



# Underground Economy: Causes and Size

No-Wook Park  
Korea Institute of Public Finance



# Contents

- 📌 What is Underground Economy?
- 📌 Why Does Underground Economy Matter?
- 📌 Size of Underground Economy
- 📌 Growth of Underground Economy
- 📌 Causes of Underground Economy
- 📌 Methods of Estimating the Size of Underground Economy



# What is Underground Economy?

- 📌 Two Aspects of Economy
  - Recorded Economy and Unrecorded Hidden Economy
- 📌 Hidden Economy
  - Non-market economic activities
    - Home Production
  - Illegal market activities
    - Prohibited production and distribution of proscribed substances
  - Legal market activities but kept hidden for reasons such as tax-evasion
- 📌 Focus on legal market activities but kept hidden

TABLE 1  
A TAXONOMY GO UNDERGROUND ECONOMIC ACTIVITIES

Illegal Activities	Monetary Transactions		Non-monetary Transactions	
	Trade in stolen goods; drug dealing and manufacturing; prostitution; gambling; smuggling and fraud.		Barter: drugs, stolen goods, smuggling, etc.  Produce or growing drugs for own use.	
Legal Activities	Tax Evasion	Tax Avoidance	Tax Evasion	Tax Avoidance
	Unreported income from self-employment; Wages, salaries and assets from unreported work related to legal services and goods		Employee discounts, fringe benefits  Barter of legal services and goods  All do-it-yourself work and neighbor help	

Source : Rolf Mirus and Roger S. Smith (1997, p. 5), with additional remarks.



# Why Does Underground Economy Matter?

- 📌 Possibility of “bad equilibrium”
  - Individuals may go underground to escape from taxes and social security burdens → Erosion of tax and social security bases → Increase in budget deficit or tax rates → Growth of underground economy → Gradual weakening of economic and social basis of collective arrangement
- 📌 Lead to Incorrect information for policy making
  - Ineffective or wrong policies are adopted



# Size of Underground Economy

- 📌 Hard to measure the size of underground economy because of its hidden nature
- 📌 Various attempts are made to measure its size but there is no consistent measure to make international comparison



## Average Size of Underground Economy for Developing, Transition and OECD Countries in % of Official GDP

<b>Countries/year</b>	<b>1992/2000</b>	<b>2000/2001</b>	<b>2002/2003</b>
<b>Africa (Developing)</b>	<b>33.9</b>	<b>37.4</b>	<b>41.2</b>
<b>Central and South America (Developing)</b>	<b>34.2</b>	<b>37.7</b>	<b>41.5</b>
<b>Asia (Developing)</b>	<b>20.9</b>	<b>23.4</b>	<b>26.3</b>
<b>Transition Countries</b>	<b>31.5</b>	<b>34.6</b>	<b>37.9</b>
<b>Highly developed OECD Countries</b>	<b>13.2</b>	<b>15.7</b>	<b>16.8</b>
<b>South Pacific Island</b>	<b>31.7</b>	<b>32.6</b>	<b>33.4</b>
<b>Communist Countries</b>	<b>19.4</b>	<b>20.7</b>	<b>21.8</b>
<b>Average over 145 countries</b>	<b>33.6</b>	<b>34.5</b>	<b>35.2</b>



## Average Size of Underground Economy for Asia Countries in % of Official GDP

Countries/year	1992/2000	2000/2001	2002/2003
Bangladesh	35.6	36.5	37.7
Cambodia	50.1	51.3	52.4
Hong Kong	16.6	17.1	17.2
Indonesia	19.4	21.8	22.9
<b>Korea</b>	<b>27.5</b>	<b>28.1</b>	<b>28.8</b>
Malaysia	31.1	31.6	32.2
Thailand	52.6	53.4	54.1
Singapore	13.1	13.4	13.7



