Charles University in Prague

Faculty of Social Sciences
Institute of Economic Studies

MASTER THESIS

Role of Foreign Capital Inflows in Economic Development of Pakistan

Author: **Bc. Muhammad Ali**

Supervisor: **Jaromir Baxa, PhDr.**

Academic Year: **2011/2012**

Declaration of Authorship

The author hereby declares that he compiled this thesis independently, using only the listed resources and literature.

The author grants to Charles University permission to reproduce and to distribute copies of this thesis document in whole or in part.

Prague, May 17, 2012

_____
Signature

Acknowledgments

The author is grateful especially to the thesis supervisor Jaromir Baxa for his guidance and comments throughout and Prof. Ing. Michal Mejstrik CSc, PhDr. Tomas Havranek and PhDr. Zuzana Havrankova for their encouragement and guidance during thesis seminars.

Author is also extremely grateful to Government of Czech Republic for the provision of development scholarship.

Abstract

This study attempts to ascertain the importance of foreign capital inflows (FCIs) in Pakistan. We do so by first finding the key determinants of FCIs in Pakistan. Secondly, we attempt to investigate the relationship of FCIs with economic growth and finally we study the impact of FCIs on unemployment, poverty and income inequality. FCIs in this study are combination of foreign direct investment, remittances, foreign aid and external debt. Using data from 1973-2008 for Pakistan we found that growth is key determinant of FCIs both in aggregated and disaggregated forms. Moreover, FCIs have positive impact on economic growth in Pakistan. We also found that FCIs do help in reducing unemployment. Impact on poverty and inequality, however, was found to be insignificant. Results suggest that though FCI is beneficial for growth, the spillovers of the growth are not reaching the poor segment of the society. Policy makers should therefore focus on utilizing these foreign resources, especially remittance inflows, to strengthen domestic financial sector, reduce poverty and inequality.

Abstrakt

Tato studie se zabývá významem přílivu zahraničního kapitálu do Pákistánu. V první řadě hledáme jeho determinanty, v druhé se pokoušíme studovat jeho vztah s hospodářským růstem a nakonec zkoumáme jeho dopad na nezaměstnanost, chudobu a nerovnost příjmů. Zahraniční kapitál v této studii se skládá z přímých zahraničních investic, remitencí, zahraniční pomoci a zahraničních dluhů. V kontextu vývoje situace v zemi bychom očekávali, že zahraniční kapitál bude sloužit jako katalyzátor ekonomického růstu a napomůže snížení chudoby a úrovně sociální nerovnosti. Nicméně empirická literatura neposkytuje jednoznačné důkazy, že by k tomu docházelo. Za použití údajů z let 1973-2008 jsme zjistili, že i když růst je klíčovým determinantem zahraničního kapitálu. Má jeho příliv positivní vliv na růst pákistánské ekomomiky. Také jsme zjistili, že zahraniční kapitál pomáhá při vytváření nových pracovních míst. Na snižování chudoby a příjmové nerovnosti je však jeho vliv bezvýznamný. Výsledky výzkumu naznačují, že by se vláda měla zaměřit na takový druh zahraničního kapitálu, který není vázán podmínkami, jež brání ekonomickému rozvoji v zemi. Je také třeba využít potenciálu remitencí k posílení domácího finančního sektoru, ke snížení chudoby a nerovnosti a podpoře růstu.

Contents

List of Tables

List of Figures

Acronyms

FDI   Foreign Direct Investment

FCI   Foreign Capital Inflows

ARDL Autoregressive Distributed Lag Model

GDP   Gross Domestic Product

Master Thesis Proposal

Author	Bc. Muhammad Ali
Supervisor	Jaromir Baxa, PhDr.
Proposed topic	Role of Foreign Capital Inflows in Economic Development of Pakistan

Topic characteristics   Foreign capital inflows (FCI) plays an important role in development of a country. Although significance of such inflows is much larger in developing countries but it is not limited to them. Emerging economies, even developed countries, also need foreign inflows to manage their economy. However, size and the composition of such inflows are determined on the basis of country specific requirements. The need of foreign capital generally arises with the lack of capital in host country and low saving and investment ratios. Low household income reduces the government's earning from taxes and hence it reduces government expenditures and consequently growth of the country slows down. With the passage of time, less developed countries have become more and more dependent on foreign inflows due to which their growth is completely reliant on funds from other countries. The result of this dependence is usually a shock on host country when these inflows are completely or partially dried-up. Moreover, misallocation of funds is also a very critical issue. If inflows are not well directed and not supported with sufficient research on host country, they may adversely affect growth of a country because of increasing poverty and unemployment rate with low investment on human capital.

This study will focus on firstly, determinants of FCIs in Pakistan both in aggregated and disaggregated forms; secondly, impact of FCI on economic growth and finally, impact of FCI on poverty, income inequality and unemployment. In case of Pakistan, very little work has been done on the issue. In fact there is no such study in Pakistan which has included aggregated foreign inflow variable

in the analysis and then disaggregated it to capture the individual impacts. Moreover, there is no such study in Pakistan which has analyzed the impact of foreign capital inflows on income inequality and unemployment. The study therefore would make a significant contribution to the literature by filling this gap.

Hypotheses Two major hypothesis of the research are 1) FCI promotes economic growth in Pakistan and 2) FCI helps in reducing unemployment, poverty and income inequality.

Methodology Appropriate cointegration method will be used to study longrun relationship among variables.

Outline

1. Introduction
2. Literature Review
3. Data and Methodology
4. Econometric Model
5. Empirical Results
6. Conclusion

Core bibliography Bigsten Arne (1998) Can Aid Generate Growth in Africa?" [Report]. - Boston : Kluwer Academic Publishers.

Mohey-ud-din Ghulam (2006) Impact of Foreign Capital Inflows on Economic Growth in Pakistan

Wanhui Fan (2005) The Relationship between Foreign Direct Investment and Trade: China as an example.

Rajan, R. G., and Subramanian, A. (2005). Aid and Growth: What Does the Cross-Country Evidence Really Show. Working Paper WP/05/127, IMF.

Prasad, E. S., Rajan, R. G. and Subramanian, (2007) A, Foreign Capital and Economic Growth. NBER Working Paper Series, Vol. w13619, pp. -, 2007. Available at SSRN: http://ssrn.com/abstract=1033745

Pattillo, C., Poirson, H., and Ricci, L. (2004). What Are the Channels Through Which External Debt Affects Growth? Retrieved 2009, from International Monetary Fund, African and Asia and Pacific Departments

Yasmin, B. (2005) Foreign Capital Inflows and Growth in Pakistan: A Simultaneous Equation Model South Asia Economic Journal Vol. 6 (2) pp. 207 219

Zaman, K and Ikram, W (2008) The Study of Foreign Direct Investment - Poverty Nexus in Pakistan: Under Investigation of Pro-Poor Investment Index (PPII)

_____   _____
Author   Supervisor

Chapter 1

Introduction

Economic growth is broadly determined directly or indirectly through smooth and regular flow of investment. Investment guarantees steady economic growth through employment generation, increase in aggregate demand, technology advancement, increase in human capital and so on. Domestic resources, however, sometimes fall short of necessary investment level. In such cases, in order to fill the resource gap and keep economy on its steady state growth pattern, foreign capital inflows play an important role. The magnitude of the impact depends on composition, utilization, efficiency, underlying motives and continuity of such inflows and these characteristics, efficiency in particular, are primarily determined by preconditions in the country.

This study attempts to ascertain the importance of foreign capital inflows (FCIs) in Pakistan. We do so by first finding the key determinants of FCIs in Pakistan both in aggregated and disaggregated forms. This will allow us to find the important driving forces behind influx of foreign capital in Pakistan economy. Secondly, we attempt to investigate the relationship of FCIs with economic growth. Foreign capital is expected to promote economic growth but under certain conditions it may also negatively affect economic growth. Finally we study the impact of FCIs on unemployment, poverty and income inequality. FCIs in this study are combination of foreign direct investment, remittances, foreign aid and external debt. In developing country context, foreign capital is expected to serve as a catalyst to economic growth and help in reducing poverty and income inequality levels. Research, however, has shown ambiguous results when it comes to the causal relationship of foreign capital with key economic indicators.

Labour market under globalization and financial deepening is expected to

benefit through inflow of foreign capital through greater number of employment opportunities and faster growth of economy. The relationship, however, can go either way. Since foreign capital is attracted through favourable tariff and tax policies in the host countries, domestic sector comes under immense pressure due to tough international competition which forces many small firms to pull down their shutters. Though foreign firms do absorb some of this surplus labour and informal sector also expand because of available cheap labour, the hiring and firing does not completely cancel out rather unemployment as a whole increases.

Foreign capital does provide important support to the host economies but reliance on foreign capital is associated with high level of exposure to global crisis and policies of home countries. The relationship between foreign capital and growth is not as straight forward as it seems. Economists differ in their views regarding growth effects of foreign capital especially in the host countries. Optimists argue that foreign capital brings cheap and relatively less risky access to the funds in addition to transfer of technology while pessimists argue that foreign capital is generally moved with intentions inconsistent with fundamentals which leads to economic volatility (Bordo et al., 2007). Moreover, inefficient allocation of funds may not yield the theoretical outcome (Collier et al. 2002). In particular context to developing countries, major blame of ineffective foreign capital utilization goes to underdeveloped financial sector which also is generally responsible for crisis as a consequence of disrupted inflows.

Capital inflow can take different forms such as foreign direct investment, foreign portfolio investment, foreign aid, external debt and remittances. Though all these inflows serve a common purpose i.e. filling the resource gap, their determinants, transmission mechanisms and spillovers differ a great deal. This study includes foreign direct investment, remittances, foreign aid and external debt as foreign capital inflows.

Rest of the thesis is structured as follows: chapter 2 presents brief overview on trend and composition of foreign capital inflows in Pakistan, chapter 3 presents the analysis on determinants of foreign capital inflows, chapter 4 studies the impact of foreign capital inflows on economic growth and chapter 5 investigates the impact of foreign capital inflows on poverty, income inequality and unemployment and chapter 6 presents summary and conclusion.

Chapter 2

Trend and Composition of Foreign Capital Inflows in Pakistan

2.1 Foreign Capital Inflows (FCI)

Foreign capital inflows, in context of this study, are composed of foreign direct investment, remittances, foreign aid and foreign debt. As of 2008, foreign debt had largest share in total foreign capital inflows while foreign aid had smallest. Similar break down can be seen in terms of percentage to GDP (Figure 2.1).

Figure 2.1: Composition of Foreign Capital Inflows in Pakistan

	Foreign Direct Investment	Foreign Aid	Foreign Debt	Remittances
Share	10.4%	1.0%	76.1%	12.4%
% GDP	3.4%	0.3%	25.0%	4.1%
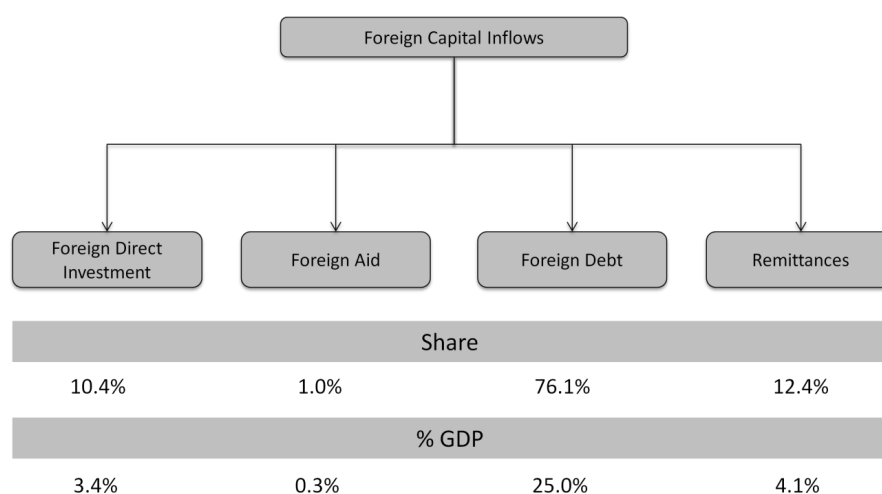
Source: author's computations.

Table 2.1: Disaggregated Foreign Capital Inflows as percentage of Total Inflows

Years	Remittances	FDI	Foreign Aid	External Debt
1975	4.20%	0.30%	1.20%	94.20%
1980	16.40%	0.30%	2.40%	81.00%
1985	19.40%	0.60%	3.00%	77.10%
1990	11.10%	1.20%	3.10%	84.50%
1995	7.50%	1.80%	1.20%	89.40%
2000	3.70%	1.70%	0.50%	94.10%
2005	11.30%	4.10%	1.00%	83.60%
2008	12.40%	10.40%	1.00%	76.10%

Table 2.2: Disaggreagated Foreign Capital Inflows as percentage of GDP

Years	Remittances	FDI	Foreign Aid	External Debt
1975	2.10%	0.10%	0.60%	45.80%
1980	8.20%	0.10%	1.20%	40.80%
1985	8.70%	0.30%	1.40%	34.70%
1990	5.50%	0.60%	1.50%	41.60%
1995	3.40%	0.80%	0.60%	40.40%
2000	1.40%	0.70%	0.20%	37.20%
2005	4.00%	1.50%	0.30%	29.90%
2008	4.10%	3.40%	0.30%	25.00%

Source: author's computations

While foreign capital inflows have increased over the time on aggregate level, weights of its disaggregated components have changed over the years. Table 2.1 and Table 2.2 compares the shares of each inflow in the total inflow variable and also their percentage to GDP in five year intervals. Largest share of foreign capital in 1975 was composed of external debts (94.2%) while smallest share comprised of FDI (0.3%). Since debt is subject to repayment with interest, it is important to know if overall size of external debt is under acceptable/repayable levels. In 1975 external debt was 45.8% of GDP in Pakistan. The share of external debt in foreign capital inflows, however, declined over the years as remittances and FDI flows increased significantly. During the period of 1975-85, share of remittances in foreign capital increased by approximately 5 times while share of debt decreased in the same period by approximately 17.1 percentage points.

Share of debt, however, increased to 94.1% in 1995 and gradually decline to 76.1% in 2008. Following the wave of globalization, FDI inflows in Pakistan

increased manifolds. Share of remittances in foreign capital inflows saw ups and downs. After increasing rapidly during 1975-85, it decline by 12 percentage points during 1985-95 before eventually reaching 12.4% in 2008. Share of FDI increased by 3 times during 1985-1995, more than doubled during 1995-2005 and 2005-2008. Share of foreign aid followed increasing trend during 1975-1990 before falling down and floating around 1% for the rest of the period.

2.2 Foreign Direct Investment

Foreign direct investment in Pakistan has relatively grown on average over time. Growth of FDI is not surprising because government policies in Pakistan were tailor-made for foreign investors to benefit from rapid globalization. Political and security conditions were also good for business which attracted many investors from all over the world. The major jump in FDI can be seen during 1995-96 which was primarily due to the investment in power sector. Later on, Asian financial crisis brought gradual decline in FDI. Sector-wise distribution of foreign direct investment is presented in Figure 2.2. Financial business enjoys significant share of total FDI in Pakistan followed by telecommunications. Moreover, share of other services is also increasing. Current government policies are directed towards attracting FDI in manufacturing sector to extract maximum long-term benefit out of such investments.

Figure 2.2: Sector-wise Composition of FDI flows in Pakistan
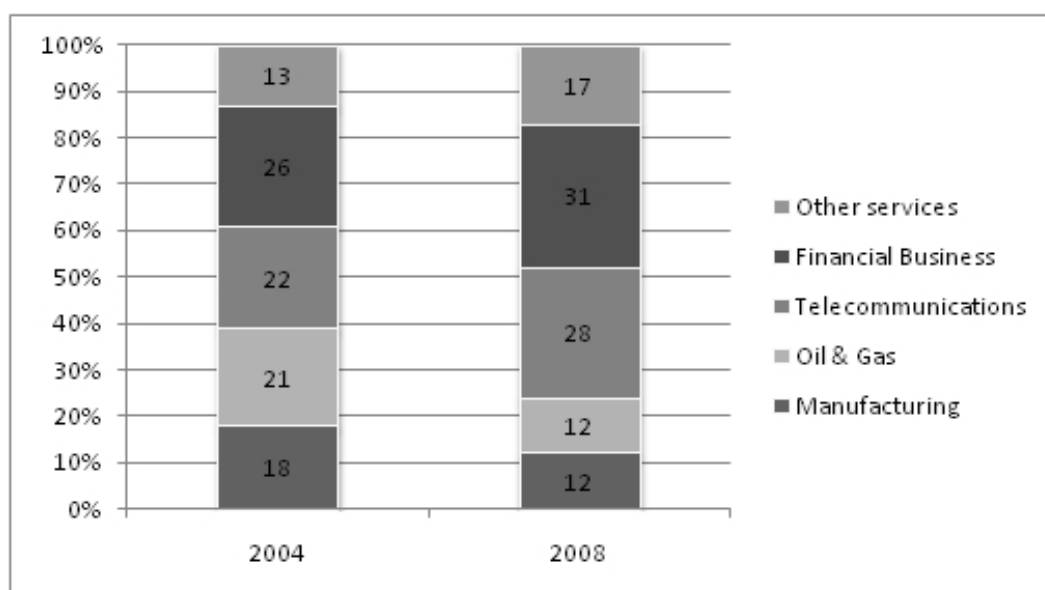
Source: State Bank of Pakistan, Annual Report 2007-08

2.3 Remittances

Remittances have been a significant source of foreign exchange for Pakistan over the years. Increase in migrations as well as domestic and international political and economic environment accounts for variation in remittance flows. One of such examples is events of 9/11 in United States. Following the event, Pakistan received significantly larger flows of remittances in anticipation of political problems in future for the Pakistani residents in US and other western countries. Major sources of remittances for Pakistan have been US, Saudi Arabia and UAE (Figure 2.3). The events of 9/11 triggered unusually high amount of inflows from US which can be seen from the figures of 2004-05 in the graph below. However, flows of remittances have been falling from US since 2004-05. Second largest source of remittances has been Saudi Arabia. Due to religious reasons, Pakistanis prefer to work and live in Saudi Arabia. Though inflows from Saudi Arabia fell during 1995-2005, percentage share in total remittances have been increasing since 2004-05.

Figure 2.3: Major Sources of Remittances for Pakistan
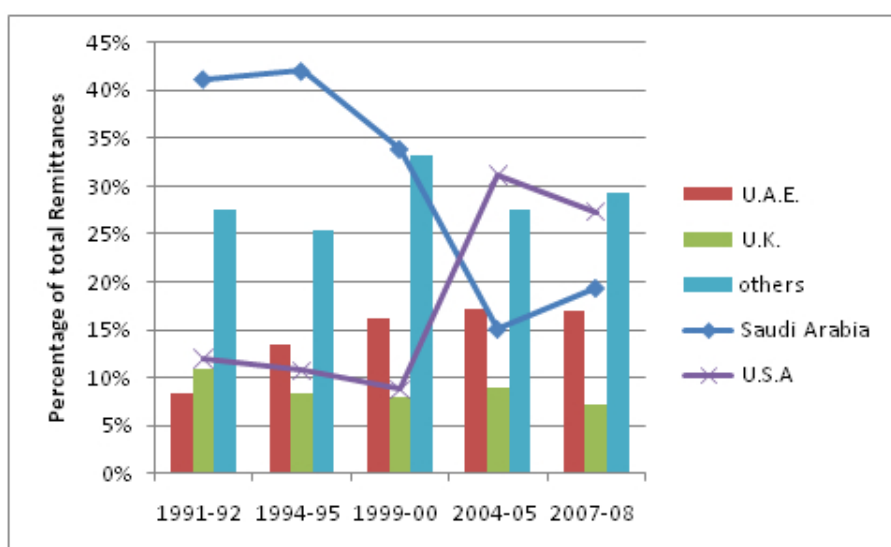
Source: Economic Survey of Pakistan 2010-11

2.4 Foreign Aid

The flows of foreign aid have not been as consistent as compared to other sources of foreign capital inflows. Major sources of foreign aid in Pakistan have been extra ordinary geographical, political and economic situations as well as

natural disasters. In 1991, for example, Pakistan received large sum of aid because of the earthquake. Flood followed earth quake in 1992 which also brought significant aid flows. In 2002, another significant jump in foreign aid was primarily due to 600 million USD grant by US for revenue losses due to afghan war. Another significant jump in aid flows in 2006 was due to earthquake when Pakistan received earthquake relief funds from all over the world. Most of the foreign aid came through consortium arrangements with different countries. The major two countries in consortium arrangements were U.S. and UK. Though shares of both countries varied over the years, U.S. was dominant during 2005-07 while UK had 74.8% of total consortium agreements in 2008. Aid from Islamic countries has also been significant in recent years. In 2008, 61.9% of the foreign aid was received from Islamic countries. Saudi Arabia has been the major contributor in this regard with 100% share in 2004, 2007 and 2008.

