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INFORMAL ECONOMY AND ITS IMPACT ON ECONOMIC DEVELOPMENT IN PAKISTAN

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ABSTRACT*-The objective of this research paper is to measure the volume of informal economy and tax evasion and its impact on Pakistan's economic development during the period 1975-2016. Time series data was used in the study and it was collected from Pakistan Economic Survey, State Bank of Pakistan, Asian Development Bank and World Bank. ADF Test, ARDL's Bound Test and Error Correction Model were used to check stationarity, long run and short run relationship between variables. It was found that taxation rate, inflation rate and fertility rate have negative effect while employment, secondary school enrolment have positive effect on per capita income and GDP in the long run and short run. High tax rates and high cost of doing business, high inflation and high fertility are the main causes of tax evasion and low per capita income.*

Key words: Informal economy, per capita income, DGP, CPI, employment.

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1.INTRODUCTION:

1.1. Background of study:

The growth rate of Pakistan has been of about 5% annually in gross domestic product during last ten years. Nevertheless, the prolongation of GDP expansion at this rate has not replicated in momentous development with affected employment condition and poverty in the country. Amongst other factors, burgeoning informal economy is one of the main cause of income inequality. Informal economy is a fragmentation of the economy which promotes actions falling external to the realm of state obliged guidelines, taxation and surveillances. Informal economy is generally considered as a parallel economy with untaxed and undocumented income.

A variety of causes are there which indicate that why policy architects require to study the structure of informal economy. First and foremost is to formulate conversant approaches to deal with the problems produced as a result of informal economy. These contain possibly the unconstructive outcomes for growth and competition, dejecting communal consistency and rules and regulation and fiscal failures because of untaxed financial bustles. A big fraction of the informal economy is supposed to be the indication of a malfunctioning of state that is unproductive, ineffective and unjust. For most administrations, these apprehensions overshadow any benefits that the informal sector proposes.

However, one cannot reject the reality that it is the informal economy that also offers new capital formation. Out of three billion working population in the world, about two-thirds (1.8 billion) workers are working in the informal economy. Most of the informal workers have the occupation of self-employee. These informal self-employed workers are generating a veiled enterprise society, and the informal economy is steadily being represented as an

incubator for commerce prospective and an intermediary support to the practiced economy. One can also witness in Pakistan a phenomenal growth in different sectors of informal economy that is now being debated for its positive as well as negative effects. In Pakistan, the structure of economic development clearly shows that entrepreneurship and innovations have principally suffered because of unnecessary and rigid rules and regulations that cause tax evaision, informal activities and low wages as well as low per capita income of workers in formal and informal sectors, besides low tax revenue. When there is low tax revenue the government cannot initiate development projects which will results in low economic development (Hannan & Awan (2014).

1.2 Objectives of study:

The objectives of study are stated as under: -

1. To study the causes of low per capita income and growing informal economy in Pakistan.
2. To study the relationship between taxation and per capita income.
3. To analyze the impact of high fertility rate, inflation and secondary school enrolment on economic growth.
4. To investigate the causes of low tax-to-GDP and employment opportunities and the impact on per capita income and economic growth in Pakistan.

1.3 Scope of study:

The scope of this study is wide because Tax to-GDP ratio in Pakistan is low, inflation and fertility rates are high, employment opportunities are low. The results of this study will enable the policy makers to frame such a policy framework that discourage informal economy, promote tax culture, and enhance per capita income of the people.

2.DATA AND METHODOLOGY:

2.1 Type of data:

We will use time series secondary data in this study. The data will be collected from following sources; -

- World Development Indicator (WDI) of World Bank.
- Asian Development Bank.
- Pakistan Economic Survey.
- State Bank of Pakistan

2.2. Sample of study:

The sampling period of study is 1975-2016.

2.3. Selected variables:

2.3.1 Independent variables:

- Per capita income.
- Tax-to-GDP ratio,
- Labour employment,
- Capital cost
- Informal Economy.

2.3.2 Dependent variable:

- Economic Development

The variables, their description and expected signs are shown in table 1:

Table1: Variables, description and expected signs

Variables	Explanation	Significance
PC	Per capita income	
INF	Informal economy	
TAXG	Tax to Gross domestic product ratio	_
LEMP	employed total labor force	+

SSE	Secondary School Enrolment	+
CW	working cost	_
FTR	Fertility Rate	+
ED	Economic Development	-

2.3. Specification of model:

The relationship between informal economy and economic development is highlighted by using the following model:

Model 1

$$PC = f(INF) \quad (1)$$

Where:

PC= per capita income

INF= Measure of Informality economy

$$INF = f(TAXG, LEMP, CW, CPI) \quad (2)$$

Where:

TAXG= Tax to Gross domestic product (GDP ratio

FR=fertility rate

SSE= secondary school enrollment

CPI= Consumer price index

LEMP= employed total labor force

CW= working cost

By applying equation 2 in 1 we get the following equation

$$PC = \omega_0 + \omega_1 TAXG + \omega_2 LEMP + \omega_3 CW + \varepsilon_T \quad (3)$$

Your model should be:

Economic development (PC) = tax-to-GDP ratio + Labouur force employment and cost of doing business. Our proposed econometric model is as follow:

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 . + €$$

Where y is dependent variable while X_1, X_2, X_3 and X_4 are independent variables while £ is error term. B_1, B_2,B_3 and B_4 are the slope of coefficient.

