Macroeconomics EC1001

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- Office hours: Thursday 9.30am-11.30am

- Module website:
  www.le.ac.uk/economics/teach/ec1001/ec1001.html

Module structure

- This module consists of 20 lectures and 9 classes
- We will closely follow a well-known textbook; but in the lectures and classes extra bits and pieces maybe discussed. These could make the difference between a pass or fail; or a good pass versus an average pass
- Advice will also be offered on how to answer examination questions and how to write the assessed essay
- The slides from these lectures will be posted on the module website **before** each lecture

Examination

- 2 hour written examination consisting of:
  - 30 multiple choice questions
  - 1 essay or short assignment (to be chosen out of 4 titles)

- Coursework
  - 20% of your overall mark
  - An assessed essay
  - Due Thursday 29th March at 3:00pm
    - The essay question will be posted on the module website at least two weeks ahead of this deadline; and announced in lectures and classes too

Classes

- Staring from week 15 (next week) you will have to attend classes too: see notice board in Econ Dept

- Classes discuss multiple choice questions and short assignments. You will be expected to have prepared answers to the distributed questions in advance of the class; and then take part in the discussion in the class

- You will be able to find the Exercise and Question Sheets on the module website
  - Exercise 1 (for week 15) is already posted there
  - The remaining exercises and questions will be posted in the week preceding your class
    - A couple of weeks **after** the class I will also post answers

Textbook

- N. Gregory Mankiw and Mark P. Taylor, *Economics (Second Edition)*, 2011, South-Western Cengage Learning. ISBN-13: 9781844808700 / ISBN-10: 184480870X

- Website: http://edu.cengage.co.uk/catalogue/product.aspx?isbn=184480870X.

- This textbook was used last semester in Microeconomics

Additional reading

- W.J. Baumol and A.S. Blinder (2012), *Economics: Principles and Policy* (12th edition), South Western Cengage Learning

Remember from lecture 1 in EC1000

- Typical *macroeconomic* issues:
  - Why is UK per capita income today ten times as large as in 1850?
  - Why is UK per capita income ten times as large as Bolivia's?
  - What determines the inflation rate?
  - What are the consequences of large fiscal deficits?
  - Plus, macroeconomics gives you some tools helpful when discussing whether the Euro will survive; or indeed whether the UK will head back into recession

Micro underpins macro

- *Macroeconomics* studies the behaviour of aggregate variables (national income, the average level of prices, imports and exports)

- But little things make up big things
  - Need to understand micro "to do" macro

Economics

- **Microeconomics**
  - Study of how households and firms
    - Make decisions
    - Interact in markets

- **Macroeconomics**
  - Study of economy-wide phenomena
    - Including inflation, unemployment, and economic growth

Measuring economic activity

- Today we will describe how to measure the total income of a nation

- In future lectures we will consider the short run and long run determinants of a nation's total income

  - and how policy can affect these

  - but firstly need to quantify what we mean by 'economic activity'

