Macroeconomics II: The Circular Flow of Income

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introduction

- "What is annually saved is as regularly consumed as what is annually spent, and nearly in the same time too; but it is consumed by a different set of people. That portion of his revenue which a rich man annually spends, is in most cases consumed by idle guests…That portion which he annually saves, as for the sake of the profit it is immediately employed as a capital, is consumed in the same manner…but by a different set of people", Adam Smith, 1776.

OECD macroeconomic performance

	OECD	EU	USA	JAPAN	GERMANY	FRANCE	ITALY	UK
Output Growth								
1960-1973	4.9	4.7	4.0	9.7	4.3	5.4	5.3	3.1
1973-1979	3.2	2.6	2.9	3.5	2.4	2.7	3.5	1.5
1979-1989	2.9	2.2	2.8	3.8	2.0	2.1	2.4	2.4
1989-1999	2.6	2.0	3.0	1.7	2.2	1.7	1.3	1.9
Unemployment								
1960-1973	2.9	2.6	4.8	1.2	1.0	2.6	5.7	3.3
1973-1979	5.0	4.6	6.7	1.9	3.0	4.4	6.0	4.9
1979-1989	7.3	9.4	7.3	2.5	5.8	8.8	8.2	9.8
1989-1999	7.4	9.9	5.8	3.1	7.5	11.2	10.9	8.3
Inflation								
1960-1973	3.9	4.1	3.1	6.1	3.4	4.9	4.9	4.8
1973-1979	8.8	9.6	7.8	9.5	4.6	11.1	16.7	15.6
1979-1989	5.4	6.6	5.3	2.5	2.8	7.5	11.4	7.0
1989-1999	2.7	3.4	2.4	1.0	2.4	2.1	4.6	3.8

Source: ***Economics of the OECD 2000 exam paper data tables 1, 4 and 5.***

the first National Account

Expenditure		Income	
• Personal Spending	£42m	• Wages	£26m
		• Profits	£8m
		• Rents	£8m
• Total	£42m	• Total	£42m

an example of value added

- A brewer buys barley from a farmer for £10, uses electricity for £20, and a keg for £5. The beer is sold to a wholesaler for £80, to the retailer for £90 and the customer for £100.
- What is the value added?

Farmer	£10
Electricity	£20
Keg	£5
Brewery	£45
Wholesaler	£10
Retailer	£10
Total	£100

measuring national income

- Value Added and Gross Output.
- Three ways to measure GDP:
  - Total Output (sum of all firms' value-added);
  - Total Expenditure on final products;
  - Total Income (sum of wages and profits);
- GDP vs GNP.
- GDP vs NNP.

components of GNP

Indirect taxes are removed from, and firm subsidies added to, NNP, yielding national income at basic prices. After this, national income is distributed between Retained earnings, Corporate taxes, Social security contributions & Household income. The government also transfers money to households, and when this is added in, we get personal income. When income taxes are deducted, we get personal disposable income.

