resources and one of the main determinants of the standard of living.

- Equity markets: new information is incorporated quickly into stock prices and analysts provide on-going commentary.
- Debt markets: large amounts of capital available quickly.
- Derivative markets: allow for risk management and hedging.

The rise of 'active finance' (i.e. finance driving management)

- Mergers and acquisitions from the 1980s onward
- Venture capital (the rise of Silicon Valley)
- Private equity
- Activist shareholders
- Fiduciary duties of institutional investors
- Environment, Social and Governance (ESG) criteria