Aggregate expenditures, pt. 1

EC 103–003

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Motivation

Housekeeping

Required readings:

- Case, Fair, & Oster (2012), ch. 8.
    - See *Extra Readings* module on `theSpring`.

Macroeconomic modeling

Over the past weeks, we have studied the main **macroeconomic measures**:

- *Output* (GDP, GNP);
- *(Un)employment* (unemployment rate, labor force, ...);
- *Inflation* (CPI, Core CPI, GDP deflator, ...);
- *Monetary policy* (interest rates, the role played by central banks, ...);
- *International trade* (exchange rates, current account, balance of payments, ...).

Macroeconomic modeling

We have also studied how these variables are **connected**:

- *Okun's law*;
- *Phillips curve*;
- The FED setting a target *federal funds rate*;
- The trade balance and *debtor/creditor* status.

Macroeconomic modeling

Now, we have enough background to put these pieces together and start **modeling** the macroeconomy.

We will start **slowly**.

- First, we will focus on **aggregate consumption and investment**.
- That is, expenditures made by **households and firms**.

$$GDP = \mathbf{C + I} + G + (X - M)$$

Aggregate consumption

Aggregate consumption

Starting off with **households**, their expenditures on *goods* and *services* represent almost **70%** of total US GDP.

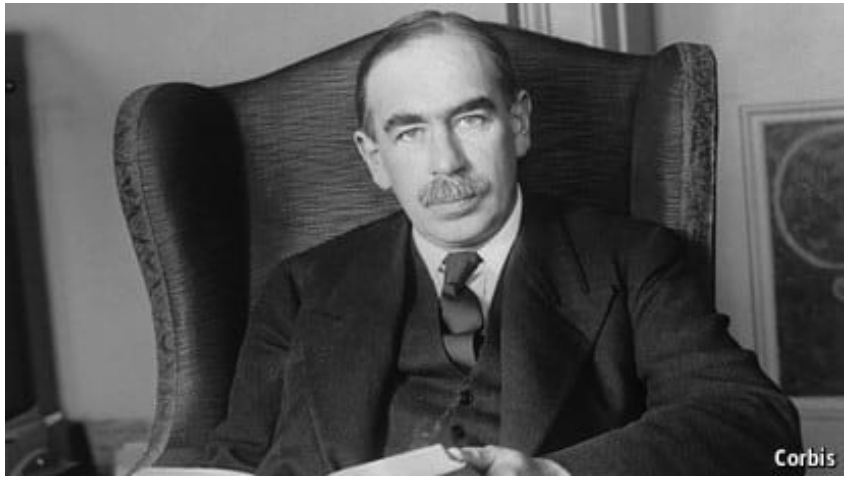
`Official data`

For you as a household, what is the **most important economic factor** determining your *how much* you consume?

- And what are some *secondary* factors?

Aggregate consumption

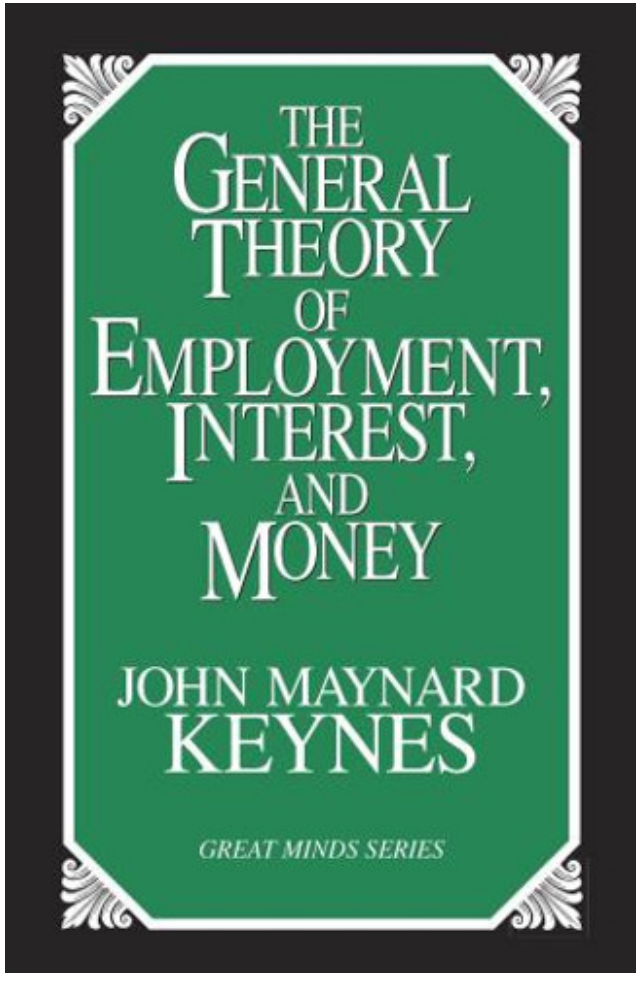
John Maynard Keynes (1883—1946) formalized the idea that **personal income** is the most relevant factor determining one's consumption, thus being important at the **aggregate level** as well.



