PART EIGHT: THE DATA OF MACROECONOMICS

Measuring A Nation’s Income

Chapter 23

What did we learn until now?
- In EC101 we learned about microeconomics
- Microeconomics is the study of how individual households and firms make decisions and how they interact with one another in markets
- We began by analysing how the forces of supply and demand determine the price for each good and service produced in the economy
- We spent much time over production, costs and the behaviour of firms in different types of markets such as perfect competition, monopoly, oligopoly and oligopolistic competition
- Finally we looked into the theory of income distribution implied by this analysis

What will we learn next?
- In EC102 we learn macroeconomics
- Macroeconomics studies the economy as a whole
- Its goal is to explain the economic changes that affect many households, firms and markets at the same time
- With critical variables such as employment, unemployment, economic growth, inflation, the exchange rate, the interest rate, taxes, the budget, etc.
- Macroeconomic issues are often the subject of heated debates by the public
- They are very relevant in answering many questions about what is happening to the Turkish economy or the world economy

Plan of Part Eight
- The aim of Part VIII is to introduce basic data of macroeconomics
- Ch.23 deals with National Income Accounting, in other words about measuring accurately the total production of goods and services in the economy
- Gross Domestic Product, Gross National Product, GDP deflator will be defined
- Ch. 24 deals with measuring inflation
- What is a price index? How the Consumer Price Index and the Producer Price Index are calculated?
- Other macroeconomic data such as the Balance of Payments, Central Bank Balance Sheet, etc. will be defined later at relevant chapters

The economy’s income and expenditure
- In order to establish whether the economy is doing well or poorly, it is natural to look at the total income that everyone in the economy is earning during one period of time
- For an economy as a whole, income must equal expenditure because:
  - Every transaction involves one buyer and one seller
  - Every TL of spending by some buyer is a TL of income for some seller
- Everyone’s income is someone’s expenditure; everyone’s spending is someone’s income

The simple circular flow diagram
- We can look back to the simple circular flow diagram first introduced in Chapter 2
- We assumed there was no government, no financial markets and no economic transactions with the outside world
- In other words, a simple closed economy
- Households and firms interacted in two markets
  - Markets for goods and services
  - Markets for factors of production
- There were two types of flows
  - Real flows: of goods, services and factor inputs
  - Nominal flows: of spending and income

Plan of the second semester
- In Part VIII we study the data of macroeconomics: national income accounting and the price indexes used to measure inflation
- In Part IX we look at the real economy in the long run: growth, saving, investment, finance, risk and unemployment
- Part X introduces money and the causes and effects of inflation in a closed economy in the long run
- Part XI opens the economy to the outside world in the long run through trade and capital movements
- Part XII analyses short-run fluctuations in output, inflation, interest rate, etc. and the effects of monetary and fiscal policy

The simple circular flow diagram
- The flow of income and expenditure in an economy
- Goods and services are bought and sold in markets
- Income is earned by households and paid to firms
- Labor, land and capital are inputs for production
- Revenue and spending are connected through the market for goods and services
- Market for Factors of Production connects the labor market, the land market and the capital market
- Input for production is the flow of goods and services bought and sold in the market for goods and services
- The circular flow of income and expenditure
- Goods and services sold
- Goods and services bought
- Revenue
- Spending
- Income
Gross domestic product – GDP

- Gross Domestic Product (GDP) is a measure of the total incomes and expenditures of an economy.
- In other words, GDP is the total market value of all final goods and services produced within a country in a given time period.
- Same economic phenomenon has three aspects:
  - Production and sale of goods and services
  - Spending on these goods and services
  - Factor incomes from these goods and services
- We can now redraw the circular flow diagram.
- Important assumption: to keep it simple, we assume that there is no government, no financial sector, no economic transactions with the outside world.

Important features of GDP

- While computing the GDP, production is valued at market prices.
- GDP records only the value of final goods but not the intermediate goods to prevent double counting.
- GDP includes both:
  - Tangible goods such as food, clothing, cars, etc.
  - Intangible services such as haircuts, housecleaning, doctor visits, education, etc.
- It covers goods and services currently produced, but excludes transactions involving goods produced in the past (buying a second-hand car or house).
- It measures the value of production within a country during a specified time period.

On Value Added

- A major danger for GDP calculations is the double counting of inputs used for the production of final goods and services.
- Example: in bread, you have wheat, flour, transport, energy, baking, etc.
- If you add all of them in GDP and then bread, they will be counted more than once.
- Value Added corresponds to sales minus inputs bought from other firms.
- Value added is by definition equal to factor incomes: wages, profit, rent and interest.
- Value added tax (Katma Deger Vergisi - KDV) in Turkey works on the same principle.

Other measures of income

- Net National Product (NNP) is obtained by subtracting from GNP indirect taxes paid by firms to government (sales tax, VAT, etc) and subtracting subsidies received.
- Personal Income is the income that households and non-corporate businesses in the economy receive: it excludes non-distributed profits of corporations.
- Disposable Personal Income is obtained by subtracting from Personal Income taxes paid to and transfers received from the government.

National Income Identity

- In macroeconomics, GDP or income is usually represented with the letter Y.
- Expenditures in an economy are divided into four main categories:
  - Consumption (C), Investment (I), Government purchases (G) and Net exports (NX).
  \[ Y = C + I + G + NX \]
- This is a very important identity that we shall be using again and again in macroeconomics.
- It says: income is equal to spending on private consumption plus spending on investment plus government purchases plus the difference between exports and imports.

Components of GDP

- Consumption (C): all spending by households on goods and services with the exception of purchases of new houses.
- Investment (I): all spending on capital equipment, on inventories and on buildings and other structures (including new housing) by businesses and government.
- Government purchases (G) includes all spending on goods and services by local and central public administration except for transfer payments (they are not made in exchange for goods and services).
- Net exports (NX) is equal to exports of goods and services minus imports of goods and services.
### Methods of National Accounting

#### Nominal versus Real GDP

- **Nominal GDP** measures the value of goods and services at current prices.
- **Real GDP** measures the value of goods and services at constant historical prices.

#### GDP: Expenditure (1)

<table>
<thead>
<tr>
<th>Item</th>
<th>Real (Trillion TL)</th>
<th>Nominal (Trillion TL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wage</td>
<td>95.6</td>
<td>65.1</td>
</tr>
<tr>
<td>Total of Final Demand</td>
<td>136.7</td>
<td>98.6</td>
</tr>
<tr>
<td>Fixed investment</td>
<td>40.7</td>
<td>27.7</td>
</tr>
<tr>
<td>Imports</td>
<td>20.7</td>
<td>14.1</td>
</tr>
<tr>
<td>Government consumption</td>
<td>10.0</td>
<td>6.8</td>
</tr>
<tr>
<td>Net factor income</td>
<td>3.7</td>
<td>2.5</td>
</tr>
<tr>
<td>Net factor income</td>
<td>1.5</td>
<td>1.0</td>
</tr>
</tbody>
</table>

#### GDP: Expenditure (2)

<table>
<thead>
<tr>
<th>Item</th>
<th>Real (Trillion TL)</th>
<th>Nominal (Trillion TL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed investment</td>
<td>40.7</td>
<td>27.7</td>
</tr>
<tr>
<td>Imports</td>
<td>20.7</td>
<td>14.1</td>
</tr>
<tr>
<td>Government consumption</td>
<td>10.0</td>
<td>6.8</td>
</tr>
<tr>
<td>Net factor income</td>
<td>3.7</td>
<td>2.5</td>
</tr>
</tbody>
</table>

#### Turkey: Nominal and Real GDP

<table>
<thead>
<tr>
<th>Year</th>
<th>Nominal GDP (Trillion TL)</th>
<th>Real GDP (Trillion TL)</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989</td>
<td>227</td>
<td>187</td>
<td>-18.5</td>
</tr>
<tr>
<td>1990</td>
<td>393</td>
<td>307</td>
<td>-22.0</td>
</tr>
<tr>
<td>1991</td>
<td>630</td>
<td>461</td>
<td>-27.3</td>
</tr>
<tr>
<td>1992</td>
<td>1,093</td>
<td>868</td>
<td>-20.7</td>
</tr>
<tr>
<td>1993</td>
<td>1,982</td>
<td>1,687</td>
<td>-15.3</td>
</tr>
<tr>
<td>1994</td>
<td>3,985</td>
<td>3,342</td>
<td>-15.9</td>
</tr>
<tr>
<td>1995</td>
<td>7,762</td>
<td>6,535</td>
<td>-15.9</td>
</tr>
<tr>
<td>1996</td>
<td>14,772</td>
<td>12,914</td>
<td>-13.4</td>
</tr>
<tr>
<td>1997</td>
<td>28,836</td>
<td>24,367</td>
<td>-14.4</td>
</tr>
<tr>
<td>1998</td>
<td>52,225</td>
<td>44,145</td>
<td>-15.5</td>
</tr>
<tr>
<td>1999</td>
<td>77,415</td>
<td>66,882</td>
<td>-13.6</td>
</tr>
<tr>
<td>2000</td>
<td>124,583</td>
<td>106,729</td>
<td>-14.1</td>
</tr>
<tr>
<td>2001</td>
<td>178,412</td>
<td>156,768</td>
<td>-12.5</td>
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<tr>
<td>2002</td>
<td>277,574</td>
<td>236,476</td>
<td>-15.0</td>
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<tr>
<td>2003</td>
<td>359,763</td>
<td>315,454</td>
<td>-12.3</td>
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<td>2004</td>
<td>430,511</td>
<td>378,232</td>
<td>-13.1</td>
</tr>
<tr>
<td>2005</td>
<td>487,202</td>
<td>437,035</td>
<td>-10.5</td>
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### Real versus Nominal GDP

- **Real GDP** adjusts GDP for inflation.
- **Nominal GDP** reflects current prices.

- **Real GDP** provides a clearer picture of economic growth and decline.
- **Nominal GDP** is useful for making comparisons across different years.

#### GDP Deflator

- The GDP deflator measures changes in prices relative to the base year.

\[
GDP\text{ \text{deflator}} = \frac{Nominal\ GDP}{Real\ GDP} \times 100
\]
Turkey: GDP from 1987 to 2005

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP (Trillion TL)</th>
</tr>
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<tbody>
<tr>
<td>1987</td>
<td>70</td>
</tr>
<tr>
<td>1989</td>
<td>80</td>
</tr>
<tr>
<td>1991</td>
<td>90</td>
</tr>
<tr>
<td>1993</td>
<td>100</td>
</tr>
<tr>
<td>1995</td>
<td>110</td>
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<tr>
<td>1997</td>
<td>120</td>
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<tr>
<td>1999</td>
<td>130</td>
</tr>
<tr>
<td>2001</td>
<td>140</td>
</tr>
<tr>
<td>2003</td>
<td>150</td>
</tr>
<tr>
<td>2005</td>
<td>160</td>
</tr>
</tbody>
</table>

Turkey: GDP growth rate

<table>
<thead>
<tr>
<th>Quarter</th>
<th>GNP Growth Rate (YoY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988Q4</td>
<td>-12</td>
</tr>
<tr>
<td>1991Q2</td>
<td>-8</td>
</tr>
<tr>
<td>1993Q4</td>
<td>0</td>
</tr>
<tr>
<td>1996Q2</td>
<td>4</td>
</tr>
<tr>
<td>1998Q4</td>
<td>8</td>
</tr>
<tr>
<td>2001Q2</td>
<td>12</td>
</tr>
<tr>
<td>2003Q4</td>
<td>12</td>
</tr>
<tr>
<td>2006Q2</td>
<td>12</td>
</tr>
</tbody>
</table>

International comparisons

- Comparing the income for the same country led us to the GDP deflator.
- Comparing GDP per person for different countries also poses measurement problems.
- One way is to convert nominal GDP to US$ at the actual exchange rate of the local currency.
- But the relative cost of different goods and services making up GDP varies enormously among countries.
- A better method uses the price of a basket of goods and services in different countries.
- It is called Purchasing Power Parity – PPP.
- Poor countries have higher GDP per capita in PPP compared with actual exchange rates.

World: GNP per capita (2005)

<table>
<thead>
<tr>
<th>Country</th>
<th>PPP GNP per capita (US$)</th>
<th>GNP per person (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>43960</td>
<td>58830</td>
</tr>
<tr>
<td>Japan</td>
<td>39800</td>
<td>56200</td>
</tr>
<tr>
<td>Germany</td>
<td>34500</td>
<td>49200</td>
</tr>
<tr>
<td>Greece</td>
<td>29500</td>
<td>40100</td>
</tr>
<tr>
<td>Argentina</td>
<td>23670</td>
<td>33650</td>
</tr>
<tr>
<td>Russia</td>
<td>20400</td>
<td>29900</td>
</tr>
<tr>
<td>Mexico</td>
<td>17500</td>
<td>26100</td>
</tr>
<tr>
<td>Turkey</td>
<td>14800</td>
<td>22900</td>
</tr>
<tr>
<td>Brazil</td>
<td>17200</td>
<td>25900</td>
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<tr>
<td>China</td>
<td>13400</td>
<td>19000</td>
</tr>
<tr>
<td>Egypt</td>
<td>9700</td>
<td>14000</td>
</tr>
<tr>
<td>India</td>
<td>5500</td>
<td>8000</td>
</tr>
<tr>
<td>Pakistan</td>
<td>1300</td>
<td>2000</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>760</td>
<td>1200</td>
</tr>
<tr>
<td>Nigeria</td>
<td>450</td>
<td>680</td>
</tr>
</tbody>
</table>

GDP and economic well-being

- GDP is the best single measure of the economic well-being of a society.
- GDP per person is obtained by dividing GDP by the population of that year.
- GDP per person summarises the income and expenditure of the average person in the economy.
- However, GDP is not a perfect measure of the happiness or quality of life.
- Many important activities take place outside markets in a modern economy.
- Typically, the value of leisure, the value of a clean environment, the quality of the public services, etc. are not included in GDP.

Measuring the Quality of Life

<table>
<thead>
<tr>
<th></th>
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<tr>
<td>US</td>
<td>41950</td>
<td>77</td>
<td>5</td>
<td>0.9</td>
<td>0.2</td>
<td>0.880</td>
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<tr>
<td>Japan</td>
<td>31410</td>
<td>81</td>
<td>1</td>
<td>0.9</td>
<td>0.4</td>
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<tr>
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<td>29210</td>
<td>81</td>
<td>1</td>
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<td>0.4</td>
<td>0.884</td>
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<tr>
<td>Greece</td>
<td>25010</td>
<td>80</td>
<td>1</td>
<td>0.9</td>
<td>0.4</td>
<td>0.884</td>
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<td>13920</td>
<td>71</td>
<td>3</td>
<td>0.9</td>
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<td>0.884</td>
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<td>10840</td>
<td>72</td>
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<td>0.4</td>
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<tr>
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<td>8250</td>
<td>70</td>
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<td>0.9</td>
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<td>6600</td>
<td>67</td>
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<td>0.9</td>
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<td>0.884</td>
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<td>65</td>
<td>7</td>
<td>0.9</td>
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<td>0.884</td>
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<td>3460</td>
<td>60</td>
<td>9</td>
<td>0.9</td>
<td>0.5</td>
<td>0.884</td>
</tr>
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<td>Pakistan</td>
<td>2350</td>
<td>58</td>
<td>11</td>
<td>0.9</td>
<td>0.5</td>
<td>0.884</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>2090</td>
<td>57</td>
<td>13</td>
<td>0.9</td>
<td>0.5</td>
<td>0.884</td>
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<tr>
<td>Nigeria</td>
<td>1040</td>
<td>57</td>
<td>16</td>
<td>0.9</td>
<td>0.5</td>
<td>0.884</td>
</tr>
</tbody>
</table>

GDP gets lighter

- An increase in GDP and therefore welfare means more output and production.
- But more production does not necessarily mean more tonnes of physical materials such as oil, coal, steel, wood, etc.
- Alan Greenspan, the famous chairman of the Federal Reserve Board points that US real GDP is today five times what it was 50 years ago.
- Yet the physical weight of the GDP is only marginally higher compared with 50 years ago.
- Office buildings, homes, cars, consumer durables, planes, etc. have all become lighter during this time with the discovery of synthetic new material.

Who wins at the Olympics?

- Nations of all sizes compete at the Olympic games.
- Normally, we expect medals to be distributed among them in proportion to their population.
- China, India, Indonesia and Bangladesh has over 40 percent of world population.
- But typically only 6% of the medals at Olympics.
- When we compare medals won by nations with their GDP we find a much stronger relation.
- And some interesting exceptions.
- The country hosting the games wins more medals.
- Communist regimes devoted more resources to sports and received more medals than their GDP implied.

Conclusion

- Macroeconomics study the economy as a whole.
- Because every transaction in the market has a buyer and a seller, the total expenditure in the economy must equal the total income in the economy.
- GDP is the market value of all final goods and services produced within a country in a given period of time.
- GDP is divided among four major components of expenditure: consumption, investment, government purchases and net exports.
- Nominal GDP uses current (actual) prices to value the production of the economy. Real GDP uses historical (base year) constant prices.
Measuring inflation

• Inflation is a fact of life: very few exceptions aside, all economies in the world have some experience with inflation
• A small number of economies, among them Turkey, know very high and persistent inflation
• In this chapter, we take our first shot at inflation
• Explaining inflation will have to wait a little
• Now we shall look into measuring inflation
• We already encountered a measure of inflation with the GDP deflator
• Inflation is usually measured by the use of price indexes such as the Consumer Price Index and the Producer Price Index

Measuring the Cost of Living

Chapter 24

Calculating price indexes

• An index is a method for measuring change of a magnitude constituted by several independent items
• It means adding up the changes in individual items by giving each item a certain weight in the total
• Establishing the weights of different goods and services in CPI is achieved by fixing a basket
• The consumption basket is determined by TUIK through a “Consumer Survey” of the population
• The current index is based on a consumer survey undertaken in 2003
• All the goods and services consumed by the typical household as observed in the survey during 2003 are in the basket

Calculating CPI inflation

• Dividing the cost of the basket this month by the cost of the basket at base period and multiplying with 100 we obtain the CPI index for this month
\[
\text{CPI index}_t = \frac{\text{Cost of Basket}_t}{\text{Cost of Basket}_0} \times 100
\]
• Dividing the CPI index for this month with that of the previous month, then subtracting 1 and multiplying with 100 gives the monthly CPI inflation
\[
\text{CPI inflation}_t = \left( \frac{\text{CPI index}_t}{\text{CPI index}_{t-1}} - 1 \right) \times 100
\]
• The same operation can be done for the same month of previous year to get annual inflation

Same inflation, different figures

• In the short run, the key indicator of inflation is the monthly figure
• DIE publishes on the 3rd day of each month the inflation for the previous month
• Annual inflation compares the change in prices in 12 months
• Year-end inflation is annual inflation for the calendar year (January to December)
• Average annual inflation is calculated by taking the average of the annual inflation figures of the last 12 months
• Monthly inflation can be very volatile while average inflation is more stable

The cost of the basket

• DIE collects the prices from different retail outlets about the prices of the goods and services in the basket two or three times every month
• Thus obtains an average price of the month for each item
• Then multiplies each average price with its weight in the basket and adds them up
• In this way the total cost of filling up the basket in that month is calculated
• By comparing the cost of the basket this month with the previous month, or the same month a year ago, or that of the base period allows the calculation of inflation

Brief history of price indexes

• The first cost of living index for Istanbul calculated in 1914 covered 26 goods
• Istanbul Chamber of Commerce (ITO) began publishing the Wholesale Price Index covering 59 goods in 1929
• The first Consumer Price Index by State Institute of Statistics (DIE) started in 1955 for Ankara
• Base years were changed in 1968, 1978, 1987, 1994 and 2003 with improved coverage
• The Wholesale Price Index by DIE began in 1981
• WPI base year changed in 1987 and 1994
• Producer Prices Index PPI with 2003 as base year replaced WPI in 2005
Composition of the CPI basket

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CPI</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Food and Beverages</td>
<td>29.4</td>
<td>31.1</td>
</tr>
<tr>
<td>Clothing</td>
<td>8.1</td>
<td>9.7</td>
</tr>
<tr>
<td>Housing</td>
<td>16.9</td>
<td>25.8</td>
</tr>
<tr>
<td>Houseware</td>
<td>6.5</td>
<td>9.3</td>
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<td>2.8</td>
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<td>-</td>
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</tr>
<tr>
<td>Miscellaneous</td>
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<td>4.4</td>
</tr>
</tbody>
</table>

Details of CPI index

- TUIK publishes other details of the CPI index
- Subdivisions of major categories: for example “Food and Beverages” is divided into three: Food, Beverages, Cigarettes and Tobacco
- Regional indexes: separate indexes for many cities: Istanbul, Ankara, Izmir, etc.
- Different income groups: wage earners, rural households, etc.
- Developed economies also publish detailed local CPI figures such as “white collar employees in county X”
- Or “CPI excluding food”, “CPI excluding energy”, “CPI excluding rent” etc.

Producer Price Index

- All economies use a second index to measure business inflation: “Producer Prices Index – PPI”
- Turkey calculated the Wholesale Price Index – WPI (Toprak Esya Fiyatlari Endeksi – TEFE) until 2005
- Producer Prices Index (Üretici Fiyatlari Endeksi – ÜFE) was introduced in January 2005
- It estimates the change in the prices charged by their producers for a representative basket of goods
- The basket is established through surveys and the base year is the same as CPI (2003)
- It has five major categories: agriculture (20.23 %), Fishing (0.42 %), Mining (1.51 %), Manufacturing (72.07 %) and Energy, Gas & Water (5.77 %)

Comparing PPI and CPI

- In principle CPI includes only final goods bought by consumers and PPI has only intermediate goods
- Bread, cheese, shirts, socks, skirts, ties are in CPI
- Wheat, flour, milk, yarn, cloth, etc. are in PPI
- Newspapers, cigarettes are in CPI, print paper and tobacco are in PPI
- CPI has a large service and rent component (more than 50 %)
- Eating at a restaurant, going to a movie, visiting a doctor, taking a bus are only in CPI, there are no services in PPI
- Renting a house is in CPI, but renting an office is not in PPI

Turkey: monthly inflation

![Turkey: monthly inflation graph](image)

Turkey: average and annual CPI

![Turkey: average and annual CPI graph](image)

Turkey: average and annual PPI

![Turkey: average and annual PPI graph](image)

CPI details: January 2007

<table>
<thead>
<tr>
<th>Category</th>
<th>YILLIK %</th>
<th>YILLIK %</th>
<th>YILLIK %</th>
<th>YILLIK %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domates</td>
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<td>141.0</td>
<td>-35.8</td>
<td>2.8</td>
</tr>
<tr>
<td>Sivri biber</td>
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<td>-9.9</td>
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<td>11.2</td>
</tr>
<tr>
<td>Karnabahar</td>
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<td>43.4</td>
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</tr>
<tr>
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<td>Ispanak</td>
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<td>15.0</td>
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<td>5.5</td>
</tr>
<tr>
<td>Karnayır</td>
<td>2.8</td>
<td>14.9</td>
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<td>Sosyal</td>
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<td>16.2</td>
</tr>
<tr>
<td>Sosyal aylık</td>
<td>2.0</td>
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<td>1.8</td>
</tr>
<tr>
<td>Zeytintas</td>
<td>1.7</td>
<td>11.7</td>
<td>-5.5</td>
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</tr>
<tr>
<td>Esentez</td>
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<td>-5.6</td>
<td>4.2</td>
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<tr>
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</tr>
<tr>
<td>Yaprak aylık</td>
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<td>4.1</td>
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<tr>
<td>Çamur detajlar</td>
<td>1.3</td>
<td>15.0</td>
<td>-10.5</td>
<td>-0.4</td>
</tr>
<tr>
<td>Makaron</td>
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<td>15.2</td>
<td>-10.8</td>
<td>0.1</td>
</tr>
<tr>
<td>Kolınlar cuzeri</td>
<td>1.1</td>
<td>26.0</td>
<td>-12.4</td>
<td>4.8</td>
</tr>
</tbody>
</table>

![CPI details: January 2007 graph](image)
Problems in measuring inflation

- Indexes are accurate measures of the selected goods and services that make up the typical bundle, but they are not necessarily perfect measures.
- The previous CPI index (base year 1994) had serious problems:
  - 1994 was a crisis year in Turkey with unusually low spending for many items.
  - CPI had a high weight for rent (20%) but rented housing is not widespread in Turkey.
- There are also systematic problems with indexes:
  - Substitution bias
  - Introduction of new goods
  - Unmeasured quality change

Unmeasured quality changes
- If the quality of the good rises from one year to the next, the real value of our money decreases even if the price of the good remains constant.
- Alternatively, the price of good may rise from one period to another but with a corresponding improvement in quality.
- Measuring quality changes is an even more difficult problem for services such as health care.
- Think of a new bus service with air conditioning but higher price: is it inflation or better service?
- Research in the US found out that CPI overstates the increase in cost of living by about 0.5 to 2 percentage points per year.