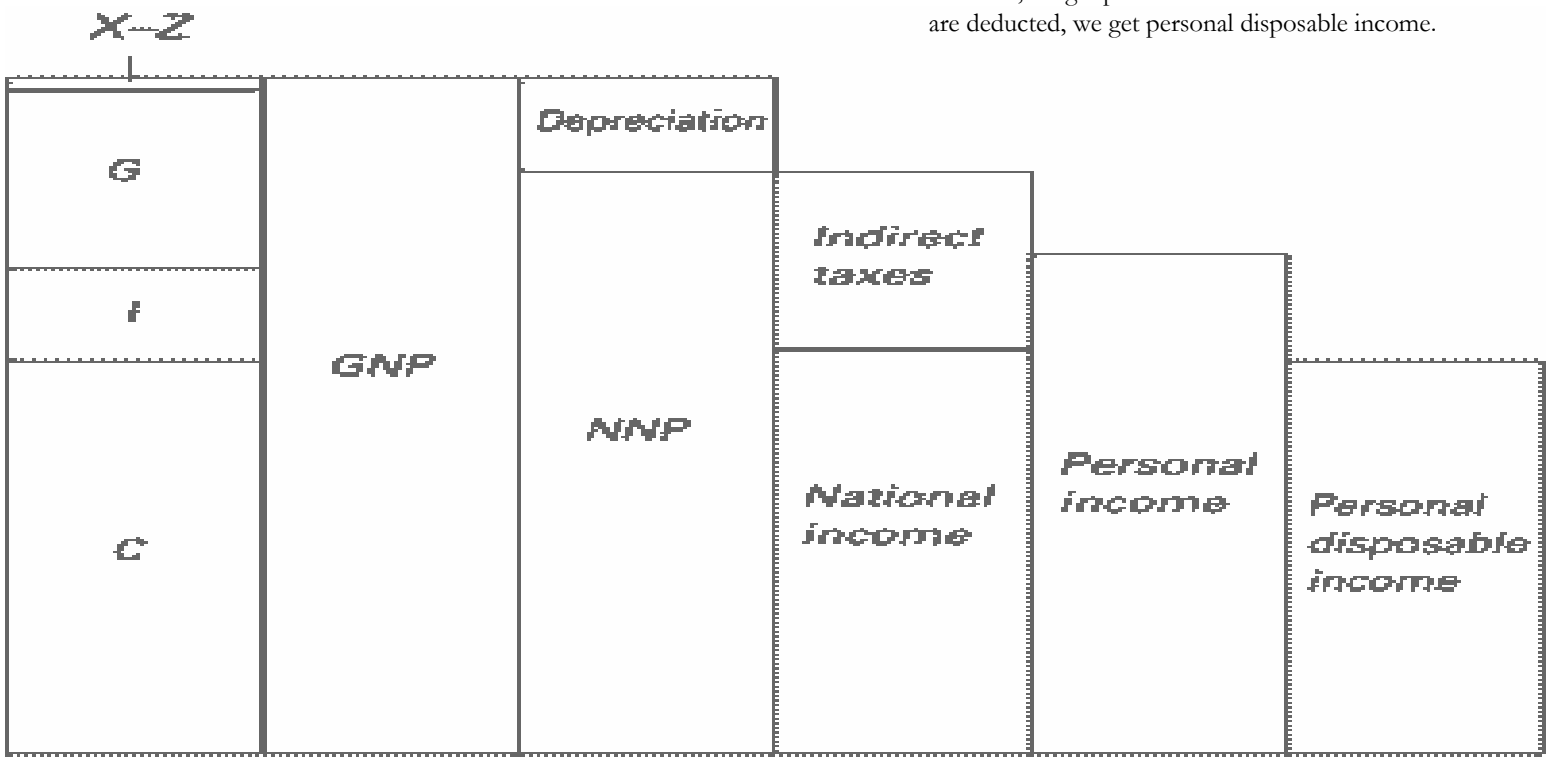


Figure 2.3. From Expenditure to Income to Personal Disposable Income

US GDP 2000

•	GDP	$9873b	
	Consumption	$6728b	
	Investment	$1768b	
	Net exports	-$364b	
	Government	$1741b	
	Net foreign	-$12b	
•	GNP	$9861b	
	Depreciation	$1241b	
•	NNP	$8620b	
	Taxes	$763b	
	Subsidies	$38b	
•	NI	$7981b	

•	NI	$7981b
	Employees	$5715b
	Proprietors	$715b
	Rent	$142b
	Corp profits	$876b
	Net interest	$532b
•	PI	$8319b
	Personal taxes	$1288b
•	PDI	$7031b
	Outlays	$6963b
•	Personal Saving	$68b
•	Personal Saving / PDI	1.0%
•	National Saving / GDP	18.1%

is GDP a good measure of welfare?