Table 2.3: Classification of Foreign Aid in Pakistan

	FY 04	FY 05	FY 06	FY07	FY08
I. Consortium arrangements	81.40%	97.60%	60.60%	74.70%	37.70%
UK	35.40%	8.90%	22.90%	15.60%	74.80%
USA	12.30%	57.10%	48.20%	62.00%	25.10%
II. Non Consortium	0.10%	2.10%	2.60%	1.80%	0.10%
III. Islamic Countries	16.90%	-	36.70%	22.90%	61.90%
Saudi Arabia	100.00%	-	54.40%	100.00%	100.00%
Total (I+II+III)	98.30%	99.60%	99.90%	99.40%	99.70%
Relief Assist. Afghan Ref	1.70%	0.40%	0.10%	0.60%	0.30%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

Source: Annual Report of State Bank of Pakistan 2009 Table 8.5

2.5 Foreign Debt

External debt outstanding is a dominant source of external financing for Pakistan. It holds 94% of share in foreign capital inflows which is equivalent to 46% of GDP. Debt servicing and repayments are the critical issues of Pakistan because of the high rate of debt accumulation and inability to finance the interest payments. Total debt outstanding in the country has been increasing over time which is worsening the debt burden. Major two sources of external debt are Paris Club (38% in 2008) and Multilaterals (59% in 2008). Within Paris Club, Japan is the major lender with share of around 40% throughout

the selected period while ADB and IDA are major lenders under the head of Multilaterals.

Table 2.4: Distribution of External Debt Outstanding

Country/ Institution	2003	2004	2005	2006	2007	2008
i. Paris Club	**45%**	**47%**	**44%**	**42%**	**39%**	**38%**
France	15%	15%	15%	16%	17%	18%
Germany	12%	12%	13%	13%	15%	15%
Japan	39%	41%	43%	42%	40%	41%
U.S.A.	15%	16%	13%	13%	12%	11%
other	18%	16%	17%	16%	16%	14%
ii. Other Bilateral	**2%**	**2%**	**3%**	**3%**	**3%**	**3%**
China	50%	65%	71%	74%	82%	78%
other	50%	35%	29%	26%	18%	22%
iii. Multilaterals	**53%**	**50%**	**52%**	**55%**	**57%**	**59%**
ADB	43%	39%	39%	39%	38%	44%
IBRD1	18%	18%	16%	13%	11%	9%
IDA	37%	42%	43%	46%	47%	44%
other	2%	2%	2%	2%	3%	3%

Source: Handbook of Statistics of Pakistan Economy 2010-11 – Table 9.4

Chapter 3

Determinants of Foreign Capital Inflows

Progress of the country is broadly determined by economic growth; in fact economic growth is one of the key components of prosperity in the country. Economic growth, on the other hand, is primarily driven by investment both from domestic and foreign sources. Robust flow of investment alone guarantees sound economic growth through employment generation, aggregate demand and other channels. When domestic sources fall short of the necessary investment level required to boost economic growth, foreign capital inflows then play an important role in filling the resource gap. The magnitude of the impact depends on composition, quality and continuity of foreign capital inflows and these qualities are determined by preconditions in the country. This chapter, therefore, analyses the determinants of foreign capital inflows in disaggregated forms. Not many papers analysed the composition of foreign capital inflows. One of the few examples is Carlson et al (2002) divided capital inflows into three parts; FDI, portfolio equity flows and short-term debt to study the determinants of capital inflows composition. Findings of their study suggest that capital control measures can increase FDI, countries with floating exchange rates receive more short-term debt while countries with fixed exchange rate attract more direct and portfolio investment. Since composition of foreign capital inflows in this study is different from other studies, we base our literature review mostly on disaggregated foreign capital inflows.

3.1   Literature Review

3.1.1   Determinants of Foreign Direct Investment

Siamwalla A (1999) studied the determinants of foreign capital inflows, which is divided into FDI and non-FDI inflows, in Thailand. Determinants of FDI mentioned were exchange rate shift, economic growth, low input costs, special government policies to favor FDI and political stability. Authors mentioned that all these determinants are active in Thailand and FDI flow is positive and increasing, even when real GDP fell significantly in 1998. Using data from 1983-1990 for 44 countries Biswas, R (2002) found that better infrastructure, low wages, longer duration of regime and environment with secured property and contractual rights significantly determine the inflow of FDI. In other words, final decision of the investor to invest in the country would not only depend on the economic performance of the country and high rate of return but also on overall integrity and stability of economic and political environment.

Asiedu, E (2002) studied how determinants of FDI work differently in sub-Saharan Africa (SSA) and found that better infrastructure and high return to investment have positive and significant impact on non-SSA countries but insignificant impact on SSA countries. Moreover, trade openness was found to be positively correlated with FDI in both SSA and non-SSA countries but the impact was higher in magnitude for non-SSA countries.

Ang, J (2008) using annual time series data from 1960 to 2005 for Malaysia, found that real GDP had significant impact of FDI inflows in Malaysia, which corresponds to Chakarbarti (2001), i.e. increase in size of domestic market results in more inflow of FDI due to economies of scale. Author also found that financial development, infrastructure development and trade openness also positively affect FDI inflows in Malaysia. Author argues that better infrastructure improves productivity of capital and expands the overall resource availability. However, higher corporate tax and appreciation of exchange rate negatively affect FDI inflows.

Recent literature goes deeper in the analysis of FDI determinants by focusing on different economic sectors in which FDI is attracted. Ramasamy, B., et al (2010), for instance, studied the determinants of service sector FDI and manufacturing sector FDI using data from 1980-2003 for OECD countries. They found that GDP and GDP growth are positively correlated with both manufacturing and services FDI, which is in line with market size hypothesis.

Similarly, trade openness was found to be positively correlated with both man-ufacturing and service FDI. On the other hand, cost of labor and cost of capital were found to be negatively (and significantly) correlated with both manufac-turing and services FDI. They also found that manufacturing FDI is important determinant for service FDI and vice versa. Moreover, countries with low risk attract more FDI as compared to high risk countries.

In case of Pakistan, few studies have been done on the determinants of FDI, for instance Aqeel A et al (2005) used annual data from 1961 to 2003 and found that tax rate, tariff rate and appreciation of exchange rate have negative and significant relationship with FDI; ease of credit have positive and significant impact while wages and share price index were found to be insignificant. Khan et al (2010) using data from 1970-71 to 2004-05, found volume of exports as the most important determinant of FDI while GDP growth had positive and significant correlation with FDI and exchange rate had negative association with FDI. Shah Z et al (2003) included market size, cost factor, political and social factors as determining variables on data from 1980 to 1999 and found that market size has positive relationship with FDI. Moreover, infrastructure was found to have positive relationship with FDI while tariff and cost of capital has negative relationship with inflow of FDI.

3.1.2   Determinants of Remittances

Using data from 1967-1991 for Egypt, El-Sakka et al (1999) found that level of economic activity in the host country is an important determinant of remittance flows. Moreover, inflows of remittances are highly responsive to the difference between official and black market exchange rates. However, difference between official interest rates and black market had negative and significant impact on migrant remittances. Similarly, difference between foreign and domestic interest rates is also found to be negatively correlated with migrant remittances because when savings are rewarded better in foreign countries, migrants tend to keep their money in foreign countries considering higher rate of return.

Aydas et al (2005) studied the determinants of worker remittances using data for Turkey from 1965 to 1993. The emphasis of the study was on contribu-tion of variables like black market premium, interest rate differential, inflation rate, growth, incomes of both host and home countries and military regime. Parameters of the equation was estimated for two distinct periods; 1965-1993 and 1979-1993, while they excluded 1994 being crisis year and data availability

concerns. Using ordinary least squares technique authors found that during 1965-1993, inflow of remittances was primarily for the purpose of consumption smoothening due to income shocks. However, black market premium had negative influence on remittances. For the period 1979-1993, authors included interest rate differentials in the regression and found that interest rate differential positively affect inflow of remittances. Inclusion of interest rate differential also changed the significance of host country income in the regression; which was now positive and significant. Authors also found that political instability significantly reduces the inflow of remittances.

Freund et al (2005) studied the determinants of remittances using data from 1995 to 2003 for 104 countries. They found that stock of migrant workers and size of the host economy are key determinants of remittance inflows. They also found the service fee and exchange rate spread had negative impact of inflows of remittances as higher fee induces migrant workers to use informal channels of transmission. Overall they argue that policies directed towards reducing service fee for remittance inflows would help in more documented remittances. Moreover, higher cost of living in home country makes migrants send more money and hence remittances increase.

Gupta et al (2005) studied the determinants of remittances for India using quarterly data from 1991 to 2003 and found that economic conditions both in host and home countries are important determinants of remittances. The coefficient of dummy for Asian crisis was found to be negative and significant due to uncertainity about economic conditions in the country with respect to depreciation of currency and so on. Moreover, remittances were not significantly influenced by fluctuations in oil prices probably because higher oil prices lead to higher income in oil producing countries and would result in higher remittances.

In one of the recent studies on determinants of remittances, Singh et al (2010) studied the determinants of remittances in Sub-Saharan Africa using data for 32 countries from 1990 to 2008 and found that financial deepening (measured as M2/GDP), institutional quality and GDP growth had positive correlation with remittances. Moreover, domestic credit as a percentage of GDP is also found to be positively and significantly correlated with inflows of remittances. Similar to El-Sakka et al (1999), interest rate differential was found to be negatively and significantly correlated with remittances. Contrary to other studies, impact of exchange rate appreciation was not found to be significant on remittances.

3.1.3   Determinants of Foreign Aid

Alesina et al (1999) studied if corrupt governments receive less foreign aid by using data from 1970-1995 for various different donors and recipient countries and found that there is no evidence that corrupt government receive less foreign aid. In fact more corrupt governments receive more foreign aid which supports the argument of critics to foreign aid programs that foreign aid programs support corrupt governments and inefficient bureaucracies. In another paper, Alesina et al (2000) used five year averages for the period 1970 to 1994 for various donors which include United States, Germany, France, Japan, United Kingdom, Netherlands, Canada, Austria, Italy, Sweden and others. Using different model specifications and step by step inclusion of variables in the models, authors found that political and strategic variables are perhaps even more important determinants of foreign aid flows as compared to economic need and policy indicators in host country. Authors came to this conclusion based on the fact that inclusion of strategic-political variables in the regression increased the percentage of variation in foreign aid explained by the model.

Zhang, G (2004) studied the determinants of foreign aid in China with special reference to World Bank loans. One of the key findings of the study is that despite the fact that aim of World Bank loans is to target poorest segment of the society, yet poorest Chinese provinces were at the bottom of the list. Moreover, provincial power, determined by provincial GDP, is positively and significantly correlated with foreign aid flows. In general, author argues that key determinant of the foreign aid in general and World Bank loans in particular is bureaucratic power of government.

Ali et al (2006) used data for 151 countries for the period 1975 to 1998 to study the determinants of foreign aid in panel regression framework. The key determinants analysed in this study are taxes on international trade, scope of government activities, ethnicity, private credit and education levels. Authors found that higher taxes on international trade are associated with higher aid dependency. In addition to that, trade, GDP, foreign direct investment, private credit and government expenditure were also found to be important determinants of foreign aid where education, private credit, GDP per worker and trade decrease foreign aid while taxes on trade, ethnicity and government expenditure increase foreign aid.

3.1.4   Determinants of Foreign Debt

Buch et al (2003) compared the determinants of external debt in 57 developed and developing countries and found that there is not much difference in the two cases even after inclusion of interaction terms. Results of the empirical investigation suggest that GDP is positively and significantly correlated with short-term external borrowing. This result was robust for different time and country samples. Similarly, financial depth of the economy, measured by M2/GDP, was also found to be positive and significant determinant of external debt. The coefficient associated with imports, however, was found to be insignificant in the models.

Tiruneh M (2003) empirically investigated the economic determinants of external debt using data from 1982 to 1998 for various countries. Results of the study indicate that more populous countries are more likely to acquire external debt. Similarly, openness to international trade and income instability also positively determine external borrowing. Income per-capita, however, was found to have negative and significant impact on external borrowing. This result suggests that countries with low income levels are more likely to borrow as compared to high income countries.

In one of the recent studies for Pakistan, Awan et al (2011) studied the determinants of external debt in Pakistan with special reference to exchange rate, fiscal deficit and terms of trade. Using Johansen approach to co-integration on annual data from 1974 to 2008, authors found that deteriorating terms of trade is important determinant of external debt in Pakistan. Moreover, depreciation of Rupee is found to have positive and significant impact on debt burden. Fiscal deficit, however, was found to be an insignificant determinant of external debt.

3.2   Data and Methodology

3.2.1   Data

Empirical models used in this chapter are inspired from previous studies. However, most of the studies used panel data for analysis therefore appropriate modifications were made to suit time series data used in this study. Data for most of the variables have been taken from various different domestic sources (see appendix A). Some of the variables required construction of indices that

has been done according to the procedure provided in relevant papers. Variables are briefly explained in model description while details can be found in appendix A along with the source.

3.2.2   Methodology

In presence of non-stationarity, conventional OLS and 2SLS techniques become invalid. Cointegration techniques, such as Johansen cointegration, presents a solution to this problem where some linear combination of non-stationary variables becomes stationary. Cointegration methods, however, do not account for possible endogeneity. When there is evidence of cointegrating relationship, one can use conventional OLS/2SLS techniques. Using this property, we tried to find evidence of cointegration in our models to account for non-stationary data problem and afterwards applied 2SLS to account for engogeneity problem. We used Hausman test to confirm that OLS estimates are not consistent. We did not directly use the longrun estimates of the Johansen cointegration methods because the method does not account for endogeneity.

3.2.3   Econometric Models

Determinants of Foreign Direct Investment : Model for determinants of FDI was inspired from Ang(2008). Author included many variables in the model and tested the model with different sets of variables. We used the baseline specification of the model used by authors and found the best suited specification for our study. Model used in the study can be written as:

$$Log(FDI) = f(log(GDPG), log(Unc), log(GDP), log(RER))$$

Where,
FDI = Foreign Direct Investment as percentage of GDP
GDP = Gross domestic product
Unc = Uncertainty generated by GARCH(1,1) process on GDP where GDP follows AR(1)
GDPG = GDP growth; measure as first difference of nominal GDP
RER = Real effective exchange rate

Determinants of Remittances   Econometric model for this section is inspired from Singh et al (2010). We included more relevant variables in the model such as dummy for war on terror in Afghanistan and financial development. Model used in this section can be written as:

Log(Rem) = f(log(Migr), log(PCGDP), log(UNC), log(Fin.Dev), DWAR)

Where,
Rem = Migrant remittances from abroad as percentage of GDP
Migr = number of migrations in a year as percentage of total population
PCGDP = per capita GDP
Unc = Uncertainty generated by GARCH(1,1) process on GDP where GDP follows AR(1)
Financial Development = Private credit/GDP
DWAR = dummy for war on terror, it takes value of 1 after 2001 to capture the impact of unrest in the country due to Afghan war and effect on migrant remittances because of that.

Determinants of Foreign Aid   One of the recent studies for determinants of foreign aid was Ali et al (2006). Authors used panel data in their analysis hence they had many variables in the model which were not application to time series analysis. We modified the model and came up with the most suitable specification as follows:

Log(Aid) = f(log(GDPG), log(Gov. Con Exp), DWAR, UNC)

Where,
Aid = Foreign assistance in the form of grants as percentage of GDP.
UNC = Uncertainty generated by GARCH(1,1) process on GDP where GDP follows AR(1)
GDPG = GDP growth; measure as first difference of nominal GDP
DWAR = dummy for war on terror, it takes value of 1 after 2001 to capture the impact of unrest in the country due to Afghan war and effect on migrant remittances because of that.
Govt. Con Exp = Government Consumption Expenditure

Determinants of Foreign Debt   Model for this section was inspired from Tiruneh (2003). The best fit model for determinants of external debt can be written as:

Log(Debt) = f(Log(Debt Serv), Log(Fin. Dev), Log(GDPG), Log(POP))

Where,
Debt = External debt outstanding as percentage of GDP
Debt Serv = Debt servicing expenditure as percentage of exports
GDPG = GDP growth; measure as first difference of nominal GDP
Fin. Dev= Private credit/GDP
POP = population

Foreign Capital Inflows (Aggregated)   We could not find any study related to our analysis in terms of composition of foreign capital inflows. Using the information in earlier sections related to disaggregated foreign capital inflows, we tried several models and found following specification:

Log(FCI = f(Log(GDPG), Log(TIT), C.Tax, Log(infl))

Where,
FCI = Foreign Capital inflows (FDI + remittances + foreign aid + foreign debt) as percentage of GDP
GDPG = GDP growth; measure as first difference of nominal GDP
TIT = Taxes on international trade
C.Tax = corporate income tax rate
Infl = general inflation rate

3.3   Empirical Results

This section presents the econometric results of the empirical models estimated in this study. Results presented in this thesis are carefully estimated after careful consideration of important econometric problems. This is, however, to be noted that these results are conditional on the data available and the methodology used.

Determinants of Foreign Capital Inflows

Before estimating the coefficients we tested the variables for unitroot problem. Results of the ADF test are presented in appendix B1. We found that variables were stationary at first difference which allows us to use Johansen cointegration. Brief results of the empirical estimation are presented in Table 3.1 while detailed estimates can be found in appendix B2. We expect endogeneity problem between FCI and GDP therefore we used Two-Staged Least Squares. We used Hausman test to find out if OLS estimates are consistent. Hausman test results suggested that we strongly reject the null hypothesis of the test which is "OLS estimators are consistent" hence we had to use 2SLS to correct for endogeneity.

Table 3.1: Estimation Results for Determinants of Foreign Capital Inflows (FCI)

Two-Staged Least Squares Estimation: (Dependent Variable: log Foreign Capital Inflows %GDP)				
C	Log(GDPG)	Log(TIT)	CTAX	Log(INFL)
-0.45	0.48***	0.64***	-0.01**	-0.59***
(0.55)	(0.17)	(0.24)	(0.01)	(0.18)
R^2			0.97	
F-stat			286.62 (pvalue 0.00)	
Serial Correlation LM-test (Ho: No Autocorrelation)			p-value: 0.14	
Normality of Residuals: (Ho: Residuals are Normally distributed)			p-value: 0.13	
Hausman Test			Chi-square = 17.1 (p-value=0.002)	

Standard errors in parenthesis; *** suggests significance at 1%, ** at 5% and * at 10%

In 2SLS method, we used lags of the explanatory variables as instruments. This method is consistent with various macroeconomic studies. Estimated results of the model for the determinants of aggregated FCI flows suggest that GDP growth has positive relationship with FCI (Table 3.1). In other words, growth attracts FCIs in Pakistan because of higher expected returns from investment. Moreover, since aid and debt from foreign sources are also included in aggregated FCI variable, this may also suggest that Pakistan economy is dependent on foreign capital flows. This finding was consistent with Ang (2008). Coefficient of tax on international trade suggests that higher taxes on international trade discourages trade and encourages business investment inside the boundaries of the country to avoid such taxes. Coefficient of corporate income tax implies that higher corporate income tax discourages capital inflows in the

country, especially when they are investment oriented. Such taxes negatively affect profitability of the firms. Similarly, high inflation rates also discourage foreign capital because higher inflation increases cost of doing business in the country.

