Chapter 10

National Income

Abstract

National income accounting generally determines the whole performance of the society. It works as well as partially for the economy. Generally, business organizations check its total revenues and expenses once in a year. Through which an organization can estimate its economic conditions. If things are going well, and profits are good, the accounting data is used to explain that success. If things are going badly and profits are poor, the firm may be able to identify the reason by studying the record over several accounting periods. All the facts, help the managers of that organization to design their future strategies. In this chapter, national income, issues in the quantification of national income, approaches of measuring NI, CFI and determinants of NI are explained.

Keywords: National income, price, circular flow, profit

10.1. What is National Income (NI)?

National income accounting works same for entire economy. It facilitates the policy makers and economists to; evaluate the strength of the society by equating productivity levels after regular intervals of time. It is used to assess the long run impacts of the society, either it has grown, remained same or decreased.

It is summation of all the products and services by a nation over a specified time. Typically, a time span is usually of one year. NI is defined by different economists differently and its synonym in literature are National Product, National Dividend, etc., According to Marshall (2009), NI is "the labour and capital of a nation, acting on its natural resources, produce annually a certain net aggregate of supplies, material and immaterial, comprising services of all kinds for nation's labor and capital working on natural resources produces an aggregate of goods, materialistic and immaterial that include all type of services, and net income receivable on foreign accounts must be added in it. This is actual revenue or NI of a nation."

Fisher (1906) describe NI as "income that contains exclusively of services that is received by final consumer either from his material environment or human environment. Thus, a pen or coat which is made for mine is not a part of this year income but added to capita. Income of this year only is only services delivered to me."

10.1.1. NI Equation

NI = Employees compensation + Corporate profits + Proprietors' income + Rental income of persons + Net interest (10.1)

10.1.2. Net National Income (NNI)

In economics, it is another term used but it differs from NI. It is basically an economics term. It might be determining by subtracting indirect taxes from Net National product. It is comprised of income of households, businesses, and the state.

It can be written as,

$$NNI = C + I + G + (NX) + NFFI - IT - MCD \quad (10.2)$$

Where NFFI = Net Foreign Factor Income

IT = Indirect Taxes

MCD = Manufactured Capital Depreciation

In Equation 10.2, 'C', 'I', 'G' and 'NX' denotes consumption, investments, government spending and net export (total exports minus imports). '(X-M) also denotes to NX which evaluate the current account of economy. Equation 10.2 uses the expenditure technique of NI accounting.

When, NNI is adjusted for natural resource depletion, it is called adjusted NNI, it is described as in the following

$$NNI^* = C + I + G + NX + NFFI - IT - MCD - NRD \quad (10.3)$$

Where NFFI = Net Foreign Factor Income

IT = Indirect Taxes

MCD = Manufactured Capital depreciation

NRD = Natural Resource Depletion

Here, in Equation 10.3, natural resources denote the minerals.

10.1.3. Concepts of NI

Different terms which is used in NI accounting are, GNP, GDP, NNP, personal income and disposable personal income.

10.1.3.1. Gross National Product (GNP)

GNP refers to the aggregate products and services produced by a nation within a year, and includes total income from outside country. It is also the summation of GDP at market prices and factors income from other countries.

GNP Market Price = GDP Market Price + Net Factor Income Abroad (10.4)

While, quantifying GNP, the final commodities are undertaken,

a) Consumer products

b) Gross private domestic income
c) Products manufactured by the state
d) Net income from out of the economy

There are three approaches of NI (Keynes 1937),

1) Aggregate spending approach
2) Factor income approach
3) Sale proceeds minus cost approach

10.1.3.2. Approaches to GNP

Various approaches are used to measure GNP are, income method, expenditure method and Production method.

a) Income approach

Income of all factors of production is recorded under and summed up to obtain GNP. However, following aspects of the economy are considered in this approach; (i) salaries and wages (ii) interest (iii) rents (iv) dividends (v) corporate profits (undistributed) (vi) direct taxes (vii) indirect taxes (viii) mixed incomes (ix) depreciation (x) net income from abroad.

b) Expenditure Approach

All types of expenditure in the economy are recorded in expenditure approach and expenditures are derived from the following heads; (i) private consumption expenditure (ii) gross domestic private income (iii) net foreign income (iv) spending of government on product.

c) Product Approach

Final output produced is recorded in product approach and it comprises of following two items;

(i) Addition of market value of final commodities
(ii) Subtraction of cost incurred on intermediate goods

However, GNP measurement is carefully performed keeping in mind the following factors:

1) Consider those commodities that can be valued
2) Market value of final products is undertaken
3) Free services are not incorporated
4) Count the current year production only
5) Illegal commodities are not considered

d) GNP at Market Price

To get GNP at market prices abbreviated as GNP (MP), multiply the total production per year along with their prices at market level.

