

## National Income

### **At the end of this a student should be able to:**

- construct and interpret the circular flow of income model;
- examine the effects of leakages and injections on the circular flow of income in the macroeconomy
- differentiate between GDP, GNP, GNI and GNDI as measures of national income; analyse which measure is a more accurate indicator of Ireland's economic performance and economic welfare
- critique the limitations of these measures of economic performance
- debate the economic and social impact of economic activities in the hidden economies
- explain the multiplier effect; apply the multiplier formulae to calculate and evaluate changes to national income in an open and closed economy
- investigate data patterns in Ireland's national income, price level, unemployment rate, government expenditure and national debt over a period of time; identify the different phases of business cycles and critically examine the main factors that led to the fluctuations in output

### **What is National Income?**

This is income accruing to the permanent residents of a country from current economic activity during a specified period, usually one year.

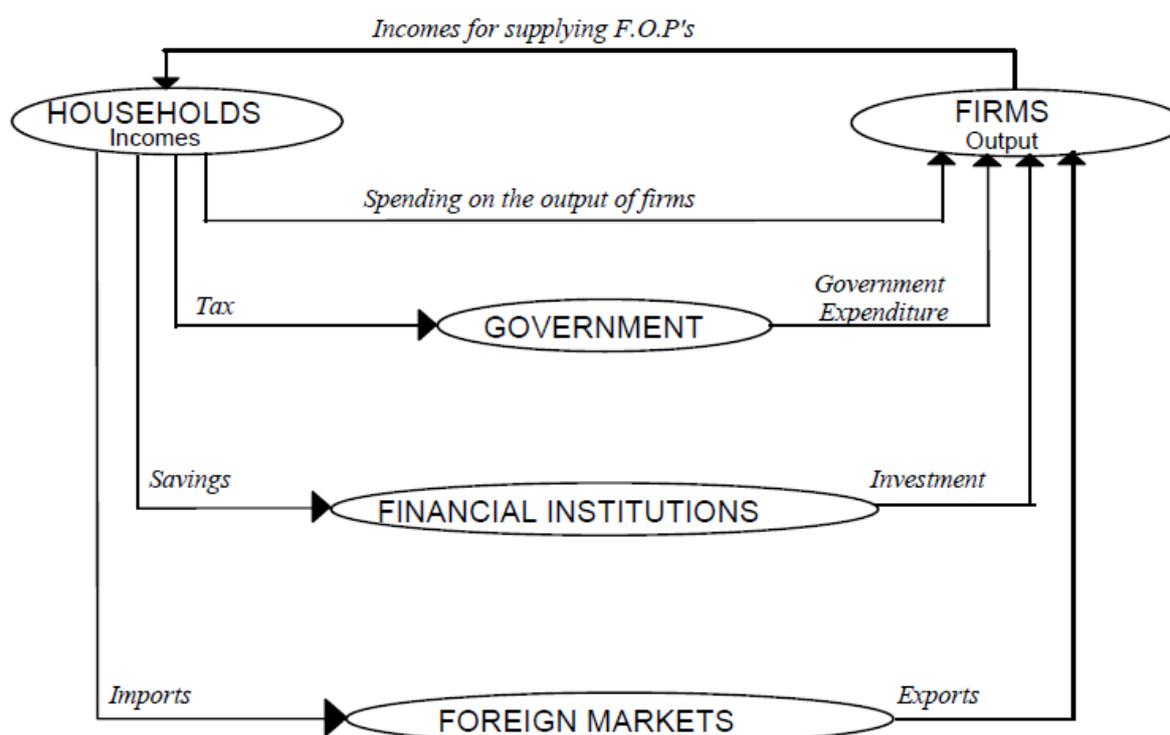
- **What determines the size of National Income?**
  - **The Quantity And Quality Of The Factors Of Production Available In A Country**
    - Countries that have a vast land area have a bigger potential national income than those with only small tracts of land. However, the productive ability of the land depends on the quality of the land.
  - **The State Of Technology In The Economy**
    - The quality of capital being used in a country will have a big influence on the size of the national income. Capital increases the productive capacity of labour. Thus as the state of technology improves, the potential level of production also improves.
  - **The National Economic Climate**
    - If the level of demand for goods and services in a country is increasing, then the entrepreneurial spirit of the citizens will ensure that more goods and services are produced to satisfy demand.
  - **The International Economic Climate**
    - When the level of income increases in other countries the level of demand will also increase. Therefore, we should export more goods and services. This extra production will increase our national income.
  - **The Level Of Aggregate Demand (Total Demand For Goods And Services)**
    - The level of aggregate demand in the country determines the actual value of national income in any year.