Determinants of Foreign Direct Investment

This section presents the estimation results of model for determinants of FDI (Table 3.2). We followed similar methodology as we did for determinants of FCI i.e. we used Hausman test to ascertain if there is problem of endogeneity in the model then we estimated the model parameters using 2SLS procedure. Detailed results can be found in appendix B3.

Results of the estimation, except for the coefficient of uncertainty, were consistent with Ang (2008). Results suggest that both economic growth and initial level of GDP are associated with higher FDI inflows. Economic interpretation of this result can be that high growth implies favourable business environment and potential for foreign investment which attracts investors from other countries. Contrary to the findings of Ang (2008), sign of uncertainty coefficient was found to be negative suggesting that higher uncertainty in Pakistan discourages foreign investors. In studies with positive impact of uncertainty on FDI authors argue that high level of uncertainty is equivalent to risky investment which is associated with high returns. Risk lover investors favour such environment and try to maximize the return on their investment. This does not seem to be true for Pakistan as it is shown by the econometric results. Consistent with Ang (2008), real exchange rate had negative and significant coefficient suggesting that if real exchange rate increases FDI decreases. Diagnostic test suggest that LM test is insignificant which means that there is no autocorrelation. JB test for normality also suggests that residuals are normally distributed. Hausman test for endogeneity suggests that OLS estimates are inconsistent because of endogeneity in the model.

Table 3.2: Estimation Results for Determinants of Foreign Direct Investment (FDI)

Two-Staged Least Squares Estimation: (Dependent Variable: log Foreign Direct Investment %GDP)				
C	Log(GDPG)	Log(GDP)	Log(UNC)	Log(RER)
10.89	0.38**	1.79***	-6.69**	-1.45**
(7.71)	(0.18)	(0.20)	(2.56)	(0.62)
R^2			0.97	
F-stat			202.74 (pvalue 0.00)	
Serial Correlation LM-test (Ho: No Autocorrelation)			p-value: 0.10	
Normality of Residuals: (Ho: Residuals are Normally distributed)			p-value: 0.45	
Hausman Test			Chi-square = 18.7 (p-value=0.000)	

Standard errors in parenthesis; *** suggests significance at 1%, ** at 5% and * at 10%

Determinants of Remittances

Following the similar methodology as before, we tested for endogeneity problem before empirical estimation of the model. Hausman test suggested that OLS is inconsistent due to endogeneity. Coefficients of the models should be interpreted carefully because the data for remittances used in this study only covers transfers from formal sources. Inclusion of transfers from informal sources may provide different results. Results of the 2SLS method for determinants of remittances suggest that, consistent with Singh et al (2010), increase in migration increases remittance inflows in longrun (Table 3.3). Moreover, coefficient of PCGDP was found to be negative suggesting that higher incomes levels imply lesser need for remittances from abroad. We also found positive relationship between uncertainty and migrant remittances. Such relationship is a result of uncertain situations such as natural disasters or events such as Afghan war. In such situations, people remit more to support their families. This result is also confirmed by the war dummy for which we found positive and significant relationship suggesting that during Afghan war, Pakistan received much higher remittances because of uncertain situation both inside and outside the country. Positive coefficient of financial development suggests that better financial sector attracts more remittances from abroad as people feel more secure when transferring their money to their home countries. High coefficient of determination and highly significant f-stats suggest high explanatory power of the model while pvalues associated with serial correlated LM test and JB test for normality of residuals imply that model is free from autocorrelation and residuals are

normally distributed, respectively. Detailed estimation results can be found in appendix B4.

Table 3.3: Estimation Results for Determinants of Remittances

Two-Staged Least Squares Estimation: (Dependent Variable: log Remittances %GDP)					
C	Log(MIG)	Log(PCGDP)	Log(UNC)	Log(Fin.Dev)	DWAR
-1.87	0.39**	-0.989***	4.66**	3.32**	0.69**
(5.47)	(0.16)	(0.19)	(2.06)	(1.46)	(0.27)
R^2			0.69		
F-stat			11.7 (pvalue 0.00)		
Serial Correlation LM-test (Ho: No Autocorrelation)			p-value: 0.59		
Normality of Residuals: (Ho: Residuals are Normally distributed)			p-value: 0.76		
Hausman Test			Chi-square = 18.5 (p-value = 0.000)		

Standard errors in parenthesis; *** suggests significance at 1%, ** at 5% and * at 10%

Determinants of Foreign Aid

Results of the model estimation for determinants of foreign aid are presented in Table 3.4. Detailed estimation results can be found in appendix B5. Hausman test result implies that OLS estimates are inconsistent therefore we used 2SLS to account for endogeneity. Consistent with Ali et al (2006) we found that GDP growth has negative relationship with foreign aid. Results suggest that higher GDP growth implies better income levels in the country and hence less need for foreign aid. Results also suggest that government consumption expenditure is positively correlated with foreign aid which implies that higher the country spends under the head of consumption expenditures, more it needs foreign aid. In other words, better control on government consumption expenditure can significantly reduce dependence on foreign aid. Similar to the findings for determinants of remittances, we found positive coefficient for dummy for Afghan war and uncertainty suggesting that Pakistan received much more aid during Afghan war and also Pakistanis remit more under uncertainty.

Determinants of Foreign Debt

Parameter estimates of the model for determinants of foreign debt are presented in Table 3.5. Detailed results can be found in appendix B6. Results suggest

Table 3.4: Estimation Results for Determinants of Foreign Aid

Two-Staged Least Squares Estimation: (Dependent Variable: log Foreign Aid %GDP)				
C	Log(GDPG)	Log(GCEXP)	DWAR	UNC
2.55*	-0.65***	2.04***	0.54*	0.27*
(1.32)	(0.18)	(0.42)	(0.28)	(0.16)
R^2			0.65	
F-stat			14.9 (pvalue 0.00)	
Serial Correlation LM-test (Ho: No Autocorrelation)			p-value: 0.38	
Normality of Residuals: (Ho: Residuals are Normally distributed)			p-value: 0.86	
Hausman Test			Chi-square = 16.9 (p-value = 0.000)	

Standard errors in parenthesis; *** suggests significance at 1%, ** at 5% and * at 10%

that debt servicing as percentage of exports has positive relationship with external debt outstanding. In other words, when proportional of debt servicing expenditure to export increases, it increases country's indebtedness in addition to the increase in debt burden through new contracts. Negative and highly significant coefficient of financial development suggests that domestic financial development helps in reducing external indebtedness. Results of the debt servicing and financial development were consistent with Tiruneh (2003). Also consistent with the findings of Tiruneh (2003) we found negative relationship between GDP growth and external indebtedness suggesting that higher growth levels increases the ability to pay-back the loans and to finance the economy with domestic sources. We also found population growth as a important determinant of external indebtedness. Policy implication from the result is that uncontrolled population growth leads to increase in number of mouths to feed and in absence of sufficient sustainable domestic financial sources; country has to borrow from abroad.

Table 3.5: Estimation Results for Determinants of Foreign Debt

Two-Staged Least Squares Estimation: (Dependent Variable: log Foreign Debt %GDP)				
C	Log(DSE)	Log(FD)	Log(GDPG)	Log(POP)
-5.54***	0.27***	-0.13***	-0.22***	1.24***
(0.68)	(0.07)	(0.02)	(0.04)	(0.22)
R^2			0.77	
F-stat			20.1 (pvalue 0.00)	
Serial Correlation LM-test (Ho: No Autocorrelation)			p-value: 0.11	
Normality of Residuals: (Ho: Residuals are Normally distributed)			p-value: 0.68	
Hausman Test			Chi-square = 20.02 (p-value = 0.000)	

Standard errors in parenthesis; *** suggests significance at 1%, ** at 5% and * at 10%

3.4 Conclusion

In this chapter we investigated the determinants of foreign capital inflows (FCIs) in Pakistan both in aggregated and disaggregated forms. Economic theory suggests different driving forces behind motivation of foreign capital especially in disaggregated forms. We used appropriate models previously used by researchers and used 2SLS method for estimation of parameters after finding cointegrating relationships. We found that GDP in its different forms was the major determinant of all kinds of capital inflows. We found positive relationship between different forms of GDP with FCI and FDI while coefficient of growth for remittances, foreign aid and foreign debt was found to be negative. All the results were in line with previous researches. Coefficient of financial development for external debt was found to be negative suggesting that better financial development in domestic sector acts as substitute for external debt. We included dummy for Afghan war in our analysis of remittances and foreign aid to account for the impact of war on capital inflows in economy. We found positive and highly significant coefficient war dummy suggesting that Pakistan received much higher capital inflows under the head of remittances and foreign aid. We also found positive relationship between uncertainty and capital inflows. To sum-up, we found that growth is an important determinant of all kinds of foreign capital flows. Perhaps the more important question is how foreign capital affects economic growth and other key economic indicators in Pakistan. Discussion on these topics will be presented in following chapters.

Chapter 4

Foreign Capital Inflows and Economic Growth

The need of foreign capital generally arises with the lack of capital in host country and low saving and investment ratios. Foreign capital does provide important support to the host economies but reliance on foreign capital is associated with high level of exposure to global crisis and policies of home countries. The relationship between foreign capital and growth is not as straight forward as it seems. Economists differ in their views regarding growth effects of foreign capital especially in the host countries. Optimists argue that foreign capital brings cheap and relatively less risky access to the funds in addition to transfer of technology while pessimists argue that foreign capital is generally moved with intentions inconsistent with fundamentals which leads to economic volatility (Bordo et al., 2007). Moreover, inefficient allocation of funds may not yield the theoretical outcome (Collier et al. 2002). In particular context to developing countries, major blame of ineffective foreign capital utilization goes to underdeveloped financial sector which also is generally responsible for crisis as a consequence of disrupted inflows.

In this chapter we study the impact of foreign capital inflows on economic growth in Pakistan. Next section presents brief literature review which is followed by econometric analysis and conclusion.

4.1 Literature Review

4.1.1 Foreign Capital Inflows and Growth

Economic literature is rich in studies on relationship between foreign capital inflows and economic growth. Though composition of the foreign capital variable differs in every study, most significant studies on relationship between foreign capital (in general) and growth are briefly reviewed next.

Laureti et al. (2005) studied the relationship in question for 11 Mediterranean countries using data for the period of 1990-2000. They found positive relationship between foreign capital and growth only for those countries which followed openness oriented policies to attract foreign capital.

Policies in favour of international capital mobility, especially inward flows in emerging markets, are expected to improve social welfare in the recipient country. In order to measure such welfare gain, Gourinchas et al. (2006) provided estimates based on calibrated standard neoclassical model. The paper contributes to the literature by estimating benefits in terms of risk sharing. Findings of the paper suggest that welfare gains are not very large, as predicted by growth theories, even for the countries with significantly large inflow of capital. For a typical non-OECD country, switching from perfect autarky to perfect capital mobility is statistically equivalent to 1% increase in consumption which is relatively negligible as compared to gains from increase domestic productivity.

On a similar note, IMF staff paper (2007) noted that benefits of financial globalization are not so clear cut. Main findings of the paper suggest that financial openness is beneficial to the advanced economies in terms of risk sharing. Moreover, countries with better domestic financial development and quality of institutions do not suffer with macroeconomic volatility and crisis. On relationship between financial globalization and economic growth, authors found that foreign direct inflows and other non-debt creating flows do supplement growth impact of debt on growth strongly depends on policies and quality of institutions.

Bordo et al. (2007) studied the growth-foreign capital nexus for 19 countries during first era of globalization i.e. 1880-1913 and found positive relationship between the two variables. Authors, however, noted that this result appears in short run because most of the capital inflow in the studied period was for infrastructure. Investment in infrastructure raises the standard of living and

may reflect in growth for the time being but long run growth is driven by increase in total factor productivity which is relatively unaffected by such capital inflows.

Prasad et al. (2007) used the data of 83 countries for the period 1970 to 2005 and found that foreign capital is more beneficial for industrialized countries because of better domestic financial sector. Though inflow of capital is good for non-industrial economies as well but due to underdeveloped financial sector, they fail effectively utilize such inflows that may reflect in growth in long run. Gist of the study suggests that instead of blindly looking for foreign capital, poor countries should focus on developing their domestic financial sector.

On similar grounds, Schularick et al. (2010), compared the first era of globalization (1880-1913) with modern period (1980-2002). Using different model specifications and estimation methodologies, authors found that in first era of globalization, the financial openness and growth nexus was significant and robust for all model specifications. On the contrary, in contemporary period, the nexus was weakly significant when models were controlled for population growth and trade openness. The suggested reason for such relationship is that, unlike historical times, international capital market openness is no longer associated with net inflows of foreign savings.

For Pakistan, Hang Le (2002) used OLS on data from 1970 to 1999 and found insignificant impact of inflows on growth reason being underdevelopment of domestic institute, human capital and entrepreneurship. Yasmin (2005) used simultaneous Equation Model on data from 1970-71 to 2000-2001 and found positive relationship between the two variables. Mohey-ud-din (2006) used Multiple Linear Regression Model for the period 1974-75 to 2003-04 and found the same results.

4.1.2 Foreign Direct Investment and Growth

Foreign direct investment can affect economic growth through different channels. According to standard neoclassical growth models, countries with low domestic savings attract FDI to help in the process of capital accumulation. Such influx of capital allows emerging economies to grow faster than they could with their existing financial resources. The model, however suggests that there is diminishing return to physical capital due to which the growth affects of FDI can be limited to short run. In the framework of the New Theory of Economic Growth, however, FDI does not only affect the level of output per capita but

also its rate of growth which means that FDI can affect economic growth both in long-run and short-run. Endogenous growth model suggests that FDI facilitates the use of local raw materials, introduces modern management practices, brings-in new technologies, helps in financing current account deficits, increases the stock of human capital via on the job training and labor development, and increases the investment in research and development.

Economic literature is rich with studies related to FDI especially 1990s. While some authors found positive relationship between FDI and growth, others argue that the nexus is not so clear-cut and it depends heavily on certain characteristics of host economies. Borensztein et al (1998), for instance, studied the relationship in question in framework of cross-country regression and found that, through technology transfer, FDI complement growth relatively more than domestic investment. The relationship, however, was conditional on absorptive capacity of host economy for such technology transfer in terms of available human capital. Similarly, De Mello (1999) used time series and panel data (1970-1990) for a sample of OECD and non-OECD countries and found that the FDI-growth nexus is conditional to the substitutability or complementarity between existing and new technologies. In other words, if there is high degree of substitutability, as it is in advanced economies, countries utilize FDI more efficiently and FDI becomes important determinant of growth. On the other hand, if technologies are complementary to each other then countries find it difficult to make changes/improvements for FDI driven technology to work. Which results in less efficient utilization of FDI and it becomes weaker determinant of growth. Further on conditional relationship between FDI and growth, Bengoa et al (2003) used panel data for the period of 1970-1999 of 18 Latin American countries and found that there is a positive correlation between FDI and economic growth in the host countries. They noted that in order to benefit from longterm capital flows, the host country requires, adequate human capital, liberalized markets and economic stability. Similar results were found in Durham (2004) who analyzed data for 80 countries from 1979 to 1998 and found that the relationship between FDI and growth is contingent on the absorptive capacity of host countries.

Alfaro et al (2004), using cross-country data for the period 1981-1999, found that aggregated FDI flows exerts an ambiguous effect on growth and positive effects are conditional to the quality, efficiency and development of domestic financial markets. Foreign direct investments in the primary sector, however, was found have a negative effect on growth, while investment in manufacturing

has positive effect. Panel data analysis of Li et al (2005) for the sample of 84 countries for the period 1970-1999 also shows that through that channel of human capital, FDI exerted a strong positive effect on economic growth.

Using two country endogenous growth model, Gao, T (2005) found that economic integration determines FDI flows to capital scarce countries which increases the standard of living in host countries and also supplements world growth. Moreover, existence of positive relationship between FDI and growth does not necessarily imply causal relationship, rather both growth and FDI respond endogenously to economic integration.

In a recent study, Bode et al. (2011) investigated the effects of inward FDI flow on income levels and growth inside the US since 1970s. Findings suggest that labor-intensive FDI which is concentrated in richer states is associated with income growth with capital-intensive growth, which is associated with poorer states, is not. There was also no evidence of income convergence inside US resulting from inward flow of FDI.

4.1.3 Remittances and Growth

Under Keynesian principles, the proportion of transfer which is used for consumption is the major factor in determining the net impact of such transfers. Research has shown that a very high proportion of remittances are spent on consumption instead of productive investments. The relationship between remittances and growth therefore can be positive or negative. Remittances may generate positive spillovers through efficient financial markets, easing the credit constraints for business as well as common men or on the contrary, it may increase consumption more than investment and negative chain of events can be triggered through low labour participation, low investments and so on. Brown (1994), for instance, found positive relationship between remittances and savings in Tonga and Samoa basing on micro-level analysis. Finding also suggests that remittances are responsive to financial incentives and interest rate differentials between home and host countries.

Remittances provide priceless income smoothening to the recipient households. Such inflows are sometimes subject to moral hazard problem i.e. in anticipation of continuous future inflows, recipients start providing less labor. Chami et al. (2003), for instance, studied this issue and found negative relationship between remittances and growth because of the moral hazard problem. Authors also found that this problem is not limited to households, even govern-

ments take important policy decisions in anticipation of continuous inflow of remittances in future. Such policies can prove to be very harmful because sudden discontinuity in remittances can create serious problems for governments.

Economic theory suggests that remittances, especially if coming from formal channels, help in easing credit constraints. Mesnard (2004) studied the same for Tunisia using a life-cycle model found that remittances ease the credit constraint of workers whose access to the financial market is limited. Results also suggest the migrants who invest after coming back home, accumulate more savings than salaried migrants.

Glytsos (2005) studied 5 countries for the period of 1969-1998. Using 2SLS, author found that fluctuations in remittances are associated with fluctuations in growth. Moreover, the negative effect of fall in remittances is higher than positive impact of its rise. Remittances were also found to be associated with rise in standard of living in recipient countries. One important feature of remittances is that it can indirectly affect labour supply. This could reduce economic growth through reduced labour supply. Moreover, large and consistent remittance inflows could make the exports less profitable through appreciated real exchange rate. For developing Asia and pacific countries, Jongwanich, J. (2007) found that remittances can raise standard of living if recipients are relatively poor. Since migration is not cheap, poor are least likely to be recipient of remittances from abroad hence the welfare gains might be negligible.

Ramirez (2008) analysed the impact of remittances on the economic growth of selected upper and lower income Latin American and Caribbean countries and found positive and significant impact of remittances on economic growth in both groups of countries. Remittances spur growth through the channel of savings and investment. Since remittances help in income smoothening, it creates demand for goods and services; which in turn generates employment opportunities but these benefits are conditional to sufficient excess capacity utilization.

In one of the recent studies, Acosta et al. (2009) developed a dynamic stochastic general equilibrium model to investigate the impact of remittances in emerging market economies. The key findings suggest that regardless of the motives, remittances are associated with reduction in labor supply and increase in demand for non-tradable commodities as a result market for non-tradable commodities expands and attracts labor. Remittances were also found to be beneficial for household welfare through smooth income flows.

In case of Pakistan, Nishat et al (1991) analysed the impact on remittances

on economic growth in Pakistan for the period 1959-60 to 1987-88. The results indicate a strong positive impact of remittances on GNP, consumption, investment and imports. They argue that remittances increase the dependency on imports through increase in import content of consumption demand and worsen balance of payments problems.

4.1.4 Foreign Aid and Growth

Neoclassical model suggests that there is a positive relationship between aid and growth, as long as the GDP in host country is below its peak transitional growth rate . The critiques argue that foreign aid facilitates the large and inefficient governments which further deteriorates economic performance.

