Measuring National Income

EE452 (PRE-TOPIC 5)

Measuring a Nation's Income

- Macroeconomics answers questions like the following:
  - Why is average income high in some countries and low in others?
  - Why do prices rise rapidly in some time periods while they are more stable in others?
  - Why do production and employment expand in some years and contract in others?

When judging whether the economy is doing well or poorly, it is natural to look at the total income that everyone in the economy is earning.

THE ECONOMY'S INCOME AND EXPENDITURE

- For an economy as a whole, *income must equal expenditure* because:
  - Every transaction has a buyer and a seller.
  - Every Baht of spending by some buyer is a dollar of income for some seller.

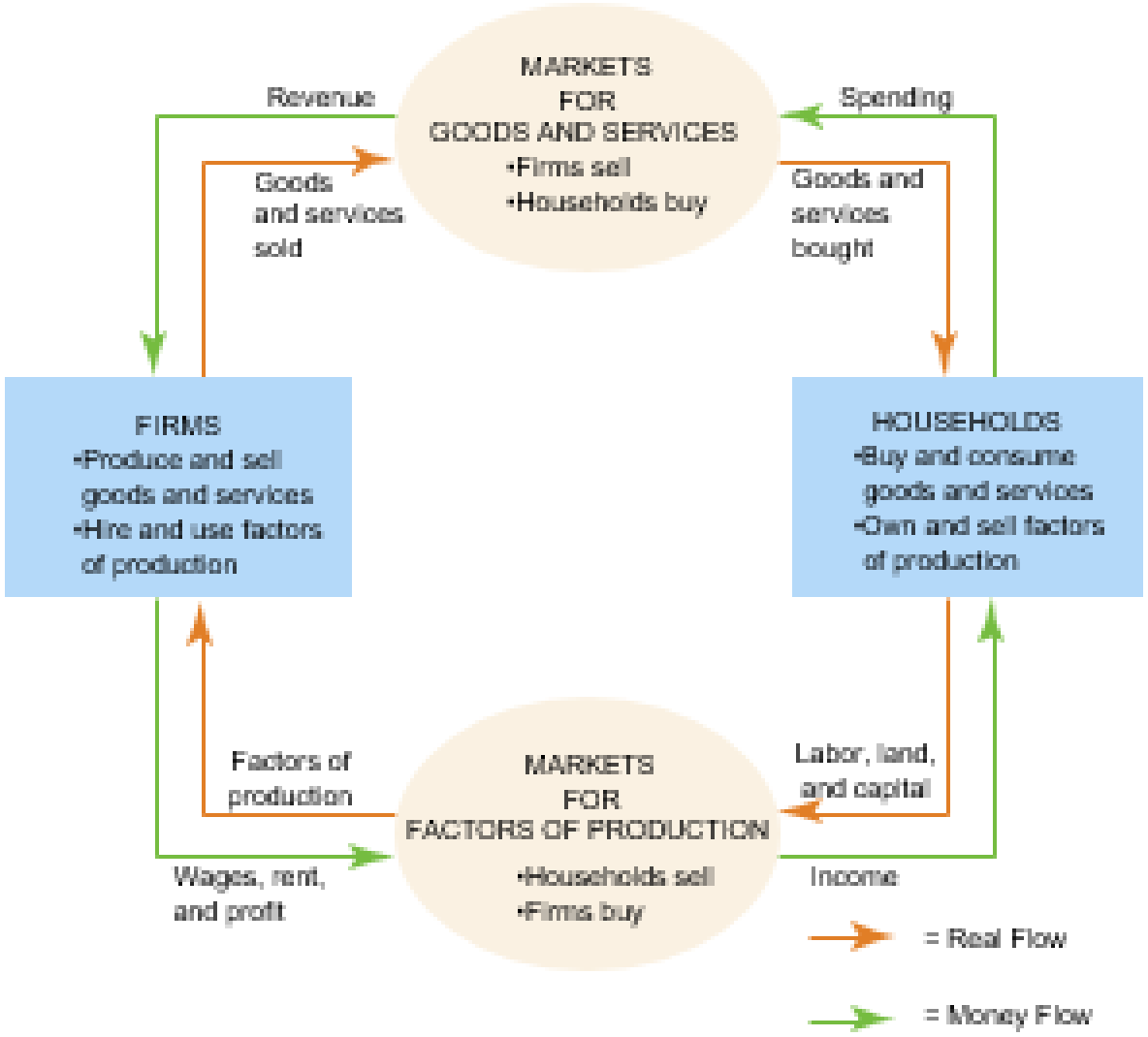
The equality of income and expenditure can be illustrated with the circular-flow diagram.

