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# Foreign Direct Investment and Economic Growth in Pakistan: A Sectoral Analysis

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**Foreign Direct Investment and  
Economic Growth in Pakistan:  
A Sectoral Analysis**

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ISLAMABAD**

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## CONTENTS

	<i>Page</i>
<b>Abstract</b>	v
<b>1. Introduction</b>	1
<b>2. Review of Theoretical and Empirical Literature</b>	2
<b>3. FDI in Pakistan</b>	3
3.1. An Overview of FDI Inflows in Pakistan	3
3.2. Dimensions of FDI in Pakistan	7
<b>4. Model, Data, and Methodology</b>	13
4.1. Model	13
4.2. Data Description	13
4.3. Methodology	14
<b>5. Empirical Results</b>	15
5.1. Unit Root Test	16
5.2. Cointegration Test	16
5.3. Sector-wise Causality Test	18
<b>6. Conclusions</b>	19
<b>References</b>	19

### List of Tables

Table 1. Foreign Investment Inflows in Pakistan (Million \$)	6
Table 2. FDI Inflows in Pakistan, from 1989-90 to 2007-08	8
Table 3. Country-wise FDI Inflows (Million \$)	9
Table 4. Country-wise Shares of FDI Inflows in Pakistan (%)	10
Table 5. Foreign Direct Investment by Economic Group	11
Table 6. Sector-wise Share of FDI (%)	12

	<i>Page</i>
Table 7. List of Selected Industries	14
Table 8. Panel Unit Root Test	16
Table 9. Results for Cointegration Tests between GDP and FDI	16
Table 10. Dynamic OLS Results of FDI and Economic Growth	17
Table 11. Dynamic Panel Causality Test	18
Table 12. Sector-wise Causality Test	18

**List of Figures**

Figure 1. Foreign Direct Investment in Pakistan	6
Figure 2. Trends of FDI as Percentage of GDP	8
Figure 3. Country-wise Share of FDI Inflows, 2001-08	10

## **ABSTRACT**

This paper establishes an empirical relationship between industry-specific foreign direct investment (FDI) and output under the framework of Granger causality and panel cointegration for Pakistan over the period 1981-2008. The result supports the evidence of panel cointegration between FDI and output. FDI has a positive effect on output in the long run. The result also supports the evidence of long-run causality running from GDP to FDI, while in the short run, the evidence of two-way causality between FDI and GDP is identified. At the sectoral level, the effects of FDI on growth vary significantly across sectors. The most striking result obtained is that FDI causes growth in the primary and services sectors, while growth causes FDI in the manufacturing sector.

*JEL classification:* F23, O40, C33

*Keywords:* FDI, Growth, Cointegration, Causality

## 1. INTRODUCTION

It is well documented in the literature that foreign direct investment (FDI) plays a positive role in the process of economic growth. Thamos, *et al.* (2008) argued that foreign affiliates of transnational corporation (TNCs) succeed in developing new products and technologies faster than local firms, thereby exerting competitive pressure and forcing local firms to imitate and innovate. This is one of the important reasons why developing countries are eager to attract FDI. Many developing countries including Pakistan faces the problem of saving-investment gap and FDI influences the process of economic growth by filling up this gap, increasing productivity, transferring advanced technology, employment creation and enhancing competition [Kobrin (2005) and Le and Ataullah (2006)]. These benefits have encouraged the developing countries to liberalise their FDI policies in order to attract FDI inflows. In the light of expected benefits of FDI, many studies have been carried out to examine the impacts of FDI on growth. However, theories and empirics appear to provide mixed evidence regarding the impact of FDI on economic growth in developing countries.

Like many other developing countries, Pakistan has thrown its doors wide open to FDI, which is expected to bring huge benefits. However, unlike China and India, Pakistan has not been successful in obtaining substantial and consistent FDI inflows. Furthermore, the meagre inflows that the country has received have not been utilised appropriately to enhance the economic performance [Le and Ataullah (2006)]. FDI inflows are still too low and this might be because the economic reforms went far enough to change the character and type of FDI. The type of FDI and its structural composition matter as much for economic growth [Chakraborty and Nunnenkamp (2008)]. The structure and type of FDI are hardly considered in previous studies on the FDI-growth nexus in Pakistan.

