A Fresh Assessment of the Underground Economy and Tax Evasion in Pakistan: Causes, Consequences and Linkages with Formal Economy

M. Ali Kemal

Introduction

- Number of activities are not reported to formal economy
- Remains out of the tax net
- These activities include
  - Smuggling
  - Corruption
  - Black Marketing
  - Narcotics
  - Legal Jobs

Introduction

- Contribution to the formal GDP
- Significant negative impact on social welfare
- Negatively affect the formal economy
- Almost all the transactions are through cash,
- Self employed persons are involved in tax evasion and underground economic activities
- There is no formal system of documentation of self employed persons and their activities.

What is a Problem…?

- Every country has underground economy
- Larger the share larger will be the tax evasion
- Rise in underground economy
- Creates problems for policymakers to formulate policies
- Statistics will be unreliable

Objectives

- Fresh assessment of the underground economy and tax evasion.
- Underground economy contributes the formal economy or not.
- The impact of various activities in the formal economy on the underground economy.
- The causes and consequences of the underground economy.

Empirical Studies on Pakistan

1. Shabsigh (1995)
2. Ahmed and Ahmed (1995)
3. Iqbal Qureshi and Mahmood (1998)
4. Aslam (1998)
5. Khalid (2002)
6. Kemal (2003)
7. Yasmin and Rauf (2003)

Review of Studies on Pakistan

- Shabsigh (1995)
  - Period: 1975-1990

$$\frac{CC}{DD} = f(PCY, R, PCBS, MT, DT, ARIMA)$$

  - Simple linear form
  - Stagnant growth pattern from 1975 to 1990

Review of Studies on Pakistan

- Ahmed and Ahmed (1995)
  - Period: 1960-90

$$\frac{CC}{M2} = f\left(i, \frac{Tax}{GDP}, D\right)$$

$$\frac{(CC + BB)}{M2} = f\left(i, \frac{Tax}{GDP}, D\right)$$

  - Log Linear Form
  - 51.96% in 1960, 35.09% in 1990
  - Question of reliability of data on money supply before 1975

Review of Studies on Pakistan

- Iqbal Qureshi and Mahmood (1998)
  - Period: 1970-1996

$$\frac{CC}{M2} = f\left(\frac{DT}{GDP}, \frac{TT}{GDP}, R, PCYg, BS, D, \left(\frac{CC}{M2}\right)_{t-1}\right)$$

  - Simple Linear Form
  - 20.2% in 1973, 36.8% in 1990 and 41.7% in 1996

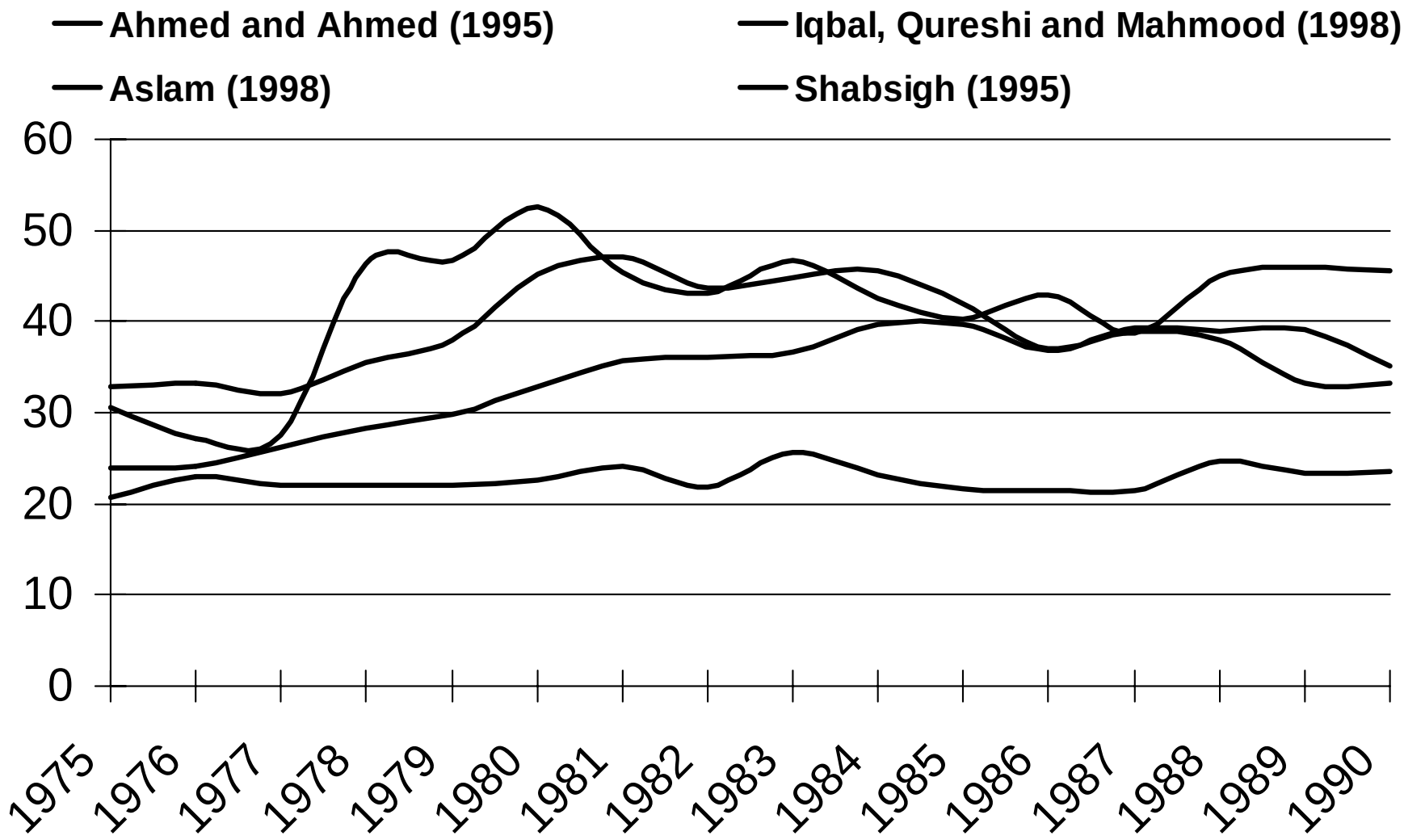
Review of Studies on Pakistan

- Aslam (1998)
  - Period: 1960-98

$$\frac{(CC + FCA)}{M2} = f\left(i, \frac{Tax}{GDP}, Yg, D\right)$$

  - Log Linear Form
  - 29% in 1960, 43.9% in 1990, 43.8% in 1996, and 35.5% in 1998