10.1.4. GNP at Factor Cost or Gross NI

This is also called GNI (Gross NI), and is given in Equation 10.5. GNI is the summation of compensations of employees, operating surplus, mixed income, depreciation and net factor income from outside country. GNP at factor cost refers to income receivable to the factors of production in return for their services.

$$\text{GNP at FC} = \text{GNP at Market Price} — \text{Net Indirect Taxes} + \text{Subsidies} \quad (10.5)$$

10.1.5. Gross Domestic Product (GDP)

All the final products produced inside the geographical boundaries of the nation valued at market price is known as GDP.

Box 10.1 Pakistan GDP Growth Rate

The Gross Domestic Product (GDP) in Pakistan expanded 3.59% in the fiscal year 2012-13 from the previous year. Pakistan GDP Growth Rate averaged 4.94% from 1952 until 2013, reaching an all-time high of 10.22 Percent in June of 1954 and a record low of -1.80 Percent in June of 1952. Pakistan has a growing semi-industrialized economy that relies on manufacturing, agriculture and remittances. Although since 2005 the GDP has been growing an average 5 percent a year, it is not enough to keep up with fast population growth. To make things even worst, political instability and lack of law enforcement hamper private investment and foreign aid.

Source: *GOP (2013)*

10.1.6. Components of GDP

GDP is decomposed into following different components; (i) Salaries wages (ii) Rent (iii) Interest (iv) Dividends (v) Undistributed Profit (vi) Mixed income (vii) Direct taxes.

10.1.7. GDP at Market Price

It is abbreviated as GDP (MP) is valued by subtracting the value of intermediary consumption from the value of production manufactured by all the manufacturers inside the country. In simple words, it indicates the aggregate of gross values added at market price.

(Value of output Produced by all producing Units within the Domestic Territory)	-	(Value of Intermediate Consumption)	= GDP at Market Price	(10.6)

10.1.8. Difference between GDP and GNP

GDP and GNP are terms broadly associated with each other in Economics. Major difference is that GNP comprises income from outside the country as well, but GDP includes the income from commodities manufactured within the geographical boundaries of the country (Dwivedi 2010). GDP at FC is the summation of compensation of employees, operating surplus and mixed income by the inputs in an accounting year plus depreciation or consumption of FC. GDP at FC might be measured by subtracting net indirect taxes from GDP at market price.

$$\text{GDP} = \text{NI} - \text{Net income from abroad} \tag{10.7}$$

10.1.9. Nominal GDP versus Real GDP

GDP measures market worth of all final commodities manufactured by the nation in a year. Nominal worth is used as a denominator for the sake of quantifying heterogeneous production. But this aggregation creates a problem as it is difficult to make comparison of market values of GDP this year with other years, because the value of money itself changes over time due to inflationary effects (when general price level rises) or deflationary effects (when prices go down). After all, economist determines the value of GDP by multiplying total output with market prices (Studenski 1958).

The way around this problem is to deflate GDP when P rises and to inflate GDP when it decreases. These adjustments give us a measure of GDP for various years as if the value of the Rupee had constantly been the same as it was in some reference year. A GDP based on prevailing P when at the time of output is called unadjusted or nominal GDP. And, GDP that has been deflated or inflated to show variation in the P is referred as adjusted or real GDP.

10.1.10. Net National Product (NNP)

Whereas, products and services are delivered, some depreciation incurs on fixed capital (FC). It is known as consumption of FC and the value of NNP can be taken by deducting the value of deprecation from GNP, as well. Thus, NNP at market price is GNP at market price less depreciation (Equations 10.8 and 10.9).

$$\text{NNP} = \text{GNP} - \text{Depreciation} \quad (10.8)$$

$$\text{NNP at Market Price} = \text{GNP at Market Price} - \text{Depreciation} \quad (10.9)$$

10.1.11. NNP at Factor Cost

NI is another name of Net National Product. NNP is the entire value added at factor cost at factor cost or aggregate GDP and income from outside country.

$$\text{NNP at Factor Cost} = \text{NNP at Market Price} - \text{Net Indirect tax} \quad (10.10)$$

NI is also equals to the sum of incomes from four factors of production i.e. wages, salaries, rent, profit.