This paper is an attempt to examine the impact of FDI on economic growth. The paper contributes to the literature on FDI in three ways. First, we review the policy measure that the government of Pakistan has undertaken to attract the FDI. Secondly, we examine the impact of FDI on economic growth

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using the panel cointegration technique over the period 1981-2008. Finally, we evaluate whether the growth impact of FDI differs between primary, secondary and services sectors. We apply Granger Causality test on the basis of industry specific FDI data. The rest of the paper is organised as follows: Section 2 discusses the theoretical and empirical literature on the relationship between FDI and economic growth. Overview of FDI inflows in Pakistan is given in Section 3. Section 4 describes model, data and methodology. Empirical results are interpreted in Section 5, while some concluding remarks are provided in the final section.

## **2. REVIEW OF THEORETICAL AND EMPIRICAL LITERATURE**

The theoretical link between FDI and economic growth can be traced back to modernisation and dependency theories [Adams (2009)]. Modernisation theories suggest that FDI could promote economic growth under the principle that growth requires capital investment [Adams (2009)]. However, the new growth theories emphasises the role of technology transfer through FDI because developing countries lacks necessary infrastructure such as education, liberalised financial markets, socio-economic and political stability [Calvo and Sanchez-Robles (2002) and Adams (2009)]. Apart from technology transfer, FDI also accompanies with it organisational and managerial skills, marketing know-how and market access through the marketing networks of multinational enterprises [Balasubramanyam, *et al.* (1996), Kumar and Pradhan (2002) and Adams (2009)]. Nath (2005) has argued that FDI plays a two-fold function by contributing to capital accumulation and by increasing total factor productivity.

In contrast, the dependency theories suggest that dependency on foreign investment is expected to produces negative impact on growth and income distribution because FDI creates monopolies in industrial sector, which in turn leads to underutilisation of domestic resources [Bornschieer and Chase-Dunn (1985) and Adams (2009)]. This implies that the economy is controlled by foreigners and rather than developing organically, it grows in a disarticulated manner [Amin (1974)]. Therefore, the multiplier effect is weak and leads to stagnant growth in developing countries [Adams (2009)].

Based on these mixed theoretical views, many empirical studies have been carried out to examine the relationship between FDI and economic growth, inter alia by Alfaro, *et al.* (2004), Borensztein, *et al.* (1998), Makki and Somwaru (2004), Campos and Kinoshita (2002) and Zhang (2001) among others. For example, Zhang (2001) reported that FDI promotes economic growth in countries where the domestic infrastructure is well developed and trade and FDI policies are more liberal. Balasubramanyam, *et al.* (1996) concluded that growth enhancing effects of FDI are stronger in countries where the labour force is highly educated and pursuing export promotion rather than import substitution

trade policies. Campos and Kinoshita (2002) found that only when FDI is in the form of pure transferred technology there is a positive and significant impact on growth. Similarly, Carkovic and Levine (2005) claim that micro-level positive effects of FDI on growth can be treated with skepticism, as most of the studies do not control for simultaneity bias and country-specific effects.

Some studies find insignificant effects of FDI on growth [e.g. Akinlo (2004), Aynwale (2007) and Hermes and Lensink (2003)]. Hermes and Lensink (2003) concluded that FDI exerts significant negative effect on the host country. Similar results were found by Fry (1993), Agosin and Mayer (2000) and Sylwester (2005).<sup>1</sup>

As far as direction of causality is concerned, Elias (1990) argues that the removal of international credit and liquidity constraints had encouraged FDI in the 1980s in most of the Latin American countries. De Mello (1997) argues that the direction of causality depends on the recipient country's trade regime. Nair-Reichert and Weinhold (2001) argue that the effect of FDI on growth is highly heterogeneous across countries and this heterogeneity is more pronounced for more open economies. Therefore, there is a need for host country-specific study.

### **3. FDI IN PAKISTAN**

#### **3.1. An Overview of FDI Inflows in Pakistan**

A higher level of savings and investment is necessary to increase the rate of capital formation. However, in developing countries the level of domestic savings falls below the desired level because of low per capita income [Khan (2007)]. In the case of Pakistan, domestic savings account for 11.2 percent of GDP—a decline of 5.1 percent from 2006. The gap between domestic savings and desired level of investment can be filled by the transfer of resources from outside; FDI is one of the most important sources [Zaidi (2004)]. To increase the level of foreign capital inflows, liberalisation of trade and investment regime is required. This can be achieved by relaxing controls and offering financial and trade incentives like tax concessions and tariff reductions [Zaidi (2004)]. Furthermore, host countries need to pursue active liberalisation policies to overcome trade deficit and encourage investment in export-led sectors. To ensure that FDI stimulates domestic economic activity, the host country should make it mandatory for the foreign investor to use a certain amount of locally made inputs in the production of final goods [Zaidi (2004)]. The domestic policies opted by the host country have an important influence on the decision of foreign investment. To attract FDI, the host country should adopt concrete and investor friendly policies. Strong infrastructure is also a pre-condition to restore the confidence of foreign investors.