The positive or negative relationship of aid with growth is conditional to economic policies of host country. Burnside et al. (2000) investigated the aid-growth nexus for developing countries and found that positive affect of aid on growth is conditional to sound monetary, fiscal and trade policies. Sound policies are defined as such policies which are favourable for growth given economic fundamentals in absence of aid.

Aid is generally allocated for the wellbeing of host country population. Such welfare gain can be achieved through growth or poverty reduction or both. Feeny (2003) analyzed the impact of foreign aid on poverty and human well-being through channel of growth in Papua New Guinea during the 1990s. Results suggest that aid has negative relationship with poverty through growth but in presence of inequality the magnitude of such relationship significantly diminishes.

Collier et al. (2004) investigated policies and patterns of aid and growth in 17 societies coming out of civil war. Both growth and aid were found to be sensitive to policies. Moreover, aid effectiveness depend on certain characteristics such as inflation, budget deficit/surplus, openness, warfare, economic freedom etc.

Theoretical prediction of aid positively affecting growth is based on important assumption that aid is allocated to help recipient country grow and improve the wellbeing of its residents. Rajan et al. (2005) found that aid might be used to influence recipient countries. If this is the case, the causality of aid with growth may be reversed. Their findings suggest that impact of total aid as a percentage of GDP on growth is insignificant. Moreover, when two components of aid, *aid to allies* and *aid to non allies*, are studied separately

studied, aid to allies negatively affect growth while aid to non-allies positively affect growth.

Irandoust (2005) used the data from 1965 to 2000 for 5 less developed African countries and found that aid positively affects domestic savings and growth. Moreover, in additional to domestic capital accumulation, aid reduces foreign exchange gap, creates access to modern technology and allows easier access to foreign financial markets. Authors argue that likelihood based panel cointegration technique used in this study is the best approach to study such relationship.

4.1.5   External Debt and Growth

In neoclassical models, in presence of capital mobility when a country can lend or borrow, debt can increase transitional growth. Similarly in endogenous growth models debt is expected to have positive relationship with growth. Some studies in literature, however, state otherwise. Pattillo, et al (2002), for example, used panel data set for 93 developing countries for the period 1969-1998 and found negative relationship between debt and growth. Authors argue that the negative influence is because external debt is ultimately serviced with the domestic resources. Moreover, in highly uncertain environment, the debt accumulation can influence the growth through decrease in investment. The adverse impact is also because of the misallocation and inefficient utilization of such inflows.

Loko et al (2003) analyzed the impact of external indebtedness in 67 low income countries for the period 1985-1999 and found that there is negative relationship between external debt and poverty alleviation. The impact is through its negative impact on public investment, income growth and crowding out of government social spending. High levels of debt directly affects government spending on education, health and water and sanitation as government finds them easier to curtail. For the large dataset of 61 developing countries over the period 1969-98, Pattillo et al. (2004) studied the possible channels through which debt can affect economic growth. Special focus of the research was whether debt affects growth through capital accumulation or growth in total factor productivity. Results of the study suggest that debt negatively affects growth through both negative effect on total factor productivity growth and on physical capital accumulation. In a recent study Bjerg et al. (2011) studied how indebtedness and aid interact with each other with special reference to

growth. The main research question was if aid can be beneficial if it is used to pay off debt. Findings of the research suggest that though aid is negatively associated with growth, if such aid is used to decrease indebtedness of the country then such aid can be beneficial for recipient country.

4.2 Data and Methodology

4.2.1 Data

Empirical models used in this chapter are inspired from previous studies. However, most of the studies used panel data for analysis therefore appropriate modifications were made to suit time series data used in this study. Data for most of the variables have been taken from various different domestic sources (see appendix A). Some of the variables required construction of indices that has been done according to the procedure provided in relevant papers. Variables are briefly explained in model description while details can be found in appendix A along with the source.

4.2.2 Econometric Model

Econometric model used to study the FCI-growth nexus is inspired by one of the most cited papers on the topic by Bordo et al (2007). Due to possible endogeneity problem between FCI and GDPG, we used Two-Staged Least Squares methodology with lags of endogenous and other explanatory variables as instruments. Modified specification of the model used in this study can be written as:

Log(GDPG) = f(log(PCGDP), log(FCI), UNC)

Where,
GDPG = GDP growth measure as first difference of gross domestic product
PCGDP = Per capita gross domestic product
FCI = Foreign capital inflows as percentage of GDP
UNC= Uncertainty generated by GARCH(1,1) process on GDP where GDP follows AR(1)

4.3   Empirical Results

Variables were first tested for unitroot problem. Results of the ADF test are presented in appendix B1. Brief results of empirical estimation are presented in **??** while detailed estimates can be found in appendix B7. Hausman test results suggested that we strongly reject the null hypothesis of the test which is "OLS estimators are consistent" hence we had to use 2SLS to correct for endogeneity.

In 2SLS method, we used lags of the explanatory variables as instruments. This method is consistent with various macroeconomic studies. Estimated results of the model suggest that foreign capital inflows have positive relationship with GDP growth in Pakistan. In other words, FCIs have been beneficial for economic growth of Pakistan. The result is consistent with Yasmin (2005) for Pakistan and Bordo et al (2007) and Prasad et al (2007) for panel data. We also found that uncertainty has negative influence on economic growth while initial level of GDP, measured as per capita GDP, is important determinant of growth. Under high uncertainty, confidence of investors and businessmen decreases moreover, since output fluctuates under uncertainty, the growth levels are inconsistent. If we connect these results with determinants of foreign capital, we can say that growth and FCI determine each other.

Table 4.1: Estimation Results for FCI-Growth Nexus

Two-Staged Least Squares Estimation: (Dependent Variable: log GDPG)			
C	Log(FCI)	Log(PCGDP)	UNC
2.82***	3.21*	2.27***	-0.56***
(0.95)	(1.68)	(0.42)	(0.26)
R^2		0.89	
F-stat		96.9 (pvalue 0.00)	
Serial Correlation LM-test (Ho: No Autocorrelation)		p-value: 0.10	
Normality of Residuals: (Ho: Residuals are Normally distributed)		p-value: 0.08	
Hausman Test		Chi-square = 87.44 (p-value = 0.000)	

Standard errors in parenthesis; *** suggests significance at 1%, ** at 5% and * at 10%

4.4 Conclusion

In this section we studied the relationship between foreign capital inflows and economic growth. Economic theory suggests that FCIs should supplement growth but on the other hand high dependence on such inflows can also have negative influence on long-run growth. Some authors argue that long-run growth is determined through total factor productivity which is not generally influenced by influx of foreign resources. Especially in developing country context where capital resources are not at sustainable level, foreign capital in such situations do help in economic development of such countries. Positive impact of capital inflows in economic growth, however, is contingent of sound policy framework which efficiently utilizes the resources to their potential.

Results of our model suggest that FCIs have positive relationship with growth in Pakistan. The result is consistent with most of the previous studies on the relationship between foreign capital inflows and growth. We also found negative relationship between uncertainty and growth which suggests that under uncertainty, output fluctuates and therefore output gap also depicts irregular patterns which translates itself into reduced economic growth. Perhaps the more important question is that which of the foreign capital inflows is beneficial for growth in Pakistan and which is not. This can be a potential future research question. The question, however, remains about the benefits of these inflows in terms of poverty alleviation, reduction of income inequality

and reduction in unemployment. This aspect of the analysis will be discussed in next chapter.

Chapter 5

Impact of Foreign Capital on Unemployment, Income Inequality and Poverty

Labour market under globalization and financial deepening is expected to benefit through inflow of foreign capital through greater number of employment opportunities and faster growth of economy. The relationship, however, can go either way. Since foreign capital is attracted through favourable tariff and tax policies in the host countries, domestic sector comes under immense pressure due to tough international competition which forces many small firms to pull down their shutters. Though foreign firms do absorb some of this surplus labour and informal sector also expand because of available cheap labour, the hiring and firing does not completely cancel out rather unemployment as a whole increases. The impact of FCI on poverty and income inequality is also not trivial. Especially in developing country context, this relationship depends a great deal on economic policies in the host country. this chapter analysis the impact of foreign capital inflows on unemployment, poverty and income inequality.

5.1 Literature Review

5.1.1 Foreign Capital Inflows and Unemployment

Foreign capital can be either welfare improving or welfare harming. It has been found that welfare effects of foreign capital through unemployment are

ambiguous and greatly depend on policies in the host countries. Grinols et al. (1991), for example, studied this relationship under general equilibrium framework by introducing various extension to the model such as risk aversion in seeking high-wage (capital intensive) jobs, high elasticity of labor demand in low wage sector and contribution of unsuccessful high-wage seekers in secondary market. It was found that labour gains were positive in all cases except in extreme case where capital-intensive sector was heavily protected.

Informal sector plays important role in absorbing surplus labor and providing necessary goods and services to the economy when formal sector fails to deliver in desired quantity. Similarly, when influx of foreign investment competes out the domestic firms and fails to absorb the resultant unemployment to its full extent, informal sector utilizes this surplus labour. Chaudhuri et. al. (2006), used three sector general equilibrium model under Harris-Todaro framework to study the impact of trade liberalization and investment promoting policies on welfare and open employment. The urban sector in the model is composed on formal and informal sector which allows for the shift of labor surplus from formal to informal sector. Authors found that there is wage rigidity in urban sector which allows for the coexistence of open unemployment and informal sector which is contrary to the prediction of economic theory. Authors conclude that inflow of foreign capital in urban sector is expected to ameliorate the problem of unemployment. Under the similar framework, Chaudhuri (2007) used three sector Harris-Todaro framework in presence of agricultural-dualism (use of both traditional and advanced methods) and non traded final commodity (produced by small farmers and consumed domestically) and found that under this setup foreign capital can be welfare improving and does not necessarily aggravate the problem of unemployment.

An important perspective towards unemployment is the volatility in addition to the increase or decrease in it. Foreign capital inflows can increase or decrease this kind of volatility based on certain characteristics of home and host countries. Azariadis et. al. (2007), for example, showed that international capital mobility can increase the volatility in not only unemployment but also output. More specifically, authors found that fluctuations in unemployment with perfect capital mobility are three times as of fluctuations without capital mobility. Moreover, riskiness transfers from capital to labour and in case of small economies, policies should be designed to insure the income of workers whose income is not diversified across nations.

Unemployment rates can also be affected by foreign capital inflows through

indirect channel of capital accumulation. Karanassou et al. (2008), for example, empirically studied the determinants of unemployment and found that capital accumulation is important determinant of unemployment in Nordic countries using autoregressive distributed lag model. Authors also used Johansen framework to test for robustness of the results and found that results of the paper were robust. Demographic trends, such as population ageing, also induce international capital flows. Countries with ageing population tend to have higher savings, at prevailing interest rates, as compared to the requirement of economy. On the contrary, countries with growing labor force tend to have less than required savings which causes savings/capital to flow from population ageing country to labor growing country. Marchiori et al. (2011) studied demography-induced international capital flows with special reference to labor market imperfections and institutions. Through calibration of two country overlapping generations model to EU15 and US, authors found that labor market imperfections significantly increase the volume of capital flows. Moreover, with capital mobility, policy changes in one country affects the labor markets in other countries through capital movement.

In most recent study Schmerer et al. (2012) investigated that FDI- unemployment nexus. Since inward and outward FDI can have different influence on unemployment rates, authors used net FDI as the difference between FDI-in and FDI-out relative to GDP. Net positive FDI is expected to reduce unemployment rates through increased labor demand in the country. Authors used many specifications controlling for various factors and found that the coefficient of FDI was negative and significant. The strong magnitude in the bench mark case, however, can be driven from spurious regression and omitted variable bias. Unemployment is determined by many factors other than foreign capital inflows. Endogenous growth model suggests that, under full employment condition, unemployment rate is determined by same factors that determine growth. Moreover, relationship between unemployment rate and growth seems to be more straightforward than it is. Economic theory suggests that higher economic growth is associated with greater number of employment generating activities which determines negative relationship between the two variables. However, research has shown that this relationship can be reversed under certain economic conditions. Liu et al. (2008), for instance, extended the endogenous growth model to allow more general treatment of labor market. Main findings of the paper suggest that in addition to factors determining growth, unemployment rate is also determined by labor market parameters such as job

separation rate, bargaining power and unemployment benefits. The relationship between growth and unemployment can be positive or negative based on model parameters. Moreover, government policies that improve labour market efficiency always decrease unemployment while policies to encourage investment in research and development increases long-run unemployment.

5.1.2 Foreign Capital Inflows: Impact on Poverty and Income Inequality

Globalization can affect poverty and inequality in both ways. There is no consensus in economic literature about the welfare impacts of globalization in general and foreign capital inflows in particular. Economists supporting anti-globalization school of thought argue that economies pursue their goals on pure selfish motives and it is unwise to expect from economic giants to follow mutually beneficial policies especially in context of developing countries that generally have no bargaining power. Moreover, foreign investment is expected to benefit relatively rich people, generally entrepreneurs and qualified labor force which increases the gap between rich and poor even more. On the other hand, pro-globalization argument suggests that through increase in exports and investment opportunities, employment opportunities are created through expansion in the economy which directly helps in alleviation of poverty and inequality. The debate supported by empirical evidence, however, is based on numbers which are far from accurate and suffer from various technical and conceptual issues which makes empirical analysis of poverty and inequality quite difficult to implement and interpret (Aisbett, E 2007).

Contribution of foreign capital in decreasing or increasing poverty and inequality can be better studied in developing country with favourable conditions and policies for globalization. Gupta (1994) for instance, using, Harris-Todaro model, found that foreign capital inflows increase income inequality and lowers social welfare even under no tariff conditions. Similarly, Hanson, G. (2007) studied the case of Mexico in the era of globalization i.e. 1990s. Micro level data was used to evaluate the distributional effects of globalization on income levels in various states of Mexico along with their relative exposure to globalization. Results of the study indicated that income distribution in the states with higher exposure to globalization shifted to the right as compared to states with low-exposure. Authors, however, argued that Mexico experienced policy changes other than globalization (e.g. privatization) which can also be the de-

riving factor behind such changes in income distribution. Bergh et al. (2010) studied different kinds of globalization and their impact on income equality for 80 countries. Results indicate that globalization in the form of trade and investment (termed as economic freedom) is positively associated with income inequality.

Poverty levels can be determined by many other macroeconomic factors in addition to globalization in general and foreign capital in particular. Ahmed et al. (2010) studied the impact of global financial crisis on poverty levels in Pakistan using static computable general equilibrium model. Authors found that in addition to global financial crisis, fuel prices and food inflation were the key factors in 80% increase in poverty levels in the period of 2007 to 2009.

When we look at disaggregated forms for foreign capital inflows, remittances is found to be negatively associated with poverty (Adams et al. 2005; Anyanwu et al. 2010). Magnitude and sign of the relationship, however, depends on geographical characteristics of remittances and whether rural poor are recipient of such inflows (Wouterse, F., 2010). In addition to current percentage of population living under poverty line, some studies also analyse the impact of remittances on population under threat of falling under poverty line in future. Fuente A. (2010), for instance, found that disbursement of remittances is negatively correlated with threat to future poverty in Mexico. In one of the most recent studies, Hobbs et al. (2011) found that it is very costly for poor Nicaraguans to migrate to US therefore migration to US from Nicaragua are dominantly from middle income group. The impact of remittances on poverty and inequality, therefore, is different for difference countries of migration. Middle income group tend to benefit more while poor income group can only reach Costa Rica and therefore cannot earn as much as their middle income counterparts in US. As a result, poverty is not very much affected while inequality is increased. Gupta et al (2007) found remittances to be beneficial in poverty alleviation in Sub-Saharan Africa. They argued that there is large amount of remittance resource flow, if it can be formalized, it would bring in the money of unbanked recipients in the economy. This will not only boost economic performance but also will reduce poverty levels in

Foreign aid is generally allocated to alleviate poverty and inequality. The result however is not found to be as effective as expected. Collier et al (2002) estimated the efficient allocation of aid and found that existing aid allocation is not as effective as it should be and requires policy revision. On similar grounds using cross-country regressions, Chong et al. (2009) found weak association

between foreign aid and poverty alleviation. Moreover, the result was not robust to different policy parameters. The interesting direction of the argument is the bi-directional causality between aid and poverty. Arvin et al. (2002) studied the bi-directional relationship between aid and poverty for 118 countries and found that for most of the countries, there was no evidence of causal relationship while for other countries direction of the causality was mixed. Masud et al; (2005) analyzed the impact of aid on poverty through indirect channel of human development indicators using both bilateral and NGO aid flows in 87 countries using panel regression analysis and found that NGO aid has negative relationship with infant mortality and the impact is more prominent as compared to bilateral aid. The impact of aid on illiteracy was however found to be less significant. Hence aid has more prominent impact on poverty reduction through the channel of infant mortality.

Kraay et al (2005) argued that the aid ineffectiveness is directly linked to the improper utilization. A modest increase in aid can bring prominent results while huge amounts can end up giving zero net output from the agreement.

5.2 Data and Methodology

5.2.1 Data

Data for most of the variables have been taken from various different domestic sources (see appendix A). Some of the variables required construction of indices that has been done according to the procedure provided in relevant papers. Variables are briefly explained in model description while details can be found in appendix A along with the source.

5.2.2 Methodology

In this section we used Autoregressive Distributed Lag (ARDL/ADL) approach to cointegration to estimate longrun parameters of the model. ARDL is particularly useful because it provides consistent estimates even under small sample size and when variables are cointegrated of different order.

Autoregressive Distributed Lag Model (ARDL/ADL) When variables are integrated of different orders and sample size is not large enough, co-integration techniques like Johansen (1988) becomes imprecise. Autoregressive distributed lag model, in such a case, presents consistent estimates of parameters by including further lag dynamics in the model. Autoregressive Distributed Lag (ARDL or ADL) approach was developed by Pesaran and Shin (1995 and 1998), Pesaran et. al. (1997) and Pesaran et. al. (2001). The key benefit of the approach is that it can be applied irrespective of the order of integration i.e. purely I(0), purely I(1) or mutually co-integrated (and in small samples) while other cointegration techniques require all variables to be of equal degree of integration i.e. either purely I(0) or I(1) (and large samples). All the variables are assumed to be endogenous in the said approach. Let us consider a simple example for illustration. A simple ARDL (1,1) model can be written as:

$$y_t = m + \alpha_1 y_{t-1} + \beta_0 x_t + \beta_1 x_{t-1} + u_t$$

Where y and x are variables and u is white noise error term. The model can be inverted as lag polynomial in y

$$y_t = (1 + \alpha_1 + \alpha_1^2 + \ldots)m + (1 + \alpha_1 L + \alpha_1^2 L^2 + \ldots)(\beta_o x_t + \beta_1 x_{t-1} + u_t$$

Equation suggests that current value of y depends on current previous values of x and u. The long-run effect can be derived from this equation as

$$\frac{\beta_0 + \beta_1}{(1 - \alpha_1)} \ldots if |\alpha_1| < 1$$

Error correction representation of the model is given as:

$$\Delta y_t = \beta_0 \Delta x_t - (1 - \alpha_1)[y_{t-1} - \frac{m}{(1 - \alpha_1)} - \frac{\beta_0 + \beta_1}{(1 - \alpha_1)} x_{t-1}] + u_t$$

In generalized form ARDL (p,q) can be written as:

$$A(L)y_t = m + B(L)x_t + u_t$$

Where

$$A(L) = 1 - \alpha_1 L - \alpha_2 L^2 - \ldots - \alpha_p L^p$$

$$B(L) = \beta_0 + \beta_1 L + \beta_2 L^2 + \ldots + \beta_q L^q$$

In case of more than one explanatory variables ARDL(p,q1,q2,?,qk) model can be written as :

$$A(L)y_t = m + B_1(L)x_1t + B_2(L)x_2t + \ldots + B_k(L)x_kt + u_t$$

5.2.3 Econometric Models

Foreign Capital Inflows and Unemployment

Literature is not vast on relationship between foreign capital inflows and unemployment. Model used in this section is inspired from one of the recent studies by Schmerer (2012). The best-fit version of the model can be written as:

Unemployment = f(foreign capital inflows, infrastructure, output gap)

Where,
Unemployment= total percentage of unemployed workforce
FCI = Foreign capital inflows as percentage of GDP
Infrastructure = Government expenditure of transport and communication as percentage of GDP
Output gap = difference between actual and potential GDP as percentage of potential output.