Aggregate consumption

In *The General Theory of Employment, Interest, and Money* (1936), Keynes wrote:

> *"The fundamental psychological law, upon which we are entitled to depend with great confidence both a priori from our knowledge of human nature and from the detailed facts of experience, is that men [and women, too] are disposed, as a rule and on average, to* ***increase their consumption as their incomes increase, but not by as much as the increase in their income****."*



Aggregate consumption

Keynes is pointing out **two** main things:

1. Consumption tends to *increase* with income;
2. Their relationship is positive, but consumption does not increase by the *same proportion* as one's income.

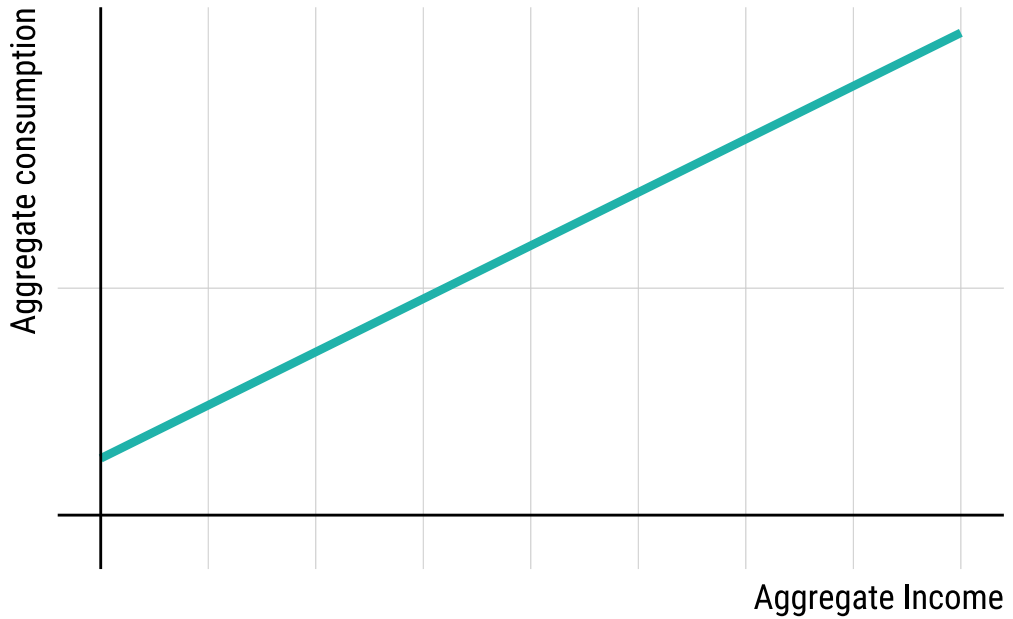
And this applies both at the **micro** and at the **macroeconomic** levels!

Aggregate consumption

With Keynes' idea in mind, how do we **formalize** this theory?

- In other words, how do we **model** this situation *mathematically*?

Let us start by thinking in graphical terms.



Aggregate consumption

Since we are assuming that aggregate consumption only depends on aggregate income, we may call the **consumption function** $C(Y)$.

And put in an equation form:

$$C = a + bY$$

- What do a and b represent here?

Aggregate consumption

Every time income *increases* (call it ΔY), consumption will *also increase* (call it ΔC).

Thus, **how much** consumption changes when income changes can be given by

$$\frac{\Delta C}{\Delta Y}$$

In other words, this is the **fraction** of a change in aggregate income that is spent on consumption.