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<sup>1</sup> For further details see Adams (2009).

After following somewhat restrictive economic policies, the government of Pakistan initiated market-based reforms in the 1990s. These reforms included gradual liberalisation of trade and investment regime by providing various trade and fiscal incentives to foreign investors through tax concessions, credit facilities, tariff reduction and easing foreign exchange controls [Khan (1997) and Aqeel and Nishat (2004)]. In the early 1990s, the government undertook a number of policy and regulatory measures<sup>2</sup> to improve the business environment and attract foreign investment [Anwer (2002)]. Restrictions on capital inflows and outflows were also gradually lifted. Foreign investors were allowed to hold 100 percent of the equity in industrial project on a repairable basis, without any prior approval [Khan (2008)]. Furthermore, investment shares issued to non-residents could be exported and remittance of dividends and disinvestments proceeds was permissible without any prior permission of State Bank of Pakistan (SBP). In 1994, restrictions on some capital transactions were partially relaxed and foreign borrowing, and certain outward investments, were allowed to some extent. Full convertibility of the Pak-rupee was established on current international transactions. The establishment of an interbank foreign exchange market also marked an important step towards decentralising the management of foreign exchange and allowing market forces to play a greater role in exchange rate determination [Khan (2008)].

Pakistan's foreign investment regime mainly consists of three components : (i) regulatory, (ii) economic, and (iii) socio-political. Regarding privatisation and deregulation, Pakistan has opted very liberal regulatory regime. The regulatory framework for foreign investment consists of three laws facilitating and protecting foreign investors; (i) Foreign Private Investment (Promotion and Protection) Act 1976, (ii) Furtherance and Protection of Economic Reforms Act 1992, and (iii) Foreign Currency Accounts (Protection) Ordinance 2001. In addition Bilateral Agreements include investment protection with 43 countries and avoidance of double taxation with 51 countries. To protect the intellectual property rights (IPRs), Pakistan has also updated IPR laws to bring them in compliance with international requirements, particularly those mandatory under the Agreement on Trade Related Intellectual Property Rights (TRIPS) of the WTO. The salient features of Pakistan's regulatory regime are:<sup>3</sup>

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<sup>2</sup>These measures includes (a) removal of the requirement of government approval of foreign investment, (b) permission of foreign equity participation of up to 100 percent, (c) permission to negotiate the terms and conditions of payment of royalty and technical fees suited to foreign investors for transferring technology, (d) liberalising of foreign exchange regime, (e) permission of remittances of principal and dividends from FDI and portfolio investment including an extensive set of fiscal incentives and allowances to foreign investors, (f) convertibility of Pak-rupee from July 1994, (g) liberalisation of import policy, and (h) opening up the sectors of agriculture, telecommunications, energy and insurance to FDI in 1997. For further detail see Anwer (2002), p. 2.

<sup>3</sup>For further detail, see Zaidi (2004) and further details can be seen on Pakistan's board of investment (BOI) web site <http://www.pakboi.gov.pk/invest.pack.htm>

- Freedom to bring, hold and take out foreign currency from Pakistan in any form.
- Privatisation of an enterprise is fully protected. Neither it can be renationalised, nor can the government take over any foreign enterprise.
- Original FDI as well as profits earned can be repatriated to the country of origin.
- Equal treatment is provided to the foreign investor and local investor in terms of import and export of goods. FDI is not subject to taxes in addition to those levied on domestic investment.
- Foreign currency accounts are fully protected and they cannot be frozen.
- All the economic sectors are open to FDI; foreign equity up to 100 percent is allowed in all sectors, including the agricultural sector.
- There is no lower limit on the size of FDI in manufacturing sector. However, in agriculture, infrastructure and social sectors the minimum amount of foreign equity investment is \$0.3 million and in services sector the minimum amount of foreign equity investment is \$0.15 million.
- No government sanction is required to set up any industry, in terms of field of activity, location and size, except arms and ammunitions, high explosives, radioactive substances, security printing, currency and mint, and alcoholic beverages.
- No double taxation on income earned by foreign investors.
- Pakistan has also rationalised its tariff regime. Custom duty on import of plant machinery is zero percent in the agricultural sector, while in the manufacturing, services, infrastructure and social sectors it is not more than 5 percent.
- There are no restrictions for payment of royalty and technical fees in the manufacturing sector, whereas in the non-manufacturing sector, a maximum rate of 5 percent of net sales is allowed.
- Tax relief (IDA, percent of PME (Plant, Machinery and Equipment) cost), 50 percent in manufacturing and non-manufacturing sectors.

