

Lecture 19

Money and Banking, Econ 345

Oleksiy Kryvtsov

March 5, 2010

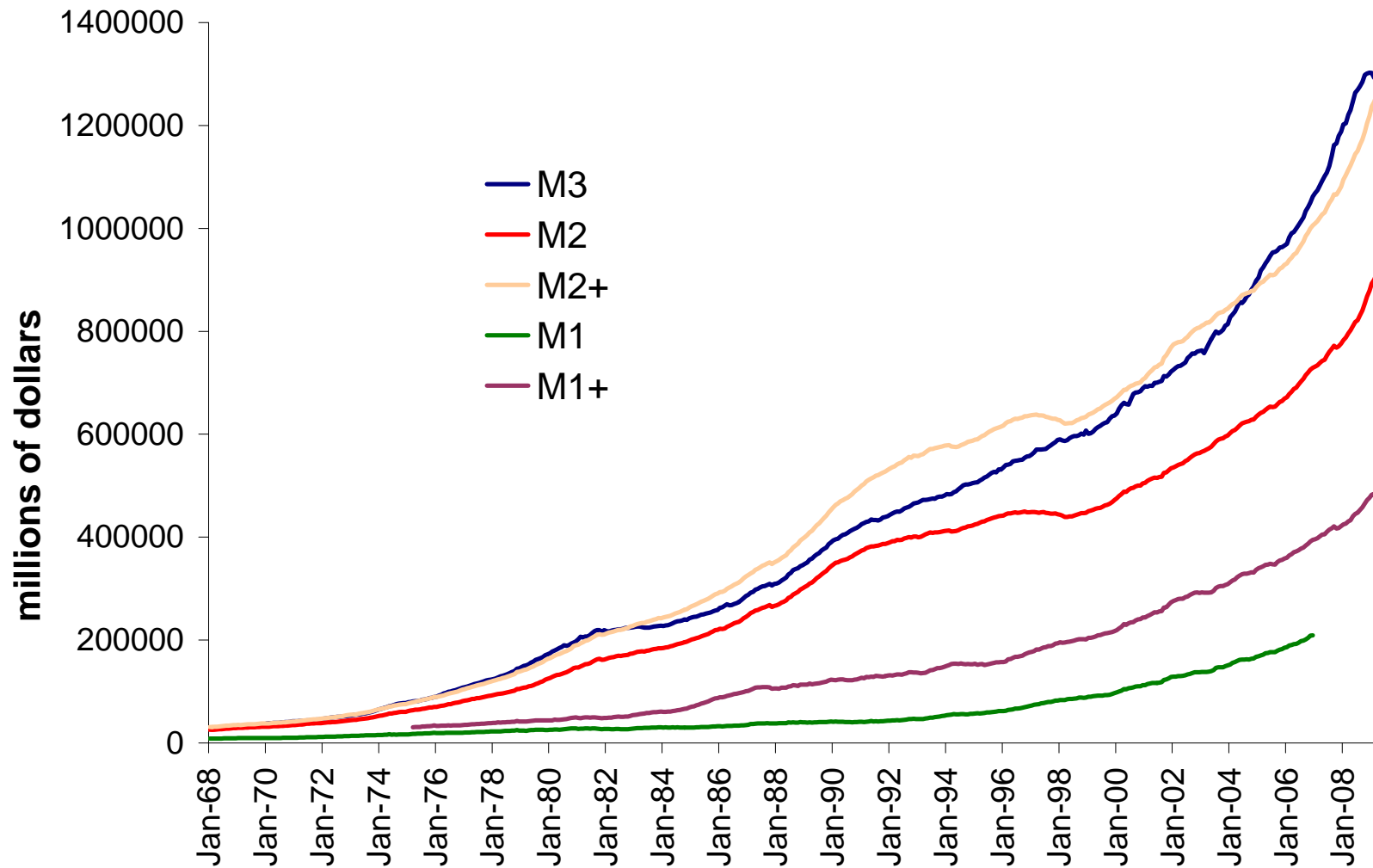
Introduction

- Main goal of the central bank is control price level (inflation) in the economy
 - also seignorage but it is typically small
- Three ways of managing total money supply:
 - change in money base (printing money)
 - reserve requirements (not a common way because of its adverse effect on banks liquidity)
 - loans to private banks
- In economies with inside money (in addition to fiat money) - how to measure the total money stock?

