

# Lecture 7

Money and Banking, Econ 345

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# Inflation acts as a distortionary consumption tax

- With lump-sum tax the budget constraint coincides with resource constraint
- So with lump-sum tax government raises revenue without distorting the budget set relative to feasible set of allocations
  - Inflation (seignorage) tax - distortionary because old pay tax  $c_2 (\mu - 1)$  which increases with  $c_2$
  - Lump-sum tax - non-distortionary, old pay tax  $\tau$  independently of  $c_2$
- Governments prefer not to use lump-sum taxes
- How much revenue can government raise by seignorage?

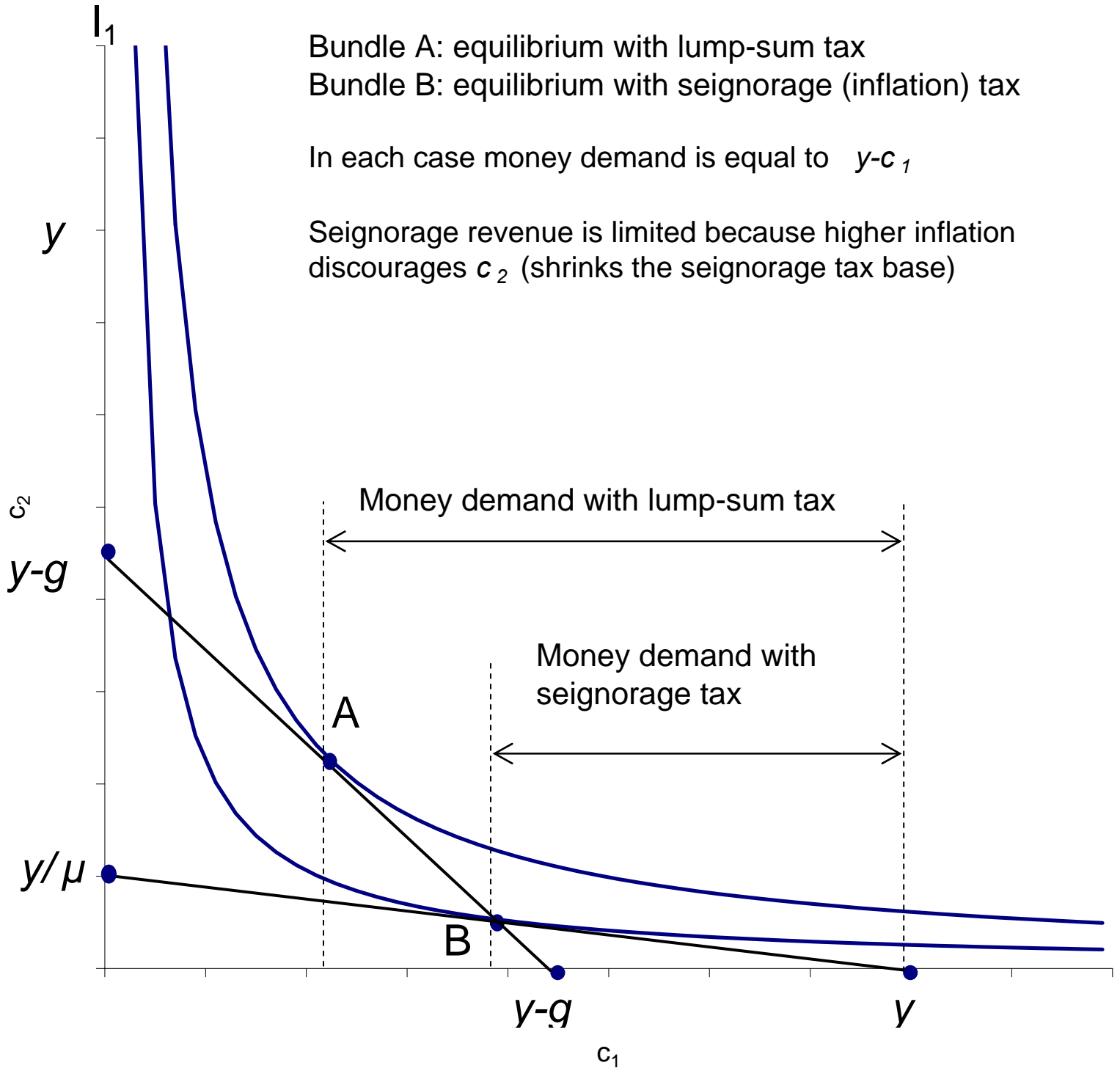
## Why seignorage revenue is limited?