Error in measuring inflation
- The accuracy of price indexes in measuring inflation is currently debated in Turkey.
- Along with the fall in TÜFE came complaints about its composition and relevance.
- Most people believe that inflation is higher than captured by the TÜFE.
- Recently published research by Dr. Güntaç Özler on household spending habits shows the opposite.
- Due to the substitution effect:
  - Substitution effect was strongest during the crisis year of 2001.
  - Actual inflation was 23.8% less than TÜFE.
  - TÜFE overestimated consumer inflation in Turkey.

Indexation
- Economists and policymakers use both the CPI and the GDP deflator to analyse inflation.
- There are important differences between the two:
  - **Consumer Price Index**
    - includes only consumer goods,
    - includes imports
    - is measured using a fixed basket
  - **Gross Domestic Product deflator**
    - includes all goods and services domestically produced
    - excludes imports,
    - is measured using currently produced goods and services

Correcting for inflation
- You often hear parents saying something like “we bought this flat for 150,000 TL in 1970” and wonder about how much it was worth today.
- Even at low levels of inflation such as 2-3% per year, over long periods of time the purchasing power of money changes substantially and needs to be corrected for comparisons.
- Price indexes are used to make this correction by inflating the original price to current prices.

\[ \text{Price}_{2002} = \frac{\text{Price}_{1970} \times \text{Price Index}_{2002}}{\text{Price Index}_{1970}} \]
Real and nominal interest

- It is very important to correct interest rates for inflation
- Nominal interest rate is the actual interest rate that we see in the marketplace
- Real interest rate is corrected for inflation

Assume nominal interest rate is 14% p.a. and annual CPI inflation is 8%.

For 1,000 YTL, after one year you get 1,140 YTL with interest but your 1,000 YTL has in the meanwhile become 1,080 YTL with inflation.

Your real interest is only 60 YTL, the rest of the interest you received (80 YTL) goes to offset your loss from inflation.

Calculating real interest rate

- How do you calculate the real interest rate?
- For low inflation (below 10% p.a.) a simple rule is: Real interest rate = nominal interest rate – inflation
- For example, if inflation is 3% and the nominal interest rate is 6%, the real interest rate is 3%.
- At higher inflation this rule is not applicable.
- Let us call \( r \) = real interest rate, \( i \) = nominal interest rate and \( \pi \) = inflation rate, all in percentages.
- The full formula becomes:
  \[
  r = \left[ \frac{1 + i}{1 + \pi} \right] - 1 \times 100
  \]
- For \( i = 14\% \) and \( \pi = 8\% \) we get \( r = 5.6\% \).

US: nominal & real interest

<table>
<thead>
<tr>
<th>Year</th>
<th>Nominal interest rate (percent per year)</th>
<th>Real interest rate (percent per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1965</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>1970</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>1975</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>1980</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>1985</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>1990</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>

Conclusion

- Indexes are not perfect measures
- The accuracy of price indexes are limited by – errors of base year or basket composition,
- substitution bias
- the introduction of new goods
- quality changes in products
- CPI is used in order to compare purchasing power in two distant periods
- By inflating the old price to current price level
- Nominal interest rates need to be adjusted for inflation
- To obtain real interest rates

PART IX: THE REAL ECONOMY IN THE LONG RUN

Production and Growth

Chapter 25

Real economy in the long run

- We begin macroeconomic analysis with the real economy in the long run
- By real economy we mean magnitudes such as the growth rate of the GDP, the level of saving and investment and their relation with the real interest rate, plus employment and unemployment
- The long run allows us to abstract any short run fluctuations in output, employment, interest rate, etc.
- Money and therefore nominal variables will be introduced in Part X, followed by the characteristics of the open economy in Part XI
- After understanding the long run Part XII will explain the short run fluctuations in output

Plan of Part Nine

- Ch.25 deals with production of goods and services from macroeconomic perspective and the factors that influence the growth of output in the long run
- Ch.26 looks at the financial system that coordinates the saving and investment decisions of economic agents through the loanable funds market
- Ch.27 is a first approximation to the basic tools of finance such as present value and the concept of risk
- Ch.28 develops the main concepts related to employment and unemployment in the long run
- In Part IX, we assume a closed economy with a government and a financial system but without the complications caused by money
Production and growth
- When we look at the world around us, we see tremendous variations in the standard of living among different countries and periods.
- The standard of living in a country depends on its ability to produce goods and services.
- We observe large changes in the standard of living over time within every country as reflected in the real GDP.
- Living standards, as measured by real GDP per person also vary significantly among nations.
- Our first task is to understand the causes and consequences of the variations in the level of production over time and among nations.

Growth in the world
- Economic growth in the world accelerated in 19th century as a result of industrial revolution that took place in Western Europe, especially in England.
- There were already big differences in real GDP per capita among nations at the end of 19th century.
- Large differences in growth rates in the 20th century resulted in bigger gaps between those who grew fast and those who grew slowly.
- Some countries today have lower GDP per capita than the US and UK did at the end of 19th century.
- Some countries like Japan moved up, while others like UK and Argentina moved down in the world league of real GDP per capita.

Economic growth in Turkey
- Data for the period before 1923 is not available or when available not meaningful and reliable.
- Turkey’s real GNP average annual growth rate from 1923 to 2003 (80 years) is 4.3%.
- But Turkey’s population also grew on the average by 2.3% annually from 1927 to 2003.
- This gives us a secular (=long run) average annual growth rate of 2.1% for real GDP per capita.
- This figure corresponds neither to an economic miracle as in Japan, Korea, Taiwan, etc. or to a relative economic decline like in Argentina, UK nor to stagnation like in Pakistan, Bangladesh, etc.
- Next is a summary of Turkey’s growth history.

World: growth in the long run

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>PERIOD</th>
<th>Real GDP per person at start</th>
<th>Rank at 1900</th>
<th>Real GDP per person at end</th>
<th>Rank at 2000</th>
<th>Growth rate p.a.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>1890-2000</td>
<td>1,256</td>
<td>6</td>
<td>26,460</td>
<td>3</td>
<td>2.81</td>
</tr>
<tr>
<td>Brazil</td>
<td>1900-2000</td>
<td>650</td>
<td>9</td>
<td>7,320</td>
<td>8</td>
<td>2.45</td>
</tr>
<tr>
<td>Mexico</td>
<td>1970-2000</td>
<td>968</td>
<td>7</td>
<td>8,810</td>
<td>7</td>
<td>2.23</td>
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<td>1870-2000</td>
<td>1,984</td>
<td>3</td>
<td>27,330</td>
<td>2</td>
<td>2.09</td>
</tr>
<tr>
<td>Germany</td>
<td>1870-2000</td>
<td>1,825</td>
<td>5</td>
<td>25,010</td>
<td>4</td>
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<tr>
<td>China</td>
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<td>596</td>
<td>11</td>
<td>9,340</td>
<td>9</td>
<td>1.90</td>
</tr>
<tr>
<td>Argentina</td>
<td>1900-2000</td>
<td>1,915</td>
<td>4</td>
<td>12,090</td>
<td>6</td>
<td>1.86</td>
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<tr>
<td>United States</td>
<td>1870-2000</td>
<td>3,347</td>
<td>2</td>
<td>34,260</td>
<td>1</td>
<td>1.81</td>
</tr>
<tr>
<td>India</td>
<td>1900-2000</td>
<td>564</td>
<td>12</td>
<td>2,390</td>
<td>11</td>
<td>1.45</td>
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<td>United Kingdom</td>
<td>1870-2000</td>
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<td>23,550</td>
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<td>1.45</td>
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<tr>
<td>Indonesia</td>
<td>1900-2000</td>
<td>743</td>
<td>8</td>
<td>2,840</td>
<td>10</td>
<td>1.35</td>
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<tr>
<td>Pakistan</td>
<td>1900-2000</td>
<td>616</td>
<td>10</td>
<td>1,960</td>
<td>12</td>
<td>1.16</td>
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<tr>
<td>Bangladesh</td>
<td>1900-2000</td>
<td>520</td>
<td>13</td>
<td>1,650</td>
<td>13</td>
<td>1.16</td>
</tr>
</tbody>
</table>

Productivity and real GDP
- We must focus on the production of goods and services to understand the large differences in living standards across countries and over time.
- Productivity is the key determinant of living standards.
- Productivity refers to the quantity of goods and services that a worker can produce from each hour of work.
- Countries with higher real GDP per capita have, by definition, higher average productivity per worker.
- It is because their working population produce more goods and services in a given period that they have higher real GDP per capita.

How rich was Rockefeller?
- Comparing per capita income in the very long is not very meaningful (FYI p.540).
- Adjusted for inflation, John D. Rockefeller (1839-1937) is the richest American who ever lived.
- His wealth was US$ 200 bill. in 1998 prices, substantially higher than Bill Gates of Microsoft.
- Yet Rockefeller did not enjoy many of today’s conveniences such as cell phones, TV, anti-biotics, air travel, internet, etc. during most of his life.
- Can we claim that Sultan Suleyman, the most powerful man in the Ottoman empire, was richer than a middle class family in 2005?
- Qualitative improvements are difficult to measure.

Understanding productivity
- Productivity is first and foremost a physical concept.
- Higher productivity implies more tons of wheat, number of cars, number of TV sets, etc. produced by each working person.
- Higher physical output per worker translates itself into higher value added and therefore higher real income per capita.
- There is no magic behind economic development: citizens of rich countries are rich because they produce more goods and services.
- Rapid growth in real GDP per capita corresponds to big increases in the productivity per working person.
Misconception about productivity
• The simple logic of productivity is not always understood properly
• Productivity is not about what you produce but about how efficiently you produce it
• Take a small country like Switzerland with a population of 7 million and real GDP per capita (PPP) of 30,350 US$ (second in rank after US)
• It has no military power, no car industry, no computer industry: among many other things, it exports milk, chocolate, drugs, watches and has large tourism and banking sectors
• Swiss are rich because they produce non-exotic goods and services with very high productivity

Factors of production
• To establish what determines productivity in the economy we need to look into the details of the production process
• Output is produced by inputs
• The inputs used to produce goods and services are called the factors of production
• We are familiar with these from microeconomics:
  – Physical capital
  – Human capital
  – Natural resources
  – Technological knowledge

Capital as a factor of production
• Capital has an interesting peculiarity as a factor of production because it is a produced factor of production
• It is an input into the production process that in the past was an output from the production process
• Physical capital is the stock of machinery, equipment and structures that are used to produce goods and services, such as
  – The machinery in oil refineries, steel mills, power plants
  – Tools used to repair automobiles or to build homes
  – Office buildings, schools, dams, TV towers, etc.

Human capital
• Human capital is the term used by economists to define the knowledge and skills that working persons in an economy acquire through education, training and experience
• Education constitutes the most important element in human capital
• Longer and better education of the citizens increase their ability to undertake complex tasks required in the production process
• Training usually takes place during working life and in firms
• Like physical capital, human capital raises a nation’s capacity to produce goods and services

Education and incentives
• Increasing the number of years children spend in school is vital for human capital (ITN p.548)
• Most nations have compulsory education laws up to age 14 or more
• These are usually difficult to enforce and poor parents prefer to send their children to work
• Gary Becker won the Nobel prize in economics because of his pioneering work on human capital
• He proposes financial incentives to poor parents as a better method for ensuring school attendance
• The title of his article is telling
  “Bribe third world parents to keep their children in schools”

Natural resources
• Natural resources are inputs used in production that are provided by nature, such as agricultural land, rivers, mineral deposits, forests, etc.
• Natural resources can be divided into two major categories
  – Renewable: trees, forests, hydroenergy
  – Nonrenewable: petroleum, coal, other minerals
• Having a large natural resource base can be an advantage but it does not lead automatically to high productivity
• Some rich countries are poor in natural resources (Danemark, Singapore) while some poor countries are rich in natural resources (Brazil, Russia, Iraq)

Technological knowledge
• Technological knowledge is the understanding of the best ways to produce goods and services
• Technological knowledge is related to but different from basic science
• A country may be well advanced in basic science and produce many high-tech products but still have low real GNP per head (Soviet Union and India are good examples)
• Producing good wine (France), expensive shoes (Italy), quality cars (Germany) also correspond to advanced technological knowledge
• Human capital refers to the resources expended to transmit the technology to the labour force

The production function
• A production function describes the relationship between the quantity of inputs used in production and the quantity of output from production
• Macroeconomic production function becomes
  \[ Y = A F ( L, K, H, N ) \]
  \[ Y = \text{quantity of output} \]
  \[ A = \text{available production technology} \]
  \[ L = \text{quantity of labour} \]
  \[ K = \text{quantity of physical capital} \]
  \[ H = \text{quantity of human capital} \]
  \[ N = \text{quantity of natural resources} \]
  \[ F \] is a function that shows how the inputs are combined (FY1 p.543)

Returns to scale
• Scale economies are about output changes when all the inputs are increased by the same proportion
• A production function may have increasing, decreasing or constant returns to scale
• A production function has constant returns to scale if, for any positive number \( x \)
  \[ x Y = A F (x L, x K, x H, x N) \]
• Under constant returns to scale, we can rewrite the production function in per worker terms by setting \( x = 1/L \)
  \[ Y/L = A F (1, K/L, H/L, N/L) \]
• Output per worker is a function of the quantity of non-labour factors of production per worker
Does nature limit to growth?
- World has a much bigger population now thanks to increases in the standard of living and therefore uses more natural resources than in the past (CS p.544)
- An important debate evolves around this issue
- Natural resources are limited yet population and use of natural resources grows exponentially
- Environmentalists and conservationists fear and claim that we are using too much natural resources and soon there will be left none
- Economists counterargue that as something gets scarce, its price will go up, leading to changes in technology and tastes and habits that will imply less consumption of it

Public policy toward growth
- Governments can do many things to raise productivity and living standards in the long run
  - Encourage saving and investment
  - Encourage education and training
  - Establish secure property rights and maintain political stability
  - Create an hospitable environment for foreign investment
  - Promote free trade
  - Control population growth
  - Promote research and development

More saving, more investment
- One sure way of raising future productivity and increasing the long run average growth rate is to save and invest a larger part of current output in physical capital stock
- Domestic savings, foreign savings in the form of Foreign Direct Investment (FDI) and foreign debt are the sources of investment in capital stock
- Governments can do many things to encourage capital accumulation, mainly through policies that increases domestic savings
  - The rule of thumb is simple: the more a country saves from current output, the higher will be the growth rate of its output in the long run

Saving and growth

<table>
<thead>
<tr>
<th></th>
<th>Average Growth Rate of GDP per capita 1960-91 (%)</th>
<th>The share of investment spending in GDP 1960-91 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Korea</td>
<td>7.0</td>
<td>24.0</td>
</tr>
<tr>
<td>Singapore</td>
<td>6.7</td>
<td>32.0</td>
</tr>
<tr>
<td>Japan</td>
<td>5.4</td>
<td>34.0</td>
</tr>
<tr>
<td>Israel</td>
<td>3.3</td>
<td>20.0</td>
</tr>
<tr>
<td>Canada</td>
<td>2.7</td>
<td>24.0</td>
</tr>
<tr>
<td>Brazil</td>
<td>2.6</td>
<td>19.0</td>
</tr>
<tr>
<td>West Germany</td>
<td>2.6</td>
<td>27.0</td>
</tr>
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<td>Mexico</td>
<td>2.4</td>
<td>16.0</td>
</tr>
<tr>
<td>Turkey</td>
<td>2.3</td>
<td>20.6</td>
</tr>
<tr>
<td>UK</td>
<td>2.1</td>
<td>18.5</td>
</tr>
<tr>
<td>Nigeria</td>
<td>2.0</td>
<td>13.0</td>
</tr>
<tr>
<td>US</td>
<td>1.9</td>
<td>22.0</td>
</tr>
<tr>
<td>India</td>
<td>1.5</td>
<td>14.0</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>1.4</td>
<td>4.0</td>
</tr>
<tr>
<td>Chile</td>
<td>1.3</td>
<td>20.0</td>
</tr>
<tr>
<td>Ruvanda</td>
<td>1.2</td>
<td>4.0</td>
</tr>
</tbody>
</table>

Catch-up effect
- Remember from microeconomics: as the stock of capital rises, the extra output produced from an additional unit of capital invested falls
- This property of the production function is called diminishing returns
- At low real GDP per capita levels, higher savings imply much higher average growth rates for the economy
- But, as real GDP per capita goes up, benefits from additional capital become smaller and the growth rate slows down
- Catch-up effect summarises this characteristic of the growth process

Institutions and property rights
- Recent research highlighted the quality and efficiency of the institutions in development
- Property rights refers to the ability of the people to exercise authority over the resources they own
- An impartial and effective legal system is an important prerequisite for the market economy and price system to work efficiently
- Weak law enforcement hurts property rights and therefore economic growth
- For growth to happen, investors must feel secure about the future of their investment
- Political stability creates an investment-friendly environment

Foreign direct investment
- Foreign direct investment – FDI – can be an important force to promote faster economic growth
- First, it allows an increase in investment without the additional burden caused by higher saving (less consumption) from current output
- Second, it reduces the need to earn foreign exchange to pay for imports
- Third, it brings very valuable technological and managerial skills to the domestic economy
- Fourth, it increases domestic competition and therefore efficiency of factor use
- Usually governments compete to attract more FDI inflows into their country
Exports and free trade
• Foreign trade allows countries to exploit their comparative advantages and increase production and efficiency
• Export-orientation encourages the production of goods and services for foreign markets and interaction with other economies
• Inward-orientation encourages the production of goods and services for domestic market and discourage interaction with other economies
• Turkey had adopted an inward-looking industrialisation regime before up to 1980
• Export-oriented trade policy is the common characteristic of “economic miracle” countries

Population growth
• Population is a key determinant of a country’s labour force
• Countries with large populations have large total GDP
• Big domestic markets resulting from large population can be an advantage for growth
• But, fast population increase reduces the average growth rate of real GDP per person
• Very high numbers of young requires scarce resources to be diverted from capital formation to education and human capital
• Controlling population growth improves growth performance for poor countries

Malthus on population
• English economist Robert Malthus (1766-1834) is known for his theory on population
• Malthus claimed that whereas agricultural output grows in arithmetic progression, like 1, 2, 3, 4, ..., population grows in geometric progression, like 1, 2, 4, 8, ...
• He therefore expected any increase in the standard of living to cause an explosion of population and eventually lead mankind to misery
• Malthus’ predictions did not come true
• In the last two centuries, real incomes in the world increased substantially despite much larger world population

Research and development
• For very poor countries, scientific research may be a luxury because they benefit from the catch-up effect
• Resources will be used more efficiently by imitating the rich countries
• But, for middle- and high-income countries, the advance of technological knowledge is the only road to higher standards of living
• Technological advancement comes from both private firms and public agencies
• Basic science is usually funded by government
• Public policy, in the form of research grants, tax breaks and the enforcement of patent laws encourage the development of new technologies

The plight of Africa
• Growth and development is not evenly distributed among continents and regions (ITN p.556)
• Africa’s growth performance was especially bad in the second half of the 20th century
• Political instability, military takeovers, civil wars, famine prevented the creation of an environment for favourable to economic development
• AIDS and other diseases hurt Africa more than any other continent or region of the world
• Some parts experienced decades of falling real GDP per head
• Much needs to be done to reverse this trend and put African countries on the road to economic growth

Conclusion
• Living standards as measured by real GDP per person vary substantially from country to country
• In the past, some countries experienced very high growth rates while others had much lower and few even negative growth rates
• Productivity is a key concept in understanding differences in living standards
• Differences in average productivity per worker explain the differences in living standards among countries
• The production function summarises the factors that influence the level of the production of goods and services

Capital accumulation and finance
• In Chapter 25 we saw the close link between the growth of real GDP and capital accumulation
• Capital stock increases by saving and investing a part of the current output of the economy
• The financial system is crucial to this process
• Those who save in the economy are not necessarily those who invest
• As a rule, many households and firms spend less than they earn: in other words, they save
• Others spend more than they earn: i.e. they invest
• Without a financial system, accumulation of capital and improvements in living standards would be very difficult in a market economy
The financial system

- The financial system consists of institutions that coordinate the actions of savers and investors.
- Its function is to move the economy’s scarce capital resources from those who save to those who borrow and invest.
- Altogether financial activities directly account for 4 to 5% of GDP in developed market economies.
- The share of financial activities Turkey’s GDP in 2004 is 4.7%.
- The financial system consists of three parts:
  - Financial markets
  - Financial intermediaries
  - Public bodies regulating financial institutions

Markets and intermediaries

- Financial markets are made of institutions through which savers can provide funds directly to borrowers:
  - Bond market
  - Stock market
- Financial intermediaries are those institutions through which savers can provide funds indirectly to borrowers:
  - Banks
  - Mutual funds
- Leasing and factoring companies are financial intermediaries.
- Brokerage houses (Menkul Değerler Şirketleri) are financial market institutions.