Economy's Income & Expenditure

- **Gross Domestic Product (GDP)**
  - Measures the total income of everyone in the economy; and at the same time…
  - Measures the total expenditure on the economy's output of goods and services
- **For an economy as a whole**
  - Income must equal expenditure
    - because every transaction has a buyer and a seller
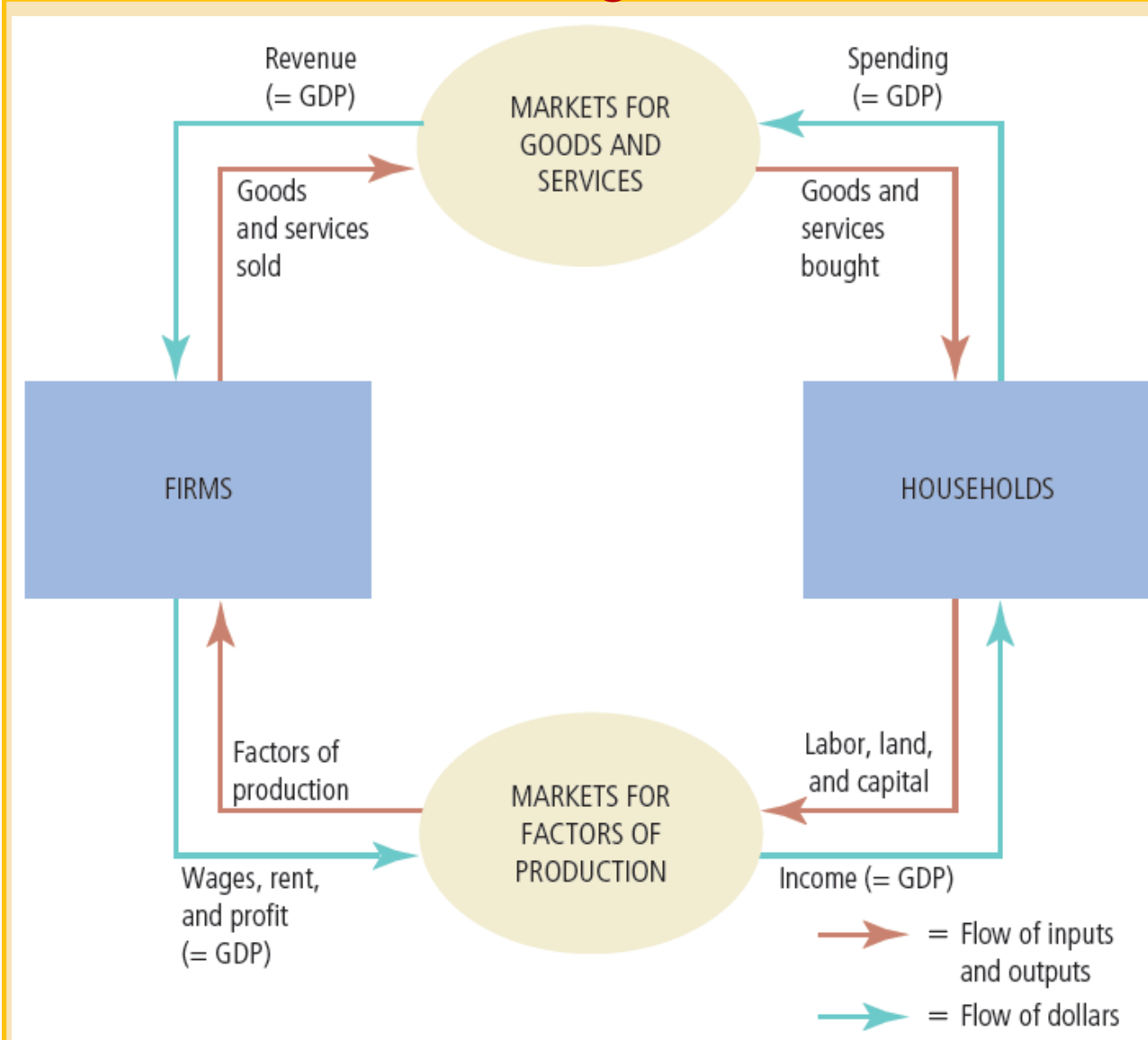   - can also see this in the circular flow of income

Economy's Income & Expenditure

- Circular-flow diagram – assumptions:
  - Markets
    - Goods and services
    - Factors of production (resource owners)
  - Households
    - Spend their income
    - Buy all goods and services from firms
  - Firms
    - Pay wages, rent and profit to resource owners

Figure 1

The Circular-Flow Diagram

Households buy goods and services from firms, and firms use their revenue from sales to pay wages to workers, rent to landowners, and profit to firm owners. GDP equals the total amount spent by households in the market for goods and services. It also equals the total wages, rent, and profit paid by firms in the markets for the factors of production.

