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Unemployment and Economic Growth of Developing Asian Countries: A Panel Data Analysis

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Abstract
This study presents the new regression estimates of the relationship between unemployment and economic growth for 12 selected Asian countries over the period 1982-2011. Fixed effect and Pooled OLS techniques are used to analyze the panel data for measuring individual country effects, group effects and time effects while exploring the relationship between Unemployment rate and the Economic Growth. The results showed that higher unemployment rate has significant negative impact on GDP per capita growth (a proxy for economic growth). The results also investigated that economic growth seems to be significantly affected by traditional determinants such as Inflation (consumer price index), Population growth, Gross Capital Formation, Trade openness etc. Based on our results the author has concluded that reduction in unemployment rate would be a better option for more and sustained economic growth and also improving the welfare of the people.

Keywords: unemployment, economic growth, developing countries, panel data, fixed effect model.

1. Introduction

Labor markets in Asia are characterized by pervasive unemployment and under-employment. Asian countries vary in size and complexity. The nature, size and structure of population of Asia region have been changing qualitatively and quantitatively. From 7 most populous countries of the world, 6 of them (China, India, Brazil, Indonesia, Pakistan and Bangladesh) are located in Asia region. Economic growth, development and low level of unemployment are a dream that has become authenticity for some countries in the west, and also a few Asian countries like China, Japan, India and many other countries also. Man has constantly investigated to develop his material state through effectual use of resources, such as improving economic growth and low level of un-employment, price

stability, stable currency value etc. Unemployment and Economic growth have been found to influence each other, but so far this aspect is normally neglected in studying the comparative analysis of developing Asian countries. Unemployment is a continuing concern of every economy and economic growth is driven by country's structural changes. The structural changes can not contribute in economic growth if social costs of structural changes are high and one of them is persistent unemployment. Unemployment rate has negative consequences for the economic well-being of human being (Levine, 2012). According to ILO population report in 2012, the number of unemployed individuals in the world has increased by 4 million in 2012 with the total reaching to_197 million. This year it is expected that it will reach up to 5.1 million and further more 3 million people will be jobless in 2014. For over three decades there has been massive amount of exploration on both theoretical and empirical effects of unemployment on economic growth of developing countries but little more has been done to investigate the relative relationship between economic growth and unemployment in Asian countries like Bangladesh, Cyprus, India, Indonesia, Korea (south), Kuwait, Pakistan, Philippines, Sri-Lanka, Syria Arab, Thailand and Turkey.

After five years of world financial crisis, economic growth has decelerated with a rise in unemployment. Rises in unemployment rate of Asia is mainly due to increase in labor force. According the World Bank report in 2011, unemployment rates in 2011 was 5, 6 and 10 percent for Bangladesh, Pakistan and India respectively. According to Economic Survey of Pakistan in 2011-12, from now, in the past few years, industrial load shedding accounts for loss of 400,000 jobs in Pakistan. It is an economic reality that country's qualitative and quantitative nature of workforce directly impacts its GDP per capita growth rate. Workforce of any country is not only a productive agent of goods and services but these also play a role in country's purchasing power which in-turn is a fuel for economic growth. According to World Bank statistics in 2012, at the end of 1980 Asian countries unemployment was very low; however, in 2000s it started to increased and was high in 2011 and is still high today. The unemployment situation in Asia has become critical. There are misleading arguments that there is no negative relationship between unemployment and other economic indicators with economic growth because each indicator including rate of unemployment and Gross Domestic Product (GDP) are rising in the long run. Asia always presents highly contrasting economic images. Economic growth is a problem in Asia due to unemployment strain and other weak economic indicators lead by defective government policies and corruption. The degree to which persistent Unemployment influence the economic growth of Asia region needs to be investigated, especially in the period where there is decline in overall economic growth (real GDP growth per capita) of Asia region.

Economic growth is the main objective of every economy. It is a standard fact that countries with good economic conditions are operationally efficient. A survey of global financial and economic practices suggests that current economic conditions of Asia countries are not optimal. The author has critically reviewed some of important empirical researches to develop main objectives in the environment of Asian countries and further, to utilize it and to draw important conclusions and recommendations for policy making. Osinubi (2005) explore the possibility of relationship among unemployment, poverty and economic growth. The results have been found by using multi-equation model by collecting the time series data for 31 years from 1970 to 2000. He concluded that increase in employment will lead to increase the output and hence cause economic growth. On the other hand, a decrease in employment rate will decrease the output and then economic growth. Blanchard (2006) conducts the study about European unemployment on evolution of facts and ideas. From survey reports, he found that European Unemployment started to increase in 1970s; further increased in 1980s and it reached a plateau in 1990s and is still high. He considered the 30 years data from 15 European countries and found that total factor productivity growth started to decline.

Wang & Abrams (2007) constructed a simple model of government outlays, growth and unemployment, by taking data of 20 OECD countries during recent three decades started from 1970 to 1999. They examined that the negative relationship between unemployment and growth is due to another cause called government outlays. Adjemian et al. (2010) examine the relationship that how labor market institutions affect unemployment and then economic growth. The data set covers 183 European regions and period from 1980 to 2003. They show that high labor costs and trade union power lead to higher unemployment rate and lower economic growth rate. Ahmed et al. (2011) explore the relationship among unemployment and growth (GDP) of Nigerian Economy,

by taking the secondary data for just 9 years from 2000 to 2008. They used regression techniques and showed that unemployment effect is 65.5 percent on the Nigerian GDP growth and there exist a negative relationship between unemployment and economic growth. Stephen (2012) explored the relationship between urban unemployment crisis on economic growth of Nigerian economy, also combining with inflation rate and investment level. Estimates showed that there exists a negative relationship between urban unemployment and economic growth. Stephen suggested that integrated vocational training programs and economic activities toward self-reliance and self-employment should be encouraged so that the unemployment rate can be minimized.