Estimates of Underground Economy as % of GDP (1975 – 1990)



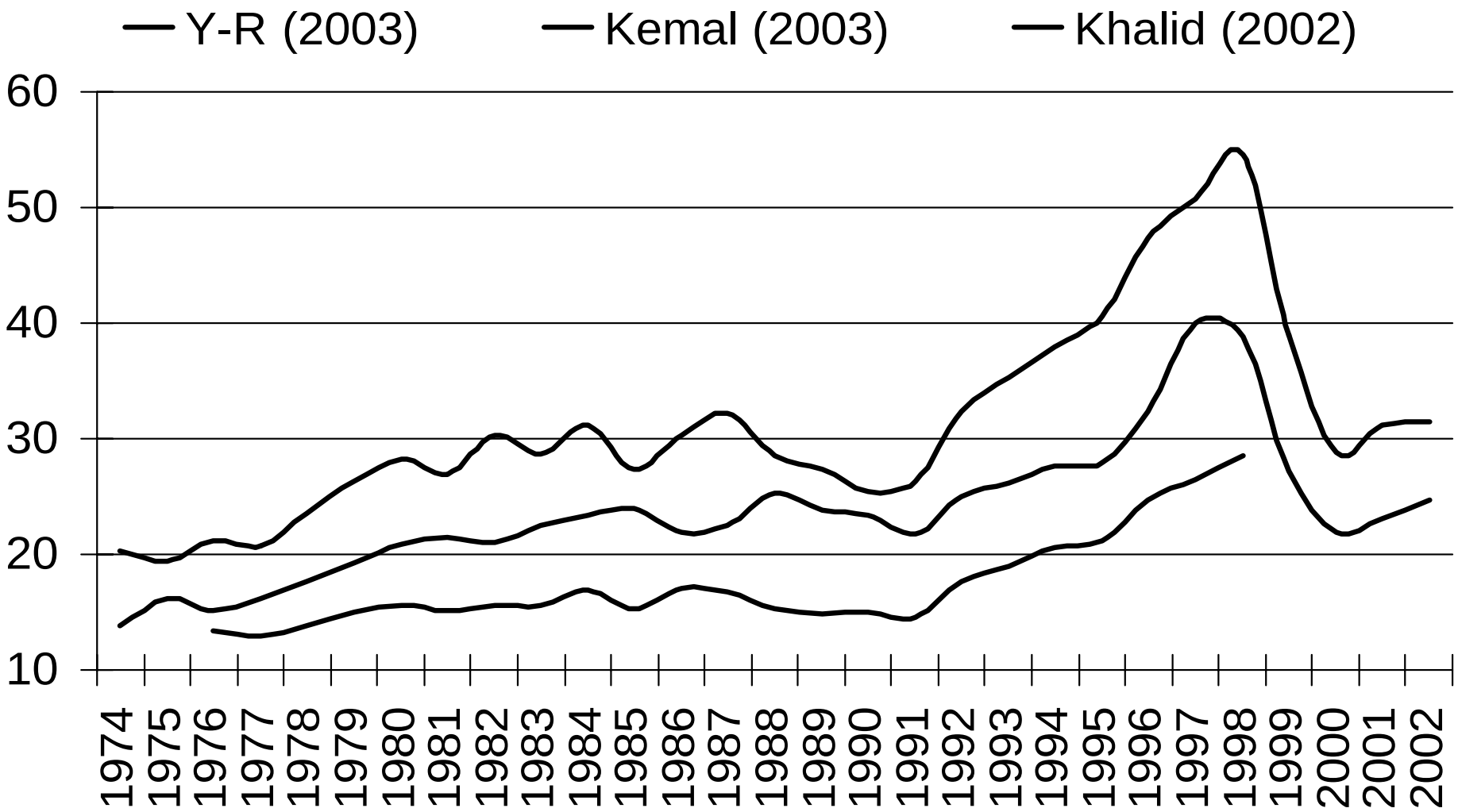
Estimates of past studies

Variable	**Kemal (2003)**	**Y-R (2003)**	**Khalid (2002)**
	Coefficient	Coefficient	Coefficient
Constant	0.114***	0.151*	0.1604
Tax to GDP ratio	1.067**		0.667
One period lag of Tax to GDP ratio		0.848*	
Banking Services	-1.34E-05**	-2.166*	2.37E-05
Growth rate of GDP	-0.506	-0.094	
Growth rate of Per Capita GDP			-0.2061
Real Rate of Interest			-0.0084
One period lag of Interest Rate		-0.006	
DUM 91	0.060*		0.0164
Lag Dependent variable	0.327***	0.401**	0.3537

What did we get…?