10.1.12. Net Domestic Product (NDP) at Market Price

NDP at market P is the market worth of all final commodities manufactured by the manufacturer within the country's boundary in a year exclusive of consumption of FC. It is equal to the net value added at market P.

10.1.13. Net Domestic Income (NDI) or NDP at Factor Cost

It is the income created through wages, rent, interest and profit in the domestic territory of a country by all the producers (normal inhabitants and non-residents) in a specified time period normally a year.

$$\text{NDP at Factor Cost} = \text{NDP at Market Price} - \text{Indirect Tax} + \text{Subsidies} \quad (10.11)$$

10.1.14. Private Income

Total of factor income from all sources and current transfers from the state and rest of the world accruing to private sector" or in other words private income is the income from socially accepted source including retained income of corporation.

10.1.15. Personal Income (PI)

PI is the amount which is received by individuals from entire sources. Direct taxes are included in it.

$$\text{PI} = \text{Private Income} + \text{Undistributed Corporate Profits} - \text{Direct Taxes} \quad (10.12)$$

10.1.16. Disposable Income (DI)

It is the income left behind with individuals after deduction of all taxes imposed against their income and their property by the government. It is the amount of income

which is received by individuals from whole sources after deducting direct taxes. The individual can dispose this income according to his wish, as it is derived after deducting direct taxes.

DI = Personal Income – Direct Taxes – Receipts of the Government (10.13)

10.1.17. Real Income

Oftenly, products and services produced in the form of money at current prices will not point out the actual state. Hence, real income is the NI stated in terms of a general level of prices of a specific year adjusted for price fluctuations occurring in the whole time period of the sample data. Base year is the time point whose price level is used to adjust money value variations across the whole data set.

10.1.18. Per Capita Income (PCI)

This income is obtained by dividing NI with total population of a nation.

PCI = NI / Population (10.14)

10.2. Difficulties in the Measurement of NI

Various approaches are used for comparing NI. Every technique has its own merits and demerits. As measurement of NI is not impossible but a difficult process. Before measuring NI, economists consider things like available data in the country, available resources and factors, distribution of NI, economic activities, behavior and customs of the people, economic structure, etc (Mc Connel and Brue 2005). These difficulties can be classified as following:

1) Conceptual difficulties or theoretical difficulties, and
2) Practical difficulties.

Theoretical difficulties take place in all over world and practical difficulties occurs in underdeveloped nations. Deficiency and incomplete data give result to difficulties in underdeveloped countries. Common difficulties arise in computing NI is as under:

10.2.1. Problem of Definition

The biggest problem arises before measurement of NI is what should be counted in or omitted according to the production products and services. Only those commodities or services should be included that are bought or sold. For example, parental services are not including in NI because it contains no market worth. But payments are earned for some non-exchangeable commodities, like the national product comprise the quantified worth of food utilized at the farm level. This could create a problem.

10.2.2. Calculation of Depreciation

This is another major issue. Main reason is the amount of capital changes over the time. For the application of depreciation, no specific rules are available. Subsequently, depreciation is a quantification, so correct deduction can be made until and unless these correct depreciation quantifications are not subtracted from the value of NNP the net NI is bound to wrong.

10.2.3. Income from Foreign Firms

Another problem arises is to decide whether, income earned from abroad should be comprised in the nation's NI or not? Rising trend of business spreading all over the world also raises this problem up to greater extent. But according to IMF, the output and income of these foreign forms should go to the owning nation and their profit must be credited to relent host country.

10.2.4. Double Counting

The biggest problem in computing NI is the double counting of goods and services. There are some goods which are taken as final goods at one time and as intermediates goods at some other time. For example, sugarcane for a farmer is the final good. But for sugar mill this will be intermediate good or raw material to produce sugar. For the sugar mill, sugar is the final good but again this will be taken as intermediate goods in the production of sweets and tea. So, when the same commodity is used as final good and intermediate good at different times, there is a very high possibility of double counting. Appropriate care is required to avoid from double counting. Usually, this problem occurs where there is no availability of suitable documentation or statistics techniques.