2. Data Description and Methodology

The data set consists of the period 1982 to 2011, which is thirty (30) years. The observed data was time series as well as cross sectional data, which is converted to Panel data/Pooled data. For this purpose we have already normalized the data for each country by using them as percentage of respective GDP in case the variable was in monetary terms. In our data set all the values of variables are presented, some of the observations were missing that have been attained by interpolation technique because missing values lower the quality of panel data.

Table 2.1: Descriptive statistic

Variables	Mean	Std. Dev.	Minimum	Maximum	Observations
GDP_PC	3.0419	4.2349	-16.3	22.5	N = 360
UNEM	5.3052	3.4465	0.5	15.2	N = 360
INF	10.2711	14.5906	-3.0	88.1	N = 360
FDI	1.2536	1.7426	-2.8	10.5	N = 360
GCF	23.9313	6.1490	10.7	42.8	N = 360
TRD	63.3936	29.7340	12	150.3	N = 360
DCB	66.0208	47.2448	13.5	330.1	N = 360
PG	1.8522	0.9787	-2.8	5.4	N = 360
GS	25.4955	8.8311	6.7	64.7	N = 360
TNRR	8.0116	13.0090	0	63.7	N = 360
GFCE	12.5291	6.5161	4.1	76.2	N = 360
RIR	4.4180	6.2690	-24.6	46.2	N = 360

Total number of observations were 360 because there are twelve countries (n=12) and thirty years' time period (T=30). The mean value for unemployment is 5.3052 and the minimum value of the series is 0.5 and belongs to Kuwait for the year 1984-87 and 1984-1992. The maximum value of Unemployment15.2 belongs to Syria for the year 1997.

Graphical presentation for unemployment rate and economic growth are presented in Appendix Figure A2.1 and Appendix Figure A2.2. And Appendix Table A2.3 describes the matrix of correlation coefficients which shows that our studied data is free from the threat of high multicollinearity. Here GDP per capita growth is a dependent variable. GDP is a good measure of average real income in a country (Akbar *et al*, 2011).

The methodology adopted for this study is empirical and experimental. This research study has aim to examine whether unemployment has an impact on the economic growth of the selected twelve Asian countries. Now suppose variable factors of production only determine the output level in an economy, and the model presented by Tiwari & Mutascu in 2011 as follows:-

$$Y = f(L, K) \quad \text{--- (i)}$$

Where, Y is output level (i.e. Per Capita GDP), L denotes the labor amount (measured by Labor force of the country) and K denotes the capital (measured by Gross Capital Formation), it can be said that an increase in the amount of employed labor and capital will increase the output level of an economy. Then following above for our research study extended model after including the other explanatory variables, the model would be as follows:

$$GDP\_PC_{it} = f\,(UNEM_{it},\ GCF_{it},\ PG_{it}\ ,TRD_{it},\ RIR_{it},\ DCB_{it},\ INF_{it},\ GFCE_{it},\ TNRR_{it},\ GS_{it},\ FDI_{it})$$
$$...(ii)$$

where

GDP_PC_{it}	=	GDP per capita growth (annual %)
$UNEM_{it}$	=	Unemployment, total (% of total labor force)
GCF_{it}	=	Gross capital formation (% of GDP)
PG_{it}	=	Population growth (annual %)
TRD_{it}	=	Trade Openness (% of GDP)
RIR_{it}	=	Real interest rate (%)
DCB_{it}	=	Domestic credit provided by banking sector (% of GDP)
INF_{it}	=	Inflation, consumer prices (annual %)
$GFCE_{it}$	=	General government final consumption expenditure (% of GDP)
$TNRR_{it}$	=	Total natural resources rents (% of GDP)
GS_{it}	=	Gross savings (% of GDP)
FDI_{it}	=	Foreign direct investment, net inflows (% of GDP)

Here, i show country effects in explanatory variables, and *t* shows time effects in explanatory variables and the assumptions of U_{it} is that $U_{it} \approx IID(0, \sigma_u^2)$, i.e. errors are independently identically distributed with zero mean and stable variances. Where i denote a particular country and t denotes a particular time.

The adopted methodology is distributed in four sections. First: - Group effects where all coefficients are constant across time and countries. Second: - Slope coefficient constant but intercept varies across countries. Third: - Slope coefficients constant but the intercept varies over countries as well as time. Fourth: - All coefficients (intercept and slope) vary across countries.

3. Results

After conducting a panel data analysis represented by econometric models presented in the methodology section, we see some interesting results. For choosing the best model between FEM and REM, Hausman test is used, which has favored FEM (Fixed Effect Model), detailed test results are presented in Appendix table A3.1. The results are distributed further in four sections.

3.1. Group effects where all coefficients are constant across time and countries

The results for all coefficients constant across individual and/or time are presented in table 3.1. It is concluded that we cannot reject the null hypothesis that unemployment does not explain the GDP per capita growth (GDP_PC) and selected determinants considered enough in order to explain the economic growth. In Model-1a, in case of zero Unemployment Rate (UNEM), zero Gross Capital Formation (GCF), zero Population Growth (PG) and zero Trade Openness (TRD) for each country (from twelve selected countries) is expected to have 2.6970 GDP per capita growth ($p<.0000$).