- Functional form
- Benchmark period
- Inclusion and Exclusion of Variables
- Velocity of money
- Estimates are entirely based on parameters
- Incomparable Estimates

Estimates of Underground Economy as % of GDP (1974 - 2002)



Data

- Data Sources
  - Annual Report of State Bank/Handbook of Statistics on Pakistan Economy 2005
    - Currency in circulation, M1, M2, total number of bank deposits, total number of bank accounts, interest rate, and foreign currency accounts
  - Economic survey/50 Years of Pakistan's Statistics
    - GDP, GNP, inflation, and real per capita income, Budget Deficit
  - CBR Annual Report
    - Total Tax Revenues, Sales tax on imports and custom duties
- Period: 1973 to 2005

Construction of Variables

- Banking Services $\frac{\text{Bank Deposits}_t}{\text{Bank Accounts}_t}$

- Real interest rate=nominal interest rate-inflation rate
- International trade taxes = custom duties + sales tax on imports
- Domestic taxes = tax revenues – international trade taxes

Methodology

- Tanzi's Monetary Approach

$$\left(\frac{CC+FCA}{M2}\right)_t = \alpha + \beta\left(\frac{T}{Y}\right)_t + \gamma BS_t + \varphi G_t + \lambda D + \delta\left(\frac{CC+FCA}{M2}\right)_{t-1} + \varepsilon_t$$

$$\left(\frac{CC+FCA}{M2}\right)_t = \alpha + \beta\left(\frac{T}{Y}\right)_t + \gamma \,\mathrm{inf}\, lation_t + \varphi G_t + \lambda D + \delta\left(\frac{CC+FCA}{M2}\right)_{t-1} + \varepsilon_t$$

$$\left(\frac{CC+DD+FCA}{M2}\right)_t = \alpha + \beta\left(\frac{T}{Y}\right)_t + \gamma \,\mathrm{inf}\, lation_t + \lambda D + \delta\left(\frac{CC+DD+FCA}{M2}\right)_{t-1} + \varepsilon_t$$

Expected signs

- Total Tax Revenues +ve
- Banking Services -ve
- Growth –ve
- Inflation +ve
- Dummy +ve

Methodology to Estimate Underground Economy and Tax Evasion

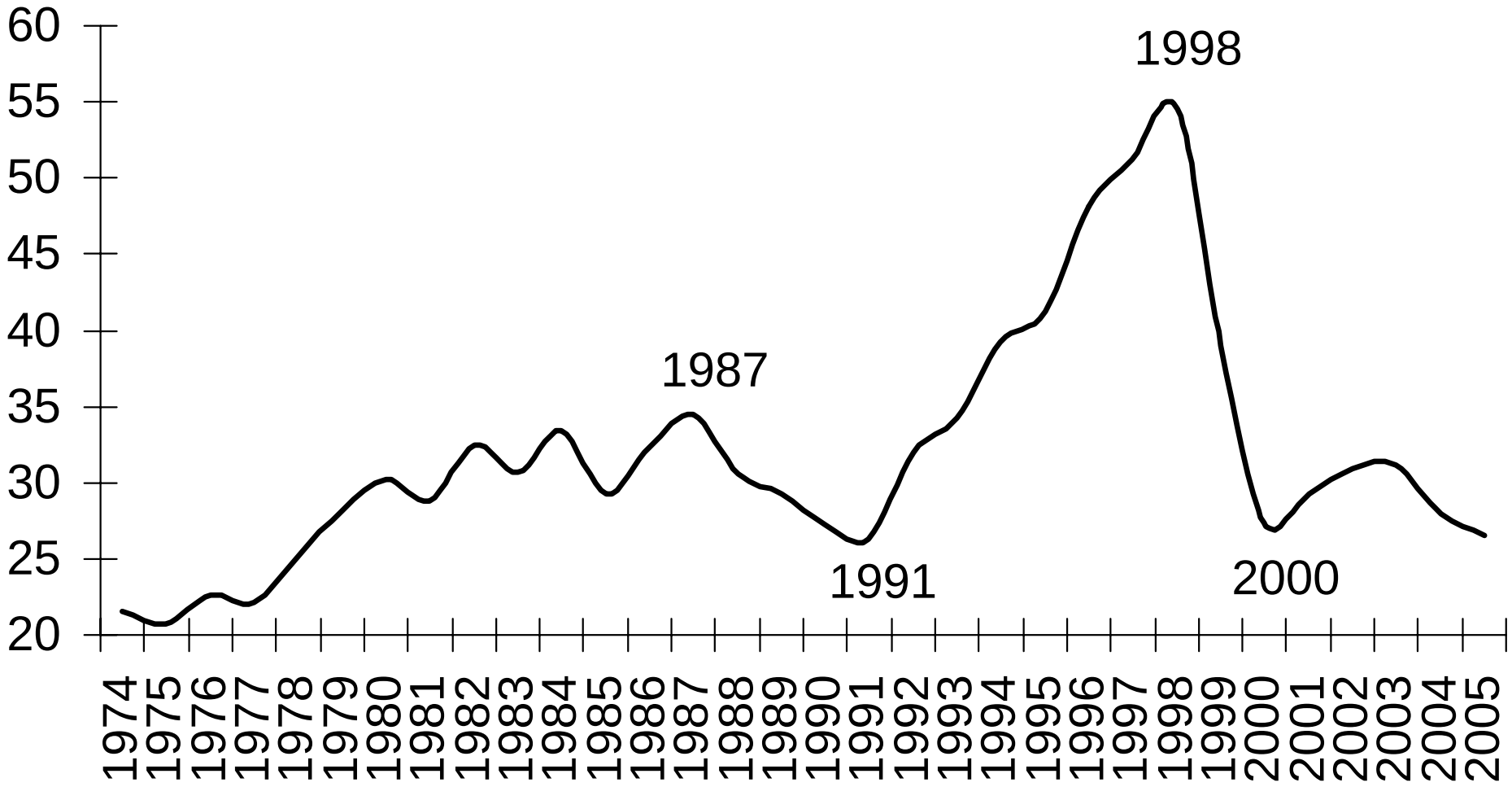
- IM = $[\{(CC+FCA)/M2\}_t - \{(CC+FCA)/M2\}_{wt}]*M2$
  (*The difference gives us indication of how much currency holding is tax induced*)
- LM = M1-IM
- V = Y/LM
- UGE = IM*V
- TE = UE*(Tax/Y)