Understanding GDP

- Gross domestic product (GDP)
  - Equals both total expenditure by households and total income (wages, rent and profit)
  - Ignoring, for now, complications like fact that households do not spend all of their income; & they save and pay taxes
  - But every transaction still has a buyer and a seller; so for the economy as a whole expenditure and income are the same

GDP vs. GNP and NNP

- As well as GNP, ONS/Eurostat produce other measures which include/exclude certain categories of income:
  - GNP: total income earned by UK nationals; so includes income that UK citizens earn abroad and excludes the income that foreigners earn in the UK
  - GNP = GDP + Net factor income from abroad
    - For Ireland, at least in 2000s, GDP>GNP as profits went overseas
  - NNP: GNP minus depreciation

The Measurement of GDP

- Gross domestic product (GDP)
  - Market value of all final goods and services
  - Produced within a country
  - In a given period of time
- "GDP is the market value…"
  - Market prices - reflect the *value* of the goods (so we can compare apples and pears; if an apple costs twice as much as a pear than in contributes twice as much to GDP)

- **"… of all…"**

  – All items produced in the economy

    - And sold legally in markets

    - Includes the market value of housing services

      – Both rental housing (where the tenant's expenditure equals the landlord's income) and owner occupied housing (by estimating its rental value: so the owner effectively pays rent to themselves)

  – Excludes most items

    - Produced and sold illicitly (e.g. illegal drugs)

    - Produced and consumed at home (veg. from garden; housework; grandparents doing childcare)

The Measurement of GDP

- "… final…"
  - Value of intermediate goods is already included in the prices of the final goods
    - excluded to avoid double counting
    - except when the intermediate good is not sold but added to inventory investment; and effectively treated as a 'final' good
- "… goods and services…"
  - Tangible goods & intangible services
- "… produced…"
  - Goods and services produced *this* quarter

The Measurement of GDP

- "… within a country…"
  - Goods and services produced domestically (in the UK)
    - Regardless of the nationality of the producer
- "… in a given period of time"
  - A year or a quarter; but not, at least for the UK, in a month - although monthly GDP estimates can still be computed from quarterly sources:
    - Mitchell *et al.* (2005), *Economic Journal*

The Components of GDP

- $Y = C + I + G + NX$

  - This is an identity: on the expenditure side

  - Y = GDP

  - C = consumption

  - I = investment

    - Goods used to increase future Y

  - G = government purchases

  - NX = net exports

The Components of GDP

- ## Consumption, C

  - Spending by households on goods and services

  - Exception: purchases of new housing

- ## Investment, I

  - Spending on capital equipment, inventories, and structures

    - Not buying a stock or bond

  - Household purchases of new housing

  - Inventory accumulation

The Components of GDP

- Government purchases, G
  - Government consumption expenditure and gross investment
  - Spending on goods and services
  - By local and national governments
  - Does not include transfer payments (social security benefit etc.) as these don't increase the economy's income they just re-distribute income – they are a negative tax

The Components of GDP

- **Net exports, NX = Exports - Imports**
  - Exports
    - Spending on domestically produced goods by foreigners
  - Imports
    - Spending on foreign goods by domestic residents

    N.B. The "current account" is the sum of the balance of trade (NX), net factor income (such as interest and dividends) and net transfer payments (such as foreign aid). Current account = change in net foreign assets

GDP data issues

- The statistical discrepancy
  - Income does not, in fact, equal expenditure exactly due to measurement problems

- Seasonal adjustment
  - Helpful to adjust GDP series for regular, periodic seasonal movements; e.g. Christmas

- 2010, GDP of the U.K. = £1463 billion
  - Consumption = 64%
  - Investment = 15%
  - Government purchases = 23%
  - Net exports = -2.5%