2.4 Analytical techniques:

We will use the following analytical techniques: -

1. ADF's Unit Root Test will be used to check stationarity in the variables.
2. Bound Test will be used to determine long run relationship between variables.
3. ARDL model to measure long run relation between variables.
4. Error Correction Model (ECM) will be applied to measure short run relationship between variables.

2.5 Hypothesis of study:

2.5.1 Null Hypothesis:

H_0: There is no relationship between informal economy and economic development.

2.5.2 Alternate Hypothesis:

H_1: There is relationship between informal economy and economic development

2.6 ARDL' s Bounds Test:

Bounds test study is used to describe the long run association between variables. This procedure is used to explore hypothesis testing by applying F-statistics. Autoregressive distributed lag (ARDL) model is used when

independent and dependent variables are not stationary. It is applied to estimation the small sample size and linear equation.

4. DATA ANALYSIS:

4.1 Descriptive statistics:

Table 1: Descriptive analysis Results:

Variables/Statistics	PC	TAXG	LEMP	CW
Mean	2683559	0.12	33002456	284536.4
Median	2423983	0.13	31452000	272485
Maximum	6028765	0.25	53841000	627813
Minimum	819118	0.10	19230000	3932
St. Dev.	1496255	0.03	9766784	15432.2
Skewness	0.54	2.67	0.52	0.32
Kurtosis	2.32	11.82	2.42	2.45
Jarque-Bera	3.32	175.78	3.01	0.68
Probability	0.18	0.00	0.24	0.72
Sum	1.06	5.08	1.30	11093013
Sum Sq. Dev	8.53	0.03	3.64	9.06

The most commonly used measure of normality is the mean. In this study, the mean value of per capita income is 2683559 (in Pak Rupee/million?) in Pakistan and the value of median of PC is 2423983 with maximum 6028765 while minimum value of PC is 819118. We use standard deviation in order to check the variations in the data. In this study, the standard deviation of PC is 1496255 that show high fluctuations around the mean value. The value of Skewness of PC is 0.54. It is positively skewed because its value is greater than zero. Value of kurtosis of PC is 2.32. Jarque-Bera test checks whether the variables have normally distributed or not. It is clear from the results of the

study that PC is not normally distributed as its P-value is greater than 0.05. We reject H_0 and accept H_1[7]. It means that there is relationship between informal economy and economic development in Pakistan.

The mean value of TAXG is 0.12 while the value of median is 0.13 with maximum value is 0.25while the minimum value is 0.10. Standard deviation of the values of Tax has 0.03. It means that M2 has high dispersion from its mean value. The value of Skewness of TAXG is 2.67 it is positively skewed because its value is greater than zero. Kurtosis value of TAXG is11.82. Tax is not normally distributed because its P value is 0.00. Likewise, the mean value of employed total labor force is 3300256 while median is 3145000 with maximum value of LEMP is 53841000 while the minimum value is 1923000. Standard deviation of LEMP is 9766784 signifies the high spreading from its mean value. The value skewness of LEMP is 0.51. The kurtosis value of LEMP is 2.42 it is leptokurtic because its value is less than three. LEMP is not normally distributed that is indicated by its value of probability. The mean value of working cost is 284536.4 and the value of median is 27485 with maximum value of CW is 627813 while minimum value is 393. Standard deviation of CW is 15432.2 which represent high deviation from its mean value. CW is positively skewed as is shown by its value i.e. 0.3. It is pltycurtic because its value i.e. 2.45. It is not normally distributed as explained by its probability value.

4.2 CORRELATION MATRIX:

Correlation matrix is used to measure the degree of linear correlation between two variables. It also suggests a strong relationship between independent and dependent variables in the models.

Table 2: Correlation analysis results:

PC	1						
TAXG	-0.16	1					
LEMP	0.50	-0.89	1				
CW	-0.94	-0.51	0.64	1			
FR	0.95	-0.39	0.65	0.89	1		
SSE	-0.71	0.23	-0.51	-0.54	-0.83	1	
CPI	-0.63	0.02	0.36	-0.42	-0.34	0.28	1

Results in Table 2 show CW and SSE is negatively correlated with TAXG as their values are: -0.94,-0.71 and -0.63 respectively while LEMP and FR are positively correlated with TAXG. The results indicate that TAXG has moderate correlation with LEMP and CPI. While tax to GDP ratio has strongly correlated with CW, FR and SSE.Further employed total labor force is positively correlated with SSE and CPI and negatively associated with CW and FR. Moreover, LEMP has weak correlation with SSE and CPI with r = 0.23 and 0.02 respectively. There is strong correlation between LEMP and FR.