10.2.5. Value of Inventories

It is not easy to determine the worth of raw materials, semi-finished and finished products in the supervision of manufacturers therefore, it generate issues.

10.2.6. Transfer payments

While computing NI, identifying the transfer payments arises as a problem. A transfer payment depicts various allowances and subsidies provided by the government to the people of the country. There seems to be a very big problem in whether to include or not to include the services provided by the government such as unemployment allowances, old age allowances, widow allowances, pension and interest on public loans, in NI of the country. These things on one hand are the personal incomes and on the other hand are the government expenditures. If this is included in both, then NI will be more than real NI. Therefore, transfer payments between an individual or institution and the government will not be suitable to be included in the NI.

10.2.7. Price Changes

NI is the nominal worth of all the final goods, and it depends on the market value that might change over time. Change in price level is one of the major problem that creates difficulties in measuring NI accounting. With the increase in price level, national raises in that year while production declines.

10.3. Approaches of Measuring NI

10.3.1. Net Output or Value-Added Method

It is also known as value added method. It includes three stages: "(a) estimation of the gross value of domestic output; (b) determining the cost of used material, services and the depreciation of physical assets; and (c) deduction of above mentioned costs and depreciation from the gross value to obtain net value of domestic output. This value is also called the value-added product. It is total of wages, supplementary labour incomes, salaries, profits, interest, and net rent paid per accrued. Let us now describe the stages (a) and (b) in some detail.

10.3.2. Measuring Gross Value

During measurement of gross value for domestic product, output is categorized into various classes. The categories are assigned depending on the nature of activities from which output originates. This categorization of production varies from economy to economy depending on (a) nature of domestic activities; (b) importance of output in economic activities at aggregate level and (c) requisite data availability.

Cost of production including depreciation is measured for estimation of net national product. Estimation of production cost is relatively a more challenging and hard task in developing countries because requisite and adequate data is not available easily. Estimating depreciation is equally difficult task as it involves statistical and conceptual problems collectively. Due to this reason, economists give preference to factor income approach over net product method for NI calculation.

However, countries adopting this method have found ways for calculation of the deductible cost. The costs may be calculated in absolute terms and may also be computed as an overall ratio of input to the total output. However, usual accounting practices of computing depreciation in running businesses are used as a general practice. Some percentage of capital is allowed under the tax-laws is estimated as depreciation. In some measures of NI, the estimators deviate from the typical practice and it is quantified as some ratio of the recent product of final products.

With the help of suitable method for each sector, deductible costs are computed including depreciation. Then, cost quantifications are deducted from the sector-wise production to attain the net sectoral goods. These are summed up together. Total obtained with this is used as a measure of NI with the help of NP methodology.

10.3.3. Factor Income Method

It is also called income method. Here, incomes (accrued to all basic factors used in production of NP) are summed up together. These basic factors used in the production of national product are conventionally categorized as labour, land and capital. Therefore, the NI under this method is the sum of all corresponding factor incomes per earning. This is shown in the following Equation 10.15,

$$NI = Rent + Wages + Interest + Profit \quad (10.15)$$

Despite this theoretical ease of above mentioned equation, it is very difficult to make a conceptual distinction between earnings from (a) capital and land on the one hand, and (b) entrepreneurial functions and ordinary labour on the other. In modern day economy, factors of production are broadly grouped into capital and labour for estimation of NI. Consequently, NI is expected to start from two primary factors, capital and labour. Another difficulty arises, when capital and labour are jointly supplied to a production activity and it is almost impossible to segregate capital and labour contents from the total earnings of that supplier. These incomes are called 'mixed incomes'. Therefore, all of the factors' incomes are categorized into three broad categories, i.e., capital incomes, labour incomes and mixed incomes.

10.3.3.1. Labour Incomes

These are also used for computation of NI and include three components. Firstly, salaries and wages paid to residents of a country. It includes bonuses, commissions and social security payments to the labourers. Secondly, supplementary labour incomes are included i.e., contribution of employers towards welfare funds of employees and social security. It also includes direct payments to retired employees in shape of pension. Thirdly, employers also pay to labourers in kind i.e. they pay in lieu of free health, education to employee's children, food, clothing and accommodation, etc. as a supplementary labour income. It allows compensations in kind, i.e., services rendered without any cost in the way of domestic servant. War bonuses, service grants and pensions are not a part of labor's income because they are considered as 'transfer payments'. Due to lack of data, several other types of income i.e. incidental jobs' incomes, tips and gratuities etc. are ignored.