GDP and its Components: GDP at current prices (£ million)

| | Domestic expenditure on goods and services at market prices | | | | | | | | | |
| | Final consumption expenditure | | | Gross capital formation | | | | | | |
	Household final consumption expenditure	Non-profit institutions [2]	General government final consumption expenditure	Gross fixed capital formation	Changes in inventories [3]	Total domestic expenditure (aligned)	Trade in goods & services total exports	Total gross final expenditure (aligned)	*less* Total imports	Gross domestic product at market prices
	ABJQ	HAYE	NMRP	NPQS	CAEX	YBIL	IKBH	ABMF	IKBI	YBHA
1997	512 020	19 600	150 524	138 814	4 695	825 625	237 363	1 062 989	232 976	830 013
1998	546 464	21 082	156 728	156 368	4 954	886 025	233 190	1 119 215	240 062	879 152
1999	582 295	22 185	169 667	161 846	6 044	942 266	242 614	1 184 880	256 009	928 871
2000	616 433	23 531	181 948	167 062	5 321	994 299	269 714	1 264 013	287 731	976 282
2001	647 370	25 111	194 609	171 786	6 325	1 045 597	276 775	1 322 372	300 747	1 021 625
2002	680 649	26 422	212 556	180 532	3 029	1 103 402	280 454	1 383 856	308 488	1 075 368
2003	714 512	27 668	232 611	186 759	4 243	1 165 756	290 207	1 455 963	316 522	1 139 441
2004	749 607	29 197	250 928	200 430	4 889	1 235 014	303 612	1 538 626	336 255	1 202 370
2005	784 149	30 824	268 273	209 722	4 405	1 296 996	331 067	1 628 063	373 771	1 254 292
2006	819 164	32 408	285 126	227 172	5 174	1 369 329	379 091	1 748 420	419 822	1 328 597
2007	862 242	34 324	295 154	250 036	6 223	1 448 445	374 032	1 822 477	416 681	1 405 796
2008	878 024	35 767	315 566	241 365	1 709	1 472 993	422 864	1 895 857	461 988	1 433 870
2009	858 242	35 863	327 349	209 253	- 11 645	1 419 491	395 588	1 815 079	421 225	1 393 854
2010	904 497	37 548	337 364	218 237	6 832	1 505 116	440 880	1 945 996	477 618	1 463 734
	C	C	G	I	I		X		M	

Real versus Nominal GDP

- Total spending rises from one year to the next
  - The economy could be producing a larger output of goods and services
  - and/or goods and services are being sold at higher prices
- Nominal GDP
  - Production of goods and services
  - Valued at current prices

Real versus Nominal GDP

- ## Real GDP

  - Production of goods and services

  - Valued at constant prices

  - Designate one year as base year

  - Not affected by changes in prices

- ## For the base year

  - Nominal GDP = Real GDP

Table 2

Real and Nominal GDP

Prices and Quantities

Year	Price of Hot dogs	Quantity of Hot dogs	Price of Hamburgers	Quantity of Hamburgers
2010	$1	100	$2	50
2011	$2	150	$3	100
2012	$3	200	$4	150

Calculating Nominal GDP

Year	
2010	($1 per hot dog × 100 hot dogs) + ($2 per hamburger × 50 hamburgers) = $200
2011	($2 per hot dog × 150 hot dogs) + ($3 per hamburger × 100 hamburgers) = $600
2012	($3 per hot dog × 200 hot dogs) + ($4 per hamburger × 150 hamburgers) = $1,200

Calculating Real GDP (base year 2010)

Year	
2010	($1 per hot dog × 100 hot dogs) + ($2 per hamburger × 50 hamburgers) = $200
2011	($1 per hot dog × 150 hot dogs) + ($2 per hamburger × 100 hamburgers) = $350
2012	($1 per hot dog × 200 hot dogs) + ($2 per hamburger × 150 hamburgers) = $500

Calculating the GDP Deflator

Year	
2010	($200 / $200) × 100 = 100
2011	($600 / $350) × 100 = 171
2012	($1,200 / $500) × 100 = 240

This table shows how to calculate real GDP, nominal GDP, and the GDP deflator for a hypothetical economy that produces only hot dogs and hamburgers.