Real Flow

Money Flow

Circular Flow 1: CLOSE ECONOMY

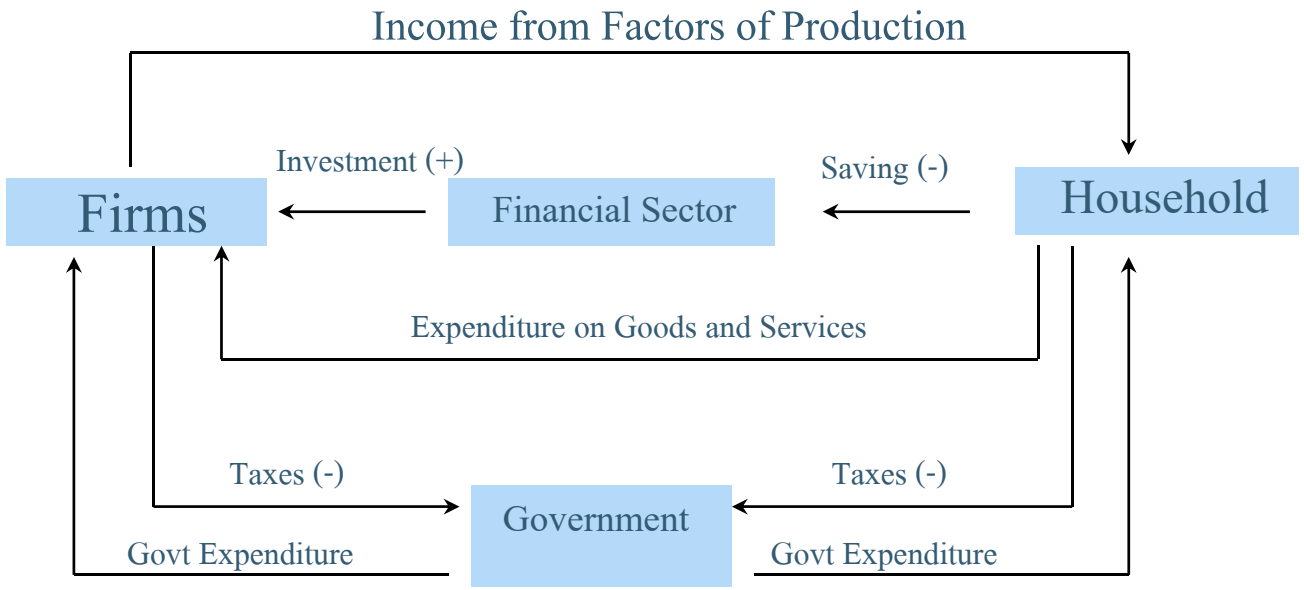
Households and Firms


MARKETS
FOR
GOODS AND SERVICES
•Firms sell
•Households buy
Revenue
Spending
Goods
and services
sold
Goods and
services
bought
FIRMS
•Produce and sell
goods and services
•Hire and use factors
of production
HOUSEHOLDS
•Buy and consume
goods and services
•Own and sell factors
of production
Factors of
production
Labor, land,
and capital
MARKETS
FOR
FACTORS OF PRODUCTION
•Households sell
•Firms buy
Wages, rent,
and profit
Income
= Real Flow
= Money Flow

Circular Flow 2: CLOSE ECONOMY

Household, Firms, Financial Institutions, and Government

The Circular-Flow Diagram 2



- Leakage or Withdrawal of Money supply:

  Economy contracts

- Injection of Money supply:

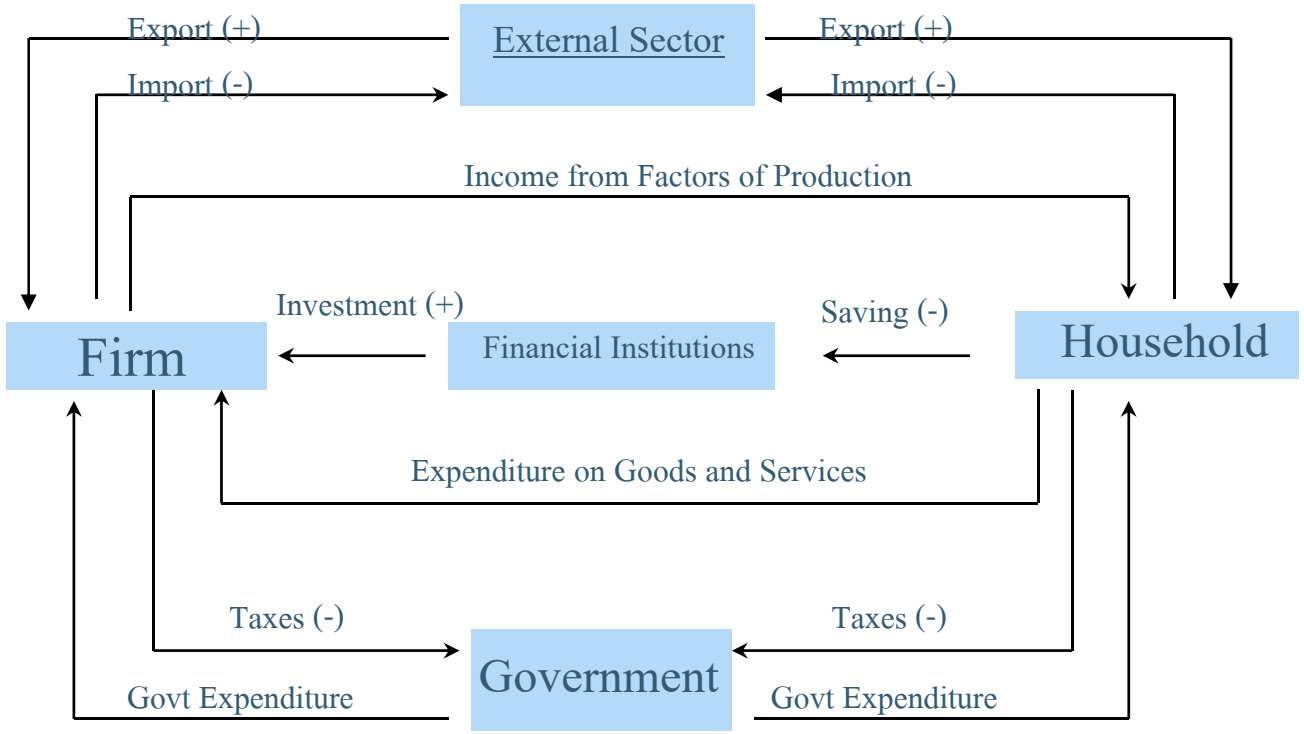
  Economic expands

Circular Flow 3: OPEN ECONOMY

Households, Firms, Financial Institutions,

Government, External Sectors

The Circular-Flow Diagram 3



National Income

Gross National Product: GNP
(ผลิตภัณฑ์มวลรวมประชาชาติ)

Gross national product (GNP) is an estimate of total value of all the final products and services turned out in a given period (usually 1 year) by the means of production owned by a country's residents.

Gross Domestic Product: GDP
(ผลิตภัณฑ์มวลรวมภายในประเทศ)

Gross domestic product (GDP) is the monetary value of all the finished goods and services produced within a country's borders in a specific time period.