Moreover, worker cost (CW) is negatively correlated with SSE. CW is positively correlated with FR and CPI. CW has moderate correlation with FR, SSE and CPI and their value is r =0.65, -0.51 and 0.3. Fertility rate (FR) is negatively correlated with SSE and CPI having the values -0.54 and -0.54 accordingly. FR has moderate correlation with SSE and CPI[9]. Secondary school enrolment (SSE) is negatively correlated with CPI whuke SSE has moderate correlation with CPI where r = -0.34.

4.3. ADF Unit Root Test:

In the present study, a time series data from 1975 to 2016 has been used. Before applying any method of co-integration, it is essential to examine co-integration of the variables. ADF test is used to check stationarity in the variables of the model. The results of ADF test is given in Table 3:

Table 3: Results of ADF Test:

	Stationary Properties of Variables			
	Augmented Dicky Fuller (ADF)		Philips and Peron (PP)	
Variables	T-statistics	Unit root	T-statistics	Unit root
PC	-6.54	I (1)	-6.47	I (1)
TAXG	-4.13	I (1)	-5.26	I (1)
LEMP	-4.11	I (1)	-5.34	I (1)
CW	-6.48	I (1)	-7.95	I (1)
FR	-3.48	I (0)	-4.37	I (0)
SSE	-3.23	I (0)	-3.49	I (0)
CPI	-4.78	I (0)	-3.99	I (0)

The results of ADF unit root test show that all variables in the model (PC, TAXG, LEMP, CW, FR, SSE, and CPI) are the not stationary. Four variables TAXG, PC, LEPM and CW are stationary at 1(1) but other variables like fertility rate, secondary school enrollment and consumer price index are stationary at level 1(0) In case of the stationarity of variable at different level, we can use ARDL Model for analysis of data.

4.4. Bounds Test Analysis:

Bounds test analysis is used to evaluation the long run association between the variables. It is restricted that the long run coefficients of variables will be equal to zero.

Table 4: Results of Bound Test:

Models	F-Statistic	1% critical value Bounds		2.5% critical value Bound		5% critical value Bound		10% critical value Bound	
		I (0)	I (1)	I (0)	I (1)	I (0)	I (1)	I (0)	I (1)
1	5.79	3.13	4.23	2.25	3.79	2.35	3.51	2.22	3.73

In table 4, the computed value of F-statistics is 5.79 while the critical value at 1% is 4.23 at 5% is 3.79 and at 10% are 3.73. Calculated value is high to the upper bound or critical value i.e. F-stat > I (1) 5.79 > 4.3.

We reject null hypothesis that signifies the lack of co-integration in the model and accept alternate hypothesis. It indicates that there is positive relationship between informal economy and economic development in Pakistan.

4.5 ARDL Long run approach:

The results of ARDL's long run relationship between informal economy and economic development is given in table 5:

Table 5: ARDL's long run relationship between variables:

Dependent variable = PC				
Variable	Coefficient	SD	t-Statistic	Prob.
TAXG	-0.87	0.72	-2.31	0.0363
LEMP	0.47	1.32	2.41	0.0236
CW	-0.39	0.75	-1.37	0.2545
SSE	0.43	0.36	1.60	0.1162
FR	-0.82	1.47	-2.23	0.0533

Here we can see the long run association between dependent variable per capita income (PC) and independent variables like TAXG, LEMP, CW, SSE, FR and CPI. The results in table 5 show that the coefficient of tax to

gross domestic product ratio (TAXG) is negative and its value is -0.87 as shown by its probability value 0.0363. The value of coefficient of TAXG shows that one unit increases in TAXG will decrease per capita income by -0.87 percent. Theoretically explain as when tax rates increases it will reduce the per capita income. It will also have negative effect on consumption, aggregate demand and total output. Corporate tax has negative effect on economic growth because such type of taxes is more harmful for economic because ia effects internal investment decisions that further affect level of output, employment and inflation rate (Lee and Gorden, 2005). This type of taxes will lower the per capita income of the countries (Dahlby, 2012).

The coefficient of employed total labor force (LEMP) is positive and its value is 0.47. Statistically it is significant as exposed by its probability worth which is 0.0236. The value of coefficient of LEMP show if one unit increases in employment it will likely to increase per capita income by 0.47 percent. There is positive relationship between LEMP and PC. Total employed labor force positively affected the PC of a country because educated, skilled workers earn more as compared to unskilled and uneducated workers. Due to the provision of training facilities they can earn more as compare to untrained workers. In such a way it cannot only increase per capita income but also increase GDP of a country (NIPS based on PDS survey, 2007).