Foreign Capital Inflows and Poverty

There are not many empirical studies on relationship between foreign capital and poverty. On determinants of poverty Mosley et al. (2004) presented an econometric model. We added FCI in the same model with slight modifications. Empirical model used in this section can be written as:

Poverty = f(inequality, FCI, Pro-poor expenditure, Growth)

Where,
Poverty = Poverty headcount ratio
Pro-poor expenditure = Index generated through education, health, housing and agriculture expenditures. Method is described in appendix A.
Inequality = Gini coefficient

FCI = Foreign capital inflows as percentage of GDP
Growth = First difference of gross domestic product.

Data for poverty and inequality was taken from domestic sources. Since micro level surveys were not very common in Pakistan, data for poverty headcount and gini coefficient is not regular. Therefore we had to use interpolation methods. We used linear and cubic spline interpolation for both variables and used both of them to compare results.

Foreign Capital Inflows and Income Inequality

Model used for analysis of FCI and income inequality relationship has been inspired from Chong (2009). Some variables, however, were dropped from the baseline version of the model because of their insignificance. The final model used in this section can be written as:

Inequality = f(Food inf, FCI, Growth)

Where,
Inequality = Gini coefficient; missing values interpolated using linear and cubic spline interpolation.
Food inf = Food inflation
FCI = Foreign capital inflows as percentage to GDP
Growth = First difference of gross domestic product.

5.3 Empirical Results

Foreign Capital Inflows and Unemployment

Results of the FCI-unemployment equation are presented in Table 5.1. Economic theory suggests that FCI should reduce unemployment in the host country. Consistent with the theory and empirical findings of Schmere (2012), we found that FCI negatively and significantly affects unemployment. In other words, FCI create employment opportunities in the country. Moreover, output gap is negatively associated with unemployment suggesting that closer the

Table 5.1: ARDL Long-run Estimates (Dependent Variable: log unemployment

C	Log(Foreign Capital Inflows %GDP)	Output Gap	Log(Infrastructure)	ECM(-1)
-0.43	-0.13***	-0.23***	-0.47E-5*	-1.37***
(0.03)	(0.05)	(0.05)	(0.24E-5)	(0.21)
R^2 of ARDL equation			0.86	
F-stat			46.39 (p-value: 0.00)	
Serial Correlation LM-test (Ho: No Autocorrelation)			0.07 (p-value: 0.8)	
Functional Form (Ramsey RESET) (Ho: Correct Functional form)			0.38 (p-value: 0.55)	
Lags			1,0,0,0	

Standard errors in parenthesis; *** suggests significance at 1%, ** at 5% and * at 10%

Source: author's computations.

output is to its potential value, lesser will be the unemployment. The results are consistent with Schmerer (2012). For detailed results see appendix B8.

In order to control for effect of domestic business environment, we used a proxy for infrastructure improvement. The coefficient of infrastructure suggests that improvement in infrastructure will lead to decrease in unemployment rate through increase in business opportunities and influx of domestic and foreign investments. Coefficient of ECM was found to be negative and highly significant implying long term relationship. Results of the diagnostic tests suggest that model is free from autocorrelation and functional form of the model is correct.

Foreign Capital Inflows and Poverty

Data for poverty and inequality is not frequent for Pakistan. Micro surveys were not much frequent in early days hence we have gaps in the data for both poverty and inequality. We used cubic-spline and linear interpolation to fill gaps in the data therefore results presented here are highly conditional to the data availability and may improve with availability of better data.

We present two models in this section; one with poverty and inequality figures interpolated with cubic spline interpolation and other with linear in-

terpolation. Table 5.2 presents the results of the models. Detailed results can be found in appendix B9. Results of model 1 with cubic spline interpolation were better than linearly interpolated poverty and inequality variables because in model 2, there is a problem of heteroskedasticity. Moreover, contrary to many studies, sign of growth variable was found to be insignificant. Variable of interest, FCI, however was found to be insignificantly associated with poverty in both regressions. Results of model 1 suggest that FCI has insignificant relationship with poverty in Pakistan. Given that FCI negatively correlates with unemployment, insignificant relationship with poverty suggests that benefits of FCI through employment generation do not trickle down to the people living under poverty line. Consistent with the findings of Mosley et al (2004) we found positive relationship between inequality and poverty and negative relationship between pro-poor expenditure and poverty. We also found negative and significant relationship between growth and poverty which is consistent with the findings of Mosley et al (2004). Diagnostics of the model suggest that model is free from heteroskedasticity and autocorrelation. Results of Ramsey RESET test suggest that functional form of the model is correct.

Table 5.2: ARDL Long-run Estimates (Poverty)

Model 1: Dependent Variable: Log(Cubic Spline Interpolated Poverty Headcount)					
C	Log(Inequality)	Log(Foreign Capital Inflows %GDP)	Pro Poor Expenditure Index	LogDGDP	ECM(-1)
5.23***	1.82**	0.03	-0.74**	-0.27***	-0.19***
(1.32)	(0.77)	(0.6)	(0.29)	(0.09)	(0.05)
R^2 of ARDL equation			0.98		
F-stat			113.19 (p-value: 0.00)		
Serial Correlation LM-test (Ho: No Autocorrelation)			0.25 (p-value: 0.62)		
Functional Form (Ramsey RESET) (Ho: Correct Functional form)			0.62 (p-value: 0.44)		
Heteroscedasticity (Ho: No Heteroscedasticity)			0.75 (p-value: 0.39)		
Lags			2,1,2,0,0		
Model 2: Dependent Variable: Log(Linearly Interpolated Poverty Headcount)					
C	Log(Inequality)	Log(Foreign Capital Inflows %GDP)	Pro Poor Expenditure Index	LogDGDP	ECM(-1)
3.55***	2.08***	0.52	-0.88***	-0.11	-0.54***
(1.13)	(0.61)	(0.63)	(0.25)	(0.11)	(0.14)
R^2 of ARDL equation			0.87		
F-stat			15.09 (p-value: 0.00)		
Serial Correlation LM-test (Ho: No Autocorrelation)			0.45 (p-value: 0.51)		
Functional Form (Ramsey RESET) (Ho: Correct Functional form)			0.91 (p-value: 0.35)		
Heteroscedasticity (Ho: No Heteroscedasticity)			7.93 (pvalue: 0.01)		
Lags			1,2,0,2,1		

Standard errors in parenthesis; *** suggests significance at 1%, ** at 5% and * at 10%

Source: author's computations.

Foreign Capital Inflows and Income Inequality

Long-run estimates of the FCI and inequality models are presented in Table 5.3. Detailed results can be found in appendix B10. Similar to poverty section, we present results of two models in this section; one with linearly interpolated Gini coefficient and other with cubic spline interpolation. Diagnostic tests on model 2 suggested that there is a strong presence of autocorrelation in the model. Therefore we used model 1 with linear interpolation for which there was no evidence of autocorrelation. Results of model 1 suggest that foreign capital inflows do not significantly affect inequality in the country. Moreover, GDP growth negatively and significantly affects income inequality while food inflation positively and significantly affects inequality in the country. These findings are consistent with Chong (2009). Diagnostic tests suggest that functional form of the model is correct and high coefficient of determination suggests that model has high explanatory power.

Table 5.3: ARDL Long-run Estimates (Income Inequality)

Model 1: Dependent variable Log(Linearly interpolated Gini coefficient)				
C	Log(Foreign Capital Inflows %GDP)	Log(DGDP)	Log(Food Inflation)	ECM(-1)
1.41***	0.25	-0.14***	0.21***	-0.99***
(0.22)	(0.49)	(0.04)	(0.06)	(0.25)
R^2 of ARDL equation			0.84	
F-stat			10.24 (p-value: 0.00)	
Serial Correlation LM-test (Ho: No Autocorrelation)			0.91 (p-value: 0.35)	
Functional Form (Ramsey RESET) (Ho: Correct Functional form)			1.25 (p-value: 0.28)	
Lags			2,2,2,2	
Model 2: Dependent variable Log(Cubic spline interpolated Gini coefficient)				
C	Log(Foreign Capital Inflows %GDP)	Log(DGDP)	Log(Food Inflation)	ECM(-1)
-0.27	1.06***	0.03	0.09**	-0.22***
(0.26)	(0.34)	(0.03)	(0.44)	(0.05)
R^2 of ARDL equation			0.97	
F-stat			139.9 (p-value: 0.00)	
Serial Correlation LM-test (Ho: No Autocorrelation)			17.74 (p-value: 0.00)	
Functional Form (Ramsey RESET) (Ho: Correct Functional form)			2.29 (p-value: 0.14)	
Lags			2,0,0,1	

Standard errors in parenthesis; *** suggests significance at 1%, ** at 5% and * at 10%

Source: author's computations.

5.4   Conclusion

In this section we studied the relationship of FCIs with unemployment, poverty and inequality. In order to get the long-run estimates of model, we used ARDL approach to cointegration. Economic theory suggests that FCIs improve business conditions in the country and creates employment opportunities. Consistent with the theory we found that FCI negatively and significantly affects unemployment. Moreover, output gap is negatively associated with unemployment suggesting that closer the output is to its potential value, lesser will be the unemployment.

When it comes to poverty and income inequality, literature suggests that FCIs can both increase or decrease poverty rates in the country. We found that, even though FCIs decrease unemployment, it does not significantly affect poverty and inequality. Insignificant relationship with poverty suggests that benefits of FCI through employment generation do not trickle down to the people living under poverty line. Consistent with the findings of Mosley et al (2004) we found positive relationship between inequality and poverty and negative relationship between pro-poor expenditure and poverty. Moreover, GDP growth negatively and significantly affects income inequality and food inflation positively and significantly affects inequality in the country.

In a nutshell we can say that FCIs have been beneficial for employment generation but not for poverty alleviation and income inequality reduction. Future research can focus on FCIs relationship with different sectors of unemployment which will give answer to the question why employment benefits of FCIs failed to reflect on poverty and income inequality.

Chapter 6

Summary and Conclusion

In this study we investigated the importance of foreign capital inflows in economic development of Pakistan. We did so by examining the impact of such capital inflows on economic growth, poverty, income inequality and unemployment in addition to the analysis on their determinants. Foreign capital inflows (FCIs) in this study are combination of foreign direct investment, remittances, foreign aid and external debt. We used data for the period 1973-2008 from various different sources for Pakistan. To be more specific about the research agenda, this study attempted to answer three major questions; what are the determinants of foreign capital inflows in both aggregated and disaggregated forms? How does foreign capital affect economic growth in Pakistan? and how does FCIs influence unemployment, poverty and income inequality. Economic literature, both empirical and theoretical, presents contradictory views on the importance and significance of foreign capital inflows in host countries. Causal relationships are particularly vague in developing country context; possible reasons being underdeveloped financial markets, corruption, inefficient allocation of resources, improper planning and so on.

In order to estimate parameters, we used different methodologies. Since first two chapters deal with determinants of FCI and FCI-Growth nexus, there was a possibility of endogeneity. We used 2SLS method to estimate model parameters in chapter 3 and 4. Since we did not expect endogeneity in chapter 5 (relationship of FCI with poverty, unemployment and income inequality) we used autoregressive distributed lag (ARDL/ADL) approach to cointegration. The ARDL approach is particularly useful here because of relatively smaller sample size and different levels of co-integration.

In our analysis for determinants of FCIs we found that GDP in its different

forms was the major determinant of all kinds of capital inflows. We found positive relationship between different forms of GDP (GDP per worker, GDP per capita, GDP growth; consistent with literature)with FCIs, FDI, remittances and external debt. Coefficient of GDP for foreign aid was found to be negative suggesting that higher national income decreases the requirement for foreign aid. Trade openness was found to be important determinant of FDI and FCI while financial development was found to be important determinant of foreign aid and external debt.

While analysing the impact of aggregated FCIs on economic growth, we found that FCIs have positive relationship with growth in Pakistan. In other words, FCIs have been beneficial for economic growth of Pakistan. We also found that uncertainty has negative influence on economic growth while initial level of GDP, measured as per capita GDP, is important determinant of growth. Under high uncertainty, confidence of investors and businessmen decreases moreover, since output fluctuates under uncertainty, the growth levels are inconsistent. If we connect these results with determinants of foreign capital, we can say that growth and FCI determine each other.

In final chapter we studied the relationship of FCIs with unemployment, poverty and income inequality separately. We found that FCI reduces unemployment in the long run. However, we could not find significant relationship between FCIs and poverty and income inequality. In a nutshell we can say that FCIs have been beneficial for employment generation but not for poverty alleviation and income inequality reduction. Moreover, although economic growth determines FCIs in both aggregated and disaggregated forms, the impact of FCI on growth in turn is negative.

Based on above mentioned results we can say the foreign capital inflows have generally been beneficial for Pakistan economy. However, overall benefits to the economy failed to reach poor segment of the population. Although FCI help in reducing unemployment, poverty and income inequality remains unaffected. Sound economic policies to efficiently utilize foreign resources, especially worker remittances, can help in poverty alleviation and reducing income inequality.

Potential future direction of the research can be towards FCI-growth, FCI-poverty and FCI-income equality nexus in disaggregated forms. This will identify fruitful and harmful kinds of inflows for Pakistan.

Chapter 7

References

1. Acosta, Pablo A., Emmanuel K.K. Lartey, Federico S. Mandelman, (2009) Remittances and the Dutch disease Journal of International Economics, Volume 79, Issue 1, September 2009, Pages 102-116.

2. Adams, Richard H. Jr. and John Page (2005) Do International Migration and Remittances Reduce Poverty in Developing Countries? World Development Vol. 33, No. 10, pp. 1645–1669, 2005

3. Aisbett, Emma (2007) Why are Critics so Convinced the Globalization is Bad for the Poor NBER Chapters, in: Globalization and Poverty, pages 33-86 National Bureau of Economic Research, Inc.

4. Alesina Alberto, Beatrice Weder (1999) Do Corrupt Governments Recieve Less Foreign Aid? National Bureau of Economic Research Working Paper No. 7108

5. Alesina Alberto, David Dollar (2000) Who Gives Foreign Aid to Whom and Why? Journal of Economic Growth 5. 33-63

6. Alfaro, Laura., Areendam Chanda, Sebnem Kalemli-Ozcan, Selin Sayek, (2004) FDI and economic growth: the role of local financial markets Journal of International Economics, Volume 64, Issue 1, October 2004, Pages 89-112.

7. Ali Abdiweli M, Hodan Said Isse (2006) An Empirical Analysis of Determinants of Foreign Aid: A Panel Approach International Advances in Economic Research12: 241-250

8. Ang, James B. (2008) Determinants of foreign direct investment in Malaysia Journal of Policy Modeling 30 (2008) 185–189

9. Anyanwu, J. C. and Erhijakpor, A. E. (2010), Do International Remittances Affect Poverty in Africa? African Development Review, 22: 51–91. doi: 10.1111/j.1467-8268.2009.00228.x

10. Aqeel, Anjum., Muhammad Nishat (2005) The Determinants of Foreign Direct Investment in Pakistan Periodicals of 20th Annual General Meeting, Pakistan Society for Development Economists.

11. Arvin, B. Mak., Francisco Barillas (2002) Foreign aid, poverty reduction and democracy Applied Economics, 2002, 34: 2151-2156

12. Asiedu Elizabeth (2002) On the Determinants of Foreign Direct Investment to Developing Countries: Is Africa Different? World Development Vol. 30 . No. 1pp. 107-119

13. Awan Asma, Nabeela Asghar, Hafeez ur Rehman (2011) The Impact of Exchange Rate, Fiscal Deficit and Terms of Trade on External Debt in Pakistan Australian Journal of Business and Management Research Vol. 1 No.3

14. Aydas, Usman Tuncay., Kivilcim Metin-Ozcan and Bilin Neyapti (2005) Determinants of Worker's Remittances: The Case of Turkey Emerging Markets F Finance and Trade vol. 41, no. 3 pp 53-69

15. Azariadis, Costas., Christopher A. Pissarides, (2007) Unemployment dynamics with international capital mobility European Economic Review, Volume 51, Issue 1, January 2007, Pages 27-48, ISSN 0014-2921, 10.1016/j.euroecorev.2005.11.005.

16. Bengoa, M., and Blanca, S.-R. (2003). Foreign Direct Investment, Economic Freedom and Growth: New Evidence from Latin America. Europian Journal of Political Economy 19 , 529-545.

17. Bergh, Andreas; Therese Nilsson,(2010) Do liberalization and globalization increase income inequality? European Journal of Political Economy, Volume 26, Issue 4, December 2010, Pages 488-505, ISSN 0176-2680, 10.1016/j.ejpoleco.2010.03.002.

18. Biswas Romita (2002) Determinants of Foreign Direct Investment Review of Development Economics, 6(3), 492-504

19. Bjerg, Christina., Christian Bjornskov, Anne Holm (2011) Growth, debt burdens and alleviating effects of foreign aid in least developed countries European Journal of Political Economy 27 (2011) 142-153.

20. Bode, Eckhardt., Peter Nunnenkamp (2011) Does foreign direct investment promote regional development in developed countries? A Markov chain approach for US states Review of World Economics (2011) 147:351 383

21. Bordo, Michael D., Christopher M. Meissner (2007) Foreign Capital and Economic Growth in the First Era of Globalization NBER Working Paper No. 13577

22. Borensztein, E. J., De Gregorio, J., and W, Lee. (1998). How Does Foreign Direct Investment Affect Economic Growth? Journal of International Economics 45 , 115-135.

23. Brown, R. P. C. (1994), Migrants' Remittances, Savings and Investment in the. South Pacific , International Labour Review 133, 347-367

24. Buch Claudia M, Lusine Lusinyan (2003) Determinants of Short-term Debt: a note International Financial Markets, Institutions and Money 13 pp:157-170

25. Burnside, C., and Dollar, D. (2000). Aid, Policies and Growth . American Economic Review 90(4) , 847-868.

26. Carling Jorgen (2008) The Determinants of Migrant Remittances Oxford Review of Economic Policy. Vol 24, Bo 3, pp581-598

27. Carlson Mark, Leonardo Hernandez (2002) Determinants and Repurcussions of the Composition of Foreign Capital Inflows International Finance Discussion Papers, Board of Governers of the Federal Reserve System No. 717 webaddress: www.imf.org/external/pubs/ft/wp/2002/wp0286.pdf

28. Chakrabarti Avik (2001) The Determinants of Foreign Direct Investment: Sensitivity Analysis of Cross-country Regressions. Kyklos, 54: 89-113.

29. Chami, R., A. Barajas, T. F. Cosimano, C. Fullenkamp, M. Gapen and P. Montiel (2008) Macroeconomic Consequences of Remittances, IMF Occasional Paper No. 259 Washington, D.C.: International Monetary Fund.

30. Chami, R., Fullenkamp, C., and Jahjah, S. (2003). Are Immigrant Remittance Flows a Source of Capital for Development? Washington DC: IMF Working Paper 01/189, International Monetary Fund.

31. Chaudhuri, Sarbajit (2007) Foreign capital, welfare and urban unemployment in the presence of agricultural dualism Japan and the World Economy, Volume 19, Issue 2.

32. Chaudhuri, Sarbajit, Yabuuchi, Shigemi and Mukhopadhyay, Ujjaini, (2006) Inflow of Foreign Capital and Trade Liberalization in a Model with an Informal Sector and Urban Unemployment . Pacific Economic Review, 11: 87–103. doi: 10.1111/j.1468-0106.2006.00301.x

33. Chong, Alberto., Mark Gradstein., Cecilia Calderon (2009) Can foreign aid reduce income inequality and poverty? Public Choice (2009) 140: 59–84

34. Collier, Paul., David Dollar, (2002) Aid allocation and poverty reduction, European Economic Review , Volume 46, Issue 8, September 2002, Pages 1475-1500, ISSN 0014-2921, 10.1016/S0014-2921(01)00187-8.