Empirical Results

Variables	Equation 1	Equation 2	Equation 3
	Coefficient	Coefficient	Coefficient
Constant	0.137*	0.123**	0.198*
Tax to GDP ratio	1.125**	1.724*	0.529**
Banking Services	-8.01E-07**	-6.83E-07**	
Growth rate of GDP	-0.492***	-0.682*	
DUM 91	0.067*	0.081*	-1.69E-02**
Lag Dependent variable	0.215		0.58*
Inflation Rate		0.136***	0.166*
	R^2 = 0.76	R^2 = 0.78	R^2 = 0.79
	F = 17.50	F = 19.02	F = 26.36
	h-test = !	DW = 2.28	h-test = 0.119

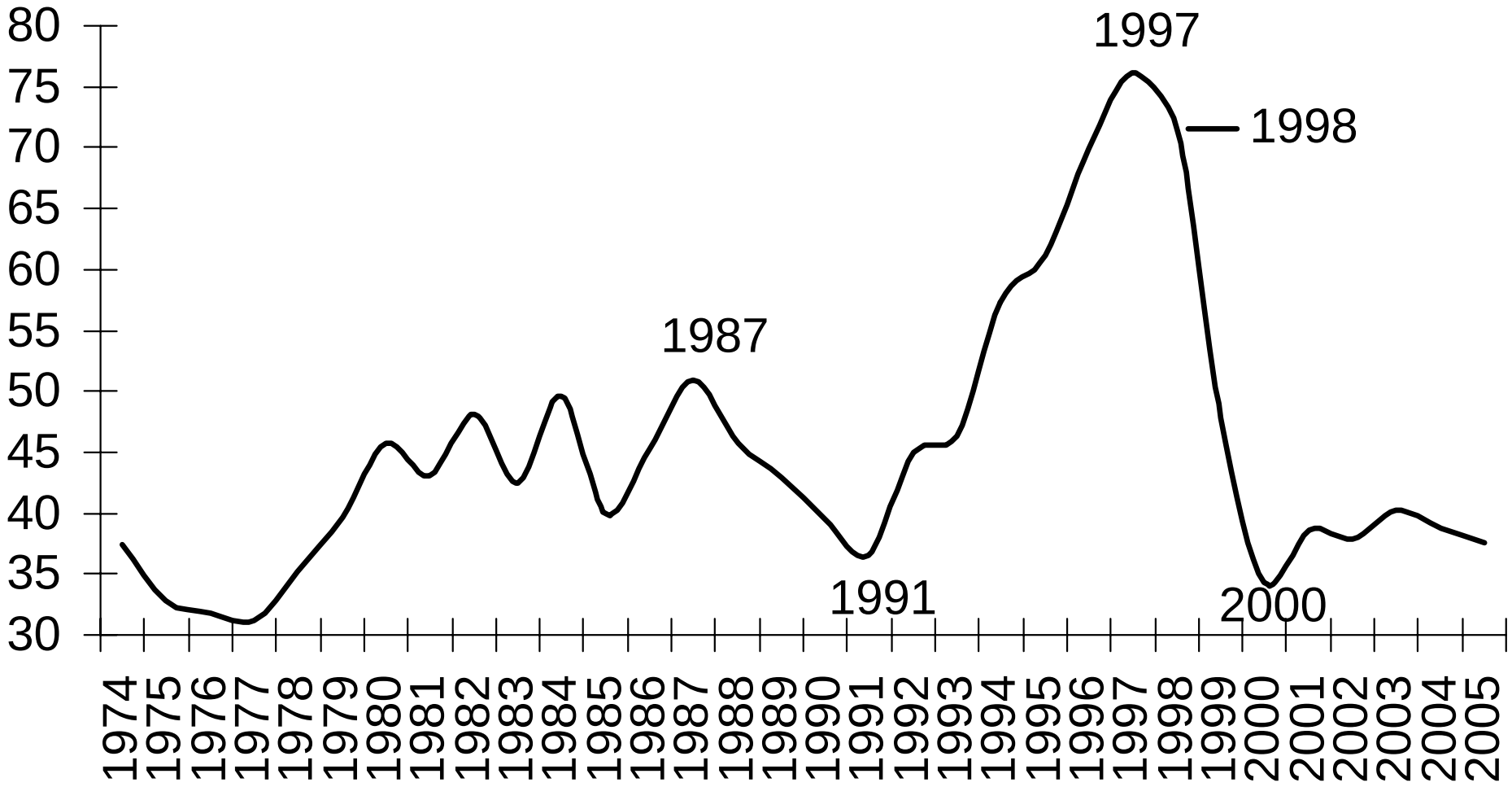
Underground Economy as % of GDP

(Equation 1)