## Average Size of Underground Economy for Communist Countries in % of Official GDP

Countries/year	1999/2000	2000/2001	2002/2003
China	13.1	14.4	15.6
Vietnam	15.6	16.9	17.9
Mongolia	18.4	19.6	20.4
<b>Lao PDR</b>	<b>30.6</b>	<b>31.9</b>	<b>33.4</b>
<b>Average</b>	<b>19.4</b>	<b>20.7</b>	<b>21.8</b>



# Growth of Underground Economy

- 📌 Scandinavian countries and German-speaking countries exhibit a sizeable increase of their underground economy during 1960-1995
  - Sweden, Norway, and Denmark
  - Germany and Austria
- 📌 Countries with a low share of underground economy show a significant increase, too.
  - Switzerland, Austria, and the US
- 📌 Increasing importance of the underground economy relative to the official economy is a robust phenomenon

TABLE 3  
 GROWTH OF SHADOS ECONOMY RELATIVE TO GNP  
 SELECTED WEST EUROPEAN COUNTRIES AND THE UNITED STATES, 1960-95

Country	Size of Hidden Economy		Increase in Hidden Economy
	1960	1995	
Sweden	2%	16%	14%
Denmark	4.5%	17.5%	13%
Norway	1.5%	18%	16.5%
Germany	2%	13.2%	11.2%
United States	3.5%	9.5%	6%
Austria	0.5%	7%	6.5%
Switzerland	1%	6.7%	5.7%

Source: Authors' calculations based on the currency demand approach (rounded figures).



# Causes of Underground Economy

- 📌 Higher tax rates and social security contributions
- 📌 Increased regulation
- 📌 Forced reduction of weekly working hours
- 📌 Earlier retirement
- 📌 Unemployment
- 📌 Decline of civic virtue and loyalty towards public institutions



# Method of Estimating the Size of Underground Economy

- 📌 Three Methods are widely used
  - Direct Approaches
  - Indirect Approaches
  - Model Approach
- 📌 Each methods have its own weakness and its estimated size differs widely.



# Direct Approaches

- 📌 Micro approaches employ surveys and samples based on voluntary replies or tax auditing and other compliance methods.
- 📌 Surveys
  - Pro
    - able to gather detailed information
  - Cons
    - Sensitive to the way the questionnaire is formulated
    - Sensitive to respondents' willingness to cooperate
      - Most interviewed hesitate to confess their wrong doings.



## Direct Approaches (Cont'd)

### 📌 Sampling

- Estimate size of the underground economy by examining the discrepancy between income declared for tax purpose and that measured by selective checks (tax audit program).
- Difficulties
  - Sample Bias
    - Using tax compliance data is equivalent to using sample of the population. Selection of taxpayers for audit is based on properties of submitted tax returns which indicate some likelihood of fraud. So this sample is not a random one of the whole population.
  - Only a part of underground economy
    - Estimates based on audits reflect only a portion of hidden economy income which the authorities succeeded in discovering.
  - Provides only point estimates and does not offer estimates of shadow economy over a longer period of time.

### 📌 Surveys and tax auditing are likely to provide lower-bound estimates of the underground economy.



# Indirect Approaches

## 📌 (a.k.a.) Indicator Approaches

- Use mostly macroeconomic data
- Use various economic and other indicators that contain information about the development over time of the hidden economy
- Five indicators are available
  - Discrepancy between National Expenditure and Income Statistics
  - Discrepancy between Official and Actual Labor Force
  - Transaction approach
  - Currency demand approach
  - Physical input (Electricity Consumption) method



# Discrepancy between National Expenditure and Income Statistics

- 📌 Size of the underground economy
  - In national accounting, the income measure of GNP should be equal to the expenditure measure of GNP.
  - Estimate of the hidden economy = Expenditure measure – Income measure, if independent estimate of the expenditure side of GNP is available.
- 📌 Better to use the initial discrepancy or first estimate, rather than the published discrepancy because national account statisticians will be anxious to minimize this discrepancy.
- 📌 Reliability is questionable
  - The discrepancy reflects not only the underground economic activity but also all omissions and errors in national account statistics.