Table 3.1: Results with OLS & Fixed Effect Model for period 1982-2011. DV is GDP per capita growth (GDP_PC)

	Model-1a (OLS)	Model-1b (OLS)	Model-1c (OLS)	Model-2a (Fixed Effect)	Model-2b (Fixed Effect)	Model-2c (Fixed Effect)
UNEM	-0.1219**	-0.1279**	-0.0764*	-0.1157**	-0.1059*	-0.0478*
GCF	0.1774***	0.1578***	0.1802***	0.1613***	0.1339***	0.1528***
PG	-1.3341***	-1.4711***	-1.6065***	-1.3246***	-1.4578***	-1.6287***
TRD	-0.0124*	-0.0067	-0.0198**	-0.0109	-0.0061	-0.0198***
RIR		0.0130	0.0172		0.0571*	0.0611
DCB		-0.1208**	-0.0179**		-0.0091*	-0.0115***

INF		-0.0379**	-0.0373**		-0.0306**	-0.0296**
GFCE			0.0887**			0.0847**
TNRR			0.0290			0.0270
GS			0.0021			0.0121
FDI			0.1470			0.1649
Intercept	2.6970*	4.2214**	3.0675*	2.9414**	4.1540**	2.9115*
F Test	27.24***	17.69***	12.51***	25.2***	16.69***	11.88***
Adj. R²	.5132	.6218	.7113	.5415	.6372	.7215
Obs.	360	360	360	360	360	360

***, **, and * denote significance at 1%, 5% and 10% respectively.

And for 1 percent increase in unemployment rate (UNEM), the total GDP per capita growth (GDP_PC) for selected countries is expected to decrease by 0.1219 percent, holding all other variables constant. In Model-1a unemployment rate (UNEM), population growth (PG) and trade openness (TRD) are negatively correlated to GDP per capita growth (GDP_PC) only Gross capital formation (GCF) is positively correlated. The signs of unemployment (UNEM) co-efficient are consistently negative across specifications and in all models it is statistically significant. Further the coefficient values of unemployment (UNEM) across specifications are nearly similar, ranging between 0,0478 and -.1279. A good-nees of fit measure Adjusted R² is increasing with the addition of more regressors which means that the included variables are going to response more for better explanation of the model. Adjusted R² of .7113 in Pooled OLS Model-1c means that this model accounts for 71 percent of the total variance in the GDP per capita growth (GDP_PC) rate of twelve selected countries and Adjusted R² of .7215 in Fixed Effect Model with "with-in" effects mean that model accounts for 72 percent of total variances in the GDP per capita growth (GDP_PC) rate of selected Asian countries.

3.2. Slope coefficient constant but intercept varies across countries

Appendix Table A3.2 presents the results by using Least Squre Dummy Variabel (LSDV) a technique of Fixed Effect Model. Here we examine the fixed group effects by introducing group (country) dummy variables. The dummy variable c_1 is set for Bangladesh and zero for other countries, similarly for other countries. There is no dummy for turkey as Turkey is a comparison country, in other words intercept for baseline in models are representing the intercept of Turkey. Akbar *et al,* in 2011 used Pakistan as a comparison country. LSDV fits the data better as Adjusted R² increases from .5817 to .6671 and from .6671 to .7329. Each of c_1-c_{11} dummy intercepts has deviation from its group specific intercept that is the baseline intercept (intercept for Turkey). These differences in country intercepts are due to the unique features of managerial talent or managerial style etc. after considering the Model-3a, we can write it in the equation form as follows:-

Bangladesh:
$$GDP\_PC_{it} = -2.5255 - 0.0139UNEM_{it} + 0.2634GCF_{it} - 1.6982PG_{it} - 0.0188TRD_{it}$$
Cyprus: $GDP\_PC_{it} = -0.4755 - 0.0139UNEM_{it} + 0.2634GCF_{it} - 1.6982PG_{it} - 0.0188TRD_{it}$
India:
$$GDP\_PC_{it} = -0.0052 - 0.0139UNEM_{it} + 0.2634GCF_{it} - 1.6982PG_{it} - 0.0188TRD_{it}$$
Indonesia:
$$GDP\_PC_{it} = -2.7986 - 0.0139UNEM_{it} + 0.2634GCF_{it} - 1.6982PG_{it} - 0.0188TRD_{it}$$
Korea:
$$GDP\_PC_{it} = -2.0614 - 0.0139UNEM_{it} + 0.2634GCF_{it} - 1.6982PG_{it} - 0.0188TRD_{it}$$
Kuwait: $GDP\_PC_{it} = 3.4611 - 0.0139UNEM_{it} + 0.2634GCF_{it} - 1.6982PG_{it} - 0.0188TRD_{it}$
Pakistan:
$$GDP\_PC_{it} = 1.3720 - 0.0139UNEM_{it} + 0.2634GCF_{it} - 1.6982PG_{it} - 0.0188TRD_{it}$$
Philippines:
$$GDP\_PC_{it} = -0.2636 - 0.0139UNEM_{it} + 0.2634GCF_{it} - 1.6982PG_{it} - 0.0188TRD_{it}$$
Sri-Lanka:
$$GDP\_PC_{it} = -0.4139 - 0.0139UNEM_{it} + 0.2634GCF_{it} - 1.6982PG_{it} - 0.0188TRD_{it}$$

Syria:
$$GDP\_PC_{it} = 0.2709 - 0.0139UNEM_{it} + 0.2634GCF_{it} - 1.6982PG_{it} - 0.0188TRD_{it}$$
Thailand:
$$GDP\_PC_{it} = -0.8235 - 0.0139UNEM_{it} + 0.2634GCF_{it} - 1.6982PG_{it} - 0.0188TRD_{it}$$
Turkey: $GDP\_PC_{it} = 0.9216 - 0.0139UNEM_{it} + 0.2634GCF_{it} - 1.6982PG_{it} - 0.0188TRD_{it}$

3.3. Slope coefficients constant but the intercept varies over countries as well as time

Results for panel data models have been presented in Appendix table A3.3. The results presented in Model-4c appear to be more robust and have higher value of adjusted R^2 and making the prediction that 73% variances in economic growth are explained by the studied explanatory variables, country dummies and time dummies regressors. In all three models, individual time dummies were individually statistically significant as they include year's 1983, 1985, 1986, 1987, 1989, 1990, 1992, 1995, 2000, 2003, 2004, 2006, 2007 and 2010 which suggest that GDP per capita growth have changed much over a time. Here, also some of the individual country effects were also statistically significant like as Indonesia, Korea (south), Kuwait, Philippines and Sri-Lanka. If all of these were statistically significant, then no reason for polling (Gujrati, 2003). The overall conclusion from the Appendix table A3.3 was that there was propound individual country effects and also individual time effects. In other words, the GDP per capita growth functions for twelve selected countries have changed due to explanatory variables effects, individual country effects and as well as time effects.