35. de Mello, Luiz R. Jr (1999) Foreign direct investment-led growth: evidence from time series and panel data Oxford Economic Papers 51 (1999), 133-151

36. Durham, J. B. (2004). Absorptive Capacity and the effects of Foreign Direct Investment and Equity Foreign Portfolio Investment on Economic Growth. European Economic Review 48 , 285-306.

37. El-Sakka M.I.T, Robert McNabb (1999) The Macroeconomic Determinants of Emigrant Remittances World Development vol. 27 No. 8 pp: 1493-1502

38. Feeny, Simon (2003) The Impact of Foreign Aid on Poverty and Human Well-Being in Papua New Guinea Asia-Pacific Development Journal Vol. 10, No. 2, December 2003

39. Freund Caroline, Nikola Spatafora (2005) Remittances: Transaction costs. Determinants and Informal Flows World Bank Policy Research Working Paper No. WPS3704

40. Gao, Ting (2005) Foreign direct investment and growth under economic integration Journal of International Economics 67, 157-174.

41. Glystsos, N. (2005). The contribution of remittances of growth. Journal of Economic Studies 32(6) , 468-496.

42. Gourinchas, Pierre-Olivier., Olivier Jeanne (2006) The Elusive Gains from International Financial Integration Review of Economic Studies (2006) 73, 715–741

43. Grinols, Earl L. (1991) Unemployment and Foreign Capital: The Relative Opportunity Costs of Domestic Labour and Welfare Economica New Series, Vol. 58, No. 229 (Feb., 1991), pp. 107-121 Published by: Blackwell Publishing on behalf of The London School of Economics and Political Science and The Suntory and Toyota International Centres for Economics and Related Disciplines

44. Gupta Poonam (2005) Macroeconomic Determinants of Remittances: Evidence from India IMF Working Paper WP/05/224

45. Gupta, Manash Ranjan (1994) Foreign capital, income inequality and welfare in a Harris-Todaro model , Journal of Development Economics, Volume 45, Issue 2, December 1994, Pages 407-414, ISSN 0304-3878, 10.1016/0304-3878(94)90040-X.

46. Gupta, Sanjeev., Pattillo, Gupta., and Wagh, Smita (2007) Impact of Remittances on Poverty and Financial Development in Sub-Saharan Africa IMF Working Paper, WP/07/38

47. Hang Le, Minh., Ali Ataullah (2002) Foreign Capital and Economic Performance of Pakistan The Lahore Journal of Economics (Vol. 7-I, 2002).

48. Hanson, Gordon H. (2007) Globalization, Labor Income, and Poverty in Mexico, NBER Chapters, in: Globalization and Poverty, pages 417-456 National Bureau of Economic Research, Inc.

49. Hobbs, Andrew W. Kenneth P. Jameson (2011) Measuring the effect of bi-directional migration remittances on poverty and inequality in Nicaragua Applied Economics Vol. 44, Iss. 19, 2011

50. Irandoust. M., Ericsson. J. (2005) Foreign aid, domestic savings and growth in LDCs: An application of likelihood-based panel cointegration Economic Modelling Vol. 22 (4), pp. 616-627

51. Jamal, Haroon (2006) Does Inequality Matter for Poverty Reduction? Evidence from Pakistan's Poverty Trends The Pakistan Development Review 45 : 3 (Autumn 2006) pp. 439–459

52. Johansen S., Juselius K., (1990) Maximum Likelihood Estimation and Inference on Cointegration – with applications to the demand for money, Oxford bulletin of economics and statistics, 52, 2, pp. 169-210

53. Johansen, S., (1988) Statistical Analysis of Cointegration Vectors, Journal of Economic Dynamics and Control, Vol. 12 pp. 231-54.

54. Jongwanish, J. (2007). Worker's Remittances, Economic Growth and Poverty in Developing Asia and the Pacific Countries. Economic and Social Commission for Asia and Pacific: UNESCAP Working Paper, WP/07/01

55. Karanassou, Marika., Hector Sala and Pablo F. Salvador (2008) Capital accumulation and unemployment: new insights on the Nordic experience Cambridge Journal of Economics 32(6): 977-1001 first published online June 16, 2008 doi:10.1093/cje/ben022

56. Kentor, J., and Boswell, T. (2003). Foreign capital dependence and development: A new direction. American Sociological Review, 68(2), 301-313

57. Khan, Ejaz Ali Khan., Muhammad Atif Nawaz (2010) Economic Determinants of Foreign Direct Investment in Pakistan Journal of Economics 1 (2), pp 99-104.

58. Kraay, Aart., Claudio Raddatz, (2007) Poverty traps, aid, and growth Journal of Development Economics, Volume 82, Issue 2, March 2007, Pages 315-347.

59. Laureti, L., and Postiglione, P. (2005). The effects of capital inflows on the economic growth in Med area. Journal of Policy Modelling 27:7 (839-851).

60. Li, X., and Xiaming, L. (2005). Foreign Direct Investment and Economic Growth: An Increasingly Endogenously Relationship. World Development 33 (3), 393-407.

61. Liu, Haoming and Jinli Zeng (2008) Determinants of Long-Run Unemployment Southern Economic Journal , Vol. 74, No. 3 (Jan., 2008), pp. 775-793

62. Loko, Boileau., Mlachila,Montfort., Nallari, Raj., and Kalonji, Kadima (2003) The Impact of External Indebtedness on Poverty in Low-Income Countries IMF Policy Development and Review Department Working Paper WP/03/61

63. Masud, Nadia and Yontcheva, Boriana (2005) Does Foreign Aid Reduce Poverty? Empirical Evidence from Nongovernmental and Bilateral Aid IMF Working Paper WP/05/100

64. Mesnard, A. (2004), Temporary Migration and Capital market Imperfections , Oxford Economic Papers, Vol.56 (2): 242-62.

65. Pattillo, C., Poirson, H., and Ricci, L. (2002). External Debt and Growth. Retrieved 2009, from IMF WOrking Paper: http:// papers.ssrn.com/sol3/papers.cfm?abstract_id=879569

66. Pattillo, C., Poirson, H., and Ricci, L. (2004). What Are the Channels Through Which External Debt Affects Growth? Retrieved 2009, from International Monetary Fund, African and Asia and Pacific Departments: http://www.imf.org/external/pubs/ft/wp/2004/wp0415.pdf

67. Paul Collier, Anke Hoeffer (2004) Aid, policy and growth in post-conflict societies European Economic Review 48, 1125 1145

68. Pesaran M. H., and Shin, Y. (1995, 1998) An Autoregressive Distributed Lag Modelling Approach to Cointegration Analysis DAE Working Paper No. 9514

69. Pesaran, M. H., and Pesaran, B. (1997) Working with Microfit 4.0: Interactive Econometric Analysis , Oxford: Oxford University Press

70. Pesaran, M. H., Shin, Y., and Smith, R. J. (2001) Bounds Testing Approaches to the Analysis of Level Relationships, Journal of Applied Econometrics, 16, 289-326

71. Rajan, R. G., and Subramanian, A. (2005). Aid and Growth: What Does the Cross-Country Evidence Really Show . Working Paper WP/05/127, IMF.

72. Ramasamy Bala, Matthew Yeung (2010) The Determinants of Foreign Direct Investment in Services The World Economy webaddress: http://onlinelibrary.wiley.com/doi/10.1111/j.1467-9701.2009.01256.x/full (Accessed March 2012)

73. Ramirez, M. D., and Sharma, H. (2008, June). Remittances and Growth in Latim America: A Panel Unit Root and Panel Cointegration Analysis. Yale Economics Department Working Paper No. 51

74. Roemer, M; Guerty, Mary Kay (1997) Does Economic Growth Reduce Poverty? Harvard Institute of International Development Technical Paper website: http://pdf.usaid.gov/pdf_docs/PNACA656.pdf

75. Schmerer, Hans Jorg, (2012) Foreign direct investment and search unemployment : Theory and evidence, IAB Discussion Paper 201204, Institut für Arbeitsmarkt; und Berufsforschung (IAB), Nürnberg [Institute for Employment Research, Nuremberg, Germany].

76. Schularick, Moritz and Thomas M . Steger (2010) Financial Integration, Investment, and Economic Growth: Evidence from Two Eras of Financial Globalization Review of Economics and Statistics 2010 92:4, 756-768

77. Shah Zahir, Ahmad Qazi Masood (2003) The Determinants of Foreign Direct Investment in Pakistan: An Empirical Investigation. Pakistan Development Review, 42: 697-714.

78. Siamwalla Ammar, Yos Vajragupta, Pakorn Vichyanond (1999) Foreign Capital Inflows: Determinants and Impact Thailand Development Research Institute webaddress: www.tdri.or.th/download/reports/published/m52.pdf

79. Singh, Raju Jan., Markus Haacker, Kyung-woo Lee, Maelan Le Goff (2010) Determinants and Macroeconomic Impacts of Remittances in Sub-Saharan Africa Journal of African Economies vol. 20 no. 2, pp 312- 340

80. Tiruneh Menbere Workie (2003) An Empirical Investigation intro the Determinants of External Indebtedness University of Munich Working Paper webaddress: http://www.menbere.com/Causesofdebtcrisis.pdf

81. Wouterse, F. (2010) Remittances, Poverty, Inequality and Welfare: Evidence from the Central Plateau of Burkina Faso Journal of Development Studies Vol. 46, Iss. 4, 2010

82. Yasmin, B. (2005) Foreign Capital Inflows and Growth in Pakistan: A Simultaneous Equation Model South Asia Economic Journal Vol. 6 (2) pp. 207-219 Zhang Guang (2004) The Determinants of Foreign Aid Allocations accross China: The Case of World Bank Loans Asian Survey vol. 44 No. 5 pp. 691-710

Appendix A

Data and Variable Descriptions

Data has been taken from various different sources for the period of 1973-2008. Variable descriptions and sources and described as under:

Variable	Description	Data source
FCI	Foreign Capital inflows (FDI + remittances + foreign aid + foreign debt) as percentage of GDP	
FDI	Foreign direct investment is investment of foreign assets into domestic structures, equipment, and organizations. It does not include foreign investment into the stock markets1. FDI is used as percentage of GDP.	Handbook of Statistics on Pakistan Economy 2005, updated with Annual Reports of State Bank of Pakistan and Economic Survey of Pakistan various issues.
Remittances	A remittance is a transfer of money by a foreign worker to his or her home country2. Remittances are used as percentage of GDP	Handbook of Statistics on Pakistan Economy 2005, updated with Annual Reports of State Bank of Pakistan and Economic Survey of Pakistan various issues.
Foreign Debt	External debt outstanding as percentage of GDP	Economic Survey 2010-11 External Debt Outstanding million USD
Foreign Aid	Foreign aid is a voluntary transfer of resources from one country to another in the form of grants i.e. unlike foreign debt, grant is non-returnable. Foreign aid is also used as percentage of GDP.	Handbook of Statistics on Pakistan Economy 2005, updated with Annual Reports of SBP and Economic Survey of Pakistan various issues.
PCGDP	Per capita GDP calculated by dividing GDP with population	Handbook of Statistics on Pakistan Economy 2005, updated with Annual Reports of State Bank of Pakistan
GDP	GDP is the nominal GDP i.e. Gross Domestic Product, at current prices of 2000-01 in Million Pakistani rupees. Per capita GDP (PCGDP) is derived from this variable by dividing it with population and Nominal GDP Growth (GDPG) is also derived from GDPN.	Handbook of Statistics on Pakistan Economy 2005, updated with Annual Reports of State Bank of Pakistan

---

[1] Definition extracted from website: http://economics.about.com/cs/economicsglossary/g/fdi.htm
[2] Definition extracted from website: http://en.wikipedia.org/wiki/Remittances

GDPW	Gross Domestic Product per worker	Word Development Indicators. Converted in PKR
RGDP	Real GDP = Nominal GDP/Deflator	
Output gap	Difference between actual and potential GDP as percentage of potential output. Constructed using Hodrick-Prescott Filter. Trend component is treated as potential GDP while cyclical component is difference between actual and potential GDP.	
Growth	First difference of gross domestic product (GDP).	Handbook of Statistics on Pakistan Economy 2005, updated with Annual Reports of State Bank of Pakistan
Poverty	Poverty headcount ratio is the percentage of population living below poverty line in the country. Missing values were interpolated using linear and cubic spline interpolation.	Jamal. H (2006) for actual figures till 1998-99. Economic survey 2010-11 for later figures
Inequality	The Gini coefficient is a measure of the inequality of a distribution, a value of 0 expressing total equality and a value of 1 maximal inequality. Missing values were interpolated using linear and cubic spline interpolation.	Jamal. H (2006) for actual figures till 1998-99. Economic survey 2008-09 for later figures
Unemployment	Unemployment rate is the percentage of workforce unemployed in the country. The variable is taken is percentage points.	Economic Survey of Pakistan and Labor Force Survey
Food inf	Food inflation	Handbook of Statistics for Pakistan Economy (2010) converted to base year 2001
Pro-poor expenditure	Index generated through education, health, housing and agriculture expenditures. Simple OLS regression was estimated consistent with Mosley et al (2004) lnpoverty = lnhealth expenditures%GDP + lneducation expenditures% GDP + lnagriculture expenditures% GDP. Due to insignificance of housing, it was removed from the regression. Based on	Source of government expenditures: Annual budget statements of Pakistan various issues.

	coefficients estimated, pro-poor expenditure index was generated. LPOV=0.234*LHEAG+0.191*LEDUG +0.375LAGRG	
Infrastructure	Government expenditure of transport and communication as percentage of GDP	Annual budget statements of Pakistan various issues.
NS	National Savings as percentage of GDP	Current prices, Million PKR taken from HBS SBP 2005 and State Bank of Pakistan Annual Reports
Gov. Con Exp	Government consumption expenditure as percentage of GDP	World Development Indicators government consumption expenditure as percentage of GDP
Fin Dev	Financial development (private credit/GDP)	Source of private credit Handbook of Statistics on Pakistan Economy 2010 table 4.10
Openness	The degree of openness measures the extent of openness of country's economy. The commonly used proxy for degree of openness is: $$OPEN = \frac{Trade}{GDP}$$ Where Trade = Exports + Imports and GDP is nominal GDP (GDPN) explained earlier.	Source for Exports and Imports: Handbook of Statistics on Pakistan Economy 2005, updated with Annual Reports of SBP
Debt Serv	Debt servicing expenditure as percentage of exports	Economic Survey 2010-11 debt outstanding table 9.3
Migr	Number of migrations in a year as percentage of total population	Bureau of Emigration and Overseas Employment www.beoe.gov.pk
RER	Real effective exchange rate	WDI:IMF Real Effective Exchange Rate
Unc	Uncertainty generated by GARCH(1,1) process on GDP where GDP follows AR(1)	

Appendix B

Detailed Econometric Results

Appendix B1: Unit-root test results

	Augmented Dickey Fuller Test	
	Level	1st Difference
lnFCI	-0.033	-7.19***
lnFDI	-0.32	-3.25**
lnRemittances	-3.08**	-3.84***
LnFDebt	-1.98	-5.78***
lnFaid	-2.12	-6.33***
lnPCGDP	-1.05	-5.63***
lnGDP	-1.53	-5.85***
lnGDPW	-2.21	-5.06***
lnRGDP	-0.46	-4.55***
Outputgap	-2.83*	-4.48***
lnDGDP	-0.23	-7.56***
lnPovlinear	-2.92*	-7.62***
lnPovCubic	-2.39	-2.26
lnInequLinear	-1.02	-3.98***
lninequCubic	-2.93*	-3.36**
lnUnem	-1.77	-5.47***
lnFoodinf	-3.62**	-3.38**
PropoorExp	0.42	-5.53***
lnInfrastructure	-0.39	-6.39***
lnNationalSaving	-4.67***	-9.5***
lnGovtconsexp	-1.81	-6.66***
lnFinancialdevelopment	-2.93**	-7.72***
lnOpen	-2.44	-5.69***
lnDebtserv	1.39	-8.01***
lnMigr	3.08**	3.85***
lnRealExchrate	-1.38	-1.98
lnUncertainty	-1.16	-1.67

* indicates significance at 10%
** indicates significance at 5%
*** indicates significance at 1%

Appendix B2: Determinants of Foreign Capital Inflows

Hausman Test Results

Hausman test -

  Null hypothesis: OLS estimates are consistent

  Asymptotic test statistic: Chi-square(4) = 17.1098

  with p-value = 0.00184028

Two-Staged Least Square Results

Dependent Variable: LFCI

Method: Two-Stage Least Squares

Date: 05/12/12   Time: 19:06

Sample (adjusted): 1974 2008

Included observations: 35 after adjustments

White Heteroskedasticity-Consistent Standard Errors & Covariance

Instrument list: C LOG(D(GDP))(-1)   LNTIT(-1) CTAX(-1) LNINFD(-1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.454396	0.546327	-0.831728	0.4121
LOG(D(GDP))	0.485056	0.167048	2.903691	0.0069
LNTIT	0.637853	0.237472	2.686011	0.0117
CTAX	-0.011523	0.005363	-2.148738	0.0398
LNINFD	-0.597491	0.184353	-3.241018	0.0029

R-squared	0.974508	Mean dependent var		12.94221
Adjusted R-squared	0.971109	S.D. dependent var		1.302723
S.E. of regression	0.221428	Sum squared resid		1.470910
F-statistic	286.6228	Durbin-Watson stat		2.040072
Prob(F-statistic)	0.000000			

LM-Test for Autocorrelation

Breusch-Godfrey Serial Correlation LM Test:

Obs*R-squared	14.85768	Probability	0.137337

JB Test for Normal Distribution of Residuals
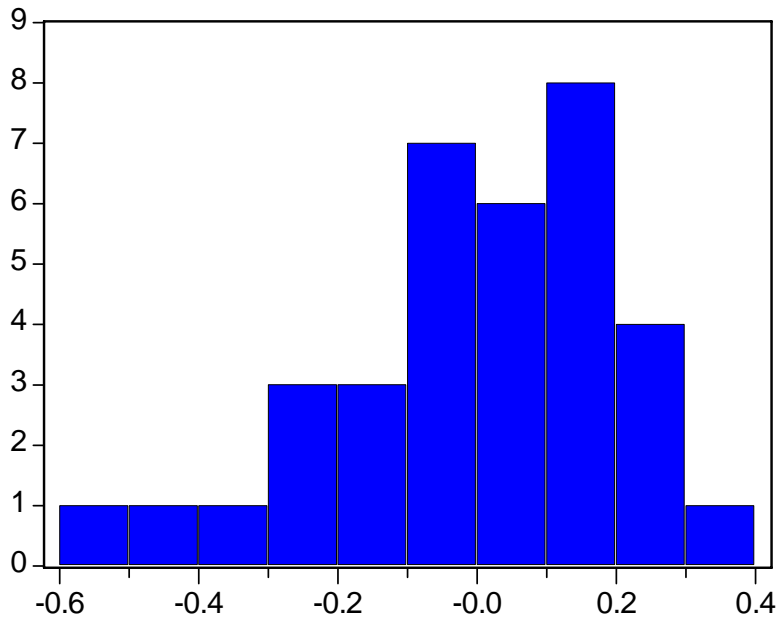
Series: Residuals	
Sample 1974 2008	
Observations 35	
Mean	7.08e-15
Median	0.056977
Maximum	0.354812
Minimum	-0.573009
Std. Dev.	0.207995
Skewness	-0.809854
Kurtosis	3.463848
Jarque-Bera	4.139640
Probability	0.126208