Real versus Nominal GDP

- The GDP deflator
  - Ratio of nominal GDP to real GDP times by 100
  - Equals 100 for the base year
  - Measures the current level of prices relative to the level of prices in the base year
  - Can be used to take inflation out of nominal GDP ("deflate" nominal GDP)
  - Want to update the base year as frequently as possible; explains move to chain-linking

Real versus Nominal GDP

- ## Inflation
  - Economy's overall price level is rising

- ## Inflation rate
  - Percentage change in some measure of the price level from one period to the next

$$\text{Inflation in year 2} =$$

$$= \frac{\text{GDP deflator in year 2 - GDP deflator in year 1}}{\text{GDP deflator in year 1}} \times 100$$
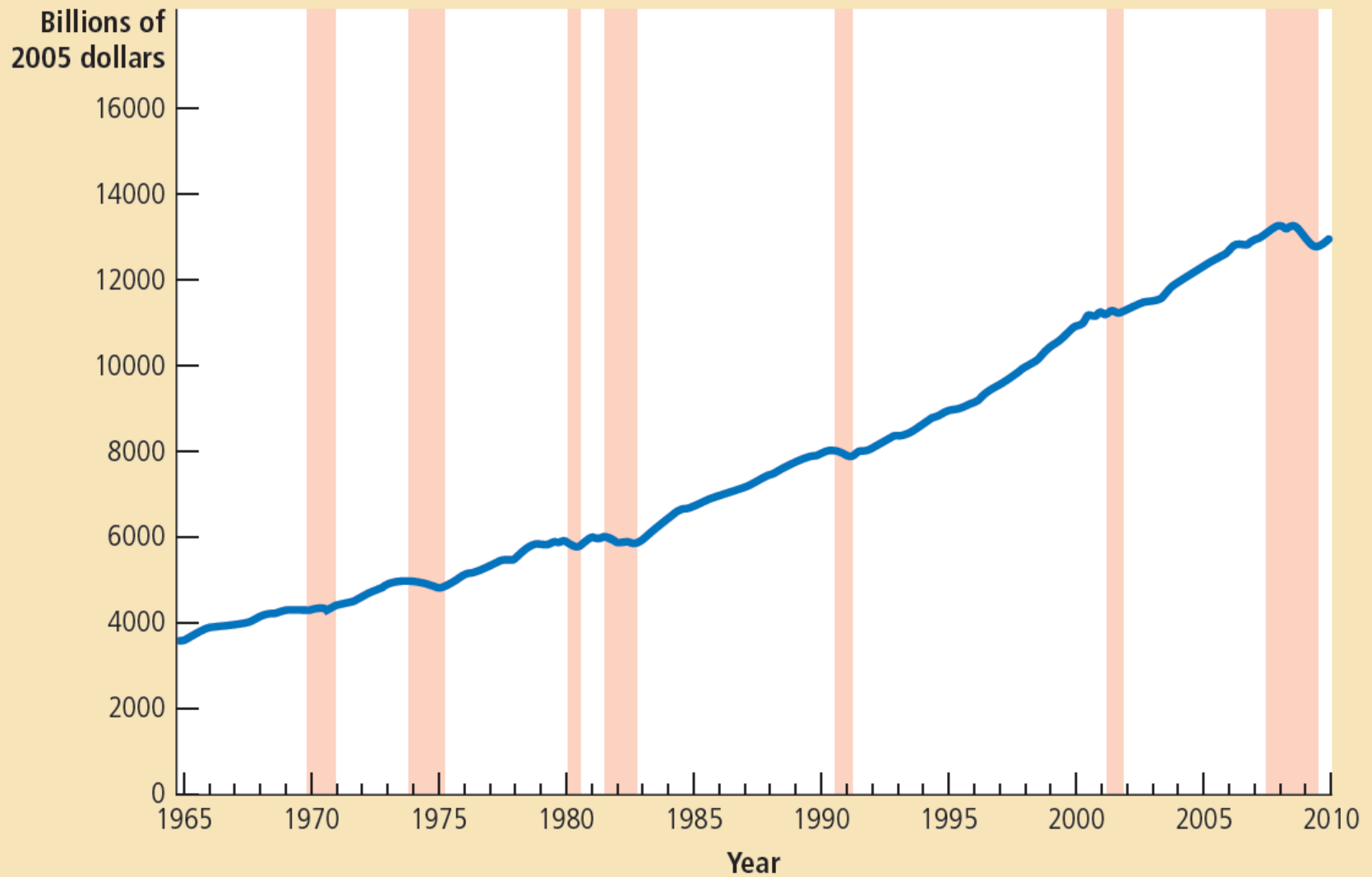
- The GDP data
  - Real GDP grows over time
  - Growth – average 3% per year since 1965
  - Growth is not steady
    - GDP growth interrupted by recessions