Methods of Calculating GDP

1. Product Approach

$$GDP = (P1 \times Q1) + (P2 \times Q2) + \ldots + (Pn \times Qn)$$

$$= \sum_{i=1}^{n} Pi \times Qi$$

P = Price

Q = Quantity

- To prevent double counting, it takes account only the final goods and services.
- Hence, it only considers the Value-Added in each stage.

Value Added= Final Value- Intermediate Value

Example

Unit: Baht

Production Stages	Intermediate value	Final Value	Value-Added
Raw animal skin	-	500	500
Cashmere piece	500	800	300
Cashmere scarf in factory	800	1,200	400
Cashmere scarf in retail shop	1,200	2,000	800
Total	2,500	4,500	2,000

Table 3 Gross domestic product at current market prices by economic activities	2009	2010	2011	2012r	2013r	2014r	2015r	2016p
Agriculture	**945,297**	**1,137,252**	**1,310,673**	**1,421,602**	**1,462,283**	**1,334,795**	**1,235,858**	**1,235,583**
Agriculture, forestry and fishing	945,297	1,137,252	1,310,673	1,421,602	1,462,283	1,334,795	1,235,858	1,235,583
Non-agriculture	8,713,367	9,670,890	9,996,234	10,935,742	11,452,876	11,895,508	12,511,139	13,297,882
Mining and quarrying	**326,742**	**366,998**	**400,576**	**483,427**	**496,562**	**495,627**	**431,425**	**398,582**
Manufacturing	2,845,650	3,343,011	3,278,536	3,456,693	3,563,122	3,648,058	3,758,226	3,955,738
Electricity, gas, steam and air conditioning supply	249,252	264,283	270,494	291,725	313,431	331,412	343,199	372,457
Water supply; sewerage, waste management and reme	36,174	37,712	38,292	41,888	47,609	51,722	55,333	58,460
Construction	271,258	302,792	306,622	340,956	344,786	337,043	379,940	402,916
Wholesale and retail trade; repair of motor vehicles and	1,381,998	1,516,327	1,570,715	1,709,703	1,729,206	1,816,182	1,963,028	2,160,160
Transportation and storage	578,826	607,153	616,470	666,331	693,603	720,581	779,849	833,492
Accommodation and food service activities	285,443	311,910	349,523	413,291	472,928	497,777	600,218	700,843
Information and communication	208,273	222,201	242,816	265,239	290,854	301,427	327,058	340,292
Financial and insurance activities	553,900	580,532	644,682	744,615	871,377	961,260	1,037,951	1,118,062
Real estate activities	278,727	294,125	306,174	317,770	319,055	324,590	332,488	352,981
Professional, scientific and technical activities	170,202	195,594	214,438	258,785	266,926	267,745	261,393	258,489
Administrative and support service activities	155,876	171,745	189,205	227,941	234,426	231,496	237,026	242,969
Public administration and defence; compulsory social se	606,399	640,207	681,051	732,534	765,985	802,790	840,197	877,227
Education	393,674	417,863	454,248	503,346	528,167	565,146	592,287	616,205
Human health and social work activities	193,354	206,441	219,165	235,802	250,812	270,681	287,898	306,021
Arts, entertainment and recreation	36,523	44,516	50,656	60,357	65,422	65,640	70,145	81,156
Other service activities	123,726	129,574	142,068	162,716	175,308	181,557	185,669	193,729
Activities of households as employers	17,370	17,906	20,503	22,623	23,297	24,774	27,809	28,103
Gross domestic product, (GDP)	**9,658,664**	**10,808,142**	**11,306,907**	**12,357,344**	**12,915,159**	**13,230,303**	**13,746,997**	**14,533,465**

2. Expenditure Approach

GDP includes all items produced in the economy and sold *legally* in markets.

What Is Not Counted in GDP?

- GDP excludes most items that are produced and consumed at home and that never enter the marketplace.
- It excludes items produced and sold illicitly, such as illegal drugs.

$$GDP = C + I + G + NX$$

THE COMPONENTS OF GDP

- *Consumption (C)*:
  - The spending by households on goods and services, with the exception of purchases of new housing. (durable, non-durable goods & services)
- *Investment (I)*:
  - The spending on capital equipment, inventories, and structures, including new housing.