- Consumer surplus;
- Externalities (positive and negative);
- Non-market exchanges (housework, underground economy);
- Depreciation of capital (physical, human and environmental);
- Inflation, quality change;
- Exchange rates, PPPs;
- Inequality;
- Keeping up with the Jones's;
- Happiness.

injections and withdrawals

- In equilibrium, planned spending must equal actual spending in the economy. Ex ante spending must equal ex post spending.
- Expenditure is the sum of its components:
  - $Y \equiv C+I+G+NX$
- C is consumption, I is investment, G is government spending, and NX is net exports (exports minus imports).
- Injections into the circular flow of income must equal withdrawals:
  - $S+T+M \equiv I+G+X$
- S is Saving, T is Taxes, M is imports, I is investment, G is government spending, and X is exports

the circular flow of income

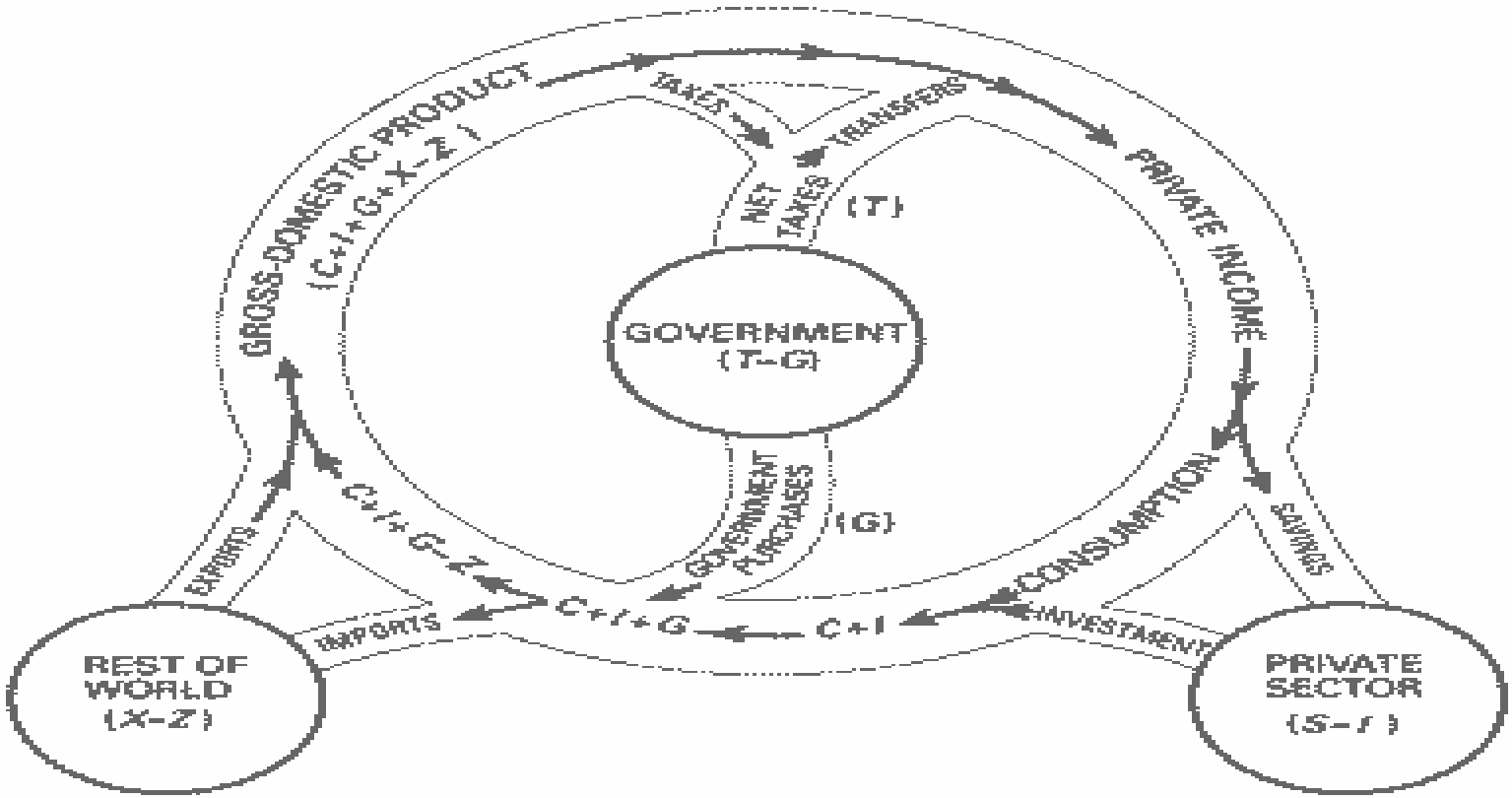
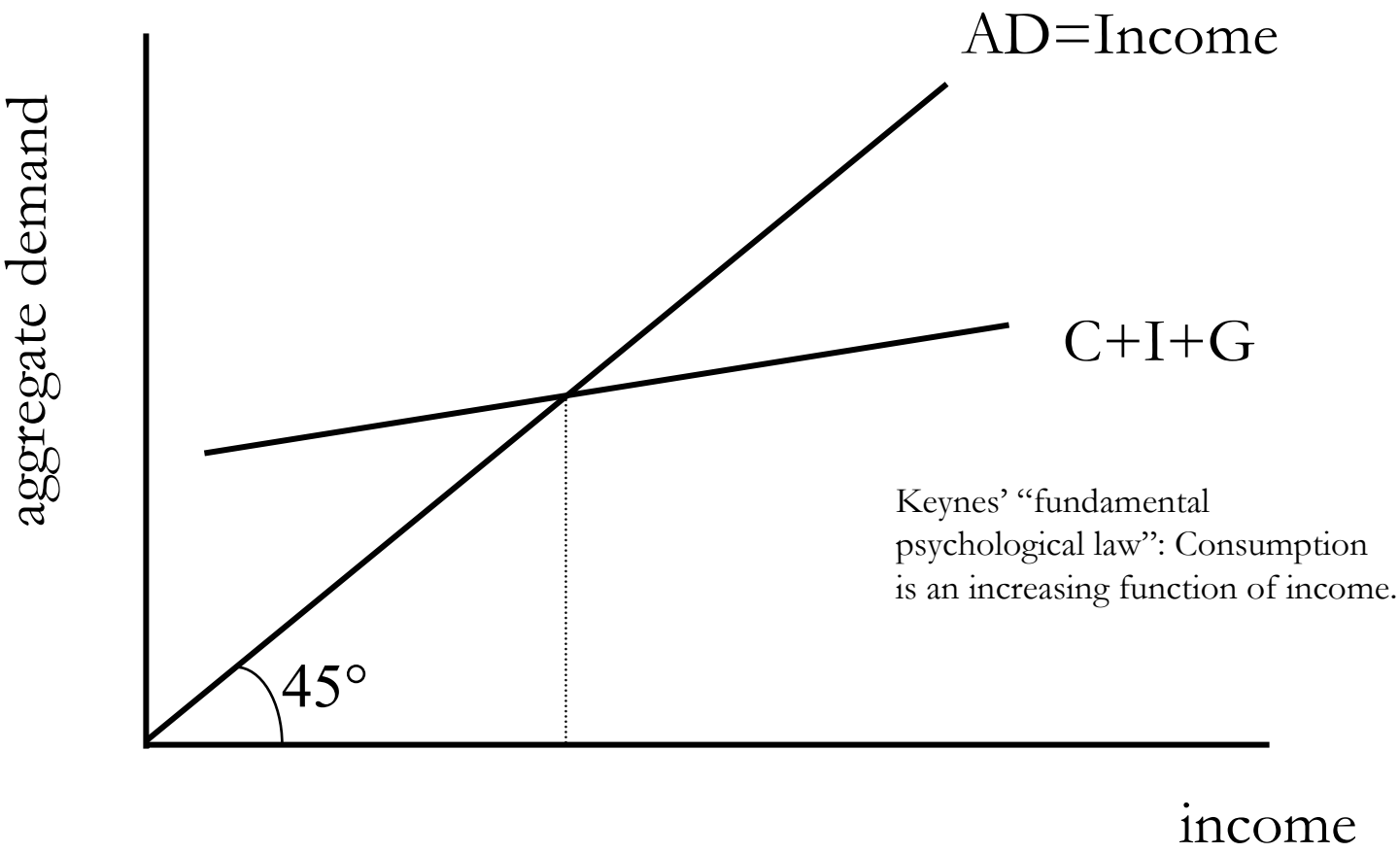