10.3.3.2. Capital Incomes

Following capital earnings are included in it,

i. All dividends eliminating inter-corporate dividends

ii. Before-tax profits of corporations undistributed

iii. Interest on saving deposits, bonds and mortgages (however, it does not include interests on consumer-credit and on war bonds)

iv. Interest produced by insurance companies and credited to the insurance policy reserves

v. Net interest paid out by commercial banks

vi. Net rents from buildings and land etc. containing imputed net rents on owner-occupied dwellings

vii. Royalties

viii. Profits of government enterprises

10.3.3.3. Mixed Income

Incomes from farming enterprises, sole proprietorship and other professions (e.g. medical consultancy, legal consultancy services, trading and transporting services etc.) make up mixed incomes. This category comprised of incomes from those who earn their living through several sources as wages, rent from owned property and interest accrued to own capital etc. These all are summed up to give rise to the measure of NI. This method is called as factor-income method.

10.3.4. Expenditure Method

This technique is synonymously called as *Final Product Method***.** In this method, NI at the final expenditure stages is measured. Although, for NI calculation, any one method can be adopted from these two methods,

Firstly, the monetary expenditures with respect to market price may be computed and summed up together to get NI of an economy. In this method, following expenditure items are considered,

(i) Private consumption expenditure

(ii) Payments made to the NGOs and charity institutes, like, old homes and orphanages etc.

(iii) Direct tax payments

(iv) Private savings

Secondly, final value of all items is disposed of and summed up to yield total national level spending. In this second method only following items are taken into account

(i) Goods and services related to private consumer

(ii) Private investment on products

(iii) Public products

(iv) Net investment outside the boundaries of an economy

Due to ease in collection and availability of accurate data on above said items, second method is more extensively used in literature.

10.3.5. Treatment of Net Income from Abroad

We have concentrated our discussed approaches of calculating NI in a ‘closed economy’ so far. However, no economy is really closed in modern world. In fact, almost all economies are open because they trade in all over the world, and they do financial transactions within other economies of the world. During this very process of transactions, some nation earn profit from trade and other bear lose due to trade. Therefore, overall NI in modernized world is directly affected by net earnings or loss in foreign trade of an economy. It is thus required that net result of external transactions

is adjusted to the total, while measuring the NI. Net incomes from abroad are included as an addition to the total. On the other hand, net losses to the foreigners are subtracted from the total NI computed with the help of any of the three methods discussed above.

Simply, net exports (e.g., shipping, banking, insurance, tourism and gifts etc.) is a part of NI. On the other hand, all the imports of merchandised goods and services mentioned above are subtracted from the final value of national output. This yields the approximate measure of NI. The adjustments for transaction of an economy with the world are recorded by balance of payments of the economies.

10.4. Circular Flow of Income (CFI)

This term usually describes the give and take relationship of income among the producer and consumer. Businesses manufacture products and in this procedure, incomes are generated for all four factors of production.

10.4.1. Leakages (withdrawals) from the Circular Flow

All income will not shift from customers to producers. It shows that significant part of consumer income will be,

1) Separated for future expenditure, i.e., savings (S) in banks accounts and other deposits,
2) Paid to the state in taxation
3) Spent on imports which flow

Outflows are rises in savings, taxes or imports, decline the flow of income and originate a multiplied decline of production. Injections into this flow are additions to *I*, *G* or *X*. Rise in it cause a multiplied growth of output. Nation will be in equilibrium when the rate of injections and rate of withdrawals will be equal.

10.4.2. Assumptions

It has following assumptions,

1) Country is comprised of two sectors, households and firms
2) Households use all of their income on purchasing commodities or consumption and there is no saving
3) Production by the firms is bought by consumers through their expenditure (E)
4) There is no financial division
5) There is no government sector
6) There is no overseas sector
7) It is a closed economy with no exports or imports

In terms of the five sectors, this model occurs when the total outflow and inflows are equal in the economy. This can be shown as,

$$\text{Savings} + \text{Taxes} + \text{Imports} = \text{Investment} + \text{Govt. Spending} + \text{Exports} \quad (10.16)$$

OR

$$S + T + M = I + G + X \quad (10.17)$$

10.4.3. Phases or Stages of CFI

There are three basic activities in the economy, i.e., production, consumption and creation of income that continue and are called as CFI. Output increase the income levels, due to this demand for commodities increases, this high demand increases the spending and this spending motivate more output. This all makes the flow of NI and like actions; output, income and spending are known as stages of CFI.

$$\text{Production} \rightarrow \text{Income} \rightarrow \text{Expenditure} \rightarrow \text{Production} \quad (10.18)$$

10.4.3.1. Production Phase

It means to create utility for satisfaction of human wants. It includes the contribution of factors of production up to desired ratio. This job is executed by organization who takes an initiative with the intention to earn profits. This phase includes production and sale of products and services for income.