## Circular Flow of Income – The Creation of National Income

The **circular flow** of income and spending shows connections between different sectors of an economy

- It shows flows of goods and services and factors of production between firms and households
- The circular flow shows how national income or Gross Domestic Product is calculated

Businesses produce goods and services and in the process of doing so, **incomes are generated** for factors of production (land, labour, capital and enterprise) – for example wages and salaries going to people in work.



- **Leakages (withdrawals) from the circular flow**
  - Not all income will flow from households to businesses directly. The circular flow shows that some part of household income will be:
    - Put aside for future spending, i.e. **savings** (S) in banks accounts and other types of deposit
    - Paid to the government in **taxation** (T) e.g. income tax and national insurance
    - Spent on foreign-made goods and services, i.e. **imports** (M) which flow into the economy
- **Injections into the circular flow**
  - Additions to investment, government spending or exports so boosting the circular flow of income leading to a multiplied expansion of output.
    - Capital spending by firms, i.e. investment expenditure (I) e.g. on new technology
    - The government, i.e. government expenditure (G) e.g. on the Health Service or defence

- Overseas consumers buying Irish goods and service, i.e. Irish export expenditure (X)
- *'Ireland is described as a small open economy and this affects the government's ability to influence the level of aggregate demand in the country'*. Explain this statement using the Circular Flow of Income to support your answer
  - As an open economy, Ireland is heavily dependent on imports and exports to achieve economic growth.
  - **Imports are a leakage.**
    - If the government injects money (through C, I or G) into the circular flow, some of it will leave the economy due to the MPM and reduce the circular flow of income. Thus aggregate demand will not grow by the anticipated amount / aggregate demand will fall.
  - **Exports are an injection.**
    - The government has little direct control/influence over exports except through offering tax incentives to exporters. If demand for Irish exports increases then this will increase the circular flow of income. This will lead to extra income in Ireland and an increase in aggregate demand.
  - The ability of the government to influence aggregate demand is hindered by the extent of foreign trade, particularly imports. If imports exceed exports aggregate demand will fall. If exports exceed imports aggregate demand will increase.

## Multiplier

The multiplier shows the relationship between an (initial) injection into the circular flow of income and the eventual total increase in national income resulting from the injection.

Joe gets €10 pocket money. He spends €8 on a haircut. The hairdresser spends €7 of this on groceries in a local shop. The shopkeeper spends €5 on a taxi.

The initial injection into the economy of €10 results in a total increase in income of €30, i.e. €10 (Joe) + €8 (hairdresser) + €7 (shopkeeper) + €5 (taxi driver).

The multiplier in this example is 3. The initial €10 injection as a result of Joe receiving his pocket money has led to an increase in income of three times that amount.

- **Calculating the size of the multiplier**
  - The size of the multiplier depends upon the following:
    - **The marginal propensity to consume**
      - The amount of extra income that earned by a person that is spent on goods and services
      - $MPC = \frac{\Delta C}{\Delta Y}$
      - $MPC = 1 - MPS$
      - The bigger the MPC, the bigger the multiplier
    - **The marginal propensity to save**

- The amount of extra income that earned by a person that is saved
- $MPS = \frac{\Delta S}{\Delta Y}$
  
- $MPS = 1 - MPC$
- The bigger the MPS, the smaller the multiplier
- **The marginal propensity to tax**
  - The amount of extra income that earned by a person that is paid in tax
  - $MPT = \frac{\Delta T}{\Delta Y}$
  - The bigger the MPT, the smaller the multiplier
- **The marginal propensity to import**
  - The amount of extra income that earned by a person that is spent on imported goods
  - $MPM = \frac{\Delta M}{\Delta Y}$
  - The bigger the MPM, the smaller the multiplier
- **Formula for calculating the multiplier (See log book)**
  - **Open Economy with Tax regime**
    - $\frac{1}{MPS+MPM + MPT}$
  - **Tax Free Open Economy**
    - $\frac{1}{MPS+MPM}$
  - **Closed Economy with Tax regime**
    - $\frac{1}{MPS+MPT}$
- **Calculating the increase in National Income**
  - (Multiplier X € amount of Injection)

The following table shows the level of National Income (Y), Consumption (C), Investment (I), Government Spending (G), Exports (X) and Imports (M) for 2013 and 2014.