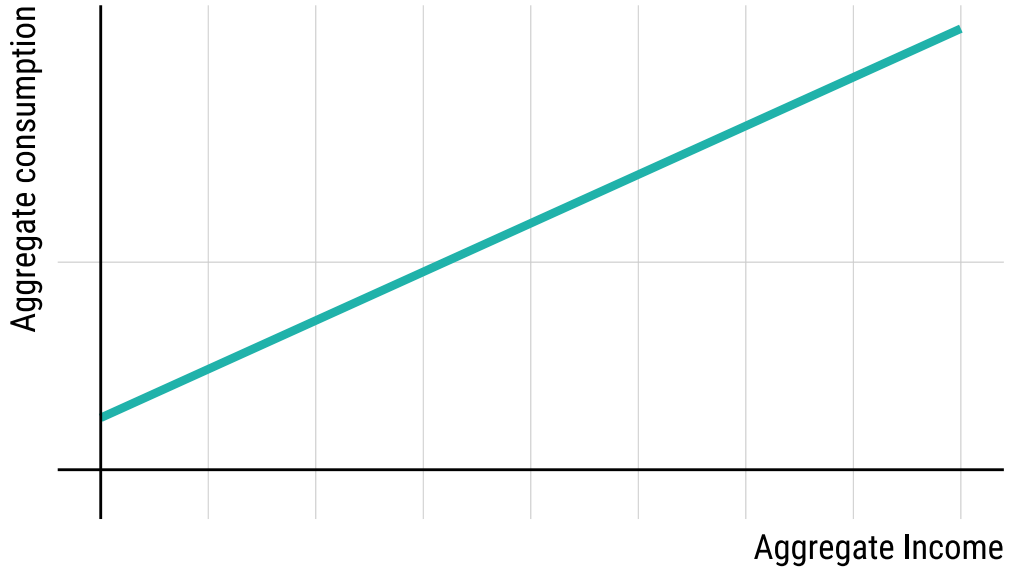
In economic terms, this fraction is called the **marginal propensity to consume** (*MPC*).

As an example, if income increases by \$200 ($\Delta Y = 200$), an **MPC** of .5 means that consumption increases by $0.5 * 200 = 100$.

Aggregate consumption

From a graphical perspective, the **marginal propensity to consume** is equivalent to the consumption function's **slope**.

If its value is *less than* **1**, Keynes' claim is *verified*: individuals spend less than 100% of their income increase in consumption.



Aggregate saving

Aggregate saving

The portion of one's income that is **not** spent on consumption is **saved**.

From an **aggregate** perspective, the part of aggregate income (Y) that is not consumed (C) becomes **aggregate saving** (S).

$$S \equiv Y - C$$

Notice that the "equivalent to" sign (≡) means an **identity** (something that is always true).

Thus, the **marginal propensity to save** (MPS) is equal to

$$MPS \equiv 1 - MPC$$

MPS is the fraction of an increase in income that is *saved* (or the fraction of a decrease in income that comes out of saving).

Planned investment

Planned investment

Consumption of goods and services are a major part of aggregate expenditures.

However, **investments** made by *firms* are also part of the economy's output.

Recall that **aggregate investment** includes

- Purchases of machinery, equipment;
- Structures;
- Software, research & development;
- Residential investment.

`Official US data`

In addition to these items, aggregate investment also includes **changes in inventories**.

Planned investment

A firm's **inventory** is the stock of goods that it has *awaiting sale*.

There are several **reasons** for firms wanting to hold inventories:

- Cheaper to produce in larger volumes;
- Unexpected changes in consumer behavior;
- The current economic scenario.

That being said, while the firm's decisions to purchase new machinery or to hold inventories are **deliberate**, sometimes inventories build up (or decline) **without any deliberate plan** by firms.

For this reason, there can be a difference between **planned** and **actual** investment.

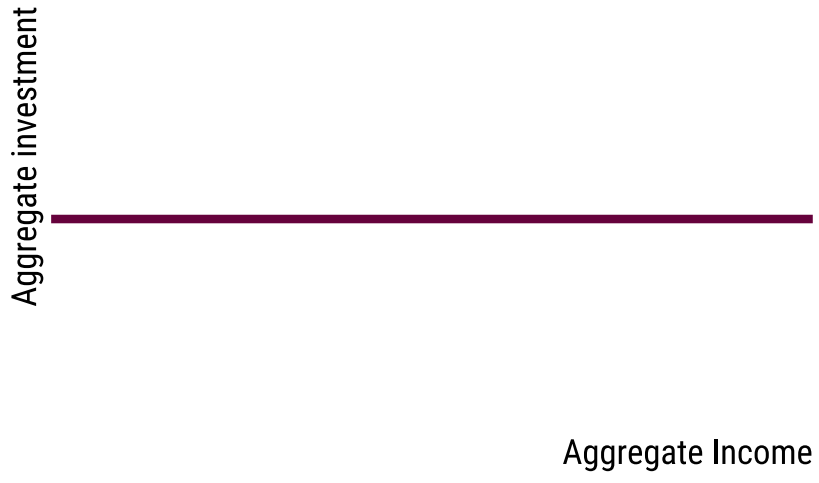
Planned investment

For simplicity's sake, we will assume for now that aggregate investment equals **planned** investment.

Thus, we will **not** account for differences between actual and planned investment.

- Later on, we will *relax* this assumption.

In practice, this means that firms' planned investment is **fixed** and **does not** depend on income.



Next time: Equilibrium; the multiplier