THE COMPONENTS OF GDP

- *Government Purchases (G)*:
  - The spending on goods and services by local, state, and federal governments.
  - Does *not* include transfer payments because they are not made in exchange for currently produced goods or services.
- *Net Exports (NX):*
  - Exports minus imports.

Table 1 Gross Domestic Product at Current Prices

Unit: Millions of Baht

	2015p	2016p1	2015p				2016p1			
			Q1r	Q2r	Q3r	Q4r	Q1r	Q2r	Q3rr	Q4
Private Final Consumption Expenditure	7,024,885	7,279,212	1,685,812	1,790,756	1,780,643	1,767,674	1,725,350	1,875,926	1,841,131	1,836,805
General Government Final Consumption Expenditure	2,366,136	2,453,977	539,980	579,318	649,597	597,241	604,092	605,865	627,059	616,961
Gross Fixed Capital Formation	3,373,323	3,490,808	846,180	850,705	797,275	879,163	904,438	883,754	809,711	892,905
Change in Inventories	-331,428	-330,412	-29,336	-153,447	-164,851	16,206	-205,292	-158,143	-78,601	111,624
Exports of Goods and Services	9,446,146	9,898,739	2,294,416	2,242,582	2,452,106	2,457,042	2,524,915	2,362,830	2,494,611	2,516,383
- Goods	*7,333,108*	*7,555,323*	*1,747,728*	*1,769,682*	*1,927,183*	*1,888,515*	*1,979,550*	*1,830,540*	*1,912,865*	*1,932,369*
- Services	*2,113,038*	*2,343,416*	*546,688*	*472,900*	*524,923*	*568,527*	*645,365*	*532,290*	*581,746*	*584,015*
Imports of Goods and Services	7,861,679	7,782,761	1,913,440	1,942,829	2,018,818	1,986,592	1,827,454	1,904,969	1,965,085	2,085,253
- Goods	*6,407,028*	*6,293,579*	*1,565,511*	*1,572,173*	*1,658,039*	*1,611,305*	*1,458,381*	*1,537,249*	*1,600,369*	*1,697,580*
- Services	*1,454,651*	*1,489,182*	*347,929*	*370,656*	*360,779*	*375,287*	*369,073*	*367,720*	*364,716*	*387,673*
Expenditure Side	14,017,383	15,009,564	3,423,612	3,367,085	3,495,952	3,730,734	3,726,049	3,665,263	3,728,826	3,889,425
Statistical Discrepancy	-344,518	-648,937	-6,592	-30,387	-101,177	-206,362	-166,965	-141,287	-157,980	-182,704
Production Side	13,672,865	14,360,627	3,417,020	3,336,698	3,394,775	3,524,372	3,559,084	3,523,976	3,570,846	3,706,721

Source: NESDB

3. Income Approach or Factor Income Approach

GDP = Rent + Wage + Interest + Profit + Net Business

Indirect Taxes + Depreciation Costs of Capitals

ความสัมพันธ์ระหว่าง GDP, GNP กับ บัญชีทางสังคมอื่นๆ

REAL GDP VERSUS *NOMINAL (Money* GDP)

REAL VERSUS NOMINAL GDP

Nominal GDP values the production of goods and services at *current prices*.

Real GDP values the production of goods and services at *constant prices*.

REAL VERSUS NOMINAL GDP

An accurate view of the economy requires adjusting nominal to real GDP by using the GDP deflator.