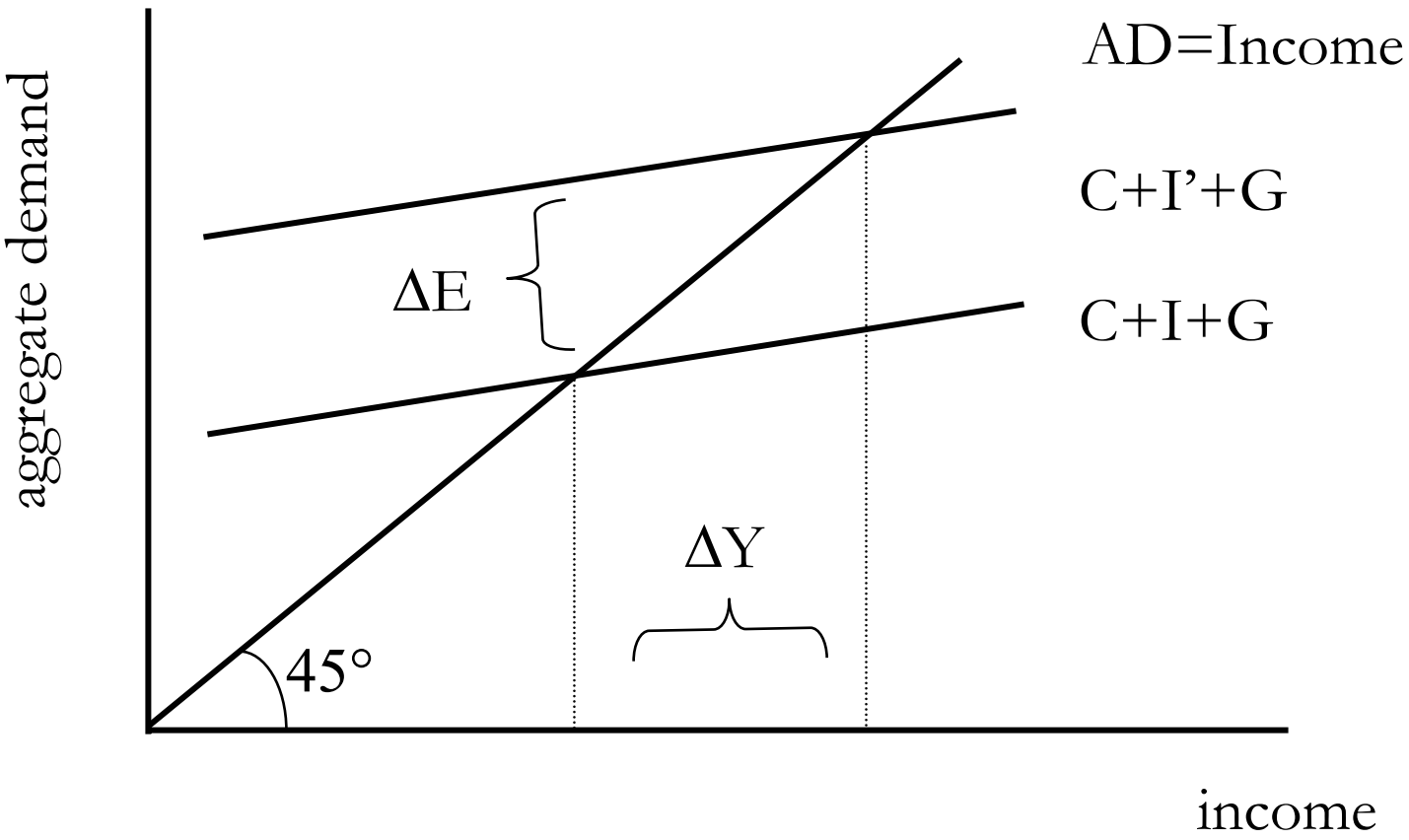
Figure 2.2. The Circular Flow Diagram

aggregate expenditure



Keynes' "fundamental psychological law": Consumption is an increasing function of income.

a simple multiplier



key assumptions

- If prices and wages are fixed in the short-run and there are unemployed resources, changes in aggregate expenditure will be reflected in changes in output and income.
- In the longer term though, wages and prices are flexible. Changes in aggregate expenditure will therefore tend to lead to changes in the price level, but not output.
- Here we just look at short-run fluctuations, not long-run growth.

income generation

- Consumption depends on income.
- Suppose that 80% of each pound of income is spent on consumer goods: C=0.8Y
- Firms spend 20 pounds on investment goods: I=20
- National income is 100.
- This is an equilibrium since withdrawals=saving=20=injections=investment=20
- Planned aggregate demand=aggregate income.

solving for equilibrium

- Level of income at which planned spending= income
- Planned spending = C+I = 0.8Y +I
- Setting this equal to income, Y, gives:

  Y=0.8Y+I, so

  Y=I/(1-0.8) = 5I
- The multiplier is 5 = 1/0.2= 1/marginal propensity to save.

the adjustment process

- The extent to which income rises when autonomous spending rises is determined by the multiplier (Richard Kahn, 1931).
- With an increase in I, firms producing investment goods run down their stocks.
- This induces them to raise output in the next period (to equal demand in the previous period).
- Extra income is earned, which is then spent on consumer goods, so stocks of retailers do down, which induces them to order more from manufacturers….

completing the picture

- Two other injections: *government spending* on goods and services and *exports*.