10.4.3.2. Income Phase

Firms generate revenue from sale of products and services. The entire revenue is divided into factors of production in the form of rent, wages, interest and profits. Such an income is classified into three parts, compensation of employees, operating surplus and mixed income.

10.4.3.3. Expenditure Phase

Household use its income to achieve infinite desires. Saving out of this income becomes investment on capital and it aid in creation of income. Spending are the income of manufacturers and it helps the uninterrupted CFI.

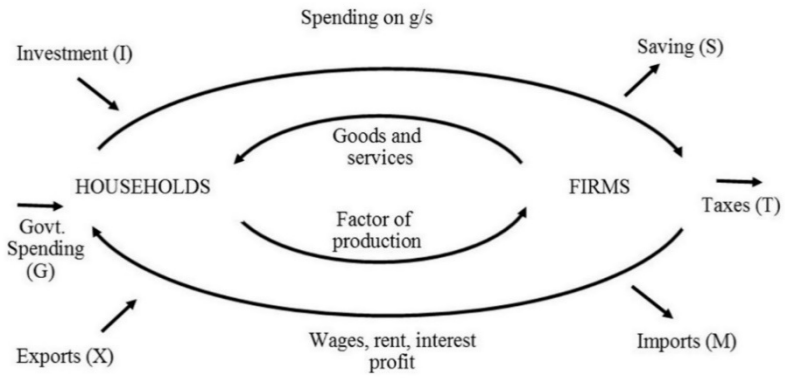

Fig. 10.1 Circular Flow of Income

10.4.4. Real vs. Nominal Income

Nominal income is the actual Rupee amount that the person receives as income, and it has not been adjusted for the inflation rate. Real income on the other hand is adjusted for inflation and represents a realistic picture and shows how much is left with when the increase in prices is deducted from nominal income. It shows the purchasing power of the person by relating the income to the goods or services that can bought with it instead of just the Rupees amount. In the form of equation,

$$\text{Real Income} = \text{Nominal Income} - \text{Inflation} \tag{10.19}$$

$$\text{Nominal Income} = \text{Price (P)} \times \text{Real Income (Y)}$$

$$\text{Real Income (Y)} = \text{Nominal Income} / \text{Price (P)} \tag{10.20}$$

10.5. Determinants of NI

There are many elements or factors that affect the volume of NI. These are discussed in below,

10.5.1. The Stock of Factors of Production

Major factor that effect the NI is quality and amount of economy's stock of inputs for final production, like; land, labor, capital and organization. Land is gift of nature. It delivers farm commodities and input for farming. The output of land depends on the fertility of the soil, latitude and climate and irrigation system. If the land is fertile and is not suffering any issue, the size of the NI will be quite large. On the other hand, if the quality of land is poor, the size of the NI will be small.

Labor is another basic determinant of factor of production. The importance of this factor is judged through it that land is not able to produce something more value able expect wild vegetables. The quality and quantity of labor influence too much to NI. Because if labor is skilled, efficient and in large quantity NI increases. The quantity of output is significantly impacted by the amount and quantity of capital available in the nation. Capital is assumed as a lifeblood for industry. If it is comprised of allowed equipment, the volume of the NI cannot be large. But output of country can be raised by employing modern technologies.

The quantity of the NI also is dependent upon the amount and skills of the producer. If the managers are efficient, they will combine; the certain inputs and resultantly volume of total output will be quite large. If a nation has lack of managerial skills, NI will decrease.

Knowledge is also an important factor that effect NI. The procedure of production of output, now-a-days have become important that without the modern technology country cannot compete in the international market. The innovative approaches of manufacturing have significantly raised the output capability. If nation has poor technology, the level of NI would decrease, and in case of advance availability of technical knowledge NI will be more.

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