3.4. All coefficients (intercept and slope) vary across countries

Appendix Table A3.4 presents the estimated GDP per capita growth where all the studied co-efficients vary across countries. In our models the differential slope coefficients were different for different countries. For unemployment rate (UNEM), the relationship for GDP per capita growth (GDP_PC) and unemployment (UNEM) is negative for all countries which is showing that with increase in unemployment (UNEM) the GDP per capita growth (GDP_PC) will be lowers. Some of the differential slope coefficients are also statistically significant (Gross capital formation in Kuwait, Gross capital formation in Turkey, Population growth in Kuwait, Real interest rate in Syria, Domestic credit provided by baking sector in Cyprus, Inflation in Korea (south), Inflation in Syria, Gross savings in Turkey, Foreign Direct investment in Kuwait and Foreign direct investment in Turkey, we can say that the variable introduced in the model influences the GDP per capita growth rate.

The relationship between Inflation (INF) and GDP per capita growth (GDP_PC) also presents the mix nature. Some countries have positive slope differential and some countries have negative slope differential. In last, the relationship for foreign direct investment (FDI) and GDP per capita growth (GDP_PC) have also mix nature for slope differential intercepts.

Limitations
In terms of policy implications, the issues that are central in the exploration of the unemployment should also be investigated, which will also be closely linked with the question of reduced unemployment. Although analysis presented and empirical models constructed for research are as complete and comprehensive as possible but still there are some limitations causing further suggestions for future research. First:
– Analysis covers only twelve (12) Asian countries thus the results only presents the realities of twelve selected countries only. Second;
– Main explanatory variable is unemployment rate that have different causes for different countries which needs to be explored in depth.

4. Conclusion

We have used a panel data of twelve selected developing countries from Asia to capture in time and country effects of unemployment rate on economic growth. Considering our data set of twelve countries between 1982 and 2011 periods, we have consistently found that high unemployment causes the decrease in economic growth in all models. Research study first presents

the importance of unemployment phenomenon toward economic growth. As we saw the unemployment is very heatedly discussed in national as well as international level. Growth of Asian developing countries is influenced by unemployment rate, especially among some Asian countries namely India, Indonesia, Sri-Lanka, and Thailand which have the highest unemployment rates when compared with other studied countries from Asia region. The above discussion clearly makes Kuwait, India and Turkey at the top but Pakistan, Sri-Lanka and Thailand at last in order while comparing for economic growth. All in all, the research study supports the view that there is some scope for developing countries in order to correcting and maintaining the economic development indicators, so the economic growth would be sustainable. Research conclusion underlines the importance of unemployment rate to the economic growth, both on global and as well as on local level. Hence, the conclusion indicates that increased unemployment rate decrease the economic growth rate in the long-run.

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УДК 33

Безработица и экономический рост в развивающихся азиатских странах: панель анализа данных

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Аннотация. В этом исследовании представлены новые оценки регрессии взаимосвязи безработицы и экономического роста для 12 выбранных стран Азии за период 1982-2011 годы. Фиксированный эффект и объединенные МНК методы используются для анализа панельных данных, оценивающих отдельные страновые эффекты, групповые эффекты и временные эффекты, исследуя взаимосвязь между уровнем безработицы и экономическим ростом. Результаты показали, что более высокий уровень безработицы оказывает значительное негативное влияние на ВВП на душу населения (аппроксимация процессов экономического роста). Результаты также указывают, что на экономический рост, похоже, оказывают существенное воздействие такие традиционные детерминанты как инфляция (индекс потребительских цен), рост численности населения, валовое накопление капитала, степень открытости торговли и т.д. На основе полученных результатов автор пришел к выводу, что снижение уровня безработицы будет благоприятным фактором для поддержания устойчивого экономического роста и повышения благосостояния людей.

Ключевые слова: безработица, экономический рост, развивающиеся страны, панельные данные, модель с фиксированными эффектами.