# Discrepancy between Official and Actual Labor Force

- 📌 A decline in labor force participation in the official economy can be seen as an indication of increased activity in the underground economy, if total labor force participation is assumed constant.
- 📌 Weakness
  - Differences in the rate of labor participation may have other causes
  - People can work in both the hidden economy and the official economy.



# Transaction Approach

## Assumption

- Constant relation over time between the volume of transaction and official GNP
- Start from Fisher's quantity equation
  - $M \cdot V = p \cdot T$
  - M: money, V: velocity, p: prices, T: total transaction
- Assume V and relation between value of total transaction ( $p \cdot T$ ) and total (official + unofficial) nominal GNP
  - $M \cdot V \rightarrow p \cdot T \rightarrow$  Total nominal GNP
  - Underground economy = Total nominal GNP – Official GNP
- Need for assuming a base year where there is no hidden economy
  - $p \cdot T =$  total nominal GNP = Official GNP in a base year



## Transaction Approach (Cont'd)

### Weakness

- Assumption of a base year with no underground economy
- Assumption that the ratio of transactions to official GNP is constant over time
- Need precise figures of the total volume of transactions
  - Hard to achieve for cash transactions b/c they depends on various factors such as durability of bank notes
  - Hard to eliminate financial transactions form pure cross payments which are legal and have nothing to do with the hidden economy
- In short, empirical requirements (data requirements) for reliable estimates are so difficult to fulfill.



# Currency Demand Approach

- 📌 Underground economic transactions are undertaken in the form of cash payments, in order to leave no traces for authorities.
  - Increase in underground economy → increase in cash demand
- 📌 In order to isolate excessive demand for cash, equation for currency demand is econometrically estimated over time
  - Control variables
    - Income, payment habits, interest rates, and so on
  - Factor causing people working in the hidden economy
    - Tax burden, regulation, complexity of tax system and so on
  - Excess demand for cash = amount unexplained by the control variables
- 📌 One of the most commonly used methods
  - Used for many OECD countries



# Currency Demand Approach (Cont'd)

## Weakness

- Not all transactions in the hidden economy are paid in cash.
  - In Norway in 1980, a survey showed that 80% of underground transactions were paid in cash. → Currency demand approach underestimates the size of the hidden economy.
- Most studies consider only one particular factor, the tax burden, as a cause of the shadow economy.
  - Other factors (such as impact of regulation, tax morality, and so on) are also important.
- Assumption of the same velocity of money in both types of economy is unrealistic.
  - The velocity of money in the official economy is hard to estimate. The velocity of money in the hidden economy is even harder to estimate.



# Physical Input (Electricity Consumption) Method

- 📌 Start from the assumption that electricity consumption is the single best physical indicator of overall economic activity.
  - Overall (official and unofficial) economic activity and electricity consumption have been empirically observed to move in lock-step, with an electricity/GDP elasticity usually close to one.
  - growth of unofficial economy = growth of electricity consumption – growth of official GDP



## Physical Input Method (Cont'd)

### Weakness

- Not all hidden economic activities require a considerable amount of elasticity (e. g. personal services) and other sources can be used (gas, oil, coal etc.)
  - Only a part of the hidden economy will be captured
- The use of electricity becomes more efficient over time.
- There may be considerable differences in the elasticity of electricity/GDP across countries and changes over time.



# Model Approach

- 📌 Explicitly consider multiple causes and multiple indicators of the underground economy
- 📌 Factor analytic approach is used to measure the hidden economy as an unobservable variable over time.
- 📌 Causes → development of the underground economy over time → Indicators
  - Causes
    - High taxation, heavy regulation, declining tax morality
  - Indicators for the size of the hidden economy
    - Monetary indicators, labor indicators, production market indicators



*Thank you !!*