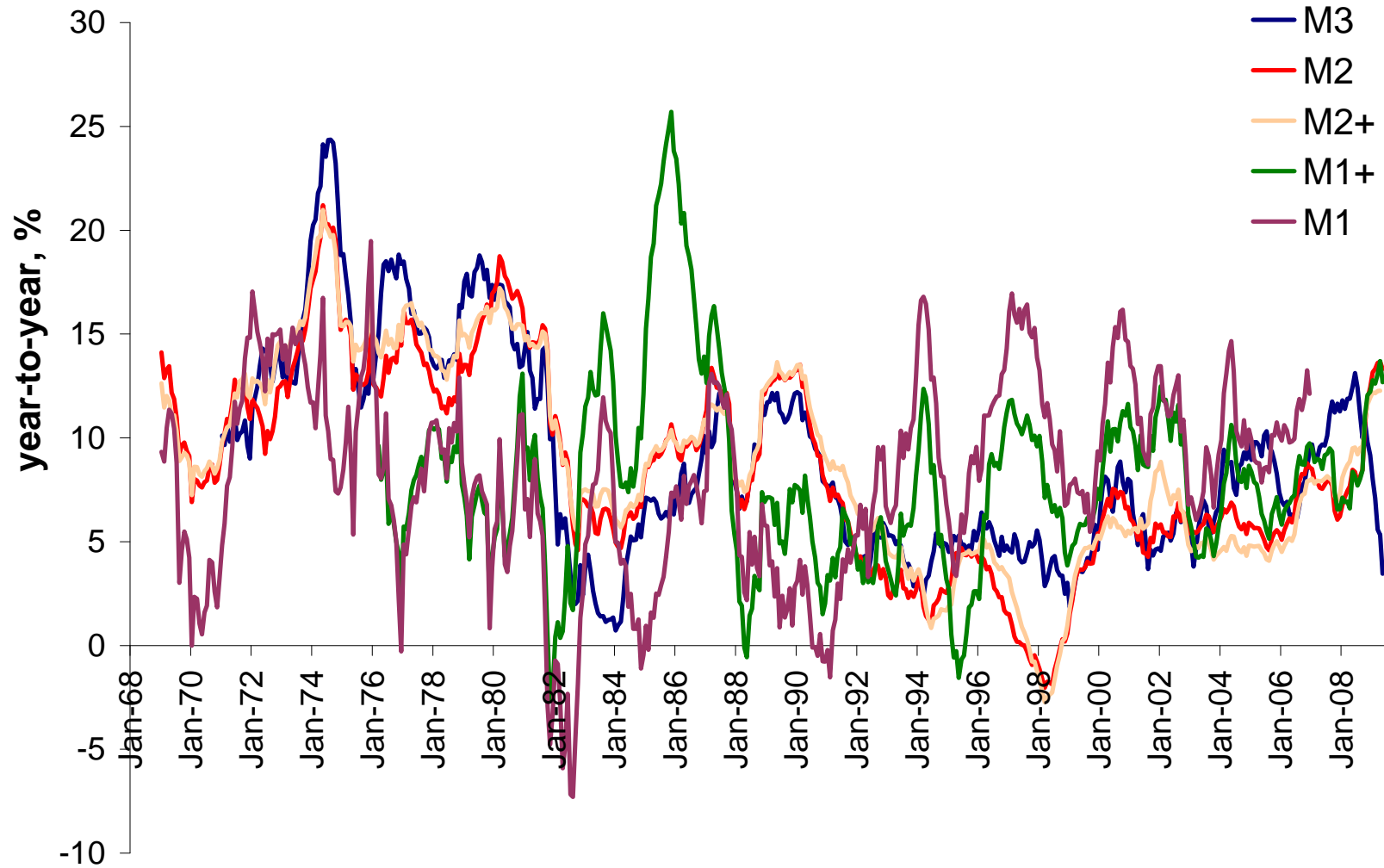
Monetary aggregates

- Total money stock measure is **subjective** (by country, across time)
- We will consider Canada
- M1: highly liquid assets (medium of exchange)
 - currency + demand deposits
- M2 : $M1 +$ assets that can be converted into a medium of exchange
 - savings and time deposits
- M3: $M2 +$ assets held by businesses
 - foreign currency deposits, nonpersonal time deposits

Monetary aggregates in Canada: levels



Monetary aggregates in Canada: growth rates



Total Money Supply in the Model

- Total money supply in the model is the total nominal stock of deposits at banks
 - corresponds to $M1$
 - recall: no money held as currency
- In economy with reserve requirements $\gamma M1$ must be held in form of fiat money - monetary base, M

$$M1_t = \frac{1}{\gamma} M_t$$

- total money supply can be increased by lowering reserve requirements or increasing monetary base
- 1% increase in monetary base will lead to a $\frac{1}{\gamma}$ % increase in money supply
- $\frac{M1_t}{M_t} = \frac{1}{\gamma}$ is the **money multiplier**

Total Money Supply in the Model

- Recall that the price level was $P_t = \frac{M_t}{\gamma N_t h_t}$, which now can be written

$$P_t = \frac{M1_t}{N_t h_t}$$

- Prices change in proportion to M1 (recall Quantity Theory of Money)
- Effect on price depends on the tool used to change M1
 - return on deposits is affected differently by decrease in γ vs increase in M_t

Rate of return on deposits

- What rate of return on deposits should banks offer?
- Competition will force banks to offer depositors the rate of return they earn on the assets
- Each good-unit of deposit is split between reserves and investment, earning
 - $\frac{n}{\mu}$ from reserves
 - \sqrt{X} from investing in capital
- The return on deposit equals then to

$$\begin{aligned}r^* &= \gamma \frac{n}{\mu} + (1 - \gamma) \sqrt{X} \\ &= \sqrt{X} - \gamma \left(\sqrt{X} - \frac{n}{\mu} \right)\end{aligned}$$

- Hence return on deposits is higher if
 - reserve requirement γ is higher
 - return on fiat money n/μ is higher
 - return on capital \sqrt{X} is higher

M1 is tightly linked to price level

- M1 can be increased by
 - decreasing reserve requirements γ
 - increasing monetary base M_t
- Real return on deposits is
 - higher if γ is lower
 - lower if monetary base is higher
- Effect on real demand for deposits depends on the way of increasing $M1$, leading to different effect on price
- Money supply $M1$ is more tightly linked to price level than monetary base M
 - recall: Quantity Theory of Money