Appendix

Appendix Figure A2.1
Graphical presentation of Unemployment rate of 12 selected countries
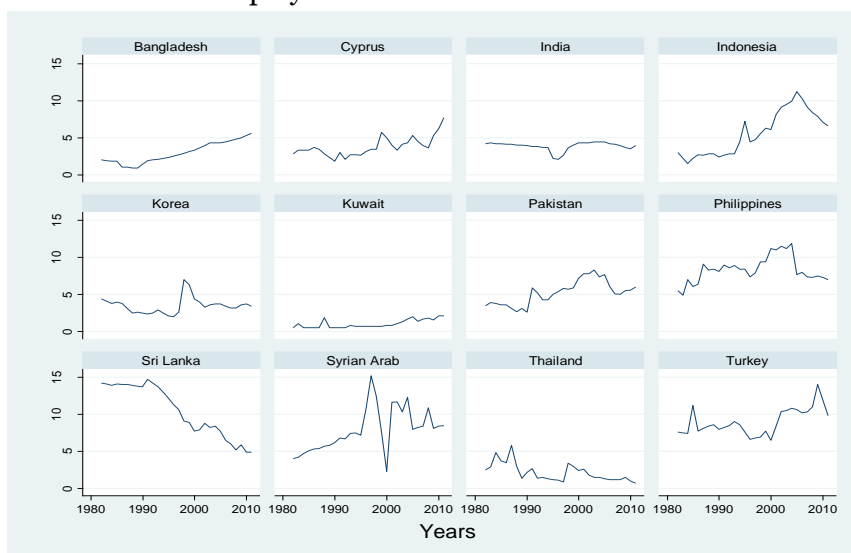
Figure A2.2
Graphical presentation of GDP per capita growth of 12 selected countries
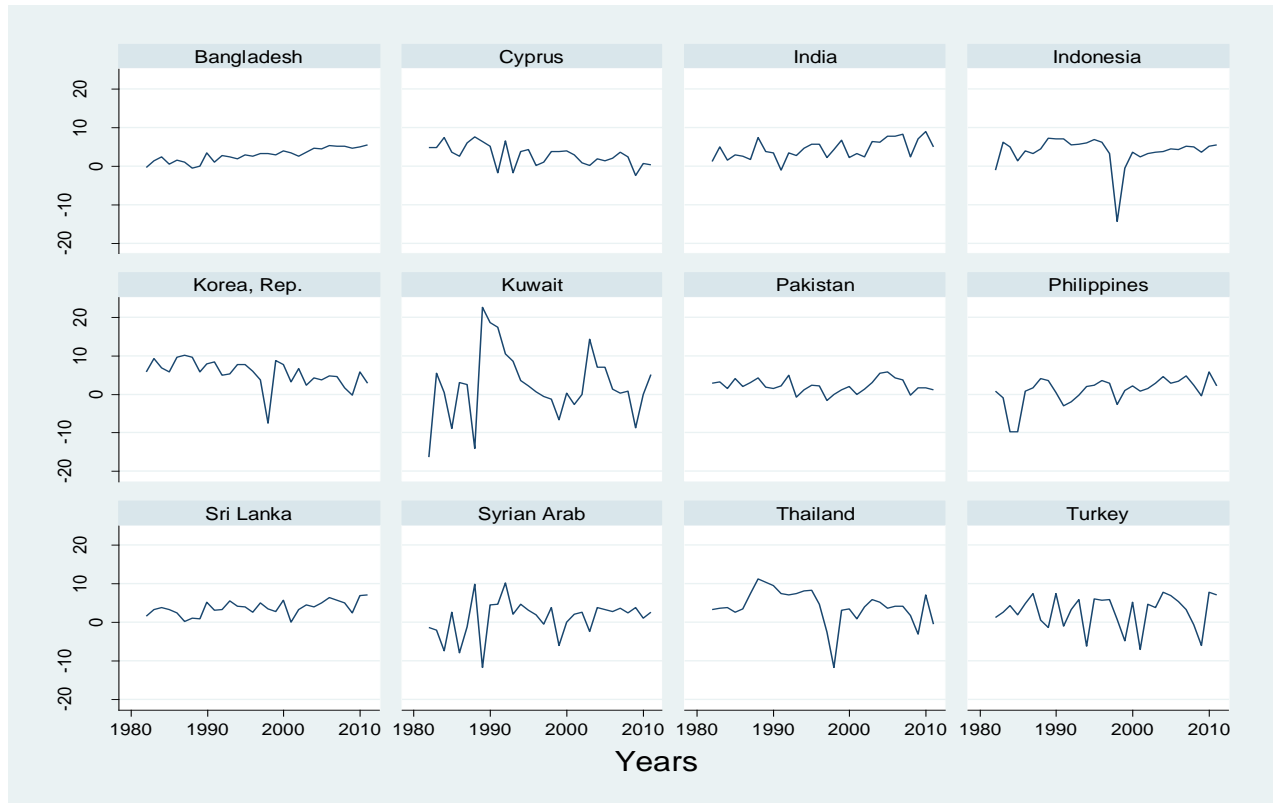
Table A2.3
Matrix of Correlation Coefficients

	GDP_PC	UNEM	GCF	PG	TRD	RIR	DCB	INF	GFCE	TNRR	GS	FDI
GDP_PC	1											
UNEM	-0.0927*	1										
GCF	0.4039*	-0.1384*	1									
PG	-0.4010*	-0.1043*	-0.4689*	1								
TRD	-0.0238	-0.1151*	0.1396*	-0.2051*	1							
RIR	0.1055*	-0.1513*	0.1521*	0.0139	-0.0457	1						
DCB	-0.0232	-0.2916*	0.0574	-0.1838*	0.5810*	-0.0171	1					
INF	-0.1354*	0.2617*	-0.0943	-0.0070	-0.2761*	-0.2756*	-0.2526*	1				
GFCE	0.0776	-0.2748*	-0.0511	-0.0254	0.4265*	-0.0112	0.4206*	-0.1151*	1			
TNRR	0.0932	-0.2425	-0.2758	0.4662	0.2134	-0.0689	-0.0694	-0.1596*	0.4222*	1		
GS	0.1114*	-0.4381*	0.2660*	0.1384*	0.2487*	0.0908	-0.0449	-0.2459*	0.1388*	0.5466*	1	
FDI	0.0060	0.0230	0.0475	-0.2044*	0.4319*	-0.0230	0.6283*	-0.1728*	0.0629	-0.2126*	-0.2139*	1

1. Source: World Bank Development Indicators, Economic surveys of selected respective countries.

2. * denote significance at 5%.

Table A3.1
Hausman specification test answers for best model by comparing the Fixed Effect Model and Random Effect Model. The Hausman test results for all models are presented in Appendix Table

A3.1:
Hausman test results for all models

Sr. No	Model	Hausman test value	Significant or not Sig.
1	Model-2a	0.021	Significant
2	Model-2b	0.029	Significant
3	Model-2c	0.000	Significant
4	Model-3a	0.001	Significant
5	Model-3b	0.000	Significant
6	Model-3c	0.009	Significant
7	Model-4a	0.004	Significant
8	Model-4b	0.031	Significant
9	Model-4c	0.011	Significant
10	Model-5a	0.010	Significant
11	Model-5b	0.000	Significant
12	Model-5c	0.002	Significant

If Hausman test value <0.05 then statistically significant.