The bond market

- A bond is a certificate of indebtedness that specifies obligations of the borrower to the holder of the bond.
- Characteristics of a bond:
  - Term: the length of time until maturity
  - Credit risk: the probability that the borrower will fail to pay some of the interest or principal
  - Tax treatment: how income from bond is taxed
- In developed economies, issuing bonds is a major source of finance for private corporations as well as central and local government.
- In Turkey the bond market is fully dominated by Treasury bonds (T-bills) and private company bonds are almost nonexistent.

The stock market

- Stock is a claim to partial ownership in a firm.
- The sale of stock by firms to raise funds is called equity financing.
- Compared to bonds, stocks offer higher risk but also potentially higher returns.
- Bond holders receive interest on their capital independent of the profitability of the borrower.
- Stock holders receive dividends only if the firm makes and distributes profits.
- All major financial centers have stock exchanges: New York, London, Tokyo, Frankfurt, Paris, etc.
- Istanbul Stock Exchange (İstanbul Menkul Değerler Borsası IMKB) is a new but growing stock market.

Mutual funds

- A mutual fund is an institution that sells shares to the public and uses the proceeds to buy a selection - or portfolio - of various types of stocks, bonds, or both.
- Mutual funds allow people with small amounts of saving to diversify and try to benefit from the advantages of the stock exchange.
- In Turkey the equivalent of mutual funds is called investment funds (yatırım fonlar)
  - A-type funds have at least 25% of their portfolio in stocks
  - B-type funds have mainly bonds and REPOS
  - REPOS are short maturity transactions that involve purchase and repurchase of T-bills.

Back to national income identity

- Recall that GDP is at the same time:
  - total income produced in the economy
  - total expenditure on the economy’s output of goods and services
    \[ Y = C + I + G + NX \]
    \[ Y = C + S + T + NX \]
- From now on, we will assume a closed economy, in other words delete NX from both identities
  \[ Y = C + I + G \]
  \[ Y = C + S + T \]
- In the closed economy, national income is either consumer, or saved, or paid as taxes to the government.

Banks

- Banks take deposits from households and firms who wish to save and make loans to households and firms who wish to borrow.
- Banks pay interest to depositors and charge slightly higher interest to borrowers on their loans.
- Banks help create a medium of exchange by allowing depositors to write checks against their deposits.
- Two state banks (Ziraat and Halk) and four private banks (Garanti, İş, Ak and Yapı Kredi) make up a large part of the banking system.
- Total deposits in the banking system is about 50 percent of GDP.

Saving and investment

- Total income in the economy after paying for consumption and government purchases is called national saving or just saving.
- By definition, in a closed economy national saving is equal to investment
  \[ I = Y - C - G \]
  \[ I = S \]
  \[ S = (Y - T - C) + (T - G) \]
  \[ S_p = (Y - T - C) = \text{private saving} \]
  \[ S_g = (T - G) = \text{public saving} \]
- National saving = income – private consumption
- National saving = private saving + public saving.
Private and public saving

- Private saving is the amount of income left to households after paying for taxes and for consumption
  \[ S_p = Y - T - C \]
- Public saving is the amount of tax revenue left to the government after paying for its spending
  \[ S_g = T - G \]
- \( T - G \) can be seen as the budget balance of the government
- Budget deficit makes \( S_g \) negative while budget surplus makes it positive
- Notice that by definition national saving is calculated after we add government deficit/surplus

Supply and demand for loanable funds

- The supply of loanable funds comes from households and firms who have extra income they wish to save and loan out
  \[ S = (Y - T - C) + (T - G) \]
- Saving is an increasing function of the real interest rate (upward sloping curve)
- The demand for loanable funds is investment in the economy: it comes from firms who wish to borrow to make investment
  \[ I = Y - C - G \]
- Investment is decreasing function of the real interest rate (downward sloping curve)

Effects of budget deficit

- It is very important to understand the interrelation between saving, investment, taxes and government purchases for the closed economy
- If the budget is in balance, then \( T - G = 0 \) and national saving and therefore investment is equal to private saving
  \[ S = S_p = I = Y - C \] for \( T = G \)
- If the budget has a deficit, then \( T - G < 0 \) and private saving is bigger than national saving and investment
  \[ S = I = S_p + (T - G) < 0 \]
- A budget surplus in turn allows national saving and therefore investment to be higher than private saving

The market for loanable funds

- Saving and investment decisions in the economy are coordinated in the market for loanable funds
- Financial markets work much like other markets in the economy
- The supply and demand for loanable funds determine the equilibrium real interest rate
- Attention: in daily language, saving and investment have other meanings compared with economics
- Deposits in the bank or buying T-bills, considered as ‘investment’, is saving to economists
- For the economist, investment is the act of adding machinery, equipment or structures to the capital stock of the economy, not buying a T-bill

Saving incentives

- Changes in the tax regime for savings and/or interest income affects the rewards of saving and thus changes the incentives to save
  - A decrease in taxes on saving increases the incentive to save at any given real interest rate
  - The supply curve of loanable funds shifts to the right
  - Higher savings reduces the equilibrium real interest rate
  - Investment (quantity demanded of loanable funds) increases as a result of the lower interest rate
  - The opposite holds for an increase in taxes
  - Supply curve shift to left, real interest rate increases and the quantity of investment falls

Investment incentives

- Changes in the tax regime that affects the profitability of investments affects the rewards for investment and thus changes the incentives to invest
  - An investment tax credit (yatırım vergi istisnası) increases the incentive to borrow of the firms
  - The demand curve for loanable funds market shall look at the policy actions of government and how they affect the real interest rate
    - How taxes affect saving?
    - How taxes affect investment?
    - How budget deficits of the government affects real interest rate?
A decrease of taxes on investment

1. An investment tax credit increases the demand for loanable funds...
2. ...which raises the equilibrium interest rate...
3. ...and raises the equilibrium quantity of loanable funds.

Budget deficit

- The shortfall in income when the government spends more than it receives in tax revenues is called the budget deficit.
- The deficit in the budget means that public saving is negative.
- Remember: budget balance affects the level of national saving.

\[ S = (Y - T - C) + (T - G) \]

Accordingly, the deficit in the budget decreases national saving and therefore the supply of loanable funds.
- By definition, the budget balance of the government has an impact on the loanable funds market.

Budget deficit and crowding out

1. A budget deficit decreases the supply of loanable funds...
2. ...which raises the equilibrium interest rate...
3. ...and reduces the equilibrium quantity of loanable funds.

From deficits to debt

- When the government spends more than its revenues the deficit is financed by borrowing in domestic and international markets.
- Public debt is therefore equal to the sum of past budget deficits of the government.
- Large budget deficits rapidly increases public debt.
- Public debt is best expressed as a ratio of GNP.
- Part of the gross public debt could be held by public institutions like the Central Bank.
- Net public debt is a better measure of debt burden.
- Net public debt to GNP ratio increased rapidly in Turkey 80% of GNP in 2001.
- It has been falling slowly during the last two years.

Public debt in the US

- Growth of output and accumulation of capital requires saving from current output with the aim of increasing the capital stock in the economy.
- Financial system is the vital link between those who save and those who invest.
- Financial markets work like other markets in the economy.
- They coordinate borrowing and lending, helping to allocate the economy’s scarce resources efficiently.
- Turkey’s financial system includes financial institutions such as banks and mutual funds and financial markets such as the bond market and the stock market.

Conclusion

- National saving equals private saving plus public saving.
- Saving and investment decisions are reflected into the market for loanable funds.
- Supply and demand for loanable funds determine the real interest rate.
- The budget deficit of the government represents negative public saving, reducing national saving and the supply of loanable funds.
- Budget deficit crowds out private investment thus reducing growth of GDP and the living standards in the long run.

Turkey: the rise in public debt

- The deficit crowds out private investment.
- The accumulation of past budget deficits constitute the public debt.
Finance is everywhere

• In a modern economy every citizen is involved in some ways with the financial system
• Deposits in banks and credit cards are the simplest forms of financial transactions
• An increasing number of people use more sophisticated financial instruments such as shares of stock and investment funds to place their savings
• Fluctuations in the stock market index, in the interest rates, in the prices of government bonds as well as in the exchange rate cause excitement
• Understanding the basic principles of finance is important for our daily life

Financial decisions: time and risk

• Finance concerns the decisions we make today that affect our lives in unknown future
• Two elements become key to all financial decisions: time and risk
• Finance is the field that studies how people make decisions regarding the allocation of resources over time and the handling of risk
• First we learn to compare sums of money at different points in time
• Second, we discuss how to manage risk
• Third, we apply these concepts to examine what determines the value of an asset, such as a share of stock

The Basic Tools of Finance

Chapter 27

Present value

• How can you compare 100 YTL paid today with 200 YTL paid in ten years, assuming zero inflation and 5% real interest rate
• You can either calculate the value of 100 YTL in 10 years:

\[ 100 \times (1 + 0.05)^{10} = 162.9 \text{ YTL} \]
• Or the present value of 200 YTL today:

\[ 200 \times \left( \frac{1}{1 + 0.05} \right)^{10} = 122.8 \text{ YTL} \]
• Obviously at 5% real interest rate, 200 YTL has a bigger present value than 100 YTL
• If \( r \) is the interest rate, then an amount \( X \) to be received in \( N \) years has present value of:

\[ \frac{X}{(1 + r)^N} \]

Measuring the time value of money

• Present value refers to the amount of money today that would be needed to produce, using prevailing interest rates, a given future amount of money
• The concept of present value demonstrates the time value of money
• Receiving a given sum of money in the present is preferred to receiving the same sum in the future
• If the payment in future is larger, we compare values at different points in time by their present values
• For example, firms undertake investment projects if the present value of the project exceeds its current cost to the firm

Future value and compound interest

• The amount of money in the future that an amount of money today will yield, given prevailing interest rates, is called the future value
• We calculate future value by assuming that the interest earned every period is added to the principal and earns interest in the next period
• This is also called compound interest
• If value at the beginning is \( V \), real interest rate is \( r \) and the number of periods is \( N \), future value \( FV \) becomes

\[ FV = V \times (1 + r)^N \]
• This is the opposite of the present value formula

The Rule of 70

• It is very important to understand the meaning of compounded expansion for real life events
• Differences in annual growth rates that seem small at first sight turn out to be enormous when compounded over very long periods
• According to the rule of 70, if a variable grows at a rate of \( x \) percent per year, it doubles in approximately \( 70/x \) years
• Let us look at two examples (FYI p.585)

<table>
<thead>
<tr>
<th>Growth Rate</th>
<th>Years to Double</th>
</tr>
</thead>
<tbody>
<tr>
<td>2%</td>
<td>35 years</td>
</tr>
<tr>
<td>7%</td>
<td>10 years</td>
</tr>
<tr>
<td>10%</td>
<td>7 years</td>
</tr>
</tbody>
</table>

Managing risk

• Life is about making decisions about future events with unknown outcomes
• Almost every decision involves some sort of uncertainty and therefore carries some risk
• In driving a car, choosing a profession, investing in the stock market, etc., outcomes depend on events beyond our control, almost like gambling
• The rational response to risk is not necessarily to avoid it at all cost
• But to take it into account during decisions making to transform it into calculated risk
• We must learn to manage risk

Risk aversion

• A person is said to be risk averse if he/she exhibits a dislike of uncertainty
• Most people are risk averse
• In the sense that they dislike bad things happening to them more than they like comparable good things
• Someone offers you to flip a coin for 100 mil. TL
• Chances of winning and loosing are equal
• If you are risk averse, you refuse this bet
• Because the pain from losing 100 mil. TL is bigger than the gain from winning 100 mil. TL
• Even if you know that chances are equal
Utility and risk aversion

- Economist have developed models of risk aversion using the concept of utility.
- Utility is a person’s subjective measure of well-being or satisfaction from some good or service.
- Higher levels of wealth provide higher levels of utility but with diminishing marginal utility.
- In the sense that, your higher the wealth, the less utility you get from the incremental increase in wealth.
- Diminishing marginal utility explains risk aversion.
- The fall in utility from losing 100 mil. TL is bigger than the increase in utility from winning 100 mil. TL.
- We can see this on the utility function.

Reducing risk

- Risk aversion provides the starting point for explaining various institutions or behaviour we observe in the economy.
- Over time, economic agents have learned methods to reduce the risk they were obliged to take in the complex environment of a modern market economy.
- We will highlight three methods that economic agents use to reduce risk:
  - Buy insurance
  - Diversify
  - Accept a lower return on their investments.
- These will improve our understanding of risk.

Markets for insurance

- One way to deal with risk is to buy insurance.
- The general feature of insurance contracts is that a person facing a risk pays a fee to an insurance company, which in turn agrees to accept all or part of the risk.
- Car insurance (kasko) covers the risks of an auto accident for the owner.
- Every insurance policy is a gamble.
- For example, the car owner bets that he will have an accident while the insurer bets that he won’t.
- From a macro perspective, insurance markets don’t eliminate risk.
- Only spread it evenly among a larger population.

Assymmetric information

- Insurance markets suffer from problems due to the nature of information available to the insurer and the insured.
- Assymmetric information refers to situations where one side in a transaction knows more about what is going on than the other side.
- Obviously the insured himself knows much more about his own capabilities and intentions than the insurance company.
- The theory covers many areas, such as employment, bidding for contracts, etc. beside insurance.
- Two important applications are: adverse selection and moral hazard.

Adverse selection

- Adverse selection refers to a seller knowing more about what he sells than the buyer.
- Buyers of second hand cars have no idea about the real quality of the cars they are offered.
- Therefore, they tend to pay less to cover that risk and therefore good cars stay out of the market.
- Buyers of health insurance know more about their own health than the insurance company.
- Sicker than average persons buy more health insurance, driving up costs and premiums, thus making health insurance even less attractive for healthy persons.
- High risk people apply more to get insured.

Moral hazard

- Moral hazard arises when one person, the agent, performs some task on behalf of another person, the principal, when perfect monitoring is not possible.
- The possibility exists that the agent acts against the interest of the principal.
- As in the examples below:
  - After taking fire insurance, a homeowner stops buying fire extinguishers.
  - After taking accident insurance, a car owner drives faster.
- The insurer is the principal, the insured the agent.
- The price of insurance reflects the higher risks due to the moral hazard.

Diversification

- Mankind discovered thousands year ago one of the principles of sound finance.
- Summarised by the common sense saying: “Don’t put all your eggs in the same basket”.
- Diversification refers to the reduction of risk achieved by replacing a single risk with a large number of smaller unrelated risks.
- Investing in one single company could bring mega profits if the company is successful but also a big loss if it is a failure.
- Diversification means investing in large number of companies.
- It will reduce risk but also the return on investment.

Risk: idiosyncratic and aggregate

- We must distinguish two types of risk.
- Idiosyncratic risk affects only a single economic actor.
- Such as the uncertainty of profits, loss, bankruptcy, etc. associated with specific companies.
- Aggregate risk affects all economic actors at once.
- Such as the the uncertainty associated with the entire economy due to recessions, financial crises, etc. which affects all companies.
- Diversification cannot remove aggregate risk.
- Standard deviation measures the volatility of a variable, i.e. the intensity of its fluctuations.
- We use standard deviation to measure risk.
Trade-off between risk and return

- In life, less dangerous courses of action are usually also less advantageous.
- There exists a one-to-one inverse relation between the risks and the profitabilities of investments.
- Risk can be reduced by accepting lower returns.
- Typically, stock market assets have higher returns in the long run compared with safe assets such as government bonds.
- But in the short run the stock market may also cause large losses to the investor.
- During the last two centuries two centuries average real return on stocks was 8.3% in the US.
- However bonds gave only 3.1% real return.

Diversification and risk

- Risk (standard deviation of portfolio return) (More risk)
- Aggregate risk
- Diversification and risk

Asset valuation

- Time and value are two building blocks of finance.
- We can apply this knowledge to current issues.
- Let us start with a question of crucial importance for all investors in the stock market.
- What determines the price of a share of stock?
- As in all prices, the answer is simple: supply and demand for that stock.
- Demand for a consumption good or service depended on tastes, the income of the consumer, the prices of other goods, etc.
- What are the factors that determine the demand for a share of stock?
- Asset valuation deals with this question.

Fundamental analysis

- Buying stock is becoming a partner in a business.
- Deciding which companies to buy is not a subjective or emotional matter such as buying a shirt, etc.
- It is a rational decision based on comparing the value of the company with its share price.
- Given the price of stock, the decision will depend on the value of the company.
- Fundamental analysis is the study of a company’s accounting statements and future prospects to determine its value.

Efficient markets hypothesis

- Assume you just included 20 stocks randomly selected from the list in your portfolio.
- It is a rational decision based on comparing the value of the company with its share price.
- According to “efficient markets” it will perform well.
- A market is informationally efficient when it reflects all available information in a rational way.
- If markets are efficient, the only thing an investor can do is buy a diversified portfolio.
- “You can’t beat the market.”

Random walks and index funds

- Random walk refers to the path of a variable whose changes are impossible to predict (CS, p.593).
- If markets are efficient, all stocks are fairly valued and no stock is more likely to appreciate than another.
- Thus stock prices follow a random walk.
- In other words, the changes in stock prices are impossible to predict on the basis of available information.
- Index funds invest in companies in proportion to their weight in the stock market index.
- In the 10 years ending in Feb.2002, 82% of stock funds failed to beat the S&P index fund for NYSE.

“Irrational exuberance”

- Efficient markets hypothesis assumes that people are rational in their behaviour in the stock market.
- Many economists would challenge that assumption.
- In the 1930s Keynes suggested that asset markets are driven by “animal spirits” of investors.
- Such as irrational waves of optimism and pessimism.
- In the 1990s Fed Chairman Greenspan warned against the “irrational exuberance” reflected in the stock market boom.
- Short lived but large increases in stock prices are called speculative bubbles.
- They appear frequently in all asset markets in the world, including highly developed economies.

Conclusion

- Because savings can earn interest, a sum of money today is more valuable than the same sum of money in the future.
- A person can compare sums from different times using the concept of present value.
- The present value of any future sum is the amount that would be needed today, given prevailing interest rates, to produce the future sum.
- Because of diminishing marginal utility, most people are risk averse.
- Risk-averse people can reduce risk using insurance, through diversification, and by choosing a portfolio with lower risk and lower returns.
The importance of employment

- Whether citizens who are willing to work can find jobs is a very sensitive and important issue for all economies in the world.
- Machines, natural resource, technical knowledge are very valuable for production but in the end it is always people who produce.
- Unemployment means that the economy is not capable of using part of its productive capacity.
- A country that keeps its workers as fully employed as possible achieve a higher level of GDP than the one who leaves many of them idle.
- Unemployment also has important negative social and political consequences.

From population to employment

- Our first task is to develop adequate measures for employment and unemployment.
- Population covers all the people in a country, therefore many who are either too young or too old to work.
- Adult population covers the economically active age group in the population.
- Upper and lower age limits may vary; the World Bank takes 15-64 years.
- Labour force comprises all person who supply labour for the production of goods and services, including those that are unemployed.
- Employed plus unemployed equals labour force.

International comparisons

- What explains the higher participation rate in developed economies?
- One important factor is the changing role of women in society with economic development.
- US, Germany, etc. developed countries have witnessed a steady increase in women participation rates during the last half century.
- Household appliances that facilitate housework, birth control, increases in service industry jobs suitable for women have contributed to it.
- More important is the change in social and political attitudes that discouraged women to work and gain economic independence.
### US: demographic groups

<table>
<thead>
<tr>
<th>Demographic Group</th>
<th>Unemployment Rate</th>
<th>Labor-Force Participation Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADULTS (Aged 20 and over)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White male</td>
<td>3.7%</td>
<td>76.8%</td>
</tr>
<tr>
<td>White female</td>
<td>3.6%</td>
<td>50.2%</td>
</tr>
<tr>
<td>Black male</td>
<td>8.0%</td>
<td>72.1%</td>
</tr>
<tr>
<td>Black female</td>
<td>7.0%</td>
<td>65.4%</td>
</tr>
<tr>
<td>TEENAGERS (Ages 16-19)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White male</td>
<td>13.8%</td>
<td>54.1%</td>
</tr>
<tr>
<td>White female</td>
<td>11.4%</td>
<td>52.8%</td>
</tr>
<tr>
<td>Black male</td>
<td>30.5%</td>
<td>38.0%</td>
</tr>
<tr>
<td>Black female</td>
<td>27.5%</td>
<td>37.4%</td>
</tr>
</tbody>
</table>

### Structure of employment

- Another characteristic of developed economies is the very high share of wage and salary earners (employees) in the labour force.
- In US, Germany, etc. only a small portion of the employed (10% or so) is either self-employed or employer, the rest (90%) are wage and salary earning employees.
- Turkey has a totally different structure in employment.
- While male 3.7% 76.8%
- Female 3.6% 50.2%

### Structure of employment compared

<table>
<thead>
<tr>
<th>%</th>
<th>USA</th>
<th>Japan</th>
<th>EU-15</th>
<th>Poland</th>
<th>Turkey</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-64 years in Population</td>
<td>67</td>
<td>67</td>
<td>70</td>
<td>65</td>
<td>75</td>
</tr>
<tr>
<td>Participation Ratio</td>
<td>75</td>
<td>78</td>
<td>71</td>
<td>64</td>
<td>52</td>
</tr>
<tr>
<td>Unemployment Rate</td>
<td>5.5</td>
<td>4.7</td>
<td>8.3</td>
<td>19.0</td>
<td>10.3</td>
</tr>
<tr>
<td>Agriculture</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>18</td>
<td>34</td>
</tr>
<tr>
<td>Industry+Construction</td>
<td>20</td>
<td>29</td>
<td>27</td>
<td>29</td>
<td>23</td>
</tr>
<tr>
<td>Services</td>
<td>78</td>
<td>67</td>
<td>69</td>
<td>53</td>
<td>43</td>
</tr>
<tr>
<td>Payroll/Totale</td>
<td>92</td>
<td>85</td>
<td>84</td>
<td>73</td>
<td>51</td>
</tr>
<tr>
<td>Female/Total</td>
<td>47</td>
<td>41</td>
<td>44</td>
<td>45</td>
<td>27</td>
</tr>
</tbody>
</table>

### Civilian employment in Turkey

<table>
<thead>
<tr>
<th>By category (2006Q3)</th>
<th>millions</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unpaid family labour</td>
<td>3.8</td>
<td>16%</td>
</tr>
<tr>
<td>Self-employed</td>
<td>5.3</td>
<td>23%</td>
</tr>
<tr>
<td>Wage or salary earner</td>
<td>11.1</td>
<td>48%</td>
</tr>
<tr>
<td>Daily wage earner</td>
<td>1.8</td>
<td>8%</td>
</tr>
<tr>
<td>Employers</td>
<td>1.3</td>
<td>5%</td>
</tr>
<tr>
<td>Total civilian employed</td>
<td>23.3</td>
<td>100%</td>
</tr>
<tr>
<td>Unemployed</td>
<td>2.3</td>
<td>9.1%</td>
</tr>
<tr>
<td>Labour Force</td>
<td>25.6</td>
<td>100%</td>
</tr>
</tbody>
</table>

### Measuring unemployment

- A person is considered employed if he or she has spent most of the previous week working at a paid job.
- A person is considered unemployed if he or she is on temporary layoff, looking for a job, or waiting for the start date of a new job.
- A person in none of these categories is not in the labour force.
- The unemployment rate is calculated as the percentage of the labour force that is unemployed.

\[ \text{Unemployment rate} = \frac{\text{Number unemployed}}{\text{Labor force}} \times 100 \]

### Different kinds of unemployment

- Economists distinguish among four basically different kinds of unemployment:
  - **Structural unemployment**
  - **Disguised unemployment**
  - **Cyclical unemployment**
  - **Frictional unemployment**

- This can be partly explained by the duration of unemployment.
- Many people become unemployed but only for a very short period of time.
- Some people remain unemployed for much longer periods of time.
- Some people are never employed.