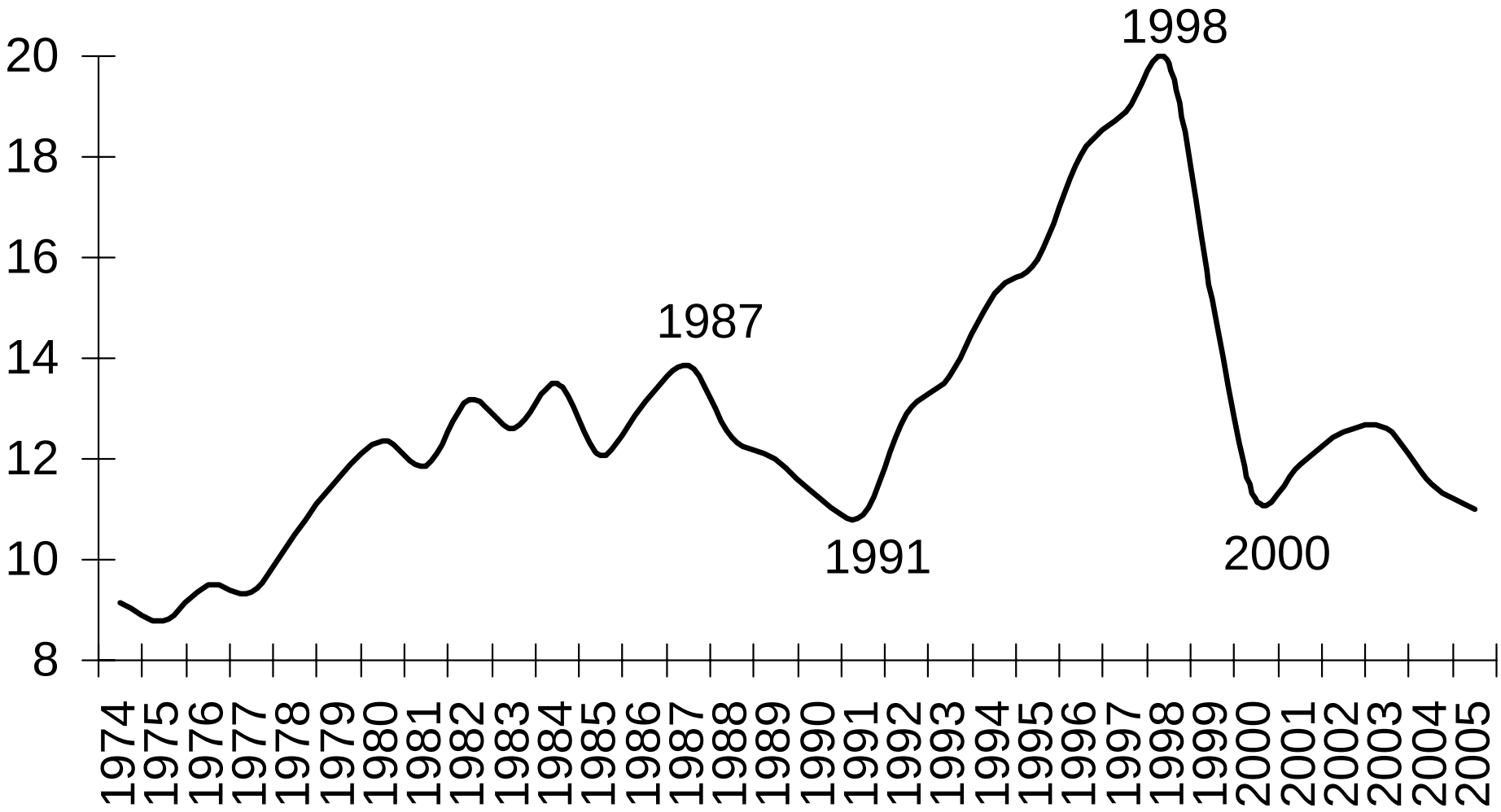
Underground Economy as % of GDP

(Equation 2)