Table A3.2
Results with Fixed Effect Model for period 1982-2011. DV is GDP per capita growth (GDP_PC)

	Model-3a (Fixed Effect)	Model-3b (Fixed Effect)	Model-3c (Fixed Effect)
UNEM	-0.0139**	-0.0919**	-0.0755*
GCF	0.2634***	0.2448***	0.2637***
PG	-1.6982***	-1.8264***	-1.7092***
TRD	-0.0188	-0.0157	-0.0160
RIR		0.0131	0.0198
DCB		-0.0179**	-0.0171**
INF		-0.0733***	-0.0695***
GFCE			0.0583
TNRR			0.0939
GS			-0.0242
FDI			-0.0263
c1(Bangladesh)	-2.5255	-2.8014*	-2.3472
c2(Cyprus)	-0.4755	-0.8217	-0.8895
c3(India)	-0.0052	-2.7381*	-2.9286*
c4(Indonesia)	-2.7986*	-3.5749**	-4.2766**
c5(Korea)	-2.0614*	-3.9480**	-3.5129**
c6(Kuwait)	3.4611**	2.4294	-3.8314
c7(Pakistan)	1.3720	-1.3164	-1.3736
c8(Philippines)	-0.2636**	-2.9141**	-2.8032**
c9(Sri-Lanka)	-0.4139**	-2.8794**	-2.7710**
c10(Syria)	0.2709	-1.9280	-3.9371**
c11(Thailand)	-0.8235	-3.0770**	-2.8632
Intercept(baseline) for Turkey	0.9216	2.0549**	2.8666*
F Test	8.62***	8.68***	7.15***
Adj. R²	.5817	.6671	.7329
Obs.	360	360	360

***, **, and * denote significance at 1%, 5% and 10% respectively.

Table A3.3
Results with Fixed Effect Model for period 1982-2011. DV is GDP per capita growth (GDP_PC)

	Model-4a (Fixed Effect)	Model-4b (Fixed Effect)	Model-4c (Fixed Effect)
UNEM	-0.0121**	-0.0574**	-0.0606*
GCF	0.2449***	0.2179***	0.2452***
PG	-1.7085***	-1.8327***	-1.8128***
TRD	-0.0104	-0.0088	-0.0091
RIR		0.0621*	0.0677*
DCB		-0.0123*	-0.0150
INF		-0.0607**	-0.0582**
GFCE			0.0288
TNRR			0.0922
GS			0.0230
FDI			0.0208
c1 (Bangladesh)	0.7721	-2.3213	-2.1547
c 2 (Cyprus)	0.1480	-1.2652	-1.6489
c 3 (India)	0.3765	-2.1168	-2.4829
c4 (Indonesia)	-0.6980*	-3.1904**	-4.1328**
c5 (Korea)	-0.9773*	-3.4135**	-3.2971*
c6 (Kuwait)	3.1942**	0.4200**	-3.4118**
c7 (Pakistan)	1.4910	-0.7393	-0.8302
c8 (Philippines)	-0.5230*	-2.8496**	-2.8049**
c9 (Sri-Lanka)	-0.6208*	-2.6955**	-2.6957**
c10 (Syria)	0.1767	-1.5119	-3.3900
c11 (Thailand)	-0.9464	-3.1337*	-3.3883
t2 (1983)	3.0664**	3.0262**	2.9891**
t3 (1984)	1.5313	1.9425	1.9555
t4 (1985)	0.9723	0.9397	1.0027
t5 (1986)	2.5660*	2.2876	2.5937
t6 (1987)	3.7237**	4.0869**	4.3635**
t7 (1988)	3.7575**	4.2176**	4.5024**
t8 (1989)	3.5211**	3.6466**	3.7726**
t9 (1990)	4.8532***	5.2528***	5.2276***
t10 (1991)	1.4859	1.9191	1.9554
t11 (1992)	3.0041**	3.1187**	3.1027**
t12 (1993)	2.0082	2.1318	2.1521
t13 (1994)	1.7217	2.0490	2.0970
t14 (1995)	2.9422**	3.3744**	3.4093**
t15 (1996)	1.7791	2.1739	2.1770
t16 (1997)	0.8383	1.1100	1.1675
t17 (1998)	-1.5393	-0.8454	-0.5613
t18 (1999)	1.2500	1.3962	1.6320
t19 (2000)	3.1279**	3.2325**	3.2710**
t20 (2001)	0.1276	0.2056	0.2888
t21 (2002)	2.1627	2.1802	2.3257
t22 (2003)	3.1952**	3.1735**	3.2556**
t23 (2004)	3.8936**	4.0151**	4.0469**
t24 (2005)	3.3942**	3.6274**	3.4600**
t25 (2006)	2.9080*	3.0924**	2.9498*
t26 (2007)	2.6135*	2.7415*	2.6087*
t27 (2008)	0.3916	1.0841	0.7452

t28 (2009)	-1.2535	-1.3039	-1.2148
t29 (2010)	2.9952**	3.3571*	3.4178**
t30 (2011)	1.5965	2.0812	2.0644
Intercept(combined) (Turkey + 1982)	1.4220	2.8408	2.0526
F Test	4.70***	5.04***	4.65***
Adj. R²	.5915	.6711	.7388
Obs.	360	360	360

***, **, and * denote significance at 1%, 5% and 10% respectively.

Table A3.4
Results with Fixed Effect Model for period 1982-2011. DV is GDP per capita growth (GDP_PC)