### Structural unemployment

- Macroeconomic textbooks are written mainly for the students of developed countries.
- Where enough capital exists so that during booms the economy operates at full employment.
- In less developed economies there is lack of capital to employ all of the labour force productively.
- The 15-64 years age group members (adults) who can not find employment simply because there are not enough factories, offices, fields, etc. constitute structural unemployment.
- Dismacroeconomic policies have no impact on structural unemployment in the short run: unemployment persists even during rapid growth.

### Disguised unemployment

- Another problem facing less developed economies is called "disguised unemployment" (gizli işsizlik).
- Many people, especially in agriculture and urban services seem to be working.
- But they have very low productivity, creating very little value added and therefore earn low levels of income.
- This is due to the lack of jobs with high productivity in the economy, itself due to the capital constraint.
- Turkish unemployment figures are not a meaningful indicator of economic activity because widespread structural and disguised unemployment exist both in agriculture and services sectors.
Cyclical unemployment
- This is the most important kind of unemployment from the perspective of macroeconomics
- The word “cyclical” refers to the business cycle or ups and downs in overall economic activity
- Cyclical unemployment happens when economic activity slows down as result of a recession or an economic crisis
- As demand for goods and services fall, people who were producing them lose their jobs
- Many people became unemployed in Turkey during 2001 and 2002 because of the economic crisis
- Banking and service industries were the hardest hit and experienced the highest cyclical unemployment

Frictional unemployment
- Employment, unemployment, labour force, etc are all dynamic flow concepts
- Companies and sectors grow, shrink, go bankrupt every day in every economy
- People migrate to other cities or regions for personal as well as economic reasons
- People change jobs for many, even irrational, reasons
- At any moment in time, there are many people temporarily unemployed in the economy
- Even at fullest possible level of employment, a small percentage of the labour force (for example 2%) will be frictionally unemployed in every modern market economy

Natural rate of unemployment
- Natural rate of unemployment – NRU – is the level of unemployment that does not go away on its own even in the long run
- It is the amount of unemployment that the economy normally experiences
- NRU has an important link with inflation
- It is the rate of unemployment at which inflation remains constant in the economy
- It is also called Non Accelerating Inflation Rate of Unemployment – NAIRU
- Efforts to reduce unemployment to below NRU are usually not successful
- It is a very important tool in macroeconomic policy

US: NRU and cyclical unemployment

Is unemployment measured correctly?
- Movements of people in and out of the labour force makes it difficult to interpret unemployment figures correctly
- Discouraged workers, people who would like to work but have given up looking for jobs, don’t show up in the unemployment statistics
- Other people may claim to be unemployed in order to receive financial assistance even though they are not looking for work
- Finally, some people may seem working but actually would be willing to take a better job if they could find it (disguised unemployment)

Job search
- Job search is the process by which workers find appropriate jobs given their tastes and skills
- Job search unemployment results from the fact that it takes time for qualified individuals to be matched with appropriate jobs
- This unemployment is different:
  - It is not caused by a wage rate higher than equilibrium wage rate
  - It is caused by the time spent searching for the “right” job
- Those in the banking sector who lost their jobs in Turkey recently find it difficult to accept jobs in other sectors

Unemployment insurance
- In the 20th century governments designed policies targeting the unemployed
- Unemployment insurance exist in all industrial economies and was recently introduced in Turkey
- It is financed through the premiums paid by the employee and the employer
- The unemployed who are part of the scheme receive unemployment benefits
- How much and how long changes from country to country
- Economists fear that generous and long unemployment benefits actually increase NRU
- And become a big burden on the budget

Why is there unemployment?
- In an ideal labour market, wages would adjust to balance the supply and demand for labour
- Ensuring that all those who look for jobs find one
- And the economy stays at full employment
- But, unemployment is a fact of life for all market economies
- We will review four explanations advanced by economists for unemployment
  - Job search
  - Minimum wage laws
  - Trade unions
  - Efficiency wages

Minimum wage laws
- Most economies have legislation which fixes the minimum wage to be paid to workers by firms
- Minimum wage laws try to protect workers against employers
- But, if the minimum wage is set above the level that balances supply and demand, it may also create unemployment
- It is therefore possible to claim that some unemployment is due to minimum wages
- In Turkey the minimum monthly wage for the first half of 2007 is set by the government at 563 YTL before tax (403 YTL after tax)
- But its effect on the economy is minimal
Minimum wage laws

![Diagram of Minimum Wage Laws]

Unions and collective bargaining

- A trade union (işçi sendikası) is a worker association that bargains with employers over wages and working conditions.
- A union is a type of cartel.
- The process by which unions and firms agree on the terms of employment is called collective bargaining.
- A strike is organised in case of disagreement.
- By acting as a cartel with the ability to strike or otherwise impose high costs on employers, unions usually achieve above equilibrium wages for their members.
- Union members earn 10 to 20 percent more than non-union workers in the US.

Unions and collective bargaining

- The contribution of unions to the welfare of society is controversial.
- Critics argue that unions cause the allocation of labour to be inefficient and inequitable.
- Wages above competitive levels reduce employment and cause unemployment.
- Union workers benefit at the expense of non-union workers and the unemployed.
- Advocates of unions contend they are a necessary antidote to the market power of firms.
- They claim that unions are important for helping firms respond efficiently to workers’ concerns about wages and job security.

Theory of efficiency wages

- The theory of efficiency wages is another more recent explanation of why wages may remain above equilibrium level despite unemployment.
- Efficiency wages are above-equilibrium wages paid by firms in order to increase worker productivity.
- The theory claims that paying above-equilibrium wages to its workers is in the interest of the firms.
- Because it allows production to be more efficient and therefore helps reduce costs of the firm despite the higher wages.
- A firm may prefer higher than equilibrium wages for four main reasons: worker health, worker turnover, worker effort and worker quality.

Four ways to efficiency

- **Worker Health**: better paid workers eat better and thus are more productive (this argument is valid only for very poor countries).
- **Worker Turnover**: training a worker is expensive; a better paid worker is less likely to look for another job and the firm saves training expenses.
- **Worker Effort**: production process demand full participation by the worker to be efficient and higher wages motivate workers to put forward their best effort.
- **Worker Quality**: higher wages attract a better pool of workers that apply for jobs to the firm, improving the firm’s chances of getting better workers.

Money in the long run

- In **Part IX** we looked at the real economy in the long run: production, growth, saving-investment, real interest rate, employment and real wages.
- We assumed a closed economy with a government and a financial system but **without money**.
- Obviously, everywhere in the world money is far too important to neglect for economic theory.
- Now we will try to define **money** and see how it affects the economy in the long run.
- The introduction of money permits a first approach to inflation.
- Understanding money is even more vital for high inflation countries like Turkey.
Plan of Part Ten

- Chapter 29 is called the Monetary System which includes the Central Bank as well as banks
- It begins with the definition of money and develops the concept of the supply of money
- Chapter 30 is called Money Growth and Inflation
- We begin by establishing the determinants of the demand for money in the long run
- Next, we see the link between the increase in the supply of money and inflation
- Finally we evaluate the effects of inflation on the smooth working of an economy
- The short run effects of money are dealt in Part Twelve along with other short run analysis

What is money?

- Money has a very specific meaning for economists
- The set of assets in the economy that people use regularly to buy goods and services from other people is called money
- Every economic transaction, for a good, a service or a factor involves a buyer, a seller and an agreed means of payment for the transaction
- Anything that the sellers of goods, services and factors accept as payment against what they sell is by definition money
- Throughout history, as specialisation in production created exchange, money and monetary systems were invented by independent societies

Functions of money

- Money has three functions in the economy
  - A medium of exchange
  - A unit of account
  - A store of value
- A medium of exchange is anything that is readily acceptable as payment
- A unit of account is the yardstick people use to post prices and record debts
- A store of value is an item that people can use to transfer purchasing power from the present to the future
- When TL fulfilled only partly the first function, we used the US dollar for the other two (“dandik para”)

Liquidity

- A key concept to understand money is liquidity
- Liquidity is the ease with which an asset can be converted into the economy’s medium of exchange
- By definition, money is the most liquid asset: banknotes in our pocket need not be converted into anything to be used for payment
- Sight deposits (vadesiz mevduat) in the banks and money market funds (B tipi fon) are also liquid
- Demand deposits (vadeli mevduat), shares in listed companies and investment funds (A tipi fonlar) are less liquid assets
- Real estate, shares in non-listed companies are not liquid assets

Commodity money

- From the days agriculture was discovered 7000 years ago all the way to the 19th century, money took the form of commodities with intrinsic value
- Not all commodities are suitable to be money
- Goods that are perishable (eggs, tomatoes), non-divisible (hides), difficult to transport (water) or relatively abundant (wheat) make bad money
- From very early days, societies understood that metals fulfilled the functions of money
- Copper, then silver, eventually gold was minted by governments as currency
- Other examples reflect marginal exceptions (such as cigarettes among war prisoners)

Fiat money

- Fiat money is used as a medium of exchange because of a government decree/decision
- US, EU, Japan, etc. all economies in the world have fiat money
- Fiat money has no intrinsic value
- The paper and printing costs of a banknote or the metal value of a coin are negligible
- In Turkey, we must accept the coins and banknotes issued by the Central Bank for all payments
- We can link the price in a transaction to anything we wish (US$, gold, CPI, price of wheat, etc.) but cannot refuse payment in TL
- Banknotes are also called “legal tender”

Money in the Turkish economy

- The actual form liquid assets take in an economy depends on the legal framework of the financial system
- For Turkey, we distinguish four types of money
- Currency is the paper banknotes and metal coins in the hands of the public
- Demand deposits (vadesiz hesap) are balances in bank accounts that depositors can access on demand usually by writing a check.
- Time deposits (vadeli hesap) are balances in bank accounts that can only be drawn at agreed time.
- Foreign exchange deposits (döviz mevduat hesapları) are accounts in foreign exchange (FX)

Measures of money supply

- Money supply is the total of money (liquidity) available for use in the economy
- The measure of money supply changes depending on the different categories of assets included in it
- Usually we start with the most liquid asset and go down towards less liquid assets
  - \( M_0 \) = Currency in circulation
  - \( B M \) = Base money \( = M_0 + \text{bank reserves} \)
  - \( M_1 \) = \( B M + \text{demand deposits} \)
  - \( M_2 \) = \( M_1 + \text{time deposits} \)
  - \( M_2Y \) = \( M_2 + \text{FX deposits} \)
  - \( M_2Y + R \) = \( M_2Y + \text{repos} \)

<table>
<thead>
<tr>
<th>Money supply in Turkey</th>
<th>Dec 06 (Billion YTL)</th>
<th>As % of M2Y+R</th>
</tr>
</thead>
<tbody>
<tr>
<td>C - Currency in Circulation</td>
<td>21.3</td>
<td>15.0</td>
</tr>
<tr>
<td>BM - C + Bank Deposits at CB</td>
<td>21.1</td>
<td>14.9</td>
</tr>
<tr>
<td>M1 - BM + demand deposits</td>
<td>42.4</td>
<td>30.0</td>
</tr>
<tr>
<td>M2 - M1 + time deposits</td>
<td>170.7</td>
<td>120.5</td>
</tr>
<tr>
<td>M2Y - M2 + FX deposits</td>
<td>258.3</td>
<td>182.4</td>
</tr>
<tr>
<td>M2 + R - M2 + Repos</td>
<td>176.2</td>
<td>124.4</td>
</tr>
<tr>
<td>M2Y + R - M2Y + Repos</td>
<td>263.8</td>
<td>186.2</td>
</tr>
</tbody>
</table>
The Central Bank

- During the 20th century, as fiat money became widespread, countries gave the monopoly to print banknotes and mint coins to a public institution called the Central Bank
- Before the Republic, Osmanlı Bankası, a private bank, had the charter to issue currency
- Türkiye Cumhuriyet Merkez Bankası (TCMB) was established in 1930 and started operations in 1932
- In the US, the Federal Reserve Board with 12 Federal Reserve Banks fulfills the functions of the central bank (established in 1913)
- Currency was issued by US Treasury before that date

Functions of the Central Bank

- The Central Bank is probably the most important institution of macroeconomics because of its role in regulating the liquidity in the financial system
- CB oversees and regulates the banking sector
- In Turkey this function was recently transferred to the Banking Regulation Agency (BDDK)
- CB acts as a banker’s bank, making loans to the banks as a lender of last resort
- CB conducts monetary policy by controlling the money supply and determining the short run nominal interest rates
- CB holds the official foreign exchange reserves of the country

Organisation of TCMB

- General Assembly (Genel Kurul) is constituted by CB Board (Banka Meclisi) is elected by the General Assembly to run the CB
- The Governor (Guvernör or Başkan) is the chief executive officer of the CB, elected directly by the Government for 5 years
- Monetary Policy Board (Para Politikası Kurulu) has been established recently to conduct monetary policy
- Recently TCMB has obtained legal independence from the government in its effort to pursue price stability

Balance Sheet of CB

- The Balance Sheet of the CB summarises monetary developments in the economy
- Assets and liabilities of the CB are either in foreign exchange or in the currency issued by the CB
- Gold and the foreign exchange holdings of the CB constitute its international reserves
- Local currency assets are usually T-bills
- Banknotes issued by the CB are called currency in circulation
- Attention: local currency in circulation is a liability for CB (it represents the debt of CB to the holder)
- Deposits by banks and its paid capital CB are the other liabilities of the CB

World: CB balance sheets

<table>
<thead>
<tr>
<th>Billion USDollar</th>
<th>US Fed Reserve</th>
<th>Bank of Japan</th>
<th>Euro Area ECB</th>
<th>Germany Bundes Bank</th>
<th>TCMB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets</td>
<td>772</td>
<td>1258</td>
<td>1094</td>
<td>305</td>
<td>55</td>
</tr>
<tr>
<td>FX Assets (incl gold &amp; SDR)</td>
<td>20</td>
<td>44</td>
<td>404</td>
<td>45</td>
<td>38</td>
</tr>
<tr>
<td>Local Currency Assets</td>
<td>752</td>
<td>1213</td>
<td>689</td>
<td>255</td>
<td>17</td>
</tr>
<tr>
<td>Liabilities</td>
<td>772</td>
<td>1258</td>
<td>1094</td>
<td>305</td>
<td>55</td>
</tr>
<tr>
<td>FX Liabilities</td>
<td>0</td>
<td>0</td>
<td>25</td>
<td>2</td>
<td>37</td>
</tr>
<tr>
<td>Local Currency Liabilities</td>
<td>772</td>
<td>1258</td>
<td>1094</td>
<td>298</td>
<td>17</td>
</tr>
<tr>
<td>Currency in circulation</td>
<td>690</td>
<td>684</td>
<td>545</td>
<td>131</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Important ratios</th>
<th>GNP (year 2000)</th>
<th>10.946</th>
<th>4.390</th>
<th>7.008</th>
<th>2.085</th>
<th>242</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets/GNP (%)</td>
<td>78</td>
<td>9</td>
<td>16</td>
<td>14</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Currency in circ./GNP (%)</td>
<td>6</td>
<td>16</td>
<td>8</td>
<td>6</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>FX Liabilities/Total Liabilities (%)</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>Currency in circ./Liabilities (%)</td>
<td>89</td>
<td>54</td>
<td>50</td>
<td>44</td>
<td>14</td>
<td></td>
</tr>
</tbody>
</table>

Money creation by banks

- When a bank makes a loan from its reserves, the money supply increases
- To understand this process, we must look at the balance sheets of the banks
- Deposits into a bank are recorded as both assets and liabilities
- Loans become assets of the bank
- When one bank loans money, that money is usually deposited in the banking system, thus creating more deposits and loans
- The money multiplier is the amount of money the banking system creates with each TL of currency issued by the CB

The balance sheet of a bank

<table>
<thead>
<tr>
<th>First National Bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Reserves</td>
</tr>
<tr>
<td>Loans</td>
</tr>
<tr>
<td>Total Assets</td>
</tr>
</tbody>
</table>

Fractional reserve banking

- Banks have a very important influence on the quantity of demand deposits in the economy and therefore on the money supply
- Fractional reserve banking refers to banks holding only a fraction of the money deposited as reserves and lending out the rest of the deposits to customers
- Reserves are deposits that banks have received but have not loaned out (kept either as banknotes or as deposits at the CB)
- In fractional reserve banking, banks are able to create deposits and therefore money almost like the Central Bank
- Let us see how it works

Balance sheet of two banks

<table>
<thead>
<tr>
<th>First National Bank</th>
<th>Second National Bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets</td>
<td>Liabilities</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>Reserves</td>
<td>$10.00</td>
</tr>
<tr>
<td>Loans</td>
<td>$90.00</td>
</tr>
<tr>
<td>Total Assets</td>
<td>$100.00</td>
</tr>
<tr>
<td>Reserves</td>
<td>$9.00</td>
</tr>
<tr>
<td>Loans</td>
<td>$81.00</td>
</tr>
<tr>
<td>Total Assets</td>
<td>$90.00</td>
</tr>
</tbody>
</table>
The Money Multiplier

- How much money is eventually created in this economy?

<table>
<thead>
<tr>
<th>Original deposit</th>
<th>$100.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>First National lending</td>
<td>$90.00</td>
</tr>
<tr>
<td>Second National lending</td>
<td>$81.00</td>
</tr>
<tr>
<td>Third National lending</td>
<td>$72.90</td>
</tr>
<tr>
<td>etc. etc. etc. etc.</td>
<td></td>
</tr>
<tr>
<td>Total money supply</td>
<td>$1,000</td>
</tr>
</tbody>
</table>

Money multiplier

- The money multiplier is the reciprocal of the reserve ratio
  \[ M = \frac{1}{R} \]
- Let us see some examples
  - For a reserve requirement \( R = 20\% \), the money multiplier becomes \( M = 5 \)
  - In other words if banks keep reserves as \( 20\% \) of deposits, an increase in currency in circulation of 1 unit will increase total money supply by 5 units
  - For \( R = 10\% \) we have \( M = 10 \)
- Attention: some currency is also held by the non-bank sectors in real life, thus reducing the money multiplier \( M \)

Money supply and monetary policy

- Money supply is the total quantity of money available in the economy
- Measures of money supply include deposits in the banking system
- The control of CB over the money supply in the economy is called monetary policy
- The CB has four types of tools in its toolbox to control the money supply
  - Open market operations – OMOs
  - FX operations
  - Changing the reserve requirements of the banks
  - Changing the discount rate for its lending

Open market operations – OMOs

- The primary way in which the CB changes the money supply is through open market operations (Açık Piyasa İşlemleri – API)
- Open market operations refer to the purchase or sale of T-bills by the CB in the bond market
- When the CB buys T-bills from the bond market, it pays for them with the currency it issues thus the money supply increases
- When the CB sells T-bills at the bond market, it receives for them currency it issued thus the money supply decreases
- OMOs are by far the most important way for most CBs to control the money supply

FX operations

- Another instrument through which the CB controls the money supply is through buying and selling FX
- When the CB buys FX from the banks and the public, it pays for it by the TL it issues, thus the money supply increases
- When the CB sells FX to the banks and the public, it receives TL previously issued by the CB, thus the money supply decreases
- This method was a very important monetary policy tool for Turkey during the 1990s when the CB fixed the exchange rate
- CBs of developed countries buy and sell FX only exceptionally and only in support of their currency

Changing the reserve requirement

- Official reserve requirements are, as the name implies, regulations of the CB on the minimum amount of reserves that banks must hold against deposits
- Increasing the reserve requirement forces the banks to keep a larger proportion of their deposits as reserves at the CB, thus reduces their ability to give loans and therefore increase the money supply
- Decreasing the reserve requirement frees funds to be lend out by the banks, thus increasing the money supply in the economy
- In other words, changing the reserve requirements increase or reduce the value of the money multiplier

Changing the discount rate

- The discount rate is the interest rate CB charges banks for short term loans (in Turkey the overnight interest rate)
- A fall in the discount rate is an incentive for banks to borrow more from the CB to meet their reserve requirements and frees funds for loans, thus increasing the money supply
- An increase in the discount rate is a disincentive for banks to borrow from the CB to meet their reserve requirements and blocks funds for loans, thus reducing the money supply
- This is the most widely used tool of monetary policy in developed economies

Problems in controlling the money supply

- Actual control of the CB over the money supply is not always precise
- Two problems of the fractional banking system stand out
  - The amount of money and FX households and firms choose to hold as deposits in the banks can vary substantially over time
  - The proportion of loans as a percentage of deposits can also change from period to period as banks put a bigger or smaller value to being liquid
- That’s why the discount rate is considered to be a better tool for efficient monetary policy

The lender of last resort

- It is worth underlining the “lender of last resort” function of the CB
- If the public and the banks demand more liquidity and currency, someone in the economy must supply that liquidity
- Assume depositors fear bank defaults and make a run on banks
- If there is no lender of last resort, the currency in the economy will fall short of demand and the bank run will transform into bank failures
- CB moves in to supply the liquidity and currency to banks thus restoring confidence in the banking system
Conclusion

- Anything that sellers of goods, services and factors accept as payment is money
  - Money serves three functions in an economy
    - As a medium of exchange
    - As a unit of account
    - As a store of value
  - Commodity money is money that has intrinsic value
  - Fiat money has no intrinsic value but circulates by law
  - The Central Bank (TCMB) regulates the monetary system in Turkey
    - It also has the monopoly to issue TL banknotes and coins

- When banks loan out the money they receive as deposits from the public they help create money in the economy
  - The money multiplier is the measure of banks’ ability to create money
  - Money supply is the money available in the economy
  - Monetary policy is the control of the money supply in the economy by the CB through
    - Open market operation
    - FX operation
    - Changing reserve requirements
    - Changing the discount rate

Inflation as a fact of life

- Turkey has experienced very high levels of inflation during the last three decades
- Students in Turkey do not need a course in macroeconomics to understand inflation
- The prices of the goods and services they buy has been visibly increasing from month to month
- None remembers how much a newspaper, a shoe, a bus ticket, a shirt, etc. cost even few years ago
- The objective of this chapter is to provide explanations about the causes of inflation by showing its strong link with the money supply
- And review the economic and social costs of inflation