	Y	C	I	G	X	M
2013	€80,000	€?	€10,000	€40,000	€100,000	€120,000
2014	€90,000	€56,000	€15,000	€34,000	€110,000	€?

Use this data to calculate the following: (Show all your workings.)

- The level of Consumption in 2013
- The Marginal Propensity to Consume (MPC)
- The level of Imports in 2014
- The Marginal Propensity to Import (MPM).

**(i) Consumption in 2013**

$$\begin{aligned}
 Y &= C + I + G + X - M \\
 80,000 &= C + 10,000 + 40,000 + 100,000 - 120,000 \\
 80,000 &= C + 30,000 \\
 80,000 - 30,000 &= C \\
 C &= 50,000
 \end{aligned}$$

5 marks

**(ii) Marginal Propensity to Consume**

$$\begin{aligned}
 \text{MPC} &= \frac{\Delta C}{\Delta Y} \\
 \text{MPC} &= \frac{6,000}{10,000} = 0.6 \text{ (60\%)}
 \end{aligned}$$

5 marks

**(iii) Imports in 2014**

$$\begin{aligned}
 Y &= C + I + G + X - M \\
 90,000 &= 56,000 + 15,000 + 34,000 + 110,000 - M \\
 90,000 &= 215,000 - M \\
 M &= 125,000
 \end{aligned}$$

5 marks

**(iv) Marginal Propensity to Import**

$$\begin{aligned}
 \text{MPM} &= \frac{\Delta M}{\Delta Y} \\
 \text{MPM} &= \frac{5,000}{10,000} = 0.5 \text{ (50\%)}
 \end{aligned}$$

5 marks

The table shows the level of National Income, Consumption, Investment, Exports, and Imports at the end of Year 1 & Year 2.

Year	National Income	Consumption	Investment	Exports	Imports
1	€10,000	€8,600	€1,000	€1,200	€800
2	€11,200	€9,500	€1,300		€1,100

Calculate the following, showing all your workings:

- (i) The level of Exports in Year 2;  
 (ii) The Marginal Propensity to Import;  
 (iii) The Marginal Propensity to Save;  
 (iv) The size of the multiplier. Explain the economic meaning of this multiplier figure. (25 marks)

(i) Level of Exports in Period 2 – 5 marks

$$Y = C + I + X - M$$

$$€11,200 = €9,500 + €1,300 + X - €1,100 = \boxed{€1,500}$$

(ii) MPM – 5 marks

$\frac{€300}{€1,200} = 0.25$
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(iii) MPS – 5 marks

$\frac{€300}{€1,200} = 0.25$	$MPS = 1 - MPC$ $1 - 0.75$ $0.25$
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(iv) The Multiplier – 5 marks

Method 1

Injections = €600. The increase in national income = €1,200. So the injections have doubled national income. The multiplier is  $\boxed{2}$

Method 2

$$MPC = \frac{€900}{€1,200} = 0.75 \quad \text{Multiplier} = \frac{1}{1 - (75\% - 25\%)} = \boxed{2}$$

Method 3

$$\frac{1}{MPS + MPM} = \frac{1}{0.25 + 0.25} = \boxed{2}$$

The economic meaning of this figure:

This figure [ 2 ] means that for any given injection into the economy, national income will increase by twice the original injection.

- **Using the Keynesian multiplier process outline how a fiscal stimulus (i.e. a government injection) would affect an economy's Aggregate Demand.**
  - The initial increase in government expenditure will have a greater final increase in aggregate demand.
  - Increase in aggregate demand = (initial increase in government expenditure multiplied by the multiplier)
    - **Example:** Government injects €10m. Multiplier is 2. So increase in Aggregate Demand = €10m x 2 = €20m.
- **In the past they have examined the concept of “Average Propensity to Consume/Save/Tax/Import” as opposed to the Marginal Propensity to.....**
  - This means the fraction/proportion of one's total income that is consumed/saved/spent on tax/imports