Appendix B3: Determinants of Foreign Direct Investment

Hausman Test Results

Hausman test -

 Null hypothesis: OLS estimates are consistent

 Asymptotic test statistic: Chi-square(4) = 18.7532

 with p-value = 0.000878718

Two-Staged Least Square Results

Dependent Variable: LOG(FDI)
Method: Two-Stage Least Squares
Date: 04/14/12   Time: 16:32
Sample (adjusted): 1980 2008
Included observations: 29 after adjustments
Instrument list: LOG(GDPG)(-1)   LOG(GDP)(-1) LOG(UNC)(-1)
        LOG(RER)(-1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.88938	7.710425	1.412293	0.1707
LOG(GDPG)	0.378303	0.177382	2.132709	0.0434
LOG(GDP)	1.787488	0.200156	8.930489	0.0000
LOG(UNC)	-6.685298	2.563409	-2.607971	0.0154
LOG(RER)	-1.446217	0.623331	-2.320143	0.0292

R-squared	0.971256	Mean dependent var		9.148486
Adjusted R-squared	0.966466	S.D. dependent var		1.975593
S.E. of regression	0.361779	Sum squared resid		3.141212
F-statistic	202.7406	Durbin-Watson stat		1.361131
Prob(F-statistic)	0.000000			

LM-Test for Autocorrelation

Breusch-Godfrey Serial Correlation LM Test:

Obs*R-squared	4.597417	Probability	0.100388

JB Test for Normal Distribution of Residuals
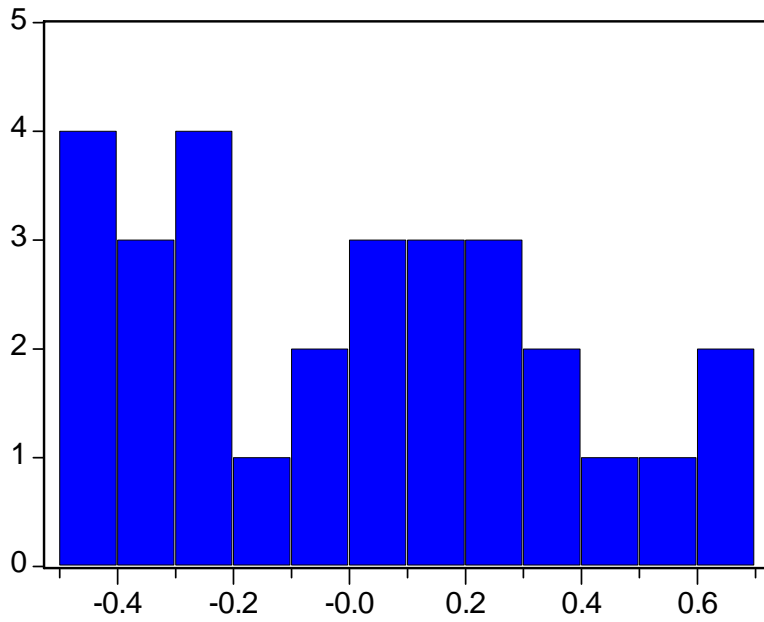
Series: Residuals	
Sample 1980 2008	
Observations 29	
Mean	7.37e-15
Median	0.013780
Maximum	0.622520
Minimum	-0.496654
Std. Dev.	0.334942
Skewness	0.273124
Kurtosis	1.995810
Jarque-Bera	1.579031
Probability	0.454065

Appendix B4: Determinants of Remittances

Hausman Test Results

Hausman test -

  Null hypothesis: OLS estimates are consistent

  Asymptotic test statistic: Chi-square(4) = 18.5007

  with p-value = 0.000984833

Two-Staged Least Square Results

Dependent Variable: LOG(REM)
Method: Two-Stage Least Squares
Date: 05/12/12   Time: 20:00
Sample (adjusted): 1974 2008
Included observations: 35 after adjustments
Instrument list: LOG(MIG)(-1) LOG(PCGDP)(-1) LOG(UNC)(-1)
     LNFD2(-1) DWAR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.879720	5.467951	-0.343770	0.7335
LOG(MIG)	0.397190	0.155492	2.554405	0.0162
LOG(PCGDP)	-0.989217	0.189313	-5.225288	0.0000
LOG(UNC)	4.662275	2.064115	2.258728	0.0316
LNFD2	3.322170	1.462240	2.271974	0.0307
DWAR	0.689048	0.265706	2.593271	0.0147

R-squared	0.686862	Mean dependent var	-3.154945
Adjusted R-squared	0.632873	S.D. dependent var	0.560521
S.E. of regression	0.339625	Sum squared resid	3.345011
F-statistic	11.70144	Durbin-Watson stat	1.126637
Prob(F-statistic)	0.000003		

LM-Test for Autocorrelation

Test statistic: Pseudo-LMF = 0.719775,
with p-value = $P(F(4,26) > 0.719775) = 0.588$

JB Test for Normal Distribution of Residuals
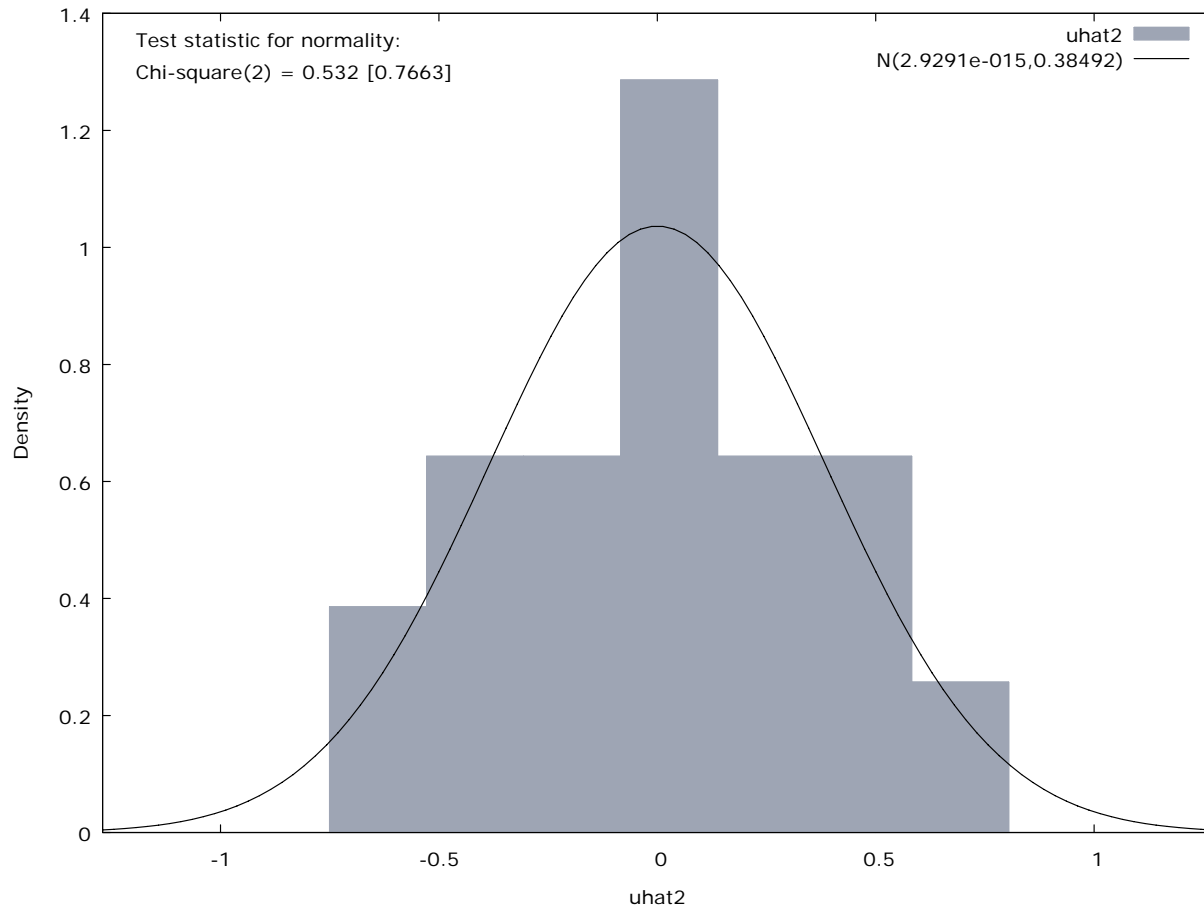
Appendix B5: Determinants of Foreign Aid

Hausman Test Results

Hausman test -

  Null hypothesis: OLS estimates are consistent

  Asymptotic test statistic: Chi-square(4) = 16.9399

  with p-value = 0.00198566

Two-Staged Least Square Results

Dependent Variable: LOG(AID)
Method: Two-Stage Least Squares
Date: 05/12/12   Time: 21:06
Sample (adjusted): 1975 2008
Included observations: 34 after adjustments
White Heteroskedasticity-Consistent Standard Errors & Covariance
Instrument list: C LOG(D(GDP))(-1) LOG(GCEXP)(-1)   DWAR UNC(
    -1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.553659	1.317185	1.938725	0.0623
LOG(D(GDP))	-0.652329	0.183413	-3.556616	0.0013
LOG(GCEXP)	2.042675	0.421340	4.848041	0.0000
DWAR	0.542842	0.279875	1.939591	0.0622
UNC	0.274702	0.163725	1.677832	0.1041

R-squared	0.646230	Mean dependent var	-4.943814
Adjusted R-squared	0.597434	S.D. dependent var	0.656418
S.E. of regression	0.416484	Sum squared resid	5.030321
F-statistic	14.87599	Durbin-Watson stat	1.808023
Prob(F-statistic)	0.000001		

LM-Test for Autocorrelation

Breusch-Godfrey Serial Correlation LM Test:

Obs*R-squared	1.939535	Probability	0.379171

JB Test for Normal Distribution of Residuals
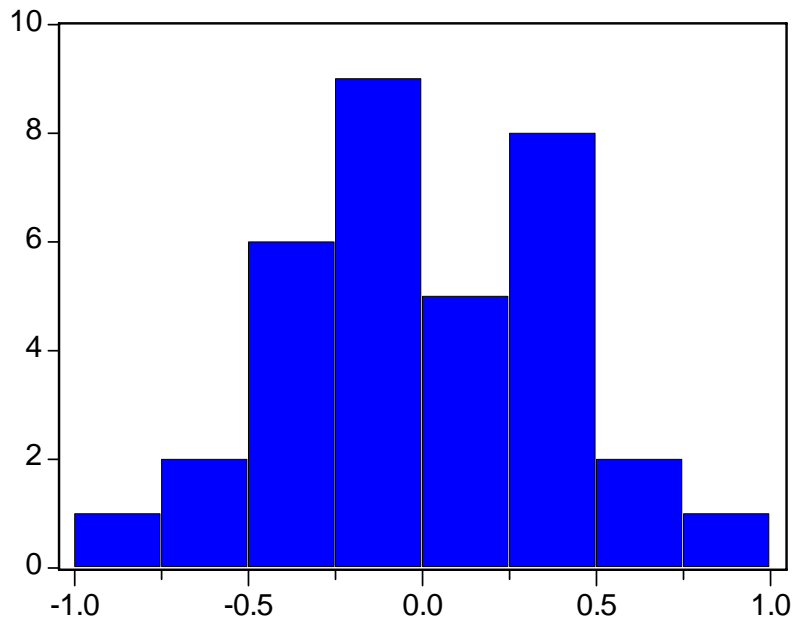
Series: Residuals	
Sample 1975 2008	
Observations 34	
Mean	-6.80e-15
Median	-0.029486
Maximum	0.795837
Minimum	-0.960496
Std. Dev.	0.390428
Skewness	-0.136967
Kurtosis	2.629558
Jarque-Bera	0.300713
Probability	0.860401

Appendix B6: Determinants of Foreign Debt

Hausman Test Results

Hausman test -

  Null hypothesis: OLS estimates are consistent

  Asymptotic test statistic: Chi-square(4) = 20.0217

  with p-value = 0.000494503

Two-Staged Least Square Results

Dependent Variable: LOG(DEBT)
Method: Two-Stage Least Squares
Date: 05/12/12   Time: 19:49
Sample (adjusted): 1980 2008
Included observations: 29 after adjustments
White Heteroskedasticity-Consistent Standard Errors & Covariance
Instrument list: C LOG(DSE)(-1) LOG(FD)(-1) LOG(D(GDP))(-1)
     LOG(POP)(-1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.543356	0.682134	-8.126489	0.0000
LOG(DSE)	0.274952	0.067722	4.060016	0.0005
LOG(FD)	-0.132720	0.022624	-5.866407	0.0000
LOG(D(GDP))	-0.222595	0.040714	-5.467253	0.0000
LOG(POP)	1.236260	0.218927	5.646899	0.0000

R-squared	0.770405	Mean dependent var	-1.011479
Adjusted R-squared	0.732139	S.D. dependent var	0.151309
S.E. of regression	0.078310	Sum squared resid	0.147180
F-statistic	20.13292	Durbin-Watson stat	1.444285
Prob(F-statistic)	0.000000		

LM-Test for Autocorrelation
Breusch-Godfrey Serial Correlation LM Test:

Obs*R-squared	4.474925	Probability	0.106729

JB Test for Normal Distribution of Residuals
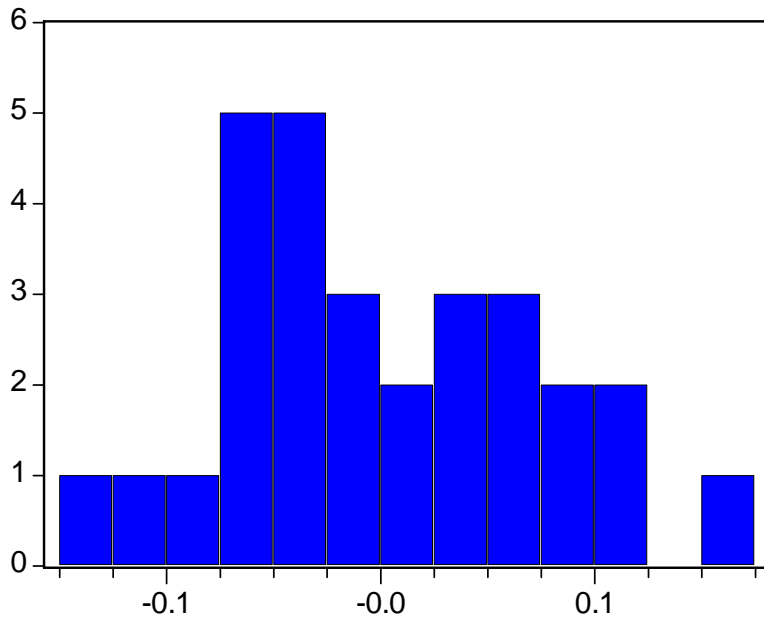
Series: Residuals	
Sample 1980 2008	
Observations 29	
Mean	-3.18e-15
Median	-0.000938
Maximum	0.156659
Minimum	-0.135207
Std. Dev.	0.072501
Skewness	0.174191
Kurtosis	2.285099
Jarque-Bera	0.764214
Probability	0.682422

Appendix B7: FCI-Growth Nexus

Hausman Test Results

Hausman test -

 Null hypothesis: OLS estimates are consistent

 Asymptotic test statistic: Chi-square(3) = 87.4377

 with p-value = 7.77713e-019

Two-Staged Least Square Results

Dependent Variable: LOG(D(GDP))
Method: Two-Stage Least Squares
Date: 05/12/12   Time: 17:10
Sample (adjusted): 1974 2008
Included observations: 35 after adjustments
White Heteroskedasticity-Consistent Standard Errors & Covariance
Instrument list: C LFCIG(-1) UNC(-1) LNPCGDP(-1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.828637	0.945473	2.991769	0.0054
LFCIG	3.214802	1.684927	1.907977	0.0657
UNC	-0.558522	0.256206	-2.179971	0.0370
LNPCGDP	2.274892	0.418711	5.433082	0.0000

R-squared	0.899256	Mean dependent var		11.69629
Adjusted R-squared	0.889507	S.D. dependent var		1.368518
S.E. of regression	0.454903	Sum squared resid		6.415033
F-statistic	96.99906	Durbin-Watson stat		1.768916
Prob(F-statistic)	0.000000			

LM-Test for Autocorrelation

Breusch-Godfrey Serial Correlation LM Test:

Obs*R-squared	28.29195	Probability	0.102666

JB Test for Normal Distribution of Residuals
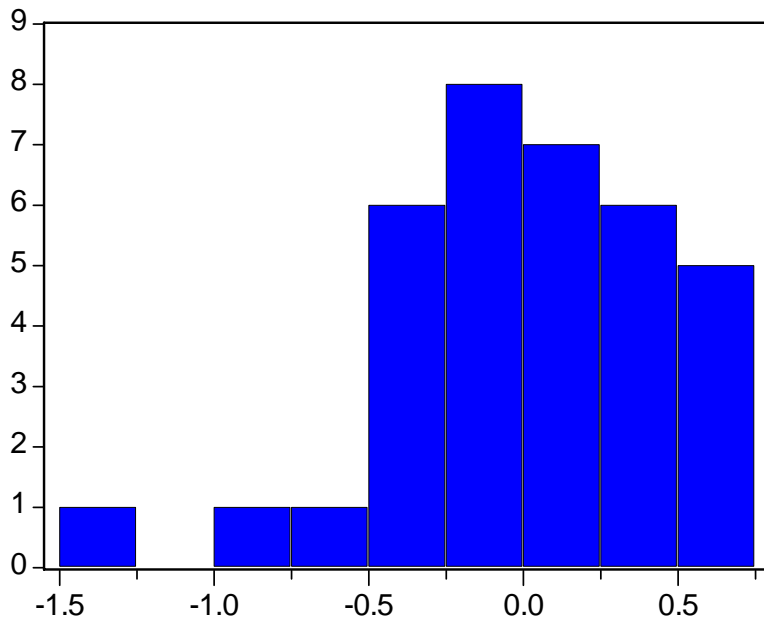
Series: Residuals	
Sample 1974 2008	
Observations 35	
Mean	-3.05e-15
Median	0.002953
Maximum	0.659819
Minimum	-1.356225
Std. Dev.	0.434370
Skewness	-0.768856
Kurtosis	4.067666
Jarque-Bera	5.110685
Probability	0.077666

Appendix B8: ARDL Results for Relationship between FCI and Unemployment (from Microfit 4.0)

Autoregressive Distributed Lag Estimates
    ARDL(1,0,0,0) selected based on Akaike Information Criterion
****
Dependent variable is LUNEM
34 observations used for estimation from 1975 to 2008
****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
LUNEM(-1)	.60486	.16009	3.7782[.001]
LFCIG	-.052178	.025894	-2.0150[.053]
GAPPOT	-.091394	.039242	-2.3290[.027]
LINFR	-.1843E-5	.7991E-6	-2.3066[.028]
C	-.016937	.014862	-1.1396[.264]

****
R-Squared   .86485 R-Bar-Squared   .84621
S.E. of Regression   .0069530 F-stat. F(4, 29) 46.3930[.000]
Mean of Dependent Variable .049826 S.D. of Dependent Variable   .017730
Residual Sum of Squares   .0014020 Equation Log-likelihood   123.3918
Akaike Info. Criterion   118.3918 Schwarz Bayesian Criterion   114.5759
DW-statistic   2.0429 Durbin's h-statistic   -.34862[.727]
****
                 Diagnostic Tests
****
*   Test Statistics *   LM Version   *   F Version   *
****
*   *   *   *
* A:Serial Correlation*CHSQ(1)= .081495[.775]*F(1, 28)= .067274[.797]*
*   *   *   *
* B:Functional Form *CHSQ(1)= .44975[.502]*F(1, 28)= .37535[.545]*
*   *   *   *
* C:Normality   *CHSQ(2)= 33.8398[.000]*   Not applicable   *
*   *   *   *
* D:Heteroscedasticity*CHSQ(1)= .078200[.780]*F(1, 32)= .073770[.788]*
****

  A:Lagrange multiplier test of residual serial correlation
  B:Ramsey's RESET test using the square of the fitted values
  C:Based on a test of skewness and kurtosis of residuals
  D:Based on the regression of squared residuals on squared fitted values

Estimated Long Run Coefficients using the ARDL Approach
  ARDL(1,0,0,0) selected based on Akaike Information Criterion
****
Dependent variable is LUNEM
34 observations used for estimation from 1975 to 2008
****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
LFCIG	-.13205	.045662	-2.8918[.007]
GAPPOT	-.23129	.053923	-4.2893[.000]
LINFR	-.4665E-5	.2383E-5	-1.9572[.060]
C	-.042863	.034111	-1.2566[.219]

****
Error Correction Representation for the Selected ARDL Model
  ARDL(1,0,0,0) selected based on Akaike Information Criterion
****
Dependent variable is dLUNEM
34 observations used for estimation from 1975 to 2008
****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
dLFCIG	-.052178	.025894	-2.0150[.053]
dGAPPOT	-.091394	.039242	-2.3290[.027]
dLINFR	-.1843E-5	.7991E-6	-2.3066[.028]
dC	-.016937	.014862	-1.1396[.264]
ecm(-1)	-.39514	.16009	-2.4682[.020]

****
List of additional temporary variables created:
dLUNEM = LUNEM-LUNEM(-1)
dLFCIG = LFCIG-LFCIG(-1)
dGAPPOT = GAPPOT-GAPPOT(-1)
dLINFR = LINFR-LINFR(-1)
dC = C-C(-1)
ecm = LUNEM + .13205*LFCIG + .23129*GAPPOT + .4665E-5*LINFR + .042863*C
****
R-Squared   .31596 R-Bar-Squared   .22161
S.E. of Regression   .0069530 F-stat.   F(4, 29) 3.3487[.023]
Mean of Dependent Variable .0010324   S.D. of Dependent Variable   .0078809
Residual Sum of Squares   .0014020   Equation Log-likelihood   123.3918
Akaike Info. Criterion   118.3918   Schwarz Bayesian Criterion   114.5759
DW-statistic   2.0429
****
R-Squared and R-Bar-Squared measures refer to the dependent variable
dLUNEM and in cases where the error correction model is highly
restricted, these measures could become negative.