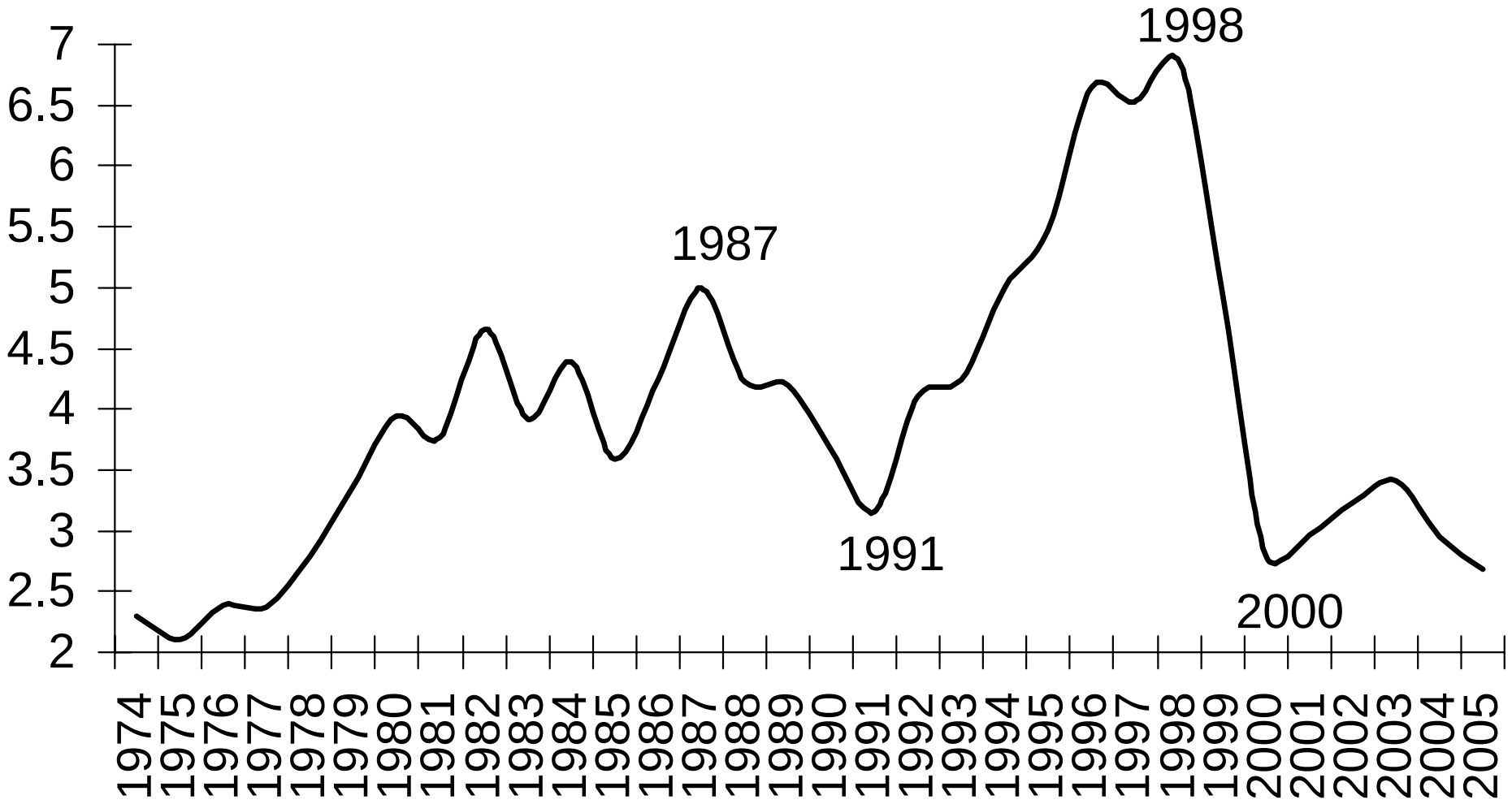
Underground Economy as % of GDP

(Equation 3)



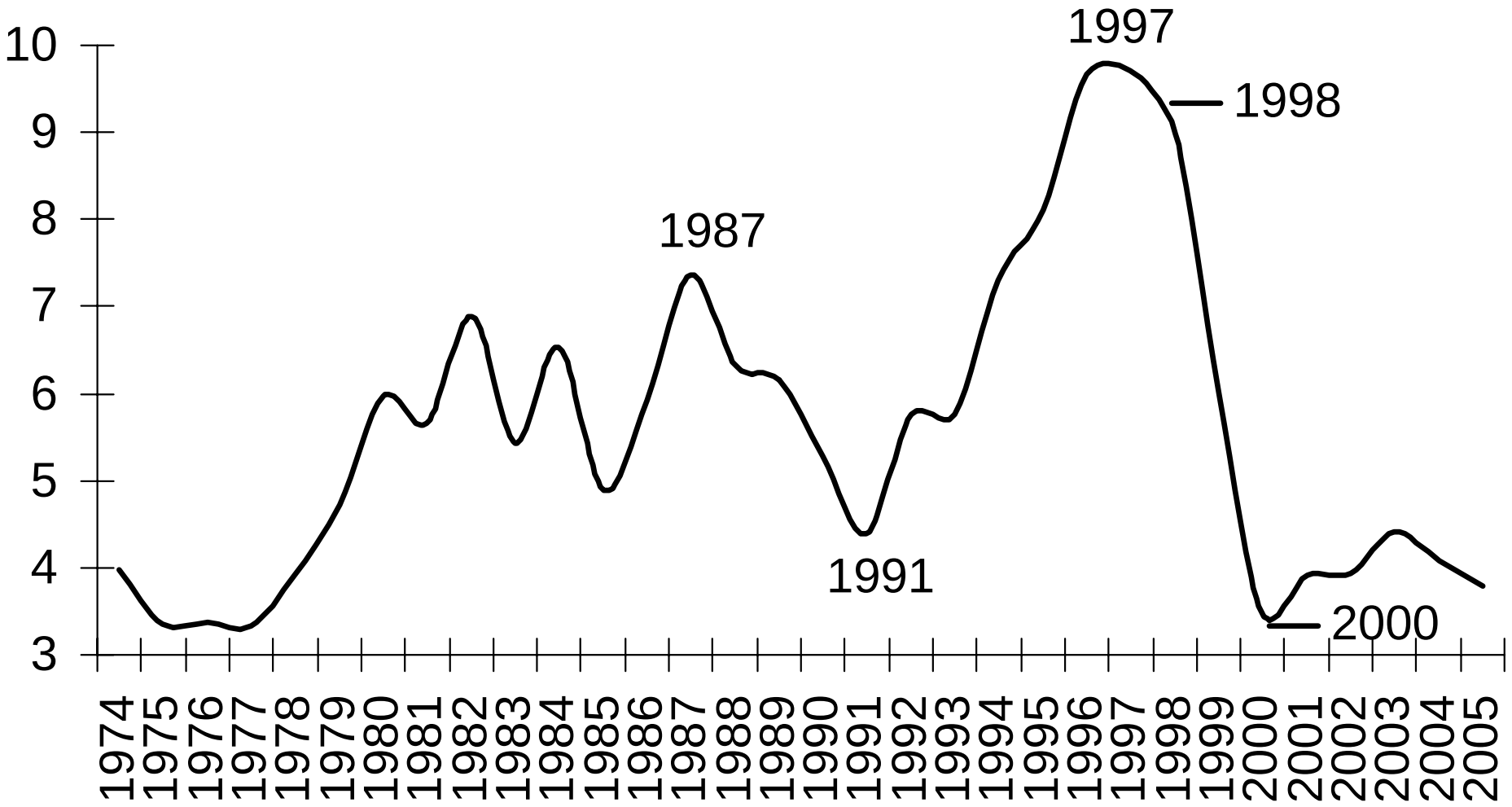
Tax Evasion as % of GDP

(Equation 1)