- Two other withdrawals: *taxation* and *imports*.
- Initially, government spending and exports treated as given.
- Taxation and imports depend upon the level of income. Suppose the government takes 30% of income as taxes and imports form 10% of spending.
- Income = Spending
  - Y=0.8*0.7*Y+I+G+X-0.1*Y
  - Y=(I+G+X)/(1-0.56+0.1)
  - Y=(I+G+X)/0.54

the Grumbling Hive

- “Vast Numbers thronged the fruitful Hive;
  Yet those vast Numbers made 'em thrive;
  Millions endeavouring to supply
  Each other's Lust and Vanity;”
- “Bare virtue can’t make Nations live
  In Splendor. They that would revive
  A Golden Age, must be free,
  For acorns as for honesty.”
- Bernard Mandeville (1705)

the paradox of thrift

- If consumers decide to save more, for any given level of income, what will happen to income?
- As people save more at their initial income level, their consumption decreases, so demand decreases, and so does production.
- An increase in thrift has therefore reduced output!
- This is only likely to be true in the short-run when prices and interest rates are held fixed.
- So, saving may therefore be good in the long-run, but may cause recessions in the short-run.

summary

- GDP can be defined in three different ways: output, expenditure, or income.
- Measurement of GDP is imperfect, costly and time-consuming. Much economic activity is unmeasured, such as housework and the underground economy. Therefore, GDP is an imperfect indicator of living standards.
- However, year on year changes in GDP are a good indicator of the state of the business cycle.
- In equilibrium, planned spending must equal actual spending in the economy.
- Other things being equal, a rise in personal thriftiness may lead to a fall in aggregate output and hence in aggregate saving.