	Model-5a (Fixed Effect)	Model-5b (Fixed Effect)	Model-5c (Fixed Effect)
UNEM	-0.0731**	-0.1736**	-0.2109***
GCF	0.2947***	0.3170***	0.3508**
PG	-0.3653*	-0.0032*	-0.2158***
TRD	0.0147*	0.0391**	0.0605**
RIR		-0.0305	-0.0269
DCB		-0.0722***	-0.0783**
INF		-0.0723**	-0.0840
GFCE			0.0938
TNRR			0.1157
GS			-0.0687
FDI			-0.3975
c1 (Bangladesh)	-54.9464	-54.9464	-54.9464
c2 (Cyprus)	28.3735	28.3735	28.3735
c3 (India)	-8.4057	-8.4057	-8.4057
c4 (Indonesia)	-24.1146	-24.1146	-24.1146
c5 (Korea)	-12.7651	-12.7651	-12.7651
c6 (Kuwait)	-21.0859	-17.7851	-14.5294
c7 (Pakistan)	-24.1161	-21.1258	-19.1920
c8 (Philippines)	-22.9338	-19.2020	-17.5053
c9 (Sri-Lanka)	-23.7749	-20.2757	-15.4650
c10(Syria)	-23.7749	-17.6983	-15.3115
c11 (Thailand)	-21.9153	-15.6808	-13.2670
c1UNEM (Bangladesh)	-0.8446	-1.5191	-1.1287
c2 UNEM (Cyprus)	-0.6047	-0.8515	-0.8888
c3 UNEM (India)	-0.2002	-0.4470	-0.4843
c4 UNEM (Indonesia)	-0.0094	-0.2374	-0.2747
c5 UNEM (Korea)	-1.4889	-1.2421	-1.2048
c6 UNEM (Kuwait)	-0.8561	-1.1030	-1.1403
c7 UNEM (Pakistan)	-0.0072	-0.0525	-0.1116
c8 UNEM (Philippines)	-0.2078	-0.2676	-0.3267
c9 UNEM (Sri-Lanka)	-0.7810	-0.8407	-0.8999
c10 UNEM (Syria)	-0.0352	-0.0244	-0.0836
c11 UNEM (Thailand)	-0.4508	-0.3916	-0.3319
c12 UNEM (Turkey)	-0.3013	-0.2416	-0.1824
c1GCF (Bangladesh)	0.5269	0.5492	0.5830
c2 GCF (Cyprus)	0.0646	0.0423	0.0085
c3 GCF (India)	1.3662	1.3439	1.3101
c4 GCF (Indonesia)	0.0658	0.0434	0.0096
c5 GCF (Korea)	0.0735	0.0959	0.1297
c6 GCF (Kuwait)	0.7392**	0.7615**	0.7953**
c7 GCF (Pakistan)	0.6310	0.5555	0.5167
c8 GCF (Philippines)	0.0450	0.0304	0.0693
c9 GCF (Sri-Lanka)	0.2139	0.2894	0.3282

c10 GCF (Syria)	0.1227	0.0472	0.0083
c11 GCF (Thailand)	0.0736	0.1491	0.1879
c12 GCF (Turkey)	1.2357***	1.1311***	1.3501***
c1PG (Bangladesh)	-3.2355	-3.5976	-3.3850
c2 PG (Cyprus)	0.6811	0.3190	0.5316
c3 PG (India)	-4.6530	-5.0151	-4.8025
c4 PG (Indonesia)	-2.8331	-3.1952	-2.9826
c5 PG (Korea)	3.2162	2.8541	3.0667
c6 PG (Kuwait)	-3.2426**	-3.6047***	-3.3921***
c7 PG (Pakistan)	-1.1203	-1.1932	-1.2964
c8 PG (Philippines)	-2.4704	-2.5433	-2.6466
c9 PG (Sri-Lanka)	-2.0235	-2.0964	-2.1997
c10 PG (Syria)	3.5426	3.6155	3.7187
c11 PG (Thailand)	8.6917	8.7646	8.8679
c12 PG (Turkey)	3.4735	3.5464	3.6497
c1TRD (Bangladesh)	-0.0035	-0.0280	-0.0493
c2 TRD (Cyprus)	0.2562	0.2317	0.2104
c3 TRD (India)	0.0412	0.0168	-0.0045
c4 TRD (Indonesia)	-0.1193	-0.1437	-0.1651
c5 TRD (Korea)	-0.0820	-0.1065	-0.1278
c6 TRD (Kuwait)	0.1677	0.1432	0.1218
c7 TRD (Pakistan)	0.0097	0.0279	-0.0197
c8 TRD (Philippines)	0.1728	0.1350	0.1432
c9 TRD (Sri-Lanka)	0.0980	0.0603	0.0684
c10 TRD (Syria)	0.1987	0.1609	0.1691
c11 TRD (Thailand)	0.1835	0.1457	0.1539
c12 TRD (Turkey)	0.0776	0.0398	0.0480
c1RIR (Bangladesh)	0.1289	0.1595	0.1559
c2 RIR (Cyprus)	-0.3636	-0.3330	-0.3366
c3 RIR (India)	0.0764	0.1070	0.1034
c4 RIR (Indonesia)	0.3510	0.3816	0.3780
c5 RIR (Korea)	-0.5785	-0.5480	-0.5515
c6 RIR (Kuwait)	0.0490	0.0795	0.0760
c7 RIR (Pakistan)	0.0415	0.0581	0.0444
c8 RIR (Philippines)	0.0210	0.0376	0.0239
c9 RIR (Sri-Lanka)	-0.1271	-0.1104	-0.1241
c10 RIR (Syria)	0.3616**	0.3782**	0.3645**
c11 RIR (Thailand)	-0.0909	-0.0742	-0.0879
c12 RIR (Turkey)	-0.1588	-0.1421	-0.1558
c1DCB (Bangladesh)	0.0041	0.0763	0.0493
c2 DCB (Cyprus)	0.0084*	0.0806**	0.0867**
c3 DCB (India)	-0.0426	0.0295	0.0356
c4 DCB (Indonesia)	-0.0065	0.0656	0.0717
c5 DCB (Korea)	0.1825	0.2547	0.2608
c6 DCB (Kuwait)	0.0132	0.0854	0.0915
c7 DCB (Pakistan)	0.2041	0.2149	0.2129
c8 DCB (Philippines)	-0.0472	-0.0365	-0.0384
c9 DCB (Sri-Lanka)	-0.1266	-0.1158	-0.1178
c10 DCB (Syria)	-0.0150	-0.0042	-0.0062
c11 DCB (Thailand)	-0.0990	-0.0882	-0.0901
c12 DCB (Turkey)	-0.0085	0.0022	0.0002
c1INF (Bangladesh)	0.1370	0.2093	0.2174
c2 INF (Cyprus)	-0.9583	-0.8866	-0.8779
c3 INF (India)	-0.0179	0.0543	0.0624
c4 INF (Indonesia)	-0.0758	-0.0035	0.0045
c5 INF (Korea)	-1.0790**	-1.0066**	-0.9986**
c6 INF (Kuwait)	0.0101	0.0824	0.0905
c7 INF (Pakistan)	-0.1435	0.0815	0.0666
c8 INF (Philippines)	-0.2306	-0.0054	-0.0203
c9 INF (Sri-Lanka)	-0.0043	0.2208	0.2059
c10 INF (Syria)	0.2134**	0.4385***	0.4236***