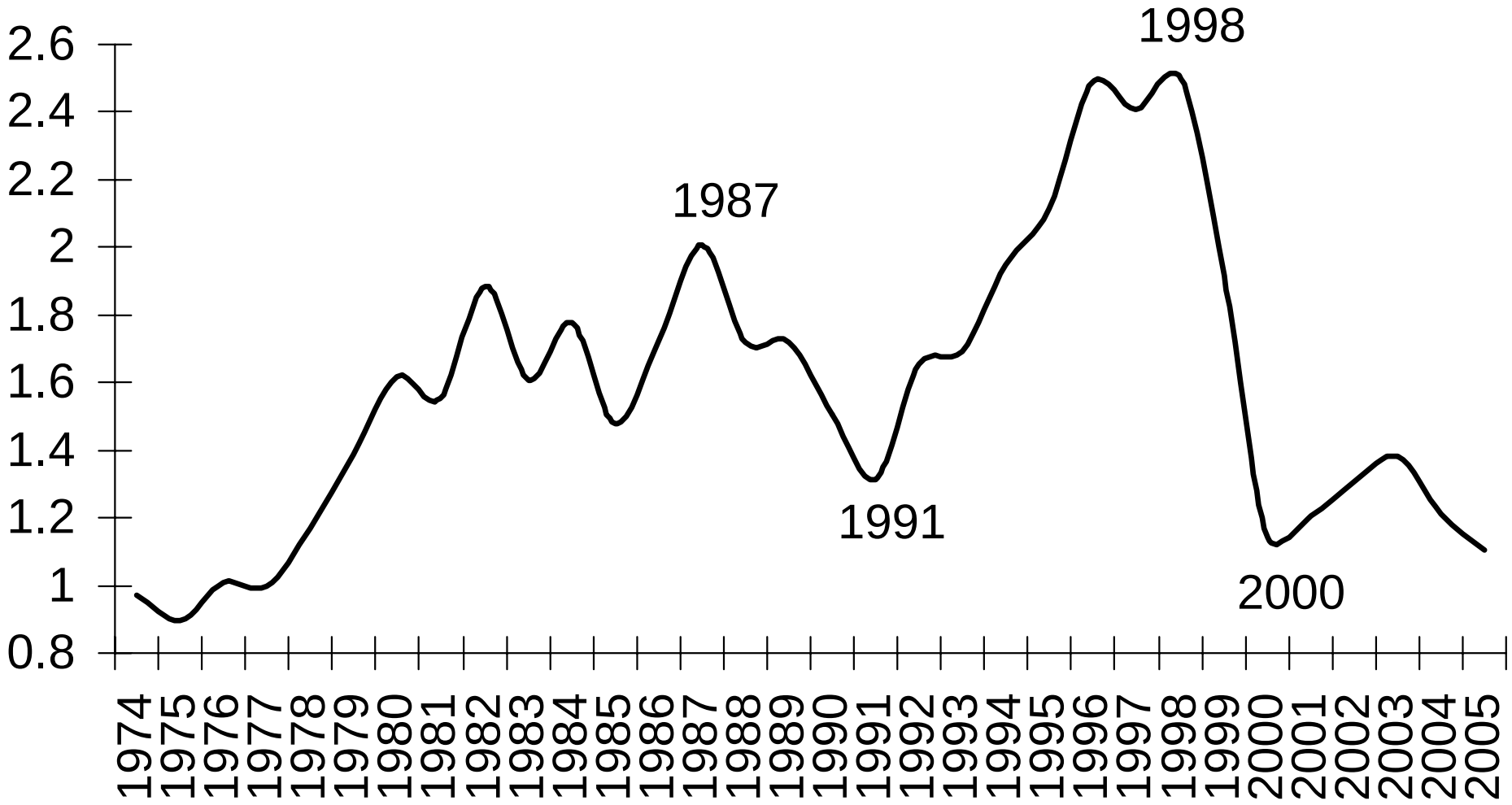
Tax Evasion as % of GDP

(Equation 2)



Tax Evasion as % of GDP

(Equation 3)



Formal Economy and the Underground Economy

- Increase in formal activities accompanied by increase in the underground economy
- Industrialists hire persons permanently and on contract or piece rate
- Producer has to pay taxes on the number of employees
- Producer need more labour to increase his production.
- When economic activity increases, the extra labour producer hires will be shown as non – permanent employees and this way they evade taxes.

Formal Economy and the Underground Economy

- Underground economy weakens the systems of the country
- Higher tax rate → more evasion → loss in revenues →
- Increase in tax rates further or
- Inflation tax
- Creating inflation to get short run benefits is the worst policy in the long run

Corruption and Formal Economy

- Corruption smoothes the process
- Is it good or bad … ?
- Various authors find he association between corruption and growth
- Recently Aman (2006) found that it is not necessary to have zero corruption for maximizing growth
- He also calculates the threshold level of inflation, i.e., 8.3
  - Index ranges from 0 – 12, 0 means no corruption
- Corruption index of Pakistan was 3 in 2003 and it was maximum in 1997 and 1998, i.e., 8

Factors affecting Underground Economy

Variables	Based on Eq 1	Based on Eq 2	Based on Eq 3
	Coefficient	Coefficient	Coefficient
Constant	-5.76*	-2.54*	-8.24*
Major Crops	-0.16**	-0.06**	-0.26***
Large Scale Manufacturing	0.35**	0.12**	0.59**
Construction	0.37*	0.12*	0.41**
Dummy (1991 – 1998)	6.88*	2.20*	9.55*
R^2	0.47	0.47	0.36
F	5.83	5.76	3.88
DW	1.63	1.66	1.64

Formal and Underground Economy

Nominal Formal and Underground GDP

Variable	Based on Eq 1			Based on Eq 2			Based on Eq 3		
	β	β	β	β	β	β	β	β	β
Constant	2.47*	0.39*	28.14*	3.08*	0.42*	3.08*	1.70*	0.44*	19.64*
Log (UGE)	0.90*	-0.002	-0.001	0.91*	0.01	0.91*	0.93*	0.03	0.06
Log $(GDP)_{t-1}$		0.98*			0.97*			0.95*	
AR(1)			0.99*			1.09*			0.98*
AR(2)						-0.36*			
MA(1)									0.51*
R^2	0.98	0.998	0.999	0.985	0.998	0.994	0.98	0.999	0.999
F	1499	8953	12883	2028	8957	1475	1337	10646	6467
DW	0.40		1.97	0.40		2.01	0.48		2.24
h-test		1.93			2.00			1.16	