Bundle A: equilibrium with lump-sum tax

Bundle B: equilibrium with seignorage (inflation) tax

In each case money demand is equal to  $y - c_1$

Seignorage revenue is limited because higher inflation discourages  $c_2$  (shrinks the seignorage tax base)



# **Hyperinflation in Ukraine, 1993-1994**

## Questions to answer

1. What is hyperinflation?
2. Why did it happen in Ukraine in 1993-1994?
3. What changed in 1994-1996 to bring inflation down?





-  Embassy
-  Other post

## Ukraine (background)

- Location: Eastern Europe, border with Black Sea, between Poland and Russia.
- Area: 233,000 sq.mi (  $\approx$  Saskatchewan), 2<sup>nd</sup> largest in Europe.
- Population: 49 million (  $\approx$  1.5 times Canada).
- Independence: 24 August 1991 (from Soviet Union).
- Economy (2006-2008) :
  - ⇒ GDP =  $\frac{1}{4}$  GDP Canada
  - ⇒ GDP/capita = 7,342\$ (1/5 of Canada)
  - ⇒ Growth GDP = 7.8 % (1.7 % in Canada)
  - ⇒ CPI Inflation = 25 % (2 % in Canada)

# What is hyperinflation?

- Inflation reflects how fast prices go up
- Hyperinflation is a very, very high inflation
- Inflation in Ukraine in 1993 was **10,255%** - prices rose by more than 100 times

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- If a similar hyperinflation started today in the Canada then the price of a cheeseburger (99 cents) would become:

1 week	2 weeks	1 month	3 months	half year	Year
1.09	1.19	1.49	3.31	10.00	100.00

- Prices rise ever faster when the government issues ever more money

Increase in money      1992   1993  
                                  x 12   x 15

Compare: in 2000-2009 money in Canada grew 7.5% a year

# Why the government printed so much money?

- Price liberalization and the policy of "soft government credit" in the wake of Soviet Union break down in early 90's...
- ... caused large budget deficits (up to 14% GDP)
- Deficit = Dom. Borrowing + Foreign Borrowing + Printing Money
  - No dom. borrowing - immature financial system
  - No foreign borrowing - lack of credibility of the government
- Hence printing money to cover the deficit was the only choice in 1992-1993

## Not everyone disliked hyperinflation

- Producers loved it - cheap (zero interest) credits, lobby the government
- Banks loved it - very high interest rates (thousands percent), lobby the government
- Consumers hated it - savings depleted by 26 times in 1992-93:
  - "car savings" of 7,000\$ became 270\$ by the end of 1993
  - student monthly stipend could buy:
    - in 1991 - dress suit, in 1993 – 1 kg of bananas
- Government hated it - no chance for reelection (incentives for corruption)

# How does the government collect revenue from printing money?

- The amount of revenue from new money (seignorage) depends on how fast prices are catching up...
- ... which depends on people's beliefs (expectations) of future prices
- Harder to forecast future prices:
  - lack of reliable data
  - little credibility of government announcements
  - confusion by price liberalization, monopoly pricing by state firms,

rising costs of energy imports, currency speculation

- As people expect higher prices, there is a "flight from domestic currency":
  - buying foreign currency
  - buying consumer durables
  - firms make payments in kind instead of using money
- ... government can still collect seignorage by printing money faster than people expect (3Q:1993 seignorage revenue was equal 93% GDP!)

## Was the end of hyperinflation inevitable?

- Yes. "Race" between more money and higher prices would eventually end:
  - collapse of the currency (money loses its value), or ...
  - ... government stops printing money (Ukraine, 1994)
- By 1995-96 stabilization became very likely as financing deficit through inflation exhausted itself.

## Monetary reform: September 1996

- Favorable conditions for reform: lower inflation (0.1% in June-July), lower deficit
- New currency, the **hryvnia**, introduced on September 2, 1996
- Conversion 100,000 karbovantsi to 1 hryvnia, no restriction on the amounts
- During September 2-16 95.5% of cash in circulation had been converted



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## What have we learned?

- Hyperinflation in Ukraine was a fiscal phenomenon
- Record numbers: inflation - 10,255% in 1993, seignorage - 93% GDP in 3Q:93
- Dramatic toll on households' savings
- Seignorage revenue is limited by real value of money stock in the economy
- At the end of hyperinflation that value is zero
- Stabilization in 1995-96 and ensuing monetary reform 9/1996 were logical outcomes of inflation process