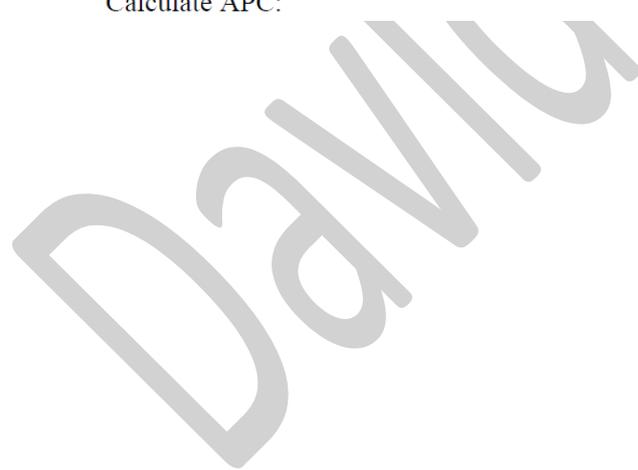
Define the term 'Average Propensity to Consume' (APC) **and** calculate the APC for 2012 from the information below. (Show your workings.) **(17 marks)**

<u>WORKINGS</u>
$€34,000^* - €5,200^* = €28,800^*$
$\frac{€28,800}{€34,000} = 0.847 \text{ or } 84.7\%$

Year	Disposable Income	Savings
2012	€34,000	€5,200

**Definition:** **9 marks**  
 The proportion / fraction of total income which is spent on goods and services.

Calculate APC: **8 marks**



## **How is National Income Measured?**

There are **three ways of calculating National Income** - all of which should sum to the same amount: **National Output = National Expenditure (Aggregate Demand) = National Income**

- Example: Jonny makes a table and sell it for €300.
  - Jonny receives €300 (income)
  - The value of the table is €300 (output)
  - The consumer who bought it spent €300 on the table (expenditure)
  - Income = Output = Expenditure
- **1. The Expenditure Method - aggregate demand (AD)**
  - The full equation for GDP using this approach is  $Y = C + I + G + (X - M)$  where:
    - C: Household spending
    - I: Capital Investment spending
    - G: Government spending
    - X: Exports of Goods and Services
    - M: Imports of Goods and Service
  - **Factors that influence each of the above**
    - **Consumption**
      - **Levels of incomes (irrespective of source)**
        - Incomes are currently low / decreasing and resulting in a fall in consumer expenditure.
      - **Interest rates**
        - Interest rates are currently at a low level. Savers will have a lower incentive to save money as the return they are getting is lower, hence they are likely to spend more money in theory.
      - **Access to / availability of credit**
        - Consumers need to be able to access credit to buy larger items. If banks are not lending money then consumption in the Irish economy will be curtailed.
      - **Rates of taxation**
        - Taxation in Ireland is increasing. Disposable income is falling resulting in a decline in spending.
      - **Consumer confidence**
        - The less confident consumers are about future the less likely they are to spend.
      - **MPC (Marginal Propensity to Consume)**
        - The lower the MPC then the lower will be the level of consumption.
    - **Investment:**
      - **Rate of Interest / MEC:**
        - As interest rates rise, borrowing becomes more expensive and investment tends to fall.
      - **Expectations of business people:**
        - Are they optimistic about the future? Does government policy favour risk taking; are the levels of taxation conducive to risk-taking etc.
        -

- **Government Expenditure:**
  - Political decisions of the government
  - Fiscal policy being pursued by the state.
- **Exports**
  - **Income levels in our export market**
    - If high then the demand for Irish exports may increase.
  - **Competitiveness of Irish exports**
    - Levels of domestic inflation v. international rates. If our goods are competitive on export markets then demand may increase.
  - **Value of the euro**
    - In relation to other currencies e.g. the US dollar / Pound Sterling.
- **Imports**
  - **Levels of incomes (irrespective of source):**
    - As income rises, the level of spending on imports tends to rise.
  - **MPM (Marginal Propensity to Import)**
    - The higher the MPM the higher will be the demand for imports.
  - **Value of the euro**
    - In relation to other currencies e.g. the US dollar / Pound Sterling
- In Ireland we estimate personal expenditure, government expenditure, spending on capital investment and exports. The latter contributes to Ireland's National Income because it is spending by other countries on Irish produced goods and services. On the other hand, we subtract imports from our calculation because this total is spending by Irish persons on the outputs of other countries.
- **2. The Income Method**
  - Here National Income is the sum of the incomes earned through the production of goods and services. This is:
    - Income from people in jobs and in self-employment
    - Profits of private sector businesses
    - Rent income from the ownership of land
    - Incomes in Kind (Income received in a non-monetary form)
  - In Ireland under the **income approach**, we measure the different elements of income such as profits of companies and the self-employed, wages and salaries and rent of dwellings. Some adjustments are then made for items like stock changes. For example, employment totals from the QNHS help in calculating total wages and salaries.
  - Only those **incomes** that are come from the production of goods and services are included in the calculation of National Income by the income approach. We **exclude**:
    - **Transfer payments**
      - Payments for which no factor of production is supplied e.g. the state pension; the Jobseekers' Allowance for the unemployed; Rent Allowance.
    - **Private transfers of money** from one individual to another