Appendix B9: ARDL Results for Relationship between FCI and Poverty (from Microfit 4.0)

Cubic Spline Interpolation
Autoregressive Distributed Lag Estimates
     ARDL(2,1,2,0,0) selected based on Akaike Information Criterion
****
 Dependent variable is LPOVC
 34 observations used for estimation from 1975 to 2008
****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
LPOVC(-1)	1.2832	.14748	8.7007[.000]
LPOVC(-2)	-.46998	.14600	-3.2190[.004]
LINEQC	-.035178	.14130	-.24897[.806]
LINEQC(-1)	.37589	.19064	1.9718[.060]
PPE	-.29001	.094584	-3.0662[.005]
PPE(-1)	-.013609	.10911	-.12473[.902]
PPE(-2)	.16518	.089106	1.8538[.076]
LFCIG	.0046031	.11271	.040839[.968]
LDRGDP	-.050095	.018243	-2.7460[.011]
C	.97609	.24208	4.0322[.000]

****
 R-Squared   .97698   R-Bar-Squared   .96835
 S.E. of Regression   .037018 F-stat.   F(9, 24) 113.1863[.000]
 Mean of Dependent Variable   3.2600 S.D. of Dependent Variable   .20808
 Residual Sum of Squares   .032887 Equation Log-likelihood   69.7536
 Akaike Info. Criterion   59.7536 Schwarz Bayesian Criterion   52.1218
 DW-statistic   2.1300
****
                   Diagnostic Tests
****
*   Test Statistics *   LM Version   *   F Version   *
****
*   *   *   *
* A:Serial Correlation*CHSQ(1)= .36065[.548]*F(1, 23)= .24658[.624]*
*   *   *   *
* B:Functional Form *CHSQ(1)= .89287[.345]*F(1, 23)= .62029[.439]*
*   *   *   *
* C:Normality   *CHSQ(2)= 23.8083[.000]*   Not applicable   *
*   *   *   *
* D:Heteroscedasticity*CHSQ(1)= .78287[.376]*F(1, 32)= .75419[.392]*
****
  A:Lagrange multiplier test of residual serial correlation
  B:Ramsey's RESET test using the square of the fitted values
  C:Based on a test of skewness and kurtosis of residuals
  D:Based on the regression of squared residuals on squared fitted values

Estimated Long Run Coefficients using the ARDL Approach
     ARDL(2,1,2,0,0) selected based on Akaike Information Criterion
****

Dependent variable is LPOVC

34 observations used for estimation from 1975 to 2008
****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
LINEQC	1.8238	.76834	2.3737[.026]
PPE	-.74104	.28722	-2.5801[.016]
LFCIG	.024640	.60071	.041018[.968]
LDRGDP	-.26815	.096968	-2.7654[.011]
C	5.2249	1.3201	3.9578[.001]

****

Error Correction Representation for the Selected ARDL Model
     ARDL(2,1,2,0,0) selected based on Akaike Information Criterion
****

Dependent variable is dLPOVC

34 observations used for estimation from 1975 to 2008
****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
dLPOVC1	.46998	.14600	3.2190[.003]
dLINEQC	-.035178	.14130	-.24897[.805]
dPPE	-.29001	.094584	-3.0662[.005]
dPPE1	-.16518	.089106	-1.8538[.075]
dLFCIG	.0046031	.11271	.040839[.968]
dLDRGDP	-.050095	.018243	-2.7460[.011]
dC	.97609	.24208	4.0322[.000]
ecm(-1)	-.18682	.050669	-3.6870[.001]

****

List of additional temporary variables created:

dLPOVC = LPOVC-LPOVC(-1)

dLPOVC1 = LPOVC(-1)-LPOVC(-2)

dLINEQC = LINEQC-LINEQC(-1)

dPPE = PPE-PPE(-1)

dPPE1 = PPE(-1)-PPE(-2)

dLFCIG = LFCIG-LFCIG(-1)

dLDRGDP = LDRGDP-LDRGDP(-1)

dC = C-C(-1)

ecm = LPOVC -1.8238*LINEQC + .74104*PPE -.024640*LFCIG + .26815*LDRGDP

  -5.2249*C

****

R-Squared   .79858 R-Bar-Squared   .72305

S.E. of Regression   .037018 F-stat. F(7, 26) 13.5933[.000]

Mean of Dependent Variable -.018744 S.D. of Dependent Variable   .070340

Residual Sum of Squares   .032887   Equation Log-likelihood   69.7536
Akaike Info. Criterion   59.7536   Schwarz Bayesian Criterion   52.1218
DW-statistic   2.1300
****

 R-Squared and R-Bar-Squared measures refer to the dependent variable dLPOVC and in cases where the error correction model is highly restricted, these measures could become negative.

Linear Interpolation

Autoregressive Distributed Lag Estimates
      ARDL(1,2,0,2,1) selected based on Akaike Information Criterion
****

 Dependent variable is LPOVL

 34 observations used for estimation from 1975 to 2008
****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
LPOVL(-1)	.46178	.13976	3.3041[.003]
LINEQC	.85167	.65006	1.3101[.203]
LINEQC(-1)	-1.3899	1.0861	-1.2797[.213]
LINEQC(-2)	1.6588	.70920	2.3390[.028]
PPE	-.47546	.18494	-2.5708[.017]
LFCIG	.17250	.29548	.58379[.565]
LFCIG(-1)	-.52085	.25603	-2.0343[.054]
LFCIG(-2)	.62683	.19772	3.1702[.004]
LDRGDP	.0094867	.043471	.21823[.829]
LDRGDP(-1)	-.070857	.043732	-1.6203[.119]
C	1.9103	.75890	2.5172[.019]

****

 R-Squared   .86774 R-Bar-Squared   .81024
 S.E. of Regression   .084629 F-stat.   F(10, 23) 15.0900[.000]
 Mean of Dependent Variable 3.2793 S.D. of Dependent Variable   .19427
 Residual Sum of Squares   .16473 Equation Log-likelihood   42.3630
 Akaike Info. Criterion   31.3630 Schwarz Bayesian Criterion   22.9680
 DW-statistic   2.1963 Durbin's h-statistic   -.98776[.323]
****

                   Diagnostic Tests
****
*   Test Statistics *   LM Version   *   F Version   *
****
*   *   *   *
* A:Serial Correlation*CHSQ(1)= .67529[.411]*F(1, 22)= .44580[.511]*
*   *   *   *
* B:Functional Form *CHSQ(1)= 1.3438[.246]*F(1, 22)= .90529[.352]*
*   *   *   *
* C:Normality   *CHSQ(2)= .51664[.772]*   Not applicable   *
*   *   *   *

* D:Heteroscedasticity*CHSQ(1)= 6.7517[.009]*F(1, 32)= 7.9291[.008]*
****
  A:Lagrange multiplier test of residual serial correlation
  B:Ramsey's RESET test using the square of the fitted values
  C:Based on a test of skewness and kurtosis of residuals
  D:Based on the regression of squared residuals on squared fitted values

Estimated Long Run Coefficients using the ARDL Approach

      ARDL(1,2,0,2,1) selected based on Akaike Information Criterion
****
Dependent variable is LPOVL
34 observations used for estimation from 1975 to 2008
****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
LINEQC	2.0820	.60584	3.4366[.002]
PPE	-.88340	.24697	-3.5769[.002]
LFCIG	.51741	.63409	.81598[.423]
LDRGDP	-.11403	.10694	-1.0662[.297]
C	3.5493	1.1302	3.1404[.005]

****

Error Correction Representation for the Selected ARDL Model

      ARDL(1,2,0,2,1) selected based on Akaike Information Criterion
****
Dependent variable is dLPOVL
34 observations used for estimation from 1975 to 2008
****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
dLINEQC	.85167	.65006	1.3101[.202]
dLINEQC1	-1.6588	.70920	-2.3390[.027]
dPPE	-.47546	.18494	-2.5708[.016]
dLFCIG	.17250	.29548	.58379[.564]
dLFCIG1	-.62683	.19772	-3.1702[.004]
dLDRGDP	.0094867	.043471	.21823[.829]
dC	1.9103	.75890	2.5172[.018]
ecm(-1)	-.53822	.13976	-3.8510[.001]

****
List of additional temporary variables created:
dLPOVL = LPOVL-LPOVL(-1)
dLINEQC = LINEQC-LINEQC(-1)
dLINEQC1 = LINEQC(-1)-LINEQC(-2)
dPPE = PPE-PPE(-1)
dLFCIG = LFCIG-LFCIG(-1)
dLFCIG1 = LFCIG(-1)-LFCIG(-2)

dLDRGDP = LDRGDP-LDRGDP(-1)

dC = C-C(-1)

ecm = LPOVL -2.0820*LINEQC + .88340*PPE -.51741*LFCIG + .11403*LDRGDP
  -3.5493*C

****

R-Squared   .58425 R-Bar-Squared   .40350

S.E. of Regression   .084629 F-stat.   F(7, 26)   4.6175[.002]

Mean of Dependent Variable -.019979 S.D. of Dependent Variable   .10958

Residual Sum of Squares   .16473 Equation Log-likelihood   42.3630

Akaike Info. Criterion   31.3630 Schwarz Bayesian Criterion   22.9680

DW-statistic   2.1963

****

R-Squared and R-Bar-Squared measures refer to the dependent variable
dLPOVL and in cases where the error correction model is highly
restricted, these measures could become negative.

Appendix B10: ARDL Results for Relationship between FCI and Income Inequality (from Microfit 4.0)

Linear Interpolation

Autoregressive Distributed Lag Estimates
ARDL(2,2,2,2) selected

****

Dependent variable is LINEQL
34 observations used for estimation from 1975 to 2008

****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
LINEQL(-1)	-.071966	.19608	-.36703[.717]
LINEQL(-2)	.086420	.17581	.49156[.628]
LFINF	.10463	.056085	1.8655[.075]
LFINF(-1)	.014588	.069442	.21007[.836]
LFINF(-2)	.084640	.054818	1.5440[.137]
LFCIG	.31148	.61916	.50307[.620]
LFCIG(-1)	-1.0479	.73061	-1.4343[.166]
LFCIG(-2)	.98167	.46590	2.1071[.047]
LDGDP	.067429	.10153	.66411[.514]
LDGDP(-1)	-.23258	.094320	-2.4659[.022]
LDGDP(-2)	.026557	.021204	1.2525[.224]
C	1.3887	.40475	3.4310[.002]

****

R-Squared   .83660   R-Bar-Squared   .75489
S.E. of Regression   .13797   F-stat.   F(11, 22)   10.2396[.000]
Mean of Dependent Variable -.93502   S.D. of Dependent Variable   .27869
Residual Sum of Squares   .41881   Equation Log-likelihood   26.5001
Akaike Info. Criterion   14.5001   Schwarz Bayesian Criterion   5.3420
DW-statistic   2.2372

****

Diagnostic Tests

****

* Test Statistics *   LM Version   *   F Version   *

****

*	*	*	*
* A:Serial Correlation	*CHSQ(1)= 1.4189[.234]	*F(1, 21)= .91455[.350]	*
*	*	*	*
* B:Functional Form	*CHSQ(1)= 1.9179[.166]	*F(1, 21)= 1.2554[.275]	*
*	*	*	*
* C:Normality	*CHSQ(2)= .068611[.966]	* Not applicable	*
*	*	*	*
* D:Heteroscedasticity	*CHSQ(1)= 2.8403[.092]	*F(1, 32)= 2.9169[.097]	*

****

A:Lagrange multiplier test of residual serial correlation
B:Ramsey's RESET test using the square of the fitted values
C:Based on a test of skewness and kurtosis of residuals
D:Based on the regression of squared residuals on squared fitted values

Estimated Long Run Coefficients using the ARDL Approach

ARDL(2,2,2,2) selected

****

Dependent variable is LINEQL

34 observations used for estimation from 1975 to 2008

****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
LFINF	.20685	.055513	3.7261[.001]
LFCIG	.24881	.49658	.50105[.621]
LDGDP	-.14063	.040742	-3.4516[.002]
C	1.4090	.25118	5.6096[.000]

****

Error Correction Representation for the Selected ARDL Model

ARDL(2,2,2,2) selected

****

Dependent variable is dLINEQL

34 observations used for estimation from 1975 to 2008

****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
dLINEQL1	-.086420	.17581	-.49156[.627]
dLFINF	.10463	.056085	1.8655[.074]
dLFINF1	-.084640	.054818	-1.5440[.135]
dLFCIG	.31148	.61916	.50307[.619]
dLFCIG1	-.98167	.46590	-2.1071[.045]
dLDGDP	.067429	.10153	.66411[.513]
dLDGDP1	-.026557	.021204	-1.2525[.222]
dC	1.3887	.40475	3.4310[.002]
ecm(-1)	-.98555	.25398	-3.8804[.001]

****

List of additional temporary variables created:

dLINEQL = LINEQL-LINEQL(-1)

dLINEQL1 = LINEQL(-1)-LINEQL(-2)

dLFINF = LFINF-LFINF(-1)

dLFINF1 = LFINF(-1)-LFINF(-2)

dLFCIG = LFCIG-LFCIG(-1)

dLFCIG1 = LFCIG(-1)-LFCIG(-2)

dLDGDP = LDGDP-LDGDP(-1)

dLDGDP1 = LDGDP(-1)-LDGDP(-2)

dC = C-C(-1)

ecm = LINEQL -.20685*LFINF -.24881*LFCIG + .14063*LDGDP -1.4090*C

****

R-Squared	.71112	R-Bar-Squared	.56667
S.E. of Regression	.13797	F-stat. F(8, 25)	6.7694[.000]
Mean of Dependent Variable	-.016668	S.D. of Dependent Variable	.20960
Residual Sum of Squares	.41881	Equation Log-likelihood	26.5001
Akaike Info. Criterion	14.5001	Schwarz Bayesian Criterion	5.3420
DW-statistic	2.2372		

****

R-Squared and R-Bar-Squared measures refer to the dependent variable
dLINEQL and in cases where the error correction model is highly
restricted, these measures could become negative.

Cubic Spline Interpolation

Autoregressive Distributed Lag Estimates
        ARDL(2,0,0,1) selected based on Akaike Information Criterion
****
 Dependent variable is LINEQC
 34 observations used for estimation from 1975 to 2008
****
Regressor	Coefficient	Standard Error	T-Ratio[Prob]
LINEQC(-1)	1.5886	.10519	15.1025[.000]
LINEQC(-2)	-.80427	.11283	-7.1281[.000]
LFINF	.019632	.0086397	2.2724[.031]
LFCIG	.22850	.082920	2.7557[.010]
LDGDP	.024564	.013337	1.8417[.077]
LDGDP(-1)	-.018877	.012685	-1.4881[.148]
C	-.057751	.055413	-1.0422[.307]

****
 R-Squared   .96883 R-Bar-Squared   .96190
 S.E. of Regression   .026625 F-stat.   F(6, 27) 139.8623[.000]
 Mean of Dependent Variable -1.0343 S.D. of Dependent Variable   .13641
 Residual Sum of Squares   .019141 Equation Log-likelihood   78.9552
 Akaike Info. Criterion   71.9552 Schwarz Bayesian Criterion   66.6129
 DW-statistic   .84133
****
                    Diagnostic Tests
****
*   Test Statistics *   LM Version   *   F Version   *
****
*   *   *   *
* A:Serial Correlation*CHSQ(1)= 13.7882[.000]*F(1, 26)= 17.7369[.000]*
*   *   *   *
* B:Functional Form *CHSQ(1)= 2.7598[.097]*F(1, 26)= 2.2969[.142]*
*   *   *   *
* C:Normality   *CHSQ(2)= 1.4901[.475]*   Not applicable   *
*   *   *   *
* D:Heteroscedasticity*CHSQ(1)= 1.4023[.236]*F(1, 32)= 1.3766[.249]*
****

  A:Lagrange multiplier test of residual serial correlation
  B:Ramsey's RESET test using the square of the fitted values
  C:Based on a test of skewness and kurtosis of residuals
  D:Based on the regression of squared residuals on squared fitted values

Estimated Long Run Coefficients using the ARDL Approach
     ARDL(2,0,0,1) selected based on Akaike Information Criterion
****

Dependent variable is LINEQC
34 observations used for estimation from 1975 to 2008
****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
LFINF	.091040	.043804	2.0783[.047]
LFCIG	1.0596	.34321	3.0874[.005]
LDGDP	.026371	.031946	.82551[.416]
C	-.26780	.23054	-1.1617[.256]

****

Error Correction Representation for the Selected ARDL Model
     ARDL(2,0,0,1) selected based on Akaike Information Criterion
****

Dependent variable is dLINEQC
34 observations used for estimation from 1975 to 2008
****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
dLINEQC1	.80427	.11283	7.1281[.000]
dLFINF	.019632	.0086397	2.2724[.031]
dLFCIG	.22850	.082920	2.7557[.010]
dLDGDP	.024564	.013337	1.8417[.076]
dC	-.057751	.055413	-1.0422[.306]
ecm(-1)	-.21565	.045658	-4.7231[.000]

****

List of additional temporary variables created:
dLINEQC = LINEQC-LINEQC(-1)
dLINEQC1 = LINEQC(-1)-LINEQC(-2)
dLFINF = LFINF-LFINF(-1)
dLFCIG = LFCIG-LFCIG(-1)
dLDGDP = LDGDP-LDGDP(-1)
dC = C-C(-1)
ecm = LINEQC -.091040*LFINF -1.0596*LFCIG -.026371*LDGDP +   .26780*C
****

R-Squared	.78505	R-Bar-Squared	.73728
S.E. of Regression	.026625	F-stat. F(5, 28)	19.7219[.000]
Mean of Dependent Variable	-.0057578	S.D. of Dependent Variable	.051946
Residual Sum of Squares	.019141	Equation Log-likelihood	78.9552
Akaike Info. Criterion	71.9552	Schwarz Bayesian Criterion	66.6129
DW-statistic	.84133		

****

R-Squared and R-Bar-Squared measures refer to the dependent variable
dLINEQC and in cases where the error correction model is highly
restricted, these measures could become negative.