Defining inflation

- Inflation is an increase in the overall price level of the economy
- It corresponds to a continuous increase as opposed to a once-for-all increase in prices
- It deals with the increase in average of prices and not just significant increases in the prices of a small number of goods and services
- Deflation is a decrease in the overall price level of the economy
- Deflation occured in the US during the 19th century and in 1930s; in Turkey in 1930s; in Japan during the last few years
- Hyperinflation refers to very high rates of inflation

Historical aspects of inflation

- In the long run, world economic history shows that inflation is the exception, not the rule
- It affects only some countries during some periods
- Most market economies have very low levels of inflation during peacetime
  - 1970s and 1980s were the only period when world inflation moved to near double-digit levels, mainly due to sharp increases in the price of oil
- Few countries are like Turkey, with an average inflation near triple-digit figures or above for several decades
- High inflation economies also experienced periods of hyperinflation but not Turkey

World inflation: long run trends

<table>
<thead>
<tr>
<th>Country</th>
<th>CPI in 1960</th>
<th>CPI in 2000</th>
<th>Average inflation (%)</th>
<th>CPI inflation in 2001 (%)</th>
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</table>

(*) Series start at year 1990

World inflation: by decades

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<td>South Korea(*)</td>
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<td>460.3</td>
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</tr>
</tbody>
</table>

(*) Series start at year 1990

Inflation as a fact of life

- Turkey has experienced very high levels of inflation during the last three decades
- Students in Turkey do not need a course in macroeconomics to understand inflation
- The prices of the goods and services they buy has been visibly increasing from month to month
- None remembers how much a newspaper, a shoe, a bus ticket, a shirt, etc. cost even few years ago
- The objective of this chapter is to provide explanations about the causes of inflation by showing its strong link with the money supply
- And review the economic and social costs of inflation
A monetary phenomenon

- Inflation is always and everywhere basically a monetary phenomenon concerning the value of the economy’s medium of exchange (money)
- Remember Principle 9 in Chapter 1: “Prices rise when government prints too much money”
- To understand the causes of inflation we must understand the concepts of
  - money supply,
  - money demand
  - monetary equilibrium
- We will see that in the long run the overall level of prices adjusts to the level at which demand for money equals the supply of money

Money supply and demand

- We introduced money supply in Chapter 29
- Money supply is a policy variable controlled by the CB through instruments such as OMOs, FX operations, discount rate and reserve requirements
- Money demand explains why people hold money
- First and foremost, because it is the medium of exchange and people need it for payments
- Interest rate will obviously influence the decision to hold money because it is the opportunity cost of holding money but is not effective in the long run
- In turn, increases in the price level (falls in the value of money) oblige people to hold more money to undertake the same amount of real transactions

Equilibrium of money supply and demand

- At the new equilibrium we have a higher price level and a lower value of money

Effects of monetary injection

- According to 18th century English economist David Hume and others, real economic variables do not change with changes in the money supply
- Classical dichotomy refers to the separation of real and nominal variables in the economy
- Nominal variables are measured in monetary units, such as nominal wages, nominal prices, nominal GDP, etc.
- Real variables are measured in physical or constant units, such as real wages, real GDP, labour force, physical capital, etc.
- In the long run, changes in the money supply affect nominal variables but not real variables
Monetary neutrality

- The irrelevance of monetary changes for real variables is called monetary neutrality.
- Keep in mind that both classical dichotomy and monetary neutrality are concepts for the long run.
- In the short run, money matters as we shall see later on in Part Twelve.
- But in the long run, ever faster increases in the money supply will have no effect on the quantity of factors of production available in the economy.
- Because these depend on real factors such as the saving rate, the budget deficit, technological change, spending on education and human capital, etc.
- Thus money is neutral.

Quantity Theory of Money

- The one-to-one relation between the quantity of money and the price level constitutes one of oldest theories in economics.
- The Quantity Theory of Money (QTM) claims that the quantity of money available in the economy determines the value of money.
- Therefore, the primary cause of inflation for every economy is the growth in the quantity of money.
- Most economists today accept the quantity theory of money for the long run, let us say a decade or longer but not for the short run.
- Long run data on Turkish economy for CPI and M2Y+R (1985-2004) validates the QTM.

Money and prices in Turkey

- In the short run, money matters as we shall see.
- But in the long run, ever faster increases in the money supply will have no effect on the quantity of factors of production available in the economy.
- Because these depend on real factors such as the saving rate, the budget deficit, technological change, spending on education and human capital, etc.
- Thus money is neutral.

Velocity and the quantity equation

- The velocity of money refers to the speed at which the typical banknote travels around the economy from wallet to wallet.
- \[ V = \frac{P \times Y}{M} \]
  - \( V \) = velocity of circulation
  - \( P \) = the price level
  - \( Y \) = the quantity of output
  - \( M \) = the quantity of money
- Rewriting it, we get the quantity equation:
  \[ M \times V = P \times Y \]
- This summarises the Quantity Theory of Money.
- For velocity (\( M \)) and output (\( Y \)) constant, doubling money (\( M \)) implies doubling prices (\( P \)).

Money and inflation in QTM

- Obviously, constant price (real) GDP is a good substitute for output \( Y \).
- For the price level \( P \) we can use either the GDP deflator or the CPI.
- Assuming a constant velocity \( V \), we get a simple relation among the three variables.
- Inflation is equal to the percentage change in money supply minus GDP growth rate.
  \[ \Delta P / P = (\Delta M / M) - (\Delta Y / Y) \]
- If GDP grows at 3% while money grows at 8%, inflation would be 5%.
- In other words, printing money explains all of the inflation phenomenon in the long run.

Hyperinflation

- Hyperinflation is inflation that exceeds 10% a month for at least several months.
- Hyperinflation occurs in some countries because the government prints too much money to pay for its spending.
- As inflation picks up speed, people try to hold as little money as possible, therefore the velocity of circulation goes up and the government has to print even more money.
- Inflation usually stops by the total collapse of all payment systems as people prefer barter to money payments.
- Hyperinflation causes much damage to the economy.

Hyperinflation examples

- Germany
  - Price level
  - Money supply

- Poland
  - Price level
  - Money supply

QT M: an evaluation

- Even for the long run, QTM is based on two important assumptions:
  - The velocity of circulation is stable over time.
  - The economy’s output of goods and services primarily depend on factor supplies and technology, which are not affected by the quantity of money (money is neutral).
- Any increase in money supply is automatically translated into excess demand in goods, services and factor markets, leading to inflation.
- When the CB increases the money supply rapidly, the result is a very high rate of inflation and eventually hyperinflation.

Hyperinflation and inflation tax

- When government raises revenue by printing money, it is said to levy an inflation tax on citizens.
- The inflation tax is paid by anybody who holds money either as cash or as demand deposits.
- Both households and firms hold money and pay the inflation tax in proportion to the quantity of money they hold.
- Therefore, higher the inflation rate, the less both will try to hold domestic currency (or move to FX).
- High inflation (and hyperinflation) ends when the government institutes fiscal reforms such that either by cutting spending or raising revenues it stops printing money.
The Fisher effect
• In Chapter 25 we studied real and nominal interest rates
  Real interest rate = nominal interest rate – inflation
• According to the Fisher effect, when the rate of inflation rises, the nominal interest rate rises by the same amount despite unchanged real interest
• When the CB increases the rate of money growth, the result is both higher inflation and higher nominal interest rates
• High interest rates are caused by inflation, not the other way around
• Printing money causes high inflation and therefore high interest rates

The costs of inflation
• Most economists agree that inflation, especially inflation above 2-3% per year, is a bad thing for the economy overall
• In the sense that it causes waste of resources and therefore the economy has a lower average growth rate in the long run
• Below are the major cost items
  – Shoe-leather costs
  – Menu costs
  – Relative price variability
  – Tax distortions
  – Confusion, inconvenience and dollarisation
  – Arbitrary redistribution of wealth

Fact and fallacy about inflation
• What economic analysis points as costs of inflation are very different from the general belief held by most citizens
• General belief is that inflation reduces the income of individuals and causes the living standards to decline (hayat pahalılığı)
  This is simply not true
• One person’s inflated price is another person’s inflated income
• Nominal price increases can happen only if nominal incomes are also rising
• In other words, with inflation nominal incomes keep pace with rising prices

Relative price variability
• Inflation distorts relative prices
• Rising nominal incomes give a false sense of wealth to consumers, upsetting their saving decisions
• Especially for goods and services purchased at time intervals, consumers loose the sense of fair price
• For some sectors it is possible to adjust prices more often while other sectors must wait longer time before adjusting prices
• Thus the price signals become less effective
• All these distortions mean that the markets are less efficient in allocating resources to their best use
• A less efficient resource allocation reduces the standard of living in the country

Inflation and tax distortions
• Inflation exaggerates the size of capital gains and increases the tax burden on this type of income
• With progressive taxation, capital gains are taxed more heavily
• The income tax treats the nominal interest earned on savings as income, even though part of the nominal interest rate merely compensates the saver for inflation
• In cases of high inflation like Turkey, the after-tax real interest rate may even turn out to be negative, making saving less attractive and preventing the development of financial markets

Confusion, inconvenience and dollarisation
• With continuously rising price level, it is very difficult to compare real revenues, costs and profits over time
• If inflation lasts for a long period of time, sooner or later people start replacing the national currency with another country’s sound currency, such as the USDollar or the Euro
• TL has become “phony money” (dandik para) during the last decade
• The move away from domestic currency is called “currency substitution” or “dollarisation”
• Dollarisation has a negative impact on the economy
Arbitrary wealth redistribution
- If inflation is anticipated, people can try to find ways of protecting themselves against it
- Unanticipated inflation redistributes wealth arbitrarily between debtors and creditors
- This may result in wealth transfers that would never be acceptable to most parties
- Debtors benefit from unexpected inflation because the real interest on debt contracts is reduced
- Government and businesses are debtors gaining from unexpected inflation
- Creditors lose from unexpected inflation for the same reason
- Depositors and banks are creditors

Conclusion
- High inflation is a fact of life in Turkey; but not everywhere and not always
- Inflation is a monetary phenomenon
- The overall level of prices in an economy adjusts to balance the supply of money with the demand for money
- Persistent growth in the quantity of money supplied leads to inflation
- Changes in the quantity of money influence nominal variables but not real variables in the long run (classical dichotomy)
- Money is neutral towards real variables

What did we learn so far?
- Macroeconomics is the study of the economy as a whole, in order to explain economic events that affect many households, firms and markets at the same time
- Part VIII dealt with the Gross Domestic Product used to measure national production and the Price Indexes used to measure inflation
- Part IX looked at the production, saving-investment and employment in the long run
- Part X introduced money and established the link between money and inflation in the long run
- Until now we assumed a closed economy without economic relations with the outside world

Open economy
- A closed economy has no interaction with other economies in the world
- There are no exports, no imports, no tourists, no capital flows, etc.
- An open economy interacts freely with other economies around the world
- It buys and sells goods and services in the world product markets
- It buys and sells capital assets in the world financial market
- Open economy refers both to merchandise and service flows and to financial transactions among countries

What we learn in Part XI?
- We relax the assumption of the closed economy and move onto the macroeconomics of the open economy
- Chapter 31 introduces the basic concepts of open-economy macroeconomics
- Such as the Balance of Payments, Net Capital Outflow, nominal and real exchange rates
- Chapter 32 looks at the macroeconomic theory of the open economy in the long run
- By showing the link between the loanable funds market and the FX market in an open economy
- And clears the way for the analysis of short run fluctuations in the economy

Open economy
- Turkey as an open economy
- There is no case of an absolutely closed economy in the world in the sense that all economies undertake some foreign trade, tourism, etc.
- The share of exports of goods and services in GDP/GNP is a reasonable measure of openness from the perspective of foreign trade
- Free movement of capital flows (also called convertibility) also imply an open economy
- Turkey was a relatively closed economy before 1980 and opened up since then
- TL was made convertible in 1989
- Customs Union with the EU since 1996 resulted in increased international trade

Turkey opens to the world 1979–2006

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<th>Year</th>
<th>GDP (Bill. US $)</th>
<th>Exports</th>
<th>FX Revenues</th>
<th>Imports</th>
<th>FX Spending</th>
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<table>
<thead>
<tr>
<th>Year</th>
<th>Industrial Exports/Total Export</th>
<th>Workers Rem/FX Revenues</th>
<th>FX Revenues / GDP</th>
<th>FX Spending / GDP</th>
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<td>90.0</td>
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<td>30.2</td>
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Open economies compared
Exports of goods and services in GDP (%)

The Balance of Payments
- All transactions of the economy with the outside world is recorded in the Balance of Payments (BoP)
- In Turkey, the Central Bank calculates and publishes the Balance of Payments on a monthly basis
- BoP is made of four parts
  - Current Account
  - Capital Account
  - Net Errors and Omissions
  - Reserve Changes
- The BoP is always in balance and can have no deficit or surplus
- Deficits or surpluses exist in its different parts but their sum is always zero

Exports, imports and net exports
- Exports (X) are domestically produced goods and services that are sold abroad
- TÜİK publishes monthly figures for goods exports (Free On Board – FOB)
- Imports (M) are goods and services produced abroad that are sold domestically
- TÜİK publishes monthly figures for goods imports (Cost Insurance Freight – CIF)
- Net Exports (NX) = Trade Balance is the value of a nation’s exports minus the value of its imports
- Attention: for non-economists exports and imports refer only to merchandise trade and does not include trade in services

Current account
- Current account of the BoP includes all types of FX revenues and expenditures of the economy
- Current account is a more comprehensive measure of the economic relations with the outside world compared with Net Exports or Trade Balance
- Whenever an economy earns FX from abroad either from the sale of a good or service or as payment for a factor of production, the revenue is registered in the relevant item in the Current Account
- Whenever an economy spends FX abroad to buy a good or service or for a factor of production, the payments is registered in the Current Account
- Current account may be in balance, deficit or surplus

Examples from the world

<table>
<thead>
<tr>
<th>Country</th>
<th>Trade Balance</th>
<th>Invisibles</th>
<th>Current Account Bal.</th>
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<td>Russia</td>
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<td>-15</td>
<td>46</td>
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<tr>
<td>Spain</td>
<td>-40</td>
<td>22</td>
<td>-18</td>
</tr>
</tbody>
</table>

All figures for 2000
What affects net exports?

- Many factors influence the level of exports and imports and thus the net exports in an economy
- The tastes of consumers for domestic and foreign goods
- The prices of goods at home and abroad
- The exchange rate at which people can use domestic currency to buy foreign currencies
- The costs of international transport for goods
- The policies of the government towards international trade
- The level of economic activity as summarised by the growth rate of GDP both at home and abroad

Net Capital Outflow – NCO

- Net capital outflow is the sum of foreign assets purchased by domestic residents and domestic assets purchased by foreigners
- Three types of assets are distinguished: Foreign Direct Investment – FDI – refers to investment in factories, offices, companies, etc.; Portfolio investment – involves the stock market and long term (several years) bonds; Borrowing includes all types of loan transactions of the financial and non-financial sectors with non-residents
- Long run and short term (less than one year) loans are treated separately

Capital account

- In the BoP, FX flows that are not FX revenues or FX spending are recorded in the Capital Account
- Basically it records financial transactions with the world
- Its main part are:
  - Foreign Direct Investment – FDI
  - Portfolio investment
  - Long term capital movements
  - Short term capital movements
- Net Errors and Omissions capture residual FX movements
- The change in Central Bank FX reserves are also recorded in the BoP

BoP: capital account

<table>
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<tr>
<td>Imports (TUIK - cif)</td>
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<td>Total Trade (TUIK)</td>
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<td>-54</td>
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<td>Trade Balance (TUIK)</td>
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<td>Service Balance</td>
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<td>Total Service Spending</td>
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<td>-11</td>
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<td>120</td>
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<td>34</td>
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<tr>
<td>Total Service Spending</td>
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<tr>
<td>Total Savings</td>
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<tr>
<td>Total Income</td>
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<td>120</td>
<td>197</td>
<td>34</td>
</tr>
<tr>
<td>Total Expenditure</td>
<td>-107</td>
<td>-6</td>
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<td>-107</td>
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<td>-11</td>
</tr>
</tbody>
</table>

Domestic and foreign saving

- We can restate the relation between saving and investment for the open economy
- Open economy permits domestic investment to be different (higher or lower) from national savings:
  - Total savings are now equal to
    \[ S = I + NX \]
  - Total savings in the current account increases foreign savings and therefore investment

International flows: summary

<table>
<thead>
<tr>
<th>Trade Deficit</th>
<th>Balance Trade</th>
<th>Trade Surplus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export &lt; Imports</td>
<td>Exports = Imports</td>
<td>Exports &gt; Imports</td>
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<td>Net exports &lt; 0</td>
<td>Net exports = 0</td>
<td>Net exports &gt; 0</td>
</tr>
<tr>
<td>( Y &lt; C + I + G )</td>
<td>( Y = C + I + G )</td>
<td>( Y &gt; C + I + G )</td>
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<tr>
<td>Saving &lt; Investment</td>
<td>Saving = Investment</td>
<td>Saving &gt; Investment</td>
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<tr>
<td>Net capital outflow &lt; 0</td>
<td>Net capital outflow = 0</td>
<td>Net capital outflow &gt; 0</td>
</tr>
</tbody>
</table>
Exchange rates

- International transactions can only happen if prices in one currency can be transformed into prices in another currency
- This vital transformation is undertaken by the exchange rates
- Once we know the exchange rate between any two currencies, we can immediately compare local prices in one country with the prices in the other country
- We can distinguish three different exchange rates:
  - Nominal exchange rates
  - Real exchange rates
  - Purchasing Power Parity (PPP) exchange rates

Nominal exchange rate

- The nominal exchange rate is the rate we see everyday in the markets
- Nominal exchange rate is the rate at which a person can buy or sell the currency of one country with the currency of another country
- The nominal exchange rate between two currencies can be expressed in two ways:
  - In units of foreign currency per one TL
  - In units of TL per one unit of the foreign currency
- The first is used by most countries
- Due to high inflation, we have been using the second method for the nominal exchange rate in Turkey

The exchange rate for TL

- Currently, one US Dollar is exchanged for one YTL and thirty-five Ykr
  - Either 1 US$ = 1.50 YTL
  - Or 1 YTL = 1 / 1.50 US$  
- The first expression gives us the US$/TL nominal exchange rate for the Americans
- The second expression gives us the TL/US$ nominal exchange rate for the Turks
- All major currencies are quoted domestically in the second way
- For the YTL, we could use 1 YTL as the unit of account and express the exchange rate as
  \[ 1 \text{ YTL} = 0.67 \text{ US$} \]

Changes in the exchange rate

- If YTL buys more foreign currency, we speak of an appreciation of the YTL
  - Example: when the YTL/US$ exchange rate moved from 1.60 to 1.30 YTL has appreciated
  - Because 1 YTL buys 0.77 US$ instead of 0.63
- If YTL buys less foreign currency, there is a depreciation of the YTL
  - Example: when the YTL/US$ exchange rate moves from 1.30 to 1.60 YTL has depreciated
  - Because 1 YTL buys 0.63 US$ instead of 0.77
- An appreciation is also called revaluation
- A depreciation is also called devaluation

Real exchange rate

- The real exchange rate is the rate at which a person can trade the goods and services of one country for the goods and services of the other country
- The real exchange rate compares the prices of domestic goods with the prices of foreign goods
- For example, if a BigMac costs $ 2.50 in the US and YTL 2.50 in Turkey, the real exchange rate is 1 $ = 1.00 YTL even if the nominal exchange rate is different (The Economist BigMac Index)
- Purchasing Power Parity exchange rate is calculated by the World Bank on the basis of the prices of a basket of goods and services
Calculating the real exchange rate
- The real exchange rate depends on the nominal exchange rate and the prices of goods in the two countries measured in local currencies.

Real exchange rate = \( \frac{\text{Nominal exchange rate} \times \text{Domestic price}}{\text{Foreign price}} \)

- When a country’s real exchange rate is low, its goods are cheap relative to foreign goods and its exports will increase while imports decrease.
- The opposite is true if the real exchange rate is high.
- Accordingly, we talk about an undervaluation or overvaluation of the currency.

Purchasing-power parity theory
- The purchasing-power parity theory is the simplest and most widely accepted theory explaining the variation of exchange rates over time.
- According to this theory, in the long run a unit of any given currency should be able to buy the same quantity of goods in all countries.
- The law of one price says that a good must sell for the same price in all locations.
- Otherwise, there exists unexploited profit opportunities of buying cheaply and selling expensively.
- Exchange rates will therefore change in such a way that prices become equal everywhere.

Inflation and the exchange rate
- The purchasing-power parity theory tells us that the nominal exchange rate between the currencies of two countries must reflect the difference in price levels in those countries.
- Countries with relatively high inflation should have nominally depreciating currencies and countries with relatively low inflation should have nominally appreciating currencies.
- This theoretical view is confirmed by the real world.
- Almost all of the movements in nominal exchange rates in the long run can be explained by inflation differentials among countries.

Conclusion
- An open economy corresponds to free flows of goods and services as well as financial transactions with the outside world.
- The Balance of Payment records the transactions of the economy with the world.
- Net exports are the value of domestic goods and services sold abroad minus the value of foreign goods and services sold domestically.
- Net capital outflow is the acquisition of foreign assets by residents minus the acquisition of domestic assets by foreigners.
- Net capital inflow is always equal to net exports in the economy.