- **Income not registered with the Revenue Commissioner (Black Economy/Shadow Economy).**
- **3. The Output Method (Value Added and Contributions to a Nation's GDP)**
  - This measure of National Income adds together the **value of output** produced by each of the productive sectors in the economy using the concept of **value added**.
    - Value added is **the increase in the value of goods or services as a result of the production process**
    - For example, suppose a furniture firm makes a table worth €500, which incorporates timber purchased for €250. National income statisticians would be double counting if they valued the table at €500 and the timber at €250 as the output of the timber firm would already be valued at €250. To avoid this they only calculate the **'value added'** by each firm. So in the example above the output of the furniture would be valued at €250 (€500 less the €250). Other goods and services are such that lots of value can be added as we move from sourcing the raw materials.

In Ireland we use an average of the **Expenditure and Income methods**. These two estimates should give exactly the same answer but, because of the different sources used, and the degree of estimation involved, never do. This is the experience in all countries. Countries resolve the problem in various ways. In Ireland, the official level of GDP is taken to be the average of the expenditure and income estimates.

### **Gross Domestic Product (GDP), Gross National Product (GNP), Gross National Income (GNI), Gross National Disposable Income (GNDI)**

- **Gross Domestic Product**
  - The output produced by the factors of production in the domestic economy (within a country's borders) irrespective of whether the factors are owned by Irish nationals or foreigners
  - In Ireland's case GDP is larger than GNP/GNI because net factor incomes abroad is negative for Ireland
  - See page 253 in textbook
- **Gross National Product (defunct)**
  - Gross National Product is defined as the total output (value of goods and services) produced by Irish owned factors of production in Ireland and elsewhere. It is a measure of the income accruing to a country's **citizens**.
  - GDP is a better measure of economic activity in a country whereas GNP is a better measure of the change in standard of living of a country's citizens.
- **Gross National Income (GNI)** is very similar to GNP and has replaced GNP as a more accurate measure of economic activity in an economy.
  - GNP does not distinguish as to whether the earnings on investments (interest/dividends/profits) have been returned to the citizen's home country, or not.
  - GNI measures income from investments (profits/interest/dividends) earned by the citizens of a country that flow back into the country.
  - $GNI = GDP \pm \text{Net Factor Income from Abroad (NFIA)}$

- **Net Factor Income from the Rest of the World:** This is the difference between incomes (profits/interest/dividends – referred to as primary income sources) earned by foreign factors of production in Ireland and sent abroad and income (profits/interest/dividends) earned by Irish factors of production abroad and returned to Ireland.
  - The difference between GDP and GNI is significant in Ireland as NFIA is a relatively large negative in Ireland’s case.
  - NFIA is negative because the profits earned by MNCs and repatriated back to their home countries exceed the profits earned by Irish MNCs located abroad and returned to Ireland and the interest payments on Irish debt held by non-residents also cause the ‘Net Factor Income from Abroad’ figure to be negative.
  - The net repatriation of profits and the interest repayments on the national debt to non-residents are both outflows hence GDP is consistently and considerably larger than GNI in Ireland.
- **Gross National Disposable Income (GNDI)**
  - GNI is often regarded as the best indicator for a country’s standard of living however it does not record unilateral transfers (notably remittances of incomes by emigrants and foreign aid payments to a country).
  - Gross National Disposable Income (GNDI), including both net factor income (captured by the GNI) and unilateral transfers, could provide a better view of the income available to a country’s residents, particularly in developing countries.
- **Ireland’s Inflated GNI – Patrick Honan**
  - **Summarised version**