c11 INF (Thailand)	-0.0828	-0.6577	-0.6726
c12 INF (Turkey)	-0.0788	0.1462	0.1313
c1GFCE (Bangladesh)	-0.6576	-0.6576	-0.5637
c2 GFCE (Cyprus)	0.0460	0.0460	0.1399
c3 GFCE (India)	-2.1654	-2.1654	-2.0716
c4 GFCE (Indonesia)	-1.9960	-1.9960	-1.9022
c5 GFCE (Korea)	-1.4322	-1.4322	-1.3384
c6 GFCE (Kuwait)	-0.1443	-0.1443	-0.0505
c7 GFCE (Pakistan)	0.0719	0.0719	0.0244
c8 GFCE (Philippines)	0.2346	0.2346	0.1871
c9 GFCE (Sri-Lanka)	0.5419	0.5419	0.4944
c10 GFCE (Syria)	-0.4025	-0.4025	-0.4500
c11 GFCE (Thailand)	-0.5555	-0.5555	-0.6030
c12 GFCE (Turkey)	-0.6995	-0.6995	-0.7470
c1TNRR (Bangladesh)	-0.1338	-0.1338	-0.1813
c2 TNRR (Cyprus)	-18.5468	-18.5468	-18.4311
c3 TNRR (India)	-1.7412	-1.7412	-1.6254
c4 TNRR (Indonesia)	0.6234	0.6234	0.7391
c5 TNRR (Korea)	15.2901	15.2901	15.4058
c6 TNRR (Kuwait)	-0.0901	-0.0901	0.0255
c7 TNRR (Pakistan)	0.3168	0.3168	0.2711
c8 TNRR (Philippines)	2.1654	2.1654	2.1197
c9 TNRR (Sri-Lanka)	-3.1801	-3.1801	-3.2250
c10 TNRR (Syria)	0.0636	0.0636	0.0179
c11 TNRR (Thailand)	-0.6454	-0.6454	-0.6911
c12 TNRR (Turkey)	-6.2859	-6.2859	-6.3316
c1GS (Bangladesh)	0.2087	0.2087	0.1399
c2 GS (Cyprus)	0.2162	0.2162	0.2849
c3 GS (India)	1.6726	1.6726	1.6039
c4 GS (Indonesia)	0.0918	0.0918	0.1606
c5 GS (Korea)	0.6190	0.6190	0.6878
c6 GS (Kuwait)	0.1335	0.1335	0.2023
c7 GS (Pakistan)	0.3779	0.3779	0.3195
c8 GS (Philippines)	0.0162	0.0162	0.0421
c9 GS (Sri-Lanka)	0.0479	0.0479	0.0104
c10 GS (Syria)	0.1864	0.1864	0.2448
c11 GS (Thailand)	0.4317	0.4317	0.3733
c12 GS (Turkey)	-1.2835**	-1.2835**	-1.3419**
c1FDI (Bangladesh)	-1.5925	-1.5925	1.9901
c2 FDI (Cyprus)	-0.0512	-0.0512	0.3462
c3 FDI (India)	-0.0434	-0.0434	0.3541
c4 FDI (Indonesia)	0.1206	0.1206	0.5182
c5 FDI (Korea)	2.3491	2.3491	2.7467
c6 FDI (Kuwait)	10.1035***	10.1035***	9.7059***
c7 FDI (Pakistan)	-0.4627	-0.4627	-0.4343
c8 FDI (Philippines)	0.3960	0.3960	0.3676
c9 FDI (Sri-Lanka)	0.3151	0.3151	0.2867
c10 FDI (Syria)	-0.1073	-0.1073	-0.1357
c11 FDI (Thailand)	-0.6333	-0.6333	-0.6618
c12 FDI (Turkey)	-1.9384	-1.9384*	-1.9668*
Intercept (baseline)	4.1160**	6.8959***	6.1994**
F Test	2.77***	3.20***	3.09***
Adj. R²	.6478	.6937	.7549
Obs.	360	360	360

***, **, and * denote significance at 1%, 5% and 10% respectively.