A Macroeconomic Theory of the Open Economy
Chapter 32
Key variables in an open economy
• Macroeconomic variables of an open economy are:
  – National saving
  – Domestic investment and net capital outflow
  – Net exports
• The values of these variables are determined through the interaction of the loanable funds market and the market for foreign currencies
• First we look at the open-economy loanable funds market without the FX market
• Second we look at the FX market on its own
• The long run equilibrium of the open economy will be established by the simultaneous working of these two markets
• Demand for loanable funds comes from those economic actors who wish to borrow to spend more than their income
• Supply of loanable funds comes from those who wish to save and loan out their income
• Net capital outflow requires a modification in the market for foreign currencies in order to take into account inward and outward capital movements

Supply & demand for loanable funds
• Supply of loanable funds come from national savings
• Remember that national savings is made of private savings and public saving
  \[ S = Y - C - G = (Y - T - C) + (T - G) \]
• Demand for loanable funds in the open economy comes from domestic investment and net capital outflow (I + NCO)
• At the equilibrium real interest rate we get
  \[ S = I + NCO \]
• In other words, national savings are invested either domestically or abroad
• If either the supply increases or demand decreases, the real interest rate will go down
• If either the supply decreases or demand increases, the real interest rate will go up
• In other words changes in the real interest rate reflect changes in the supply and demand for savings in the loanable funds market

The market for loanable funds
• The identity NX = NCO represents the two sides of the foreign exchange market in which TL is traded for other currencies (US$, Euro, etc.)
• The FX market in Turkey is by definition in TL
• NCO represents the quantity of TL supplied to the FX market for the purpose of buying assets abroad
• NX represents the quantity of TL demanded from the FX market for the purpose of buying Turkish net exports of goods and services
• Attention: in Turkey, the FX market must be visualised not in terms of the supply and demand of FX but as supply and demand of TL
• This is true for every country

Demand for TL in the FX market
• The demand for TL at the FX market corresponds to the supply of FX to the market
• Demand for TL comes from the net exports NX (or the current account of the BoP)
• Demand for TL is downward sloping because a higher exchange rate makes domestic goods more expensive, leading to less exports and more imports and therefore less demand for TL
• Demand for TL at the FX market need not be positive
• Negative value of the demand for TL means net exports are negative: i.e. There ise a current account deficit

Equilibrium in the market for loanable funds
• It is the movements in the real interest rate which equates the quantity of loanable funds supplied with the quantity of loanable funds demanded
• Therefore, equilibrium in the loanable funds market determines the real interest rate
• If either the supply increases or demand decreases, the real interest rate will go down
• If either the supply decreases or demand increases, the real interest rate will go up
• In other words changes in the real interest rate reflect changes in the supply and demand for savings in the loanable funds market

The market for FX
• The identity NX = NCO represents the two sides of the foreign exchange market in which TL is traded for other currencies (US$, Euro, etc.)
• The FX market in Turkey is by definition in TL
• NCO represents the quantity of TL supplied to the FX market for the purpose of buying assets abroad
• NX represents the quantity of TL demanded from the FX market for the purpose of buying Turkish net exports of goods and services
  \[ NCO = NX \]
• For the long run, we assume that Net Errors and Omissions and Changes in FX reserves items in the BoP will be negligible
• Which means that to any deficit (surplus) in the Current Account of the BoP will correspond a surplus (deficit) of the same magnitude in the Capital Account of the BoP
• For the long run, we assume that Net Errors and Omissions and Changes in FX reserves items in the BoP will be negligible
• Which means that to any deficit (surplus) in the Current Account of the BoP will correspond a surplus (deficit) of the same magnitude in the Capital Account of the BoP

What we learn in this Chapter?
• In Chapter 31 we defined the basic concepts of an open economy, such as the Balance of Payments, \( NX = NCO \) and the exchange rate
• In Chapter 32 we incorporate these into our analysis of the economy in the long run
• Net capital outflow requires a modification in the market for loanable funds in order to take into account inward and outward capital movements
• For the exchange rates we need a new market: the market for foreign exchange, where the exchange rate will be determined
• Attention: we are still in the long run
Supply of TL in the FX market

- The supply of TL at the FX market corresponds to the demand of FX from the market.
- Supply of TL comes from the net capital outflow (NCO), the capital account of the BoP.
- Supply of TL is vertical because the quantity of TL supplied for net foreign investment is unrelated to the real exchange rate.
- In a moment we shall see what determines NCO.
- Supply of TL at the FX market need not be positive.
- Negative value of the supply of TL means net capital outflow is negative: i.e. there is a capital account surplus which offsets a current account deficit.

Equilibrium in the FX market

- The real exchange rate adjusts to balance the supply and demand of TL at the FX market.
- At the equilibrium real exchange rate, the demand for TL from net exports exactly balances the supply of TL to be exchanged into foreign currency to buy assets abroad.
- If NX is negative at the equilibrium (current account deficit), NCO will also be negative (capital account surplus).
- If NX is positive at equilibrium (current account surplus), NCO will also be positive (capital account deficit).
- It is important to understand this relation.

NCO links the two markets

- NCO is the link between the loanable funds market and the FX market because it involves them both.
- What determines net capital outflow?
- The key determinant of NCO is the real interest rate.
- At high real interest rates, the attraction of foreign assets will be low for residents and high for non-residents; opposite for low real interest rates.
- In the market for loanable funds, NCO is a part of the demand for funds.
- In the market for FX, NCO is the supply of TL.
- Therefore any change in the real interest rate affects the FX market and thus the real exchange rate.

Equilibrium in the open economy

- We have two markets: loanable funds market and the FX market.
- We have two prices: the real interest rate and the real exchange rate.
- Equilibrium in the open economy happens through the interaction of these two markets.
- Both prices adjust simultaneously to balance supply and demand in these two markets.
- As they move, they also determine the macro-economic variables of national saving, domestic investment, net foreign investment, and net exports.
- In the open economy, the real interest and exchange rates are interrelated.

Changes in equilibrium

- In order to understand better how the two markets reach simultaneous equilibrium, we will look at how changes in policy or events affect the equilibrium in the open economy.
- Each time there is a change of a variable, there will be new equilibrium values for the real interest and exchange rates.
- We explore three cases:
  - Government budget deficit shifts the supply of loanable funds.
  - Trade policy shifts the NX curve.
  - Political and economic instability shifts the NCO curve.

Budget deficits and equilibrium

- We start by an increase in government spending G or a reduction in taxes T, leading to a change in the budget balance (budget deficit).
- Loanable funds market: Budget deficit reduces national saving, shifts the supply of loanable funds to the left and raises the real interest rates.
- NCO: Higher interest rates reduce NCO.
- FX market: Supply of TL shifts to the left, meaning less supply of TL to be exchanged into FX causing the real exchange rate to appreciate.
- Budget deficit raises interest rates, crowds out domestic investment, appreciates the TL, and causes a current account deficit.
Budget deficit in open economy

Why does an increase in the budget deficit result with an appreciation of the currency?

- When the government spends more, the economy faces two options
  - One way is to reduce total demand in the economy by having someone spend less
  - Higher interest rates reduce private investment (crowding out)
- Another way is to increase supply in the economy by importing more from abroad
- Currency appreciation allows imports to increase (current account deficit)
- It is all simple logic

Import quota in open economy

The logic of the markets

- Again, let’s see why the efforts of the government to reduce the current account deficit by import quotas only results in currency appreciation
- Trade policy has no effect on national savings, domestic investment, net capital outflow and therefore the interest rate remains unchanged
- Under these circumstances less imports mean the economy also needs less exports to pay for the imports
- And the economy ends up by exporting less because it is importing less
- It is all simple logic

An attack on the TL

The logic of the markets

- When economic actors expect things to go wrong in the country, they try to protect their savings from potential problems by sending them abroad
- One way to solve this problem is to offer a higher interest rate to them so that they stay in domestic assets
- Another way is for the economy to produce more FX by higher exports and lower imports so that the surplus can be invested abroad
- That’s why the interest rate rises while the currency falls
- It is all simple logic

Trade policy: import quota

- Government may decide to influence directly the imports or exports of a country
- Tariff: a tax on imported goods
- Import quote: limit the quantity of a good to be imported into the country
- Assume government introduces an import quota
- It has no affect on the loanable funds market and the interest rate remains unchanged
- NX curve shifts to the right and demand for TL from NX is lower but NCO is constant
- This leads to an appreciation of the currency as exports fall to compensate for falling imports

Politics in open economy

- Political instability in a country may cause capital flight
- Capital flight is a large and sudden movement of funds out of a country, as after February 2001 in Turkey
- Capital flight shifts the NCO curve to right as people increase the supply of TL to buy FX
- Resulting in higher real interest rates and a lower real exchange rate
- A major problem of high inflation countries is more volatile NCO curves
- Sudden and unexpected shifts in NCO are called an attack on the currency or financial crisis

February crisis in Turkey

- When investors around the world observed the political problems in Turkey in February 2001, they sold some of their assets in TL and used the proceeds to buy assets in other countries
- This corresponded to a big upward jump in Turkey’s NCO curve
- Interest rates also jumped as demand for loanable funds increased substantially along with the shift in the NCO curve
- TL rapidly depreciated because of the excess supply of TL at the FX market despite the big hike in the real interest rate
- That’s how markets work in an open economy
Conclusion

• In the market for loanable funds, the real interest rate adjusts in order to balance supply of loanable funds (from national saving) and demand for loanable funds (from domestic investment and net capital outflow)
• In the market for foreign exchange, the real exchange rate adjusts in order to balance the supply of TL (for net capital outflow) and the demand for TL (for net exports)
• Net capital outflow is the link between the two markets
• The two markets reach equilibrium simultaneously

Conclusion

• Budget deficits reduce national savings, drive up the real interest rate and cause an appreciation of TL and therefore a fall in NX
• Trade restrictions shifts the NX curve and cause an appreciation of TL which offsets the increase in NX
• Political instability in a country can lead to capital flight which shifts the NCO curve, causing a depreciation of the currency while the real interest rate goes up
• Political troubles caused the attack on TL in February 2001 and therefore the crisis

What did we learn so far?
• Macroeconomics studies the economy as a whole
• It aims to explain economic events that affect many households, firms and markets at the same time
• Part VIII introduced the Gross Domestic Product used to measure production and the Price Indexes used to measure inflation
• Part IX looked at the production, saving-investment and employment in the long run
• Part X introduced money and established the link between money and inflation in the long run
• Part XI introduced trade and financial flows with the outside world: the analysis of the open economy in the long run

What we learn in Part XII?
• We now relax the assumption of the long run and look at the economy in the short run
• All the economies in the world exhibit fluctuations at the level of output, inflation, unemployment, interest rates, exchange rates in the short run
• Our aim is to explain these fluctuations
• Chapter 33 defines the model of Aggregate Demand and Aggregate Supply, which constitutes the backbone of the analysis of the short run
• Chapter 34 looks at the effects of monetary and fiscal policy in the short run
• Chapter 35 explores the trade-off between inflation and the level of output in the short run

Short-run economic fluctuations
• Economic activity fluctuates in all the economies in the world from year to year
• For most years, production of goods and services rise (expansion, growth, boom)
• In some years production of goods and services shrinks, i.e. growth becomes negative (recession)
• A depression is a severe and lasting recession
• Economic fluctuations are irregular and unpredictable both in frequency and in duration
• Most macroeconomic variables fluctuate together
• As output falls, unemployment rises
• Changes in real GNP are inversely related to changes in the unemployment rate

Turkey: GNP 1987-2006

Turkey: GNP, consumption and investment: 1987 to today

Turkey: volatility of growth
The short-run and the long-run

- What we learned about the long-run in the three previous parts reflects the Classical Theory.
- Most economists believe that classical theory describes the real world in the long run but not in the short run.
- The important characteristic of the long run is that changes in the money supply affect nominal variables but not real variables.
- Defined as "classical dichotomy" and "monetary neutrality".
- These assumptions don’t hold when studying year-to-year changes in the economy (the short-run).
- Money matters in the short-run.

Basic model for the short-run

- Most economists use the model of aggregate demand and aggregate supply to explain short-run fluctuations of economic activity around a long-run trend.
- The model is based on two variables:
  - The economy’s output of goods and services Y as measured by real GDP (or alternatively GNP).
  - The change in the overall price level P as measured by the CPI or the GDP deflator.
- The model works by defining two distinct curves for aggregate demand and aggregate supply, similar to single market demand-supply curves.
- Their intersection gives the short-run equilibrium.

AD-AS equilibrium

Why is AD downward sloping?

- The reasons why a fall in the price level means more demand for goods and services:
  - The wealth effect on consumption: lower prices make consumers feel wealthier, which stimulates demand for consumption of goods and services.
  - The interest rate effect on investment: lower prices reduce the demand for money and thus the interest rate, leading to more investment spending.
  - The exchange-rate effect on net exports: lower interest rates depreciate the currency, leading to more exports and less imports (increase in net exports) and therefore more spending on domestic goods and services.

Aggregate demand

- The aggregate demand curve shows the quantity of goods and services households, firms, the government and the outside world wants to buy at any price level.
- The four components of GNP contribute to the aggregate demand for goods and services:
  \[ Y = C + I + G + NX \]
- We can express aggregate demand Y as a function of the price level \( P \), given the consumption function, investment demand, government taxes, government spending and the net exports:
  \[ Y = F(P | C, I, G, T, X, M) \]
- Aggregate demand curve is downward sloping.

Shifts in the AD curve

- Shifts in the AD curve may arise because of changes in private behaviour or public policy.
  - Private behaviour: changes in spending plans by consumers and firms.
  - If there is a bigger willingness to consume or invest, a stronger demand for exports, AD shifts to the right.
  - In the opposite case, AD shifts to the left.
  - Public policy: changes in fiscal or monetary policy.
  - Loose fiscal or monetary policy shifts AD to the right.
  - Tight fiscal or monetary policy shifts AD to the left.

Aggregate supply

- The aggregate supply curve shows the quantity of goods and services that firms choose to produce and want to sell at any price level.
- There are two different aggregate supply curves depending on the time scale:
  - The long-run aggregate supply curve (LRAS) is vertical because output is independent of the price level in the long-run.
  - LRAS depends on the production function or the resources and technology available to the economy.
  - The short-run aggregate supply curve (SRAS) is upwards sloping because outputs respond positively to rises in the price level in the short-run.
AS in the long-run

Quantity of Output

Natural rate of output

Price Level

0

P1

P2

Long-run aggregate supply

1. A change in the price level... does not affect the quantity of goods and services supplied in the long run.

2. ...does not affect the quantity of goods and services supplied in the long run.

Price Level

Long-run aggregate supply

0

P1

P2

Long-run aggregate supply

Inflation and growth in the long run

Price Level

0

P1

P2

Long-run aggregate supply

1. A change in the price level...

2. ...does not affect the quantity of goods and services supplied in the long run.

Price Level

0

P1

P2

Long-run aggregate supply

Short-run aggregate supply

• The short-run aggregate supply curve reflects the cost structure of the economy

• More output in the short run can only be obtained at higher cost, therefore at higher prices

• Lower prices imply less output

• Three reasons why SRAS slopes upwards
  
  Sticky-Wage Theory: wages adjust slowly and higher prices increase employment
  
  Sticky-Price Theory: prices adjust slowly and an unexpected rise in prices leave some firms with low prices and higher sales
  
  Misperceptions Theory: firms mistake inflation with relative price increases

Shifts in the SRAS curve

• The aggregate supply curve reflects the cost structure of the economy and shifts with changes in the cost structure

• Changes in the prices of factors shifts the SRAS curve: wages, exchange rate, world prices of commodities, government administered prices, etc.

• An increase in any of these shifts SRAS left

• Factor productivity: higher productivity means lower costs and shifts SRAS right

• Taxes and regulations: any increase in costs result in a leftward shift of SRAS

• Expectations: if firms expect higher factor or output prices in the future SRAS shifts left

Long-run equilibrium of AD-AS

• The intersection of the aggregate demand curve with the long- and short-run aggregate supply curve at the same points corresponds to the long-run equilibrium of the economy

• Output is at its natural rate

• There is no unemployment

• There is no upward pressure on the price level

• The long run equilibrium corresponds to macroeconomic stability

• If the three curves (AD, SRAS, LRAS) do not intersect at the same point, then something is wrong in the economy: either a recession or rising inflation or both are happening

The aggregate supply equation

• For our purposes the similarities of the three theories are more important than the differences

• All three theories suggest that output deviates from its natural rate when the price level deviates from the price level that people expected

• We can express this relation matematically

• \( \alpha \) measures the responsiveness of output to price

• Example: if actual price level is higher than expected, output will also be higher than natural

\[
\text{Quantity of output supplied} = \text{Natural rate of output} + \alpha \left( \frac{\text{Actual price level}}{\text{Expected price level}} - 1 \right)
\]
Two causes of economic fluctuations

- From the analysis above, it is clear that any deviation from the long-run equilibrium may happen either because the AD curve or the SRAS curve is not at the right place.
- Recessions may be caused by shifts in aggregate demand (demand shocks) or shifts in aggregate supply (supply shocks).
- In both cases, the response of economic policy to the shock is of key importance.
- Government may use fiscal and monetary policy to fight against the recession or may do nothing and wait for the markets to work it through.
- Let us see some examples.

A fall in aggregate demand

- Start with the shift to left of the AD curve.
- What may cause it? Political turbulence, consumer-investor pessimism or a recession in major markets abroad, etc. may reduce aggregate demand.
- Both output Y and the price level P fall; recession increases unemployment in the economy.
- Assume policy remains unchanged.
- Unemployment reduces real wages, falling imports appreciate the currency and these imply that after a while the SRAS shifts to right.
- Eventually the economy will reach a new long-run equilibrium but with a lower level of prices P.
- Shift in AD causes later SRAS to shift.

A Decrease in Aggregate Demand

<table>
<thead>
<tr>
<th>Price Level</th>
<th>Long-run aggregate supply, AS1</th>
<th>Short-run aggregate supply, AD1</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>A</td>
<td>B</td>
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<tr>
<td>P2</td>
<td>C</td>
<td>A</td>
</tr>
<tr>
<td>P3</td>
<td>Aggregate demand, AD1</td>
<td></td>
</tr>
</tbody>
</table>

2. ...causes output to fall in the short run…

A Decrease in Aggregate Demand

US: Great Depression and WW2

- We use US economic history to illustrate some examples of major shifts in aggregate demand.
- US economy underwent the biggest downturn in its history in 1930s after a stock market crash in 1929.
- During the Great Depression unemployment jumped from 3 to 25%.
- Economists agree that it was caused by the big fall in aggregate demand.
- The fast growth of the US economy in turn can be explained by the effects of World War 2 on demand.
- Government purchases of arms increased substantially with the war effort, leading to big jumps in aggregate demand.

An adverse shift in aggregate supply

- Positive shift (right) in SRAS implies falling costs.
- Adverse shift (left) in SRAS implies rising costs.
- A devaluation, big jump in the price of oil, pessimist expectations about politics, etc.
- In case of an adverse shift, output Y falls but the price level P rises.
- Falling output (recession) with rising prices (inflation) gave birth to a new word: stagflation.
- Assume policy makers accommodate the supply shock by loose fiscal and monetary policy.
- AD shifts right; at new long-run equilibrium both output and prices are higher.
- The cost of the shorter recession is inflation.

Adverse shift in SRAS

<table>
<thead>
<tr>
<th>Price Level</th>
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<th>Short-run aggregate supply, AS1</th>
</tr>
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<tr>
<td>P1</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>P2</td>
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</table>

2. ...causes output to fall…

Accommodating adverse supply shift

<table>
<thead>
<tr>
<th>Price Level</th>
<th>Long-run aggregate supply</th>
<th>Short-run aggregate supply, AS1</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>C</td>
<td>A</td>
</tr>
<tr>
<td>P2</td>
<td>A</td>
<td>C</td>
</tr>
</tbody>
</table>

4. ...but keeps output at its natural rate.
Policy response to recession

- We looked at two responses by the government to any fall in output below long-run equilibrium
- Do nothing and wait for prices and wages to adjust to the new situation: corresponding to a shift to the right of the SRAS curve
- Or use fiscal and monetary policy to increase aggregate demand, which restores output and cause price increases as a by-product
- The first seems a better way but there is a catch
- Adjustment in the SRAS takes much longer than stimulating demand with policy
- The economy stays in recession much longer without policy measures

Oil prices and policy

- When the price of oil increased over ten-fold from 1974 to 1980, governments everywhere faced these hard choices
- Tight fiscal and monetary policy meant a long recession immediately but no future inflation
- Loose fiscal and monetary policy meant a short lived recession immediately but problems with inflation in the future
- The policy trade-off is interesting:
  - either deep and long recession now and no recession in the future to fight against inflation
  - or light recession now but a deep recession in the future in order to fight against inflation

Conclusion

- Short run economic fluctuations occur around long-run trends but are irregular and unpredictable
- During a recession, real GDP, spending and production falls and unemployment rises
- In the AD-AS model, the output of goods and services and the overall price level adjust to balance aggregate demand with aggregate supply
- The aggregate demand curve slopes downward
- Due to wealth, interest rate and exchange rate effects on spending
- The long-run aggregate supply curve is vertical because it depends not on prices but the production function

Importance of economic policy

- Economic policy refers to the actions of the government that have a direct impact on the macroeconomic equilibrium of the economy
- Fiscal policy: changes in taxes and/or government spending, affecting the budget balance
- Fiscal policy involves the government proper: Cabinet, Ministers, Parliament, etc.
- Monetary policy: changes in the quantity of money and/or short-term interest rates
- The CB decides and implements monetary policy
- Our task is to understand how different monetary policy and fiscal policy alternatives affect aggregate demand, aggregate supply, price level, etc

Aggregate demand

- The aggregate-demand curve shows the total quantities of goods and services demanded in the economy for any price level
- The aggregate-demand curve slopes downward for three reasons
  - The wealth effect: lower prices mean higher liquid wealth, thus more spending
  - The interest-rate effect: lower prices mean lower interest rates, thus more spending
  - The exchange-rate effect: lower prices and interest rates mean lower exchange rate, thus more spending on domestic products
- The importance of each depends on many factors

Monetary policy and aggregate demand

- We start by looking at the effects of monetary policy on aggregate demand
- For this purpose, we must first understand the forces that affect the interest rate in the short run
- The Theory of Liquidity Preference explains the close relation between money supply and the interest rate in the short run
- In the long run, the real interest rate was determined in the loanable funds market
- In the short run monetary policy has a direct effect on the interest rate, and therefore the exchange rate
- The theory of liquidity preference was first developed by Keynes

Macroeconomics and J.M.Keynes

- The model for short run fluctuations outlined here is to a large extent a by-product of Great Depression
- Economist and policymakers were puzzled at the depth and persistence of depression in 1930s
- John Maynard Keynes was an economist at Cambridge University (UK) at the time
- In 1936 he published a book called “The General Theory of Employment, Interest and Money”
- Keynes’s primary message was that recessions and depressions can occur because of inadequate aggregate demand for goods and services
- Therefore the government must intervene to inject additional demand in the economy
Interest rate and the money market
- Remember: the nominal interest rate is observed in the financial markets and the real interest rate is calculated after taking into account inflation.
- In this analysis, we will assume that the expected rate of inflation is constant.
- In other words, changes in the nominal interest rate imply similar changes in the real interest rate.
- According to the theory of liquidity preference, the short run interest rate (both nominal and real) adjusts the supply and demand for money.
- Therefore, the interest rate has two functions:
  - Loanable funds: for saving and investment
  - Money market: for liquidity demand and supply

The supply of money
- The CB controls the supply of money through:
  - Open-market operations – OMOs (selling and buying T-Bills)
  - Changing the reserve requirements
  - Changing the discount rate (o/n rate in Turkey)
  - FX operations (selling and buying FX)
- Because the money supply is fixed by the CB, the quantity of money available in the economy does not depend on the interest rate.
- The money supply fixed by the CB is represented by a vertical supply curve.
- An increase (decrease) in the quantity of money shifts the money supply to right (left).

The demand for money
- The opportunity cost of holding money is the interest that could be earned on interest-earning assets.
- An increase in the interest rate raises the opportunity cost of holding money.
- As a result, the quantity of money demanded is reduced.
- A decrease in the interest rate lowers the opportunity cost of holding money.
- As a result, the quantity of money demanded rises.
- Why? Because money is the most liquid asset and being liquid reduces the risk of losses from changing interest rates.

Money market equilibrium
- We have a vertical supply curve and a downward sloping demand curve.
- Money market interest rate is determined at the intersection of these two curves.
- According to the theory of liquidity preference, the interest rate adjusts to balance the supply and demand for money.
- There is one interest rate, called the equilibrium interest rate, at which the quantity of money demanded is equal to the quantity of money fixed by the CB.
- At all other interest rates, there will be either excess demand or excess supply of money.