### **Main uses of national Income Statistics**

- **Indication of alterations in our standard of living**
  - Any change in our national income figures will indicate the level of economic growth, or otherwise, within the country from one year to the next, and give a general indication of changes to the standard of living, if any. Used by trade unions to justify wage demands.
- **Means of comparing the standard of living in different countries.**
  - We can use the national income statistics to compare the standard of living in our country with that of other countries.
- **Assists the government in formulating economic policy.**
  - Governments have a greater influence on the development and growth of the economy. To effectively plan for this governments’ need information about our economy such as that provided by the National Income statistics.
- **Evaluate economic policy**
  - To assess changes to the economy and economic changes in the various sectors, and to provide a benchmark against which progress can be monitored, it is useful to have national statistics.
- **EU Budget Contributions / Benefits**

- The wealth revealed in our national income statistics will determine the contribution, if any, which Ireland must make to the EU budget. The figure will also be used within the EU to determine those countries which require financial aid from the EU and the amount of that aid.

### **Limitations on the use of National Income Statistics**

- **Population changes**
  - If national income grows at a slower rate than population, then national income per head decreases and the average standard of living will fall. Hence population changes must be considered with changes in national income when assessing a country's economic performance.
- **Inflation/deflation**
  - An increase in prices will increase national income but standard of living may fall. So, changes in national income must be compared with changes in prices to determine the impact on standard of living / economic performance.
- **Employment / Unemployment**
  - If a person is unemployed rising national income will not necessarily mean that this person's average standard of living is rising.
- **Levels of taxation**
  - When considering a person's standard of living one should take into account rates of income tax and levels of indirect tax within the country. An increase in either of these may result in a drop in a person's standard of living.
- **Levels of social welfare**
  - For a person who is unemployed the rates of social welfare payable is of more relevance than the average standard of living in the country.
- **Measures flow of wealth not welfare**
  - Rising GNP may be accompanied by changing working/living conditions which may cause a loss of welfare e.g. more traffic congestion and so a person's standard of living may fall.
- **Hidden social costs attached to increases in national income.**
  - If a firm increases output national income increases. However, a hidden cost may be increased pollution etc.
- **Distribution of national income.**
  - If increases in national income make their way into the pockets of a small minority, there may be no improvement in the standard of living of the whole community.
- **Exclusion of important activities from calculation of national income.**
  - The hidden economy (defined as "*unrecorded economic activity*") is excluded from the calculation of national income. The work of housewives & voluntary activities is also excluded. Such activities are important to the welfare of its citizens.
- **Nature of the goods produced**
  - A country which spends a small amount on military equipment and a large amount on health, education etc. will have a better standard of living than one where the reverse is the case.
- **Government services at cost price.**

- Government services are included at cost while private services are included at selling price. A country where the government provides many services will record a lower GDP / national income.

### **Hidden Economy/Shadow Economy/Black Economy**

Every year, billions of euros worth of activity is not declared to the tax authorities. This is referred to as the “hidden economy”

- **Factors that increase the hidden economy**
  - **Increased VAT rates:**
    - This causes prices to increase and consumers want to avoid the higher taxes.
  - **Increased Income tax rates**
    - This would encourage self-employed people to under-declare their income
  - **Unemployment**
    - Those who have lost their jobs cannot afford VAT inclusive prices and/or are prepared to take a job for cash only to avoid paying income tax.
  - **Disillusionment with government policies**
    - Some think that the tax system is unfair.
- **Effects of the Hidden Economy for the Exchequer:**
  - **Economic effects**
    - **Loss of tax revenue:**
      - Reduced VAT / Income tax revenues.
    - **Increased government expenditure**
      - May have to increase spending on law enforcement.
    - **Unemployment bill is higher**
      - Some are claiming social welfare and earning an income.
    - **Affects employment in legitimate business**
      - They will struggle to compete with a business not paying the appropriate amount of tax and may have to make people redundant
    - **Unregulated products entering the market**
      - Products sold in the hidden economy may not be regulated and therefore may be harmful
  - **Social Effects**
    - **Increased Crime**
      - Many hidden economy activities are related to crime – drugs/laundered fuel
    - **Pressure on government finances / provision of services**
      - Government may have to cut spending; additional sources of tax revenue considered (e.g. stealth taxes) and/or reduced volume of services provided.
    - **Vicious Circle**

- When the government's tax take is reduced it may have to make cut backs in services that benefit society. These cut backs could push more people into the hidden economy and so the cycle continues.

David Kelly