The coefficient of working cost (CW) is negative and its value is -0.38. It is statistically significant as revealed by its probability value 0.2545. The value of CW reflects if one unit increases in working cost if will likely to cause decrease in per capita income by -0.39 per cent. There is a negative relationship between CW and PC. It will enhance cost of doing business and as such negatively affect per capita income and GDP.

The coefficient of Secondary School enrollment (SSE) is positive and its value is 0.43. Statistically it is significant as its probability value which is 0.1162. The value of coefficient of SSE indicate that if one unit increases in SSE it will cause increase in per capita income by 0.43 percent. SSE positively affect per capita income of a country in such a way that educated, skilled and trained workers earn more as compared to unskilled and uneducated persons. It also proves that increases in SSE will develop human capital which in turn will enhance productive capacity of person as well as country. Our results are consistent with the results of Mankiw, (1991.

The coefficient of fertility rate (FR) is negative and its value is -0.82. It is statistically significant as shown by its value of probability that is 0.0533. The value of coefficient of FR indicate that one unit rises in fertility rate will decrease per capita income by -0.82. Similarly, the coefficient of CPI is negative and its value is -0.56. Statistically it is significant as indicated by its probability value that is 0.0006. The value of coefficient of CPI indicates that one unit rises in CPI will decrease per capita income. High INF is always caused in price level that can lead to uncertainty about expected profitability of investment project. When expected profit of a country reduces, it will lead to lower the level of investment and per capita income of the state (Ayyoub, 2011) in the long run.

4.6 Error Correction Analysis:

Error correction analysis is used to examine the behavior of variables in short run. It is also used to explain the speed of adjustment; how much is required to converge toward the long run equilibrium. The results of ECM are shown in table 6:

Table 6: Results of ECM-short run relationship between variables.

Dependent variable = LPC				
Variable	Coefficient	SD	t-Statistic	Prob.
D (TAXG)	0.25	0.20	1.21	0.2339
D (LEMP)	0.34	0.39	0.85	0.4009
D (LEMP (-1)	-1.66	0.65	2.53	0.0181
D (WC)	2.58	0.73	3.53	0.0016
D (LSSE)	5.94	4.87	1.21	0.2344
D(LFR)	-2.79	1.36	2.05	0.0508
D (CPI)	-0.24	0.14	1.74	0.0933
D (CPI (-1)	0.46	0.15	3.05	0.0054
ECM	-0.73	0.21	4.68	0.0001

Error Correction value is negative i.e. -0.73. It is statistically significant that shows short run relationship between variables. The results in the table 6 shows that there is negative relationship between employment, inflation rate and inflation rate with per capita income in the short run while tax to GDP ratio, working cost and secondary school enrolment have positive relationship with per capita income in the short run. The results show that the deviation from short run adjustment equilibrium will be corrected with a speed of one year.

5.CONCLUSIONS:

We can draw conclusion from the above mentioned results that increase in tax rates, inflation and fertility rates have negative effects on

Economic development in the long run so the policy makers should control these variables. Inflation rate and fertility rates should particularly be focus as they have negative effect on per capita income and reduce purchasing power of the low income people. The tax rate also reduces disposable income of the people and it will also discourage investment in the country in the long run. Inflation and fertility rates also have negative effect on economic development and per capita income in the short run. Employment and secondary school enrolment have positive affect on per capita income and overall economic development. So the policy makers should frame policies that accelerate employment generation and secondary school enrolment in Pakistan. The increase in employment opportunities will enhance per capita income while increase in enrolment rate at secondary level will promote the development of human capital which is the basic need to accelerate economic development and process of innovation in any country. However, cost of doing business has positive effect on per capita income and economic development in the short run and negative effect on per capita income and economic development in the long run. So the policy makers should take initiatives to reduce the cost of doing business. It will not only enhance the profitability level of entrepreneurs but also enhance investment in fixed assets that is deemed necessary for creation of capital stock.

6. POLICY RECOMMENDATIONS:

Our study recommends that the government should reduce the rates of different taxes in order to discourage informal economy and motivate entrepreneurs to enter in documentary economy. It will not only increase tax base and number of tax payers but also enhance total revenue of the country and discourage inform economy. When tax rates will be decreased on

consumers' goods and inflation rates are low it will increase per capita income of low income people. It will ultimately enhance economic development in Pakistan.

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CONTRIBUTION OF AUTHORS AND CONFLICT OF INTEREST

This research work was carried out in collaboration between two authors.

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Both authors read the manuscript carefully and declared no conflict of interest with any person or institution.