Interest rates in the short and long run
- We now have two theories of interest rates.
- In the long run (Ch.26) the interest rate adjusts to balance the supply and demand for loanable funds (saving and investment).
- In the short run, the interest rate adjusts to balance the supply and demand for money (liquidity).
- In the long run, output is fixed by real factors.
- The interest rate adjusts saving and investment.
- The price level adjusts money supply and demand.
- In the short run the price level is fixed.
- The interest rate adjusts money supply and demand.
- Level of output adjusts saving and investment.

Slope of the AD curve and the money market
- Let us now see the relation between the money market and the slope of the aggregate demand curve.
- What happens when we have a higher price level?
- Higher price level increases the demand for money.
- This leads to higher interest rate in the money market.
- Higher interest rate reduces investment spending.
- Therefore aggregate demand for goods and services is lower.
- Confirming the downward slope of the aggregate demand curve.
Interest rate targets and money supply
• The CB may not be able to control directly the quantity of money in the economy.
• In this case targeting the money supply as a tool of monetary policy will not be appropriate.
• An alternative method is to target an interest rate and let the money market work out the details of supply and demand.
• In this case, the causality is reversed: it moves from the discount rate fixed by the CB to liquidity demand and therefore to the quantity of money.
• Many CBs now consider interest rate targets as more efficient instruments of monetary policy.
• The theory is not affected by this.

Monetary policy and the stock market
• CBs and stock exchanges closely watch one another.
• Interest rate decisions of the central banks carry valuable information for financial markets.
• About the future behaviour of key macroeconomics indicators and prices.
• Central banks in turn worry about the evolution of asset prices such as real estate and stocks.
• Booming asset prices increase society’s wealth.
• Leading to more consumption and investment spending and higher aggregate demand.
• When the CB increases interest rates, assets prices usually fall, in expectation of lower future aggregate demand and therefore profits.

Changes in the money supply
• Monetary policy affects aggregate demand.
• Loose monetary policy corresponds to increases in the money supply.
• An increase in the money supply shifts the money supply curve to the right.
• With liquidity demand constant, the interest rate falls.
• Falling interest rate increases investment spending and thus the quantity of goods and services demanded.
• The aggregate demand curve shifts to right.
• Tight monetary policy corresponds to decrease in the money supply (AD shifts left).

Changes in the Money Supply
• 1. An increase in the money supply shifts the money supply curve to the right.
• An increase in the money supply shifts the money supply curve to the right.
• With liquidity demand constant, the interest rate falls.
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Fiscal policy and aggregate demand
• Fiscal policy refers to the choice of government regarding the overall level of government purchases or taxes.
• The budget balance summarises fiscal policy.
• Loose fiscal policy means higher spending or less taxes by the government (bigger budget deficit).
• Tight fiscal policy means less spending or more taxes by the government (smaller budget deficit).
• Fiscal policy influences saving, investment and growth of output in the long run.
• In the short run, fiscal policy primarily affects the aggregate demand.
• It makes the aggregate demand curve shift.

Changes in the budget
• Government decisions to spend and to tax influence the economy because of the size of government in relation to the economy.
• It can make deliberate use of spending and taxes to manipulate the economy towards achieving a predetermined outcome.
• Its control over the economy is both direct through government purchases and indirect through the effects of taxes on consumption and investment.
• There are two macroeconomic effects of the budget balance:
  – The multiplier effect
  – The crowding-out effect

The multiplier effect
• Government purchases are said to have a multiplier effect on aggregate demand.
• Each TL spent by the government can raise the aggregate demand for goods and services by more than one TL.
• The total impact of an increase in government spending can be much larger than itself.
• Remember the circular flow: everybody’s income is someone else’s spending.
• When government spends more, some people earn more and therefore spend more, which become income to other people who spend more, etc.
• This relation is summarised in the multiplier:

The Multiplier Effect of Government Purchases
• 1. An increase in government purchases of YTL 20 billion initially increases aggregate demand by YTL 20 billion.
• 2. …but the multiplier effect can amplify the shift in aggregate demand.
The multiplier
- The value of the multiplier depends on how much people consume and save from their income
- Marginal Propensity to Consume (MPC): additional consumption from one unit of income
- Marginal Propensity to Save (MPS): additional saving from one unit of income
- Obviously, the two propensities add up to one
  \[ \text{MPC} + \text{MPS} = 1 \]
- The formula for the multiplier is:
  \[ M = \frac{1}{1 - \text{MPC}} \]
- Example: if MPC = 0.75 (75%), then MPS = 0.25 (25%) and the multiplier is \( M = 4 \)
- 100 YTL public spending creates 400 YTL demand

How the multiplier works
- Change in government purchases = YTL 20 million
- First change in consumption = YTL 15 million
- Second change in consumption = YTL 11.25 million
- Third change in consumption = YTL 8.4376 million
- Fourth change in consumption = YTL 6.33 million

Total change in consumption = YTL 80 million

\[ (1 + \text{MPC} + \text{MPC}^2 + \text{MPC}^3 + \ldots ) \times \text{YTL 20 million} \]

The crowding-out effect
- But there is another constraint on the ability of fiscal policy to increase aggregate demand
- Which limits the effectiveness of the multiplier
- An increase in government spending causes the interest rate to rise
- Higher interest rate reduces investment spending
- Part of the increase in demand is offset by lower investment spending
- In this case, we can talk about government spending crowding-out private investment in the economy
- Attention: for crowding-out to happen, interest rate must rise as a result of loose fiscal policy
- Otherwise there is no crowding-out of investment

Changes in taxes
- Tax cuts by the government increase the take-home pay of the households
- Households save some of this additional income and spend some of it on consumer goods and services
- The shift in aggregate demand resulting from a tax change depends on the value of the multiplier and the strength of the crowding-out effect as in government spending
- However, households may also decide to save a large part of the additional income if they believe it is temporary
- In that case its impact on aggregate demand will be much weaker

Fiscal policy: net impact
- The final impact of fiscal policy will depend on the relative strength of the multiplier and crowding-out
- If loose fiscal policy represented by a larger budget deficit causes substantially higher interest rates, then domestic demand will not increase
- In turn, if the fiscal stimulus to the economy comes at a time when interest rates remain very low, it will shift the aggregate demand as targeted
- In case of price volatility (inflation), large public debt or lack of credibility by the government fiscal stimulus may actually backfire and reduce aggregate demand by eroding further confidence of the markets

Keynesian policy in the US
- For two decades after 1960 Keynesian economics which supports active stabilisation policy became dominant in the US administration
- Several presidents, mainly from Democratic Party, collaborated very closely with famous Keynesian economists in designing economic policy
- Budget deficits were tolerated with the expectation of lower unemployment
- Monetary policy accommodated budget deficits
- Small but steady rise in inflation was considered a fair price to pay compared to gains in output and employment
- All this has changed after 1980s

Changes in monetary policy
- The Fed has a dual mandate of price stability and maximum sustainable employment
- Price stability means not allowing inflation to rise above 2%
- But unemployment has come down below 5%
- The Fed has been faced with dilemmas
- How to keep interest rates low enough to stimulate employment
- But how to keep inflation under control
- The Fed has responded by using unconventional measures
- They have purchased large amounts of long-term bonds
- This has lowered long-term interest rates and increased aggregate demand
- The economy has recovered more rapidly than expected
- But it has also raised fears of inflation

Using policy for stability
- Economists disagree about how active government should be attempting to stabilise the economy
- Usually, those on the “left”, such as the Democrats in the US and social-democrats in Europe prefer active stabilisation policy
- Those on the “right”, such as the Republicans in the US and conservatives in Europe prefer to let the markets do their job
- In Turkey this division is not so neat
- Both the “right” and “left” political parties in the past have been inclined to implement loose fiscal and monetary policies
- Which is the main cause of high inflation in Turkey

Case for active stabilisation policy
- Many policymakers believe it is necessary to use monetary and fiscal policy to tame an inherently unstable private sector
- Over time, the attitudes of households and firms cause large shifts in aggregate demand
- This is especially true of investment spending which can show big fluctuations
- If there is no public response to these with timely interventions through monetary and fiscal policy, the economy will experience undesirable and unnecessary fluctuations in output and employment
- Therefore it is the job and duty of the government to be active in macroeconomic policy
### Automatic stabilisers

- **Automatic stabilisers** are changes in fiscal policy that stimulate aggregate demand when the economy goes into recession without policymakers having to take any deliberate action.
- This is due to the structure of the budget revenues and spending in developed economies.
- Typically, **unemployment benefits** increase during a recession while tax receipts fall, increasing the budget deficit (loose fiscal stance).
- Unemployment benefits decrease during a boom while tax receipts rise, reducing the deficit or even moving the budget into surplus (tight fiscal stance).
- Thus the budget automatically stabilise fluctuations.

### Central bank independence

- A key economic policy issue is the independence of the central bank from the government.
- In every country, the central bank is a publicly owned institution, responsible to the government.
- Yet economic theory favours minimum direct government intervention in the conduct of monetary policy by the central bank.
- Politicians worry more about the short run, such as the next elections and are ready to trade some inflation for more employment.
- In the long run higher inflation results in lower average growth rate and therefore less employment.
- An independent CB fights inflation more effectively.

### Conclusion

- Government decisions on taxes and on public spending have a direct impact on aggregate demand.
- Fiscal policy refers to changes in the budget balance (deficit or surplus).
- The multiplier explains how additional spending (or less taxes) by the government creates more demand than itself.
- Budget deficit may crowd-out private investment if interest rates rise as a result of the deficit.
- The net effect of fiscal policy on aggregate demand depends on the value of multiplier and crowding-out.
- Fiscal policy has long-run effects on saving and growth and short-run effects on output.

### Policy dilemmas

- In the short-run tradeoff between unemployment and inflation is illustrated by the Phillips curve.
- Society faces a short-run tradeoff between inflation and unemployment.
- “One of the principles we studied in Chapter 1 described this situation.”
- “Lower unemployment and higher growth rate can only be obtained in the short-run by accepting the acceleration in inflation.”

### The long-run

- In the long-run the level of unemployment depends on several factors:
  - Capital accumulation, itself a function of saving and investment.
  - Features of the labour market such as minimum-wage laws, the market power of unions, the role of efficiency wages and the effectiveness of job search.
- These determine the natural rate of unemployment in the economy.
- In the long-run the rate of inflation depends on the growth rate of the quantity of money in the economy, which is directly controlled by the CB.
Unemployment and growth

- We must remember the one-to-one relation between the growth rate of GNP and the level of unemployment.
- Greater aggregate demand for goods and services imply a larger output for the economy.
- Which means higher growth rate of GNP but also higher overall price level.
- High levels of growth of GNP corresponds to low levels of unemployment as firms increase production to meet demand.
- Therefore, to high levels of growth and inflation will correspond low levels of unemployment and the opposite for low levels of growth.

The long-run Phillips curve

- At first, the Phillips curve seemed to offer policymakers a menu of possible inflation and unemployment outcomes.
- Governments believed they could increase the growth rate of the GNP by loose monetary or fiscal policy and thus reduce unemployment even below its natural rate if they accepted a small rise in inflation.
- In the 1960s, Friedman and Phelps concluded that inflation and unemployment are unrelated in the long-run.
- Therefore, the long-run Phillips curve is vertical at the natural rate of unemployment.

The natural rate hypothesis

- The view that unemployment eventually returns to its natural rate regardless of the rate of inflation is called the natural-rate hypothesis.
- This is a restatement of the “classical dichotomy” and “neutrality of money” that we learned when we studied money in the long-run.
- Monetary policy could be effective in reducing unemployment and increasing growth in the short-run but has no positive effect on either in the long-run.
- Historical observations from different economies with different unemployment levels support the natural-rate hypothesis.

Introducing expectations

- What explains the difference between a downward sloping short-run Phillips curve and the vertical long-run Phillips curve?
- Data from the US and the UK for the period before 1960s clearly exhibited the type of relation foreseen by the short-run Phillips curve.
- Yet Friedman and Phelps had very strong theoretical arguments for the vertical long-run Phillips curve.
- To make the two curves compatible, Friedman and Phelps introduced inflation expectations into the analysis.
- Expectations play a very important role in macroeconomics.
Shifts in the short-run Phillips curve
- The short-run Phillips curve is effective through the difference between expected and actual inflation
- A general formula can be written as
  \[ \text{Unemployment (\%)} = \text{Natural-rate (\%)} - \text{\beta} (\text{Actual inflation} - \text{Expected inflation}) \]
- In other words, if actual inflation is above expected inflation, then unemployment fall below natural rate
- In the long-run expected inflation adjusts to changes in actual inflation
- Changes in expected inflation corresponds to shifts in the short-run Phillips curve
- Higher expected inflation shifts it to right
- Lower expected inflation shifts it to left

US experience with the Phillips curve
- The systematic use of Keynesian expansionary policies in the US ended up by changing inflation expectations and thus the stable Phillips curve broke down in the early 1970s
- During the 1970s and 1980s, US economy experienced high inflation and high unemployment simultaneously (stagflation)
- This was a period of intensive debate between Keynesians who believed in active policy and the supporters of Friedman (called monetarists) who advocated restraint in monetary and fiscal policy
- The break-down of the stable Phillips curve had far reaching consequences for macroeconomics

Supply shocks and the Phillips curve
- Historical events have shown beyond doubt that the short-run Phillips curve can shift due to changes in inflation expectations
- The short-run Phillips curve also shifts because of shocks to aggregate supply
- Major adverse changes that affect aggregate supply can worsen the short-run tradeoff between unemployment and inflation
- By causing the curve to shift to right
- An adverse supply shock gives policymakers a less favourable tradeoff between inflation and unemployment
- And take us back to the policy dilemma

Policy dilemma of oil price hikes
- In the 1970s, policymakers everywhere in the world faced hard choices when OPEC cut output and raised the price of petroleum several fold
- They could either fight unemployment by expanding aggregate demand and face the acceleration of inflation
- Or fight inflation by contracting aggregate demand and endure even higher unemployment
- The first choice aggravated the shift in the short-run Phillips curve, because both costs and inflation expectations now contributed to shifts in the curve
- The second choice was politically unattractive to many governments
The cost of reducing inflation
- Once inflation reaches high levels (double-digit), reducing it to normal levels becomes a major macroeconomic policy issue
- Disinflation is the fall in inflation (not in prices: that is deflation)
- Disinflation requires a period of tight fiscal and monetary policies to break the cost-price spiral and inflationary expectations
- During which unemployment remains high and the growth rate of GNP is low, even negative
- Because the equilibrium point moves downward on the short-run Phillips curve
- In the long run the curve shifts to left

Rational expectations
- The theory of rational expectations became very fashionable in macroeconomics during 1980s
- It suggested that the sacrifice ratio of disinflation could be much smaller than estimated
- The theory of rational expectations assumes that people optimally use all the information they have when forecasting about the future, including information about government policies
- Remember: expected inflation explains the different short-run and long-run Phillips curves
- If expectations adjust quickly to disinflation, then the short-run Phillips curve shifts quickly and the sacrifice ratio is lower

Costless disinflation
- The possibility of altering inflation expectations opens the road for disinflation without cost
- If people can be convinced that inflation will fall to a target set by policymakers there is no need for a contraction in output
- The short-run Phillips curve shifts to left such that the economy has both higher growth rate (lower unemployment) and lower inflation
- Using the exchange rate as a nominal anchor by fixing its future value is one of the methods of reducing inflation expectations
- Turkey tried this during 2000 and the economy boomed while inflation went down substantially

Disinflation in the US
- In early 1980s CPI inflation reached 10 % and efforts to disinflate the US economy intensified
- In 1981 Federal Reserve Board (Fed) Chairman Volcker tightened substantially monetary policy and inflation fell from 10 % in 1981 to 4% in 1984
- The sacrifice ratio was indeed high: unemployment rate stayed at 9 % for the period
- Shifts to the left in the short-run Phillips curve during 1984-86 led to lower inflation and unemployment
- Inflation in the US has been on a downward trend since then despite record low unemployment rates during the long expansion of 1990s

The sacrifice ratio
- Output lost during disinflation is also called the sacrifice ratio
- The sacrifice ratio is the number of percentage points of annual output that is lost in the process of reducing inflation by one percentage point
- The sacrifice ratio for the US economy was estimated during the 1980s
- It was five
- To reduce inflation from about 10 % in 1979-81 to 4 % would have required an estimated sacrifice of 30 % of annual output
- Fighting against inflation can be very costly for the society

Disinflation in the US (1980s)
- Some interesting characteristics of low inflation are worth highlighting
- Once inflation remains very low for a long period of time, economic actors begin to believe that it will remain low also in the future
- Firms become very sensitive to any increases in their costs, such as wages or other inputs
- Because they believe they will not be able to pass on to the consumer the additional costs
- Thus they keep inflation low, setting in motion a virtuous circle
- High inflation like Turkey had for the last 30 years was a very damaging vicious circle
Examples of “virtuous circle”

- US economy experienced rapid growth of output, low levels of unemployment and very low inflation during the 1990s
- Because of a favourable shift in the Phillips curve
- Most analysts believe the determination of Fed Chairman Greenspan to fight inflation was an important factor in improved expectations
- Turkey experienced record breaking growth rates with rapidly falling inflation between 2002-2005
- The favourable shifts in the Phillips curves can also be explained by better economic policies
- Budget discipline and tight fiscal policy explains a larger part of improvement in the case of Turkey

Case for inflation targeting

- Tools and methods of monetary policy remain a key issue for discussion in macroeconomics
- During the last two decades many countries moved to a new approach to monetary policy called “inflation targeting” first invented New Zealand
- The government sets a specific target for inflation: it can be point (3 % p.a.) or range (2.5 to 3.5 % p.a.)
- The central bank is responsible to achieve this target
- CB is free to use monetary policy instruments as it wishes provided these are transparent
- Accountability is an important advantage of IT
- Inflation targeting is implemented in Turkey since January 2006

Conclusion

• The understanding by economists of the tradeoffs between inflation and unemployment has changed dramatically during the last forty years
• Certain principles have developed that today command consensus among economists
• The Phillips curve describes the relation between inflation and unemployment and the dilemma before the policymakers
• In the long run, there is no relation between unemployment and inflation (classical dichotomy)
• The long-run Phillips curve is vertical
• In the short run, low level of unemployment corresponds to high level of inflation and vice versa
• The short-run Phillips curve is downward sloping

What did we learn until now?

• The Phillips curve is compatible with and can be derived from the aggregate demand and supply model
• Suppose shocks and changes in inflation expectations cause shifts in the short-run Phillips curve
• When the Phillips curve shifts right, a higher level of inflation will correspond to the same level of unemployment
• Disinflation is the fight against inflation
• The sacrifice ratio is the value of output lost during disinflation
• According to the rational expectations theory, zero sacrifice ratio is possible with large positive shifts in expectations

Macroeconomic debates in the US

• Chapter 36 draws on what we learned before but with special emphasis on policy issues
• It reviews current policy debates in the US
• Macroeconomic theory has developed mainly in the US, focusing on different macroeconomic problems faced by the US economy
• Many theories are directly linked to divisions among economists on policy options in the US and other industrial countries
• Some of these debates may not seem relevant for Turkish students because of the more pressing problems facing Turkey, such as inflation and crises
• We look into these in the next chapter

PART XIII: FINAL THOUGHTS

Five Debates over Macroeconomic Policy

Chapter 36

Five major debates on policy

• Debate One: Should policymakers try to stabilise the economy with monetary and fiscal policy?
• “Active vs. Passive” policy discussion once again
• Debate Two: Should monetary policy be made by rules or by discretion?
• Can we trust policymakers?
• Debate Three: Should the CB aim for zero inflation?
• Is there a “good” level of inflation?
• Debate Four: Should the govt balance its budget?
• Evaluating fiscal policy and public debt
• Debate Five: Should the tax laws be reformed to encourage saving?
• Taxes, efficiency and the distribution of income

Pro: policymakers should try to stabilise the economy

• “Left” leaning economists believe that a market economy is inherently unstable and unless corrected it will have wide and unnecessary fluctuations
• Policy can manage aggregate demand in order to offset the inherent macro instability of the economy and reduce the severity of economic fluctuations
• There is no reason why society should suffer the pain from the violent booms and busts of recurrent business cycles
• Active countercyclical monetary and fiscal policy will curb the potential excesses of the market economy, thus bringing much needed stability
Con: policymakers should not try to stabilise the economy
- “Right” leaning economists believe that a market economy is inherently stable and it is government intervention which makes it unstable
- Monetary policy works with long and unpredictable lags between the need to act and the time it takes for these policies to produce results
- Monetary policy lags often reach six months
- Fiscal policy has long lags in the design phase because it involves the political process: Parliament, Cabinet, etc.
- All too often policy initiatives exacerbate rather than mitigate the magnitude of economic fluctuation

Pro: monetary policy should be made by rule
- “Right” leaning economists defend “rules based” monetary policy
- “Rules based policy” implies that the CB announces a set of binding rules and implements them irrespective of prevailing economic conditions
- It leaves very little freedom of action to the CB
- This prevents policy mistakes causing inflation
- CB is prevented from using policy to support the government in elections: political business cycle
- There is no worry about a discrepancy between what the CB says and what it does: time inconsistency problem

Con: monetary policy should be discretionary
- “Left” leaning economists defend discretionary monetary policy
- Discretionary monetary policy allows the CB to choose among tools and policies available those best suited to the circumstances
- It gives flexibility to the CB, especially when faced with unprecedented and surprise events
- It the rapidly changing world of the global economy, policymakers need flexibility
- The alleged problems with discretion such as political business cycle or time inconsistency are largely hypothetical

Pro: CB should aim zero inflation
- “Right” leaning economists contend that even very low inflation (1 % p.a.) is a cost on society
- We studied the costs of inflation: shoeleather costs, menu costs, increased variability of relative prices, tax liabilities, confusion and inconvenience and arbitrary redistribution of wealth
- Reducing inflation to zero has temporary costs (during disinflation) but also permanent benefits once it is achieved
- Money can fulfill its “store of value” function only in case of zero inflation
- Economically weak sections of society, such as the elderly and the poor benefit more from zero inflation

Con: CB should not aim zero inflation
- “Left” leaning economists contend that zero inflation is probably unattainable and to get there involves output and unemployment costs that are far too high compared with its benefits
- Policymakers can reduce many of the costs of relatively low level of inflation (1 or 2 % p.a.) without actually reducing inflation to zero
- Inflation indexed T-bills and inflation-adjustment in tax rates are some of the tools that is now being used in many countries
- A little inflation may improve the working of the labour markets during structural change such as those imposed by globalisation

Pro: government should balance its budget
- Budget deficits have always been the subject of heated public debates
- Public debt is the sum of past budget deficits
- “Right” leaning economists demand government budgets to be balanced: neither deficit nor surplus
- Budget deficits reduce national saving and therefore investment: crowding out
- Budget deficit corresponds to a transfer of resources from future generations to the current one
- Exceptional circumstances such as wars may justify budget deficits because the cost of war must also be shared by future generations

Con: government should not balance its budget
- “Left” leaning economists dispute the demand for a balanced budget irrespective of conditions
- Per capita debt must be compared with the life-time earnings of a citizen, not annual GDP
- Future generation’s inheritance is not only the public debt; but also the infrastructure built and the wealth accumulated by the previous generation
- Deficits caused by public investment in education may actually improve generational distribution of income by increasing future productivity
- Ratio of public debt to GNP may remain constant or even fall despite budget deficits: debt dynamics

Pro: tax laws should be reformed to encourage saving
- “Right” leaning economists support changes in the tax laws so that capital income is less heavily taxed
- Saving is the main source of investment, and therefore of higher productivity, of more employment and of higher living standards
- High taxes on capital income is a disincentive to save which reduces welfare of the society
- A growth-friendly approach is to tax consumption
- With a consumption tax households pay taxes on what they spends, not on what they earn
- Income that is saved is exempt from taxation until the saving is later withdrawn and spent on consumption

Con: tax laws should not be reformed to encourage saving
- “Left” leaning economists are against changes in the tax laws to encourage savings
- Such changes to stimulate saving would primarily benefit the wealthy
- High income households save more as a proportion of income than low income households
- Consumption tax is regressive; the poor pay higher taxes than the rich
- A more equitable way to stimulate saving is to generate budget surpluses and use them to pay back debt
- That way national saving is increased without making society less egalitarian
Globalisation, populism and crisis: macroeconomic issues for Turkey

Week 14

Differences among countries
• Macroeconomic theory provides us with the general characteristics of a modern market economy
• But, important structural differences exist among countries from the macroeconomic viewpoint
• A large portion of these differences are quantitative: per capita GNP is high for developed economies and low for developing nations
• Yet others are due to qualitative differences in political, legal and social institutions
• Such as traditions of democracy, property rights, law enforcement, corruption, etc.
• Finally, macroeconomic performance and characteristics also vary from country to country.