CASE STUDY

- Recession
  - Two consecutive quarters of falling GDP
  - Real GDP declines
  - Lower income
  - Rising unemployment (in general)
  - Falling profits
  - Increased bankruptcies

Figure 2

Real GDP in the United States

This figure shows quarterly data on real GDP for the U.S. economy since 1965. Recessions—periods of falling real GDP—are marked with the shaded vertical bars.

GDP

- GDP – "the best single measure of the economic well-being of a society"
  - Economy's total income
  - Economy's total expenditure
  - Larger GDP
    - Good life, better healthcare
    - Better educational systems
  - Measure our ability to obtain many of the inputs into a worthwhile life

GDP per person

- **GDP per person – not a perfect measure of well-being**
  - Doesn't include:
    - Leisure (GDP would be higher if we all worked 24/7; but would we be better-off?)
    - Value of almost all activity that takes place outside markets
    - Quality of the environment (GDP might be higher, but quality lower, if regulations were relaxed)
  - Nothing about distribution of income; measures income of the average individual

The economics of happiness

- In late 2008 President Sarkozy asked Professors Stiglitz and Sen (both Nobel winners) to think of new measures of growth … of gross national *happiness*
  - Happiness is a warm baguette
  - GDP p.c. has gone up; but surveys often indicate that people aren't any happier
  - More seriously, ONS is currently looking at new measures that cover the quality of life, environmental and sustainability issues, as well as the economic performance of the country
  - But difficult to measure these subjective components of happiness

Alternatives to GDP

- **UN's Human Development Index**
  - Weights GDP along with data on life expectancy and educational attainment

- **Look at range of indicators and "target" them in policy, not just GDP**

- **Kahneman's "time-use/national well-being accounts"**
  - Weight the time allocated to various activities by the subjective experiences associated with these activities. Time can be measured
  - See Kahneman *et al.* (2004), *American Economic Review*

- Rich countries - higher GDP per person
  - Better
    - Life expectancy
    - Literacy
    - Internet usage
- Poor countries - lower GDP per person
  - Worse
    - Life expectancy
    - Literacy
    - Internet usage

- Low GDP per person
  - More infants with low birth weight
  - Higher rates of infant mortality
  - Higher rates of maternal mortality
  - Higher rates of child malnutrition
  - Less common access to safe drinking water
  - Fewer school-age children are actually in school

- Low GDP per person
  - Fewer teachers per student
  - Fewer televisions
  - Fewer telephones
  - Fewer paved roads
  - Fewer households with electricity

Table 3

GDP and the Quality of Life

Country	Real GDP per Person (2007)	Life Expectancy	Adult Literacy (% of population)	Internet Usage (% of population)
United States	$45,592	79 years	99%	63%
Germany	34,401	80	99	45
Japan	33,632	83	99	67
Russia	14, 690	66	99	15
Mexico	14,104	76	93	18
Brazil	9,567	72	90	19
China	5,383	73	93	9
Indonesia	3,843	71	92	7
India	2,753	63	66	3
Pakistan	2,496	66	54	7
Nigeria	1,969	48	72	4
Bangladesh	1,241	66	54	0.3

The table shows GDP per person and three other measures of the quality of life for twelve major countries.