	Prices and Quantities			
Year	Price of Hot Dogs	Quantity of Hot Dogs	Price of Hamburgers	Quantity of Hamburgers
2001	$1	100	$2	50
2002	2	150	3	100
2003	3	200	4	150

Year	Calculating Nominal GDP
2001	($1 per hot dog × 100 hot dogs) + ($2 per hamburger × 50 hamburgers) = $200
2002	($2 per hot dog × 150 hot dogs) + ($3 per hamburger × 100 hamburgers) = $600
2003	($3 per hot dog × 200 hot dogs) + ($4 per hamburger × 150 hamburgers) = $1,200

Year	Calculating Real GDP (base year 2001)
2001	($1 per hot dog × 100 hot dogs) + ($2 per hamburger × 50 hamburgers) = $200
2002	($1 per hot dog × 150 hot dogs) + ($2 per hamburger × 100 hamburgers) = $350
2003	($1 per hot dog × 200 hot dogs) + ($2 per hamburger × 150 hamburgers) = $500

The *GDP deflator* is a measure of the price level calculated as the ratio of nominal GDP to real GDP times 100.

It tells us the rise in nominal GDP that is attributable to a rise in prices rather than a rise in the quantities produced.

The GDP deflator is calculated as follows:

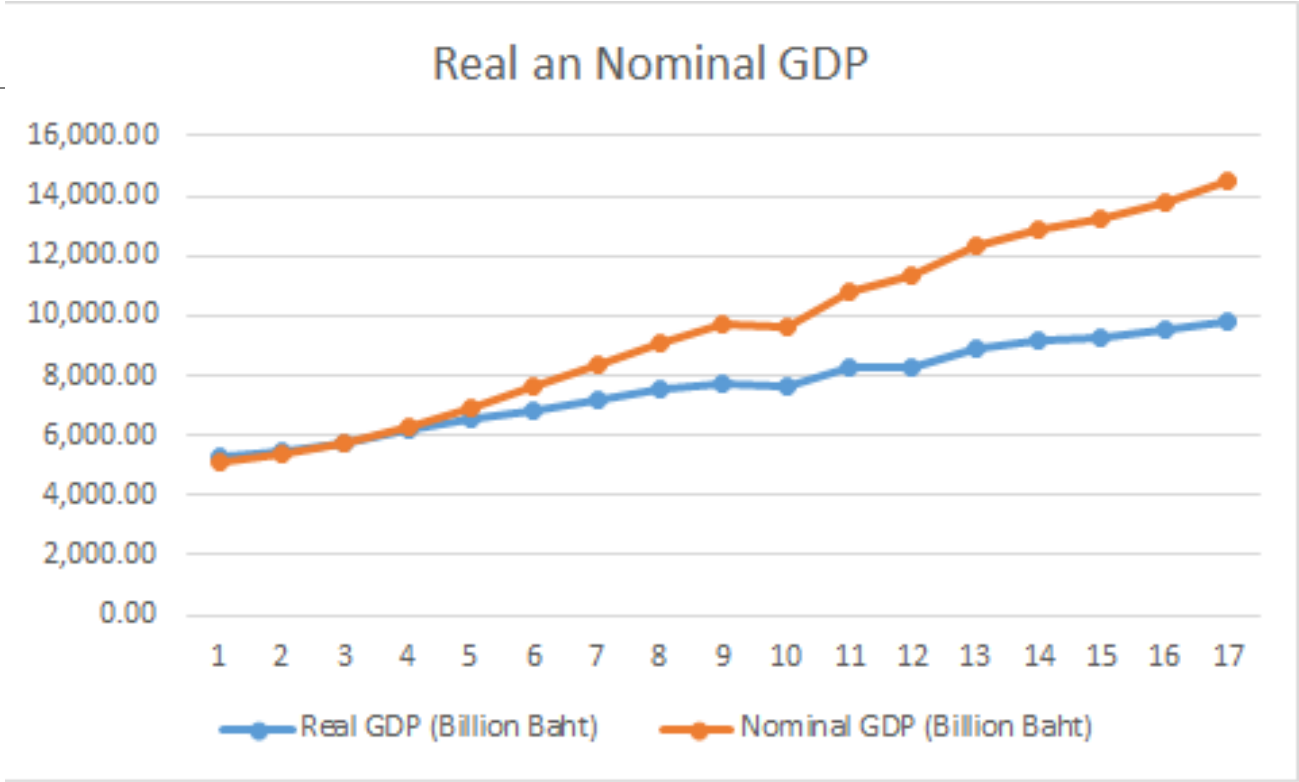
$$\text{GDP deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100$$