What we learned about Turkey
• We encountered comparative data for the Turkish economy in the previous chapters
  – GDP, GNP, per capita GNP and economic growth
  – CPI, WPI and the GNP deflator
  – Population and structure of employment
  – Monetary aggregates, CB balance sheet and the history of inflation
  – Trade, Balance of Payments and other aspects of the open economy
• Based on what we know of macroeconomic theory and available data, we will now look at the policy issues relevant for the recent past of the Turkish economy

Macroeconomics for Turkey
• In depth analysis of the causes of Turkey’s under-development is not the duty of macroeconomics
• Development economics deal with the long term trends in economic growth and social development
• It also covers the qualitative and institutional aspects of economic development
• Macroeconomics is about
  – Causes and consequences of inflation
  – Volatility in output, prices, interest rate, etc.
  – Economic crises
  – Programs and policies that aim to reduce volatility and increase economic stability

Plan of the lecture
• We start with the international environment for macroeconomic policy
  – International institutions such as the IMF and the World Bank
  – The meaning and implications of globalisation for macroeconomic policy
  – Fixed and floating exchange rate regimes
• Then we look at some of the major issues
  – Populism and populist cycles
  – FX and financial crises
  – Banking sector troubles
  – Stabilisation programs
  – Inflation and its costs

The World Bank
• The World Bank (WB) has 183 member countries and a staff of 10,000 (8,000 in Washington DC)
• It was established with the objective to support countries in their growth effort by acting like a development bank
• It played an important role in the reconstruction of Europe after WW2 along with the Marshall plan
• Türkiye Sanayi Kalkınma Bankası, the first Turkish development bank, was established with the support from the World Bank
• In the last decades the World Bank increasingly focused on social aspects of development, such as education, health, poverty, good governance

International Monetary Fund
• International Monetary Fund (IMF) has 183 member countries and a staff of 2,500
• It aims at helping member countries with payment difficulties by extending short-term FX loans
• To prevent a repetition of the 1930s when the breakdown of the international payments system had aggravated the depression in the world economy
• The world economy has grown without international liquidity problems in the 1950s and 1960s
• Since 1970s very few industrial economies demanded support from the IMF
• During the last three decades IMF’s focus has shifted to developing countries

Bretton Woods Agreement
• A conference was held in the small town of Bretton Woods in New Hampshire (USA) in 1944
• It established the institutional framework of the international economy for the last half century
• Two conflicting views were debated: one from J.M.Keynes, the other from the American team
• Americans won the argument
• The World Bank Group and the International Monetary Fund, both based in Washington D.C. are the results of the Bretton Woods agreement
• They are also jointly called International Financial Institutions (IFI)
• They constitute the backbone of world economy

Standby arrangements
• IMF came into existence in 1946
• The first IMF loan went to France in 1947
• Standby Arrangements which constitute the basic framework for IMF support in periods of difficulties was first standardised in 1952
• As its name implies, through this arrangement between the IMF and a member country, IMF announces its readiness to stand by this country
• It works through a Letter of Intend in which the government gives the details of its program of action to solve the Balance of Payments problem
• LoI becomes effective when approved by the Executive Board of the IMF
Power in the IFIs

- Voting power in the IMF-WB depends on the share of the capital committed by the country
- US, Europe and Japan have the largest shares
- By tradition, the Chairman of the WB is appointed by the US administration while the Chairman of IMF is a European
- Both institutions employ influential economists at top management jobs
  - M.Bruno, A.Krueger and J.Stiglitz (winner of the Nobel prize for 2001) served as chief economists at the WB in the past
  - S.Fischer, A.Krueger, K.Rogoff were Deputy Managing Directors at the IMF

Turkey and the IMF

- Countries experiencing macroeconomic instability, such as high inflation, large public deficits and BoP problems sooner or later ask support from the IMF
- Turkey signed 17 Standby Arrangements with the IMF during the last half century
  - Those before 1999 always involved some form of Balance of Payments and FX liquidity difficulties
  - They were typical stabilisation programs
  - The last agreement in 1999, reformulated in 2001 and in 2002 are of a different kind
  - They secure financial support from the IMF in order to reduce Turkey’s high and persistent inflation
  - They are disinflation programs

Critics of the IMF

- There are various critics of the IMF and its policies, some contradicting the others
- Governments (and opposition) in the developing countries complain about the fiscal discipline and politically unpopular public finance reforms required by the IMF as a condition for support
  - The Keynesian “left” in the industrial countries criticise IMF for applying very strict monetarist policies to all cases without adequate respect for varying circumstances
  - The “right” in the US blames the IMF for wasting the taxpayers’ money on supporting irresponsible politicians in developing countries and causing serious “moral hazards”.

International financial architecture

- In the last decade many developing countries, including high growth economies such as Korea, Thailand and Malaysia experienced financial crises
- The inability of IMF both to forecast and to prevent these crises intensified the volume of criticism
- The need for a major overhaul of the international financial system became a major issue
- But parties could not agree on what was to replace the IMF and how
- Strengthening the IMF to the point where it has the powers of a World Central Bank could be one solution in the long run
- But problems and difficulties remain in the short-run

Meaning of globalisation

- Globalisation became a very popular word during the last decade
  - Its meaning varies much from one person to other
  - For economists, globalisation means increased integration and interdependence of national economies, measured by international flows of:
    - Merchandise (trade: exports and imports)
    - Services (invisible trade)
    - Foreign direct investment (FDI)
    - Short and long term borrowing and finance
    - Stock-market portfolio investment
  - The increase in these flows puts serious constraints on domestic economic policy

Capital mobility

- Before 1990s, international capital mobility was the exception not the rule among developing economies
- Constraints on the flows of finance were lifted by developing countries in late 1980s and early 1990s
- The process is called “capital account liberalisation” or “currency convertibility”
  - Very strict controls over capital flows existed in Turkey until 1989 when the TL became convertible
  - Without capital mobility, residents in a country are not allowed to buy and accumulate FX freely
  - There are many economists in Turkey who believe that the convertible TL did more harm than good to the Turkish economy

Globalisation trilemma

- Convertibility of the TL (capital account liberalisation) imposes new constraints on economic policy
  - Globalisation trilemma refers to these constraints
  - Policy makers can control only two of the following policy instruments
    - Capital account liberalisation (convertibility)
    - Independent monetary policy (interest rate)
  - Exchange rates
  - The third must be left to the markets
  - Once the currency is convertible, CB looses control over either the interest rate or the exchange rate
  - For CB to control both, capital controls must be reimposed (no convertibility)

Choice of policy instruments

- After convertibility, the government can either control the interest rate or the exchange rate, but not both at the same time
- Command over monetary policy implies letting the exchange rate fluctuate by the forces of the market
- Then monetary policy (discretionary or rules-based) can be used to fight against recessions
  - Stable exchange rates can only be achieved by letting the interest rate fluctuate in the market
  - Therefore monetary policy can no longer be used to stabilise economic fluctuations
- Rich countries prefer to control the interest rate and float their exchange rates

Example from Turkey

- During 1990s, Turkey targeted stable exchange rate
  - High interest rates and output volatility are direct consequences of this choice
- What happened in Turkey during 2000 and 2001 confirm the trilemma
  - In 2000, the exchange rate was stable because it was fixed by the CB with IMF support
  - But the interest rate became very volatile in 2000 despite a growing economy and falling inflation
  - After 2001 the exchange rate was floated and fluctuated wildly throughout the period
  - But interest rates remained relatively stable despite the financial crisis, deep recession and recovery
**Exchange rate regimes**
- What to do about the exchange rate?
- Should we leave it to the market, to be determined by the forces of supply and demand?
- Should the government fix it through the CB?
- The exchange rate regime summarises this choice
  - In “fixed exchange rate regime”, the CB agrees to buy and sell FX at the rate it announces
  - It is also called “pegged” exchange rate
  - “Crawling-peg” means that the actual nominal exchange rate changes smoothly over time
- In “floating exchange rate regime” market forces determine the value of currency without interference from the CB

**The Gold Standard**
- From pre-modern times until the Great Depression in 1930s, the world economy worked on the Gold Standard
  - For gold coins, there is no need of an exchange rate as the quantity of gold in represents their value
  - In the Gold Standard every country fixed its paper currency to a certain amount of gold
  - The CB exchanged banknotes for gold at this price
- If actual exchange rates deviated from gold prices gold moved among countries
- In the early phase of the Bretton Woods agreement before 1970s, US Dollar was fixed to gold
- And countries fixed their exchange rate to the US$.

**To float or to fix!**
- There are advantages and disadvantages to both fixed and floating exchange rate regimes
- Fixed exchange rates help producers by reducing uncertainty for exporters and importers
- At the cost of giving up monetary policy in case of a recession
- And may cause large devaluations if shocks result in a misalignment of the real exchange rate
- Floating exchange rates permit active monetary policy in case of a recession
- At the cost of hurting procers by increasing uncertainty for exporters and importers
- And the economy adjusts to shocks smoothly

**Convertible and the exchange rate**
- When countries had controls over capital mobility, fixed exchange rates prevailed
- In conformity with the globalisation dilemma
- But developing countries continued with fixed exchange rates after the removal of capital controls
- Defying the logic of the dilemma
- Turkey during 1990s is a typical example
- This mistake contributed to the financial crises encountered by many countries during 1990s
- The incompatibility of fixed exchange rates and discretionary monetary policy in case of convertibility is the ultimate cause of the economic crises Turkey experienced in 1994 and 1999-2001

**Euro, EMU and currency boards**
- European Monetary Union is a regional response to this dilemma
- Member countries of EMU (Euroland) give up their national currency and fix permanently the exchange rate among themselves
- The Euro floats against non-member currencies
- The Euro is a logical result of the single market
- Such arrangements are called “hard peg” because there is no possibility of exit (devaluation) from the fixed exchange rate
- In a “Currency Board” (Para Kurulu) the local currency is pegged to a strong currency (US$, Euro) by law and CB prints money only against FX

**Populism**
- The concept of “populism” will help us understand better some of the macroeconomic problems faced by high inflation countries
- It is based on the belief that budget deficits are not necessarily harmful to economy
- Two versions:
  - Inflation promotes rapid economic growth
  - The budget deficit is self-financing through the Keynesian multiplier
- Populist policies shift the AD curve in the short-run, resulting in higher growth and higher inflation
- In the long-run they cause external deficits and the boom collapses with an economic crisis

**Populism and politics**
- “Populist policies” are often used in Turkey synonymous with “bad policies”
- It involves promises and implementation of policies to improve the welfare of lower income groups
- What distinguishes populism is not the objectives: the “left” (social democrats) have the same targets
- But the methods used to achieve these objectives
- Populism believes that income distribution can be improved without regard for the basic principles of macroeconomics about the budget balance, exchange rate misalignment, etc.
- Populism is dominant both in the “right” and the “left” political parties in Turkey

**Populist policies**
- Populist policies typically increase public spending without a corresponding increase in tax revenues
- Redistributions income transfers: higher salaries for civil servants, higher agricultural support prices, earlier retirement for the employed, larger subsidies for basic inputs and utilities, etc.
- Social spending: more on health and education, more investment for hospital, schools, etc.
- The budget deficit explodes, often financed by printing more and more money
- While the exchange rate is kept constant to prevent inflation and the interest rate down to promote growth

**The populist cycle**
- The “populist cycle” is a special business cycle
- The cycle begins with the rapid rise of public spending and of the budget deficit
- The additional demand injected by loose fiscal policy starts a domestic spending boom
- The interest rate and the exchange rate are repressed to contain inflation and to prolong the boom
- Domestic excess demand cause big rise in imports and large current account deficits appear
- Financed by short-term borrowing abroad
- Eventually international lenders or domestic residents get scared and the cycle ends in crisis
- A populist cycle normally last for 3 to 5 years
From boom to bust
• When the financial markets realise that macroeconomic policies are not sustainable they stop lending
• Residents start buying FX to protect their liquid assets against the coming devaluation
• With the crisis, domestic currency falls freely, cost-inflation jumps up and domestic demands collapses
• The rise in inflation erodes the gains in real wages to levels below the beginning of the populist cycle
• The vicious circle of devaluation, inflation, rising public deficits, etc. destabilises politics
• At this point usually a new government comes to power and goes to the IMF for support and the IMF prescribes very unpopular remedies

Before and after convertibility
• The end of the populist cycle takes different forms, depending on capital controls or convertibility
• With capital controls, there is no domestic run on FX and no free fall of currency
• In turn, shortage of FX stops imports and therefore domestic production that uses imported inputs
• The last phase of the cycle involves serious shortages and black markets for FX and many goods
• With capital mobility, there are no shortages but the depreciation of currency speeds up and turns into a vicious inflation-devaluation spiral
• Unless something is done to restore confidence the economy may end up in hyperinflation

Turkey’s FX crises
• When Çiller was elected to head the DYP in 1993, she reduced interest rates and tried to keep the exchange rate under pressure before the local elections in April 1994
• In January 1994 there was an attack on the TL
• US$/TL moved from below 15,000 TL in January to 40,000 TL in April 1994
• There were no currency shortages but TL lost half its value in four months
• A stabilisation package as part of a Standby Arrangement with the IMF was announced in April 1994
• In 1994 WPI rose by 150 %
• Real wages of public and private sector employees fell by 40 % to below 1989 levels

Other causes of crises
• It is wrong to attribute all economic crises and big devaluations to populist policies, i.e. large and unsustainable public sector deficits financed with short-term borrowing abroad
• Like Turkey’s three populist periods described above, many crises in Latin America also fall into this category
• But the financial crises in East Asian Tigers, Korea, Thailand and Malaysia happened despite healthy public finances
• Their cause was investment booms fuelled with “hot money” and the CB’s inability to reduce demand by tightening monetary policy

"Hot money"
• Short-term foreign borrowing by domestic financial institutions is also called “hot money”
• For “hot money” to flow into a country – Local interest rates must be higher than world interest rates
– There must be an explicit or implicit guarantee of the CB over the future course of the exchange rate
• This implies above average returns for international lenders without risks
• Some of the lending could be overnight
• Usually maturity is less than one year
• “Hot money” is a major cause of instability for developing countries

Balance sheet crises
• “Hot money” increases the fragility of the balance sheets of the financial institutions who borrowed abroad in FX to lend domestically in local currency
• Once foreign banks realise this, they cut lending
• Usually, at this point demand for FX from domestic residents also rises: a substantial upward shift in the Net Capital Outflow NCO curve
• If CB tightens monetary policy, high interest rates only make things worse for borrowers
• Meltdown in currency and money markets lead to rapid currency depreciation and bankruptcies among financial and non-financial firms
• The economy faces a full scale financial crisis

Stabilisation programs
• There is a blueprint to most IMF supported Stabilisation Programs
– Fiscal tightening in the form of higher taxes and lower spending by the government, leading to a sustainable budget deficit
– Monetary tightening in the form of higher interest rates to curb investment and consumer spending
– Large devaluation of the currency in order to improve the trade balance and the current account
• In Turkey indirect taxes rise, leading to higher inflation
• IMF supports the program with FX loans, which help both the foreign deficit and the budget deficit
Currency substitution

- Residents of a country suffer big losses during economic crisis and unexpected depreciation of the currency and the rise in inflation
- When the currency is convertible, they try to protect themselves from such losses by moving their liquid assets from local currency into FX assets
- In other words, they substitute local currency with a reliable (low inflation = sound) currency
- This is also called “dollarisation”
- Dollarisation had started in Turkey before 1989 but accelerated after the crisis in 1994
- Currency substitution further intensifies macro-economic instability in the economy

“Phoney money”

- “Old TL” fulfilled only partly the first function of money (medium of exchange) while the other two were left to foreign currencies in circulation
- TL became “phoney money” (dandik para) and thus always under threat of attack by Turkish citizens
- CB was forced to keep interest rates high in order to defend the TL
- Even in case of a recession, monetary policy could not be loosened for fear of an attack on the TL
- Which amplified the effect of any negative foreign or domestic shock to the economy
- Resulting in very large fluctuations in output and increased macroeconomic instability

Disinflation programs

- The only way to get out of the vicious circle of inflation, dollarisation, output volatility and macroeconomic instability is to disinflate
- But decades of high and volatile inflation implies a strong inflation inertia as economic actors have learned from unsuccessful past efforts by governments that inflation will remain high
- The sacrifice ratio is therefore unaffordable
- IMF moves into the picture to solve the impasse
- Disinflation programs receive IMF support even if there is no BoP and FX liquidity problems
- Like the disinflation program initiated in Turkey in 2000 with a Standby Arrangement with the IMF

Nominal anchor in 2000

- In Turkey, CPI fell from 68.8% to 39% while GNP growth rate rose from -6.3% to 6.4% in 2000
- This was achieved by the downward shift in the short-run Phillips curve resulting from the exchange rate anchor
- The sacrifice ratio was negative in 2000: falling inflation was accompanied by higher growth rate
- Very low or even negative sacrifice ratios constitute the main attraction of an “exchange-rate based disinflation program”
- Unfortunately the government and the public opinion failed to see this point and the program collapsed in 2001

November 2000 - February 2001

- The last crisis is not of the “public sector and current account deficits” kind but of the “balance sheet troubles” type
- The crisis was triggered by the deterioration in the balance sheets of banks
- By the large duty losses accumulated at the state banks (Ziraat and Halk) and risky positions taken by private banks
- When a liquidity squeeze appeared in November, the peg in the exchange rate prevented the use of monetary policy to inject liquidity into the system
- A political turbulence in February was sufficient for a run on TL and the abandon of the program

The health of the banking sector

- Banking sector plays a key role in macroeconomic stability in all economies, developed and developing
- If problems accumulate in the banking sector, unless governments act for a quick remedy, a long period of recession or slow growth follows
- Banks are vital links between saving and investment decisions and banking problems breaks the circular flow of income and spending in the economy
- When banking system stops lending to heal its own problems, investment spending and therefore aggregate demand falls, causing a serious recession
- And aggravates the balance sheets of the banks because of economic slowdown increases bad loans

Moral hazard in banking

- A failure in the banking sector is most undesirable for governments because of its long term negative effects on output
- Larger the bank facing failure, the more difficult it becomes to let it fail
- The slogan “too big to fail” is often used
- Deposit insurance schemes are part of the problem as well as the solution
- Knowing that final risks are born by the taxpayers, banks take unnecessary risks in search of large profits totally neglecting risk management
- Individual savers are attracted by higher interest rates offered by banks facing liquidity constraints

Risks in the banking sector

- Banks receive deposits from the public and lend to private firms or to the government
- Deposits have a much shorter maturity than the loan book for all banks
- The maturity mismatch corresponds to the difference of the maturity of a bank’s assets (loans) and liabilities (deposits)
- Interest rate volatility increases the risk of loss for the banks from maturity mismatch
- Banks borrow or accept deposit in FX and lend in domestic currency, implying a currency mismatch
- Exchange rate volatility increases the risk of large losses for banks from currency mismatch
Crisis indicators
- Some developments and data series are considered to be good indicators of the risks of potential crisis
- Probably the most important indicator is the current account balance
- There are few examples of a financial crisis with healthy current account surpluses (only Russia had a current account surplus and crisis in 1998)
- The overvaluation of the real exchange rate can be another indicator but not always a good one
- Level of public debt and borrowing requirements of the Treasury compared to the size of the domestic financial markets is also important
- There exists no unfailing criteria to detect crisis

Inflation: long term costs
- A major cause of the weaknesses of the banking sector is high persistent inflation
- High inflation prevents the development of financial markets everywhere because of it implies high risks for nominally denominated assets
- Savers in a high and volatile environment prefer hard assets such as real estate, gold and FX
- But the first two are unproductive assets and the third brings currency risks to the banks
- All three reduce the average growth rate of the economy given the saving rate
- High inflation countries have smaller and more fragile financial systems, lower growth, bigger output volatility and face more often crises

Inflation: empirical evidence
- Empirical research has clearly shown that, other things being equal, economies with lower inflation experience higher average growth rates
- Among the so-called “economic miracles” of the last decades, there is not one single economy which had two-digit inflation levels
- Turkey seemed to defy this rule and grow at a reasonable speed despite high inflation throughout the 1980s and 1990s
- But the end result only confirms the rule
- GNP at the end of 2002 will be about the same level as in 1997
- Corresponding to zero total growth for five years

Inflation: distribution of income
- The most dangerous fallacy of populism lies in the belief that the distribution of income can be improved despite large budget deficits
- Average growth rates and improvements in the distribution of income are positively correlated
- Fast growth achieves better income distribution by offering more job opportunities to the poor, by faster rising real wages and by lower unemployment
- There is not a single country with an equitable distribution of income and two-digit inflation level
- Turkey has one of the worst income distributions in the world and high inflation has certainly been a major contributor this outcome

Corruption and good governance
- A drama: poor countries need most a clean government and good governance but they have neither one or the other
- A “chicken or egg” problem: are they poor because they are corrupt and have wasteful governments or are they corrupt and have bad governance because they are poor?
- Rich economies have less corruption and better governance
- Corruption and bad governance, often through political and bureaucratic systems, constitutes the invisible side of bad macroeconomic policies in developing economies like Turkey