Formal and Underground Economy

Growth rate of *Nominal Formal and Underground GDP*

Variable	Based on Eq 1			Based on Eq 2			Based on Eq 3		
	β	β	β	β	β	β	β	β	β
Constant	0.14*	0.12*	0.11*	0.14*	0.12	0.11*	0.15*	0.10	0.14*
GUGE	0.03	0.009	0.19*	0.06	0.03	0.22*	0.03	0.03	0.05
$GGDP_{t-1}$		0.20			0.19			0.33**	
AR(1)									0.39*
MA(1)									-1.08*
MA(2)			-0.91*			-0.91*			-0.66*
R2	0.008	0.08	0.36	0.02	0.09	0.37	0.004	0.11	0.68
F	0.24	1.25	7.85	0.60	1.32	8.28	0.13	1.87	13.63
DW	1.86	2.31	2.56	1.87	2.28	2.58	1.08	1.70	2.54
h-test		-1.25			-0.79			0.82	

Causes of Underground Economy

- Burden of Tax
- Intensity of Regulation
  - Labour market restrictions
- Social Transfers
- Lack of Loyalty towards public institutions
- Tax Morale

Burden of Tax

- Most significant variable found to cause underground economy
- Once In Never Out (OINO)
- Increase in tax rates → people starts evading taxes
- Decline in tax rates then does not prohibit people from tax evasion
- This could be due to
  - Unwillingness
  - Fear or Lack of Trust

Intensity of Regulations

- Regulations are designed to get control over certain things
  - e.g., Monopoly Control Authority / Competition Policy
- More regulations → more restrictions → increases the cost of labour → move to underground economy where these regulations does not apply
- Improvement in the enforcement of laws and regulation is better than making more regulations

Social Transfers

- Reduces the willingness of a person to work especially in the formal economy
- Zakat and Subsidies has very small share and may not causing underground economy significantly
- Pensions has the major proportion in the social transfers
- After the retirement if they work privately in a private sector or free lance, they do not report there total income mostly

Consequences of the Underground Economy

- Rise in the underground economy → decreases the state revenues → reduces the quality and quantity of publicly provided goods and services
- The loss of revenues is filled through
  - increase in tax rates or
  - by increase in price of inelastic goods, i.e., inflation tax.
- To reduce the prices afterwards → Government reduce the money supply and increase the interest rate → reduces the credit creation → reduces the level of investment → overall economic activity goes down.

Budget Deficit and Tax Evasion

Years	Budget Deficit	Tax Evasion	Years	Budget Deficit	Tax Evasion
1976	9.6	3.4	1991	8.8	4.4
1977	8.6	3.3	1992	7.5	5.8
1978	7.9	3.9	1993	8.1	5.8
1979	8.9	4.7	1994	5.9	7.3
1980	6.3	6.0	1995	5.6	8.1
1981	5.3	5.6	1996	6.5	9.7
1982	5.3	6.9	1997	6.4	9.7
1983	7.1	5.4	1998	7.7	9.0
1984	6.0	6.5	1999	6.1	6.0
1985	7.8	4.9	2000	5.4	3.5
1986	8.1	5.9	2001	4.3	3.9
1987	8.2	7.4	2002	4.3	3.9
1988	8.5	6.3	2003	3.7	4.4
1989	7.4	6.2	2004	2.4	4.1
1990	6.5	5.3	2005	3.3	3.8

Budget Deficit and Tax Evasion

If tax evasion was zero the budget balance could be surplus in 1981, 1982, 1994 – 1998, and 2003 – 2005.

It is obvious that even if the budget balance was not surplus but the burden of the budget deficit could be lessened and we needed to borrow lesser than we had borrowed.

Consequences

Conduct of Monetary Policy

- The role of monetary policy is to enhance growth through increase in investment.
- It is a big question mark if underground economy is very high
- Authorities need to know that how much money supply is needed to get better GDP growth.
- For instance, if 30 percent of the money supply is going to the activities in the underground economy
- Increases in the money supply by 5 percent → 1.5 percent goes into the underground economy activities.
- This is OK…!

Consequences
Conduct of Monetary Policy

- No difficulty in monetary policy formulation if the underground economy is growing at a constant rate
- At the increasing rate of the underground economy it could not be possible
- Creates problems for the authorities because their objectives will not be achieved
  - to increase GDP growth at a certain level though increase in money supply.

Conclusions

The estimates should not be taken as precise measures, it could be taken as broad indications of trends and of orders of magnitude because they are sensitive to the assumptions (Tanzi, 1983)

Conclusions

- Underground economy and tax evasion was increasing very rapidly in the early eighties
- It increased sharply in the nineties and was maximum in 1998 and then started declining.
- In 2003 compared to 2000 it increased
- For the last two years it was decreasing

Conclusions

- Growth of agriculture sector reduces the underground economy
- Growth of the construction and large scale manufacturing increases the underground economy.
- On the other hand underground economy might be contributing to the formal GDP but our results are very ambiguous and we can’t say anything very authentically.

Conclusions

- The increase in underground economy is mostly associated with the tax burdens and intensity of regulations.
- It is an advice for the policymakers to broaden the tax base and impose tax by analyzing the tax Laffer curve
- Government should ensure that laws are implemented properly as they were made and reduce the number of regulations which prohibits labours to work in the official economy.

How can it Controlled…?

- Increase the number of legal documentation
- Better governance
- Decrease the number of regulations which prohibits people to work in the formal economy
- Improvement in tax payer records
- Prohibit smuggling through tariff rationalization or free trade is even better
- Efficiency wages could be good to prohibit people both from shirking on the jobs and taking bribe.
- In the long run we can aware the people on the benefits of paying taxes which improves the tax morale of the people