Converting Nominal GDP to Real GDP

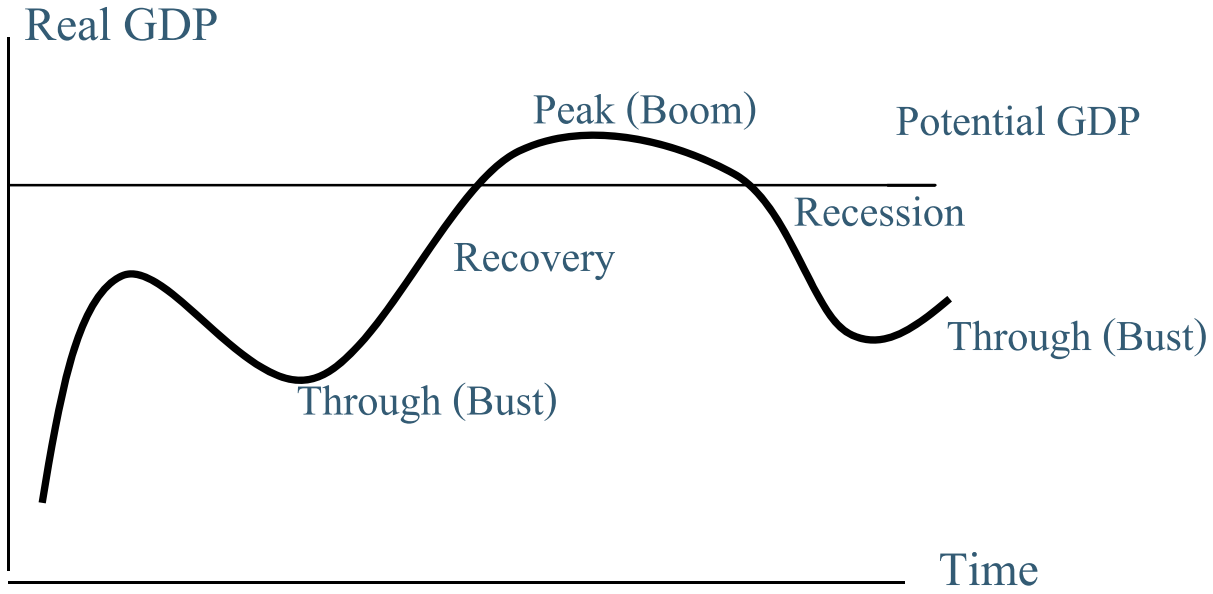
- Nominal GDP is converted to real GDP as follows:

$$\text{Real GDP}_{20XX} = \frac{\text{Nominal GDP}_{20XX}}{\text{GDP deflator}_{20XX}} \times 100$$

Year	Calculating the GDP Deflator
2001	($200/$200) × 100 = 100
2002	($600/$350) × 100 = 171
2003	($1,200/$500) × 100 = 240


Real an Nominal GDP
16,000.00
14,000.00
12,000.00
10,000.00
8,000.00
6,000.00
4,000.00
2,000.00
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
Real GDP (Billion Baht)
Nominal GDP (Billion Baht)

วัฏจักรธุรกิจ (Business Cycle)



GDP AND ECONOMIC WELL-BEING

GDP is the best single measure of the economic well-being of a society.

GDP per person tells us the income and expenditure of the average person in the economy.

GDP AND ECONOMIC WELL-BEING

Higher GDP per person indicates a higher standard of living.

GDP is not a perfect measure of the happiness or quality of life, however.

GDP AND ECONOMIC WELL-BEING

- Some things that contribute to well-being are not included in GDP.
  - The value of leisure.
  - The value of a clean environment.
  - The value of almost all activity that takes place outside of markets, such as the value of the time parents spend with their children and the value of volunteer work.