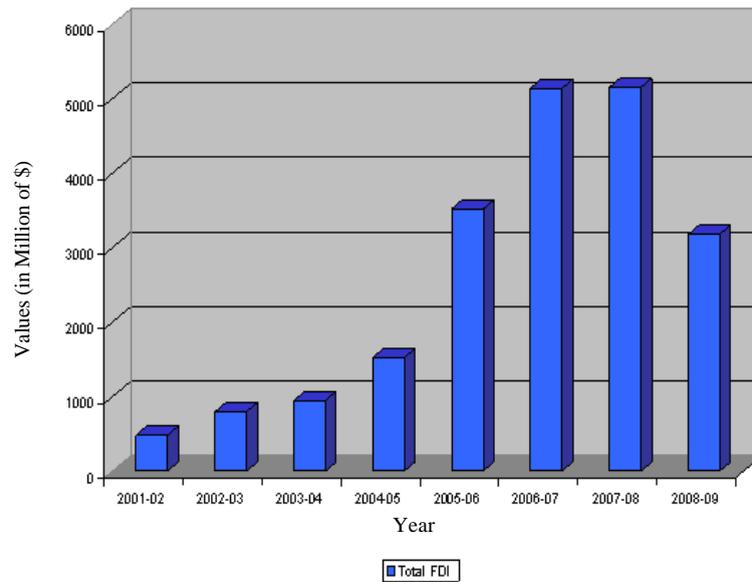
Pakistan has received comparatively higher amount of FDI over the past two decades, due to its market-oriented investment policies and enabling investment environment. FDI inflows to Pakistan can be explained in terms of its size and percentage of gross domestic product (GDP). Due to inconsistent investment policies, the flow of FDI was insignificant until 1991; however, it steadily increased in the post-liberalisation period. Actual inflows of FDI to Pakistan have increased from \$119.6 million in 1975-79 to \$3299.8 million in 1995-99 and from \$485 million in 2001-02 to \$5,152.80 million in 2007-08. FDI has showed a declining trend since 2007-08, which is due to the lack of enabling environment for investment in the country in recent years.

Table 1

*Foreign Investment Inflows in Pakistan (Million \$)*

Year	Greenfield Investment	Privatisation Proceeds	Total FDI
2001-02	357	128	485
2002-03	622	176	798
2003-04	750	199	949
2004-05	1,161	363	1,524.00
2005-06	1,981	1,540	3,521.00
2006-07	4,873.20	266	5,139.60
2007-08	5,019.60	133.2	5,152.80
2008-09	3,719.90	–	3,179.90
July-Aug09	351.40	–	351.40
Total	18,835.10	2,820.20	21,100.70

Source: Board of Investment, Government of Pakistan.

**Fig. 1. Foreign Direct Investment in Pakistan**

Since 2004, there has been a significant increase in the net inflows of capital. Capital inflows included mainly one-off inflows such as \$354 million through privatisation, \$600 million through sovereign debt issued internationally and an increase in concessional long-term loans from the World Bank and Asian Developmental Bank. FDI reached \$5.15 billion in 2008, 443 percent higher than in 2004; however, only 0.26 percent higher than in 2007. Although the increase in 2006 can be significantly attributed to privatisation proceeds, the increase in the subsequent years is primarily attributed to green field investment. Pakistan lacks adequate infrastructure, the dominance of green field investment in the composition of FDI signifies the creation of long-term jobs and influx of technology and knowledge, which improve a country's human capital. New FDI is concentrated in a few sectors such as telecommunication, finance and oil and gas exploration.

This increase seems insignificant when we compare it with other South Asian countries. The net private inflows to these countries were about \$106 billion in 1996 [Burki and Savitsky (2000)]. The reasons for a lower level of FDI inflows in Pakistan include the lack of political stability, slow bureaucratic process, inadequate infrastructure facilities, macroeconomic imbalances, inconsistent economic policies of successive governments, delays in the privatisation of state-owned enterprises, past disputes between foreign investors and the government, piracy of intellectual property, and arbitrary and non-transparent applications of government regulations [Khan (2007)].

### **3.2. Dimensions of FDI in Pakistan**

The dimensions of the FDI flows into Pakistan can be explained in terms of its growth and size, sources and sectoral compositions. The growth of FDI in Pakistan was not significant until 1990 due to the regulatory policy framework. However, under the more liberal policy regime, it has played a significant role in the development of Pakistan's economy, as shown in Table 2. It shows that over the post-liberalisation era, there has been a steady build up in the actual FDI inflows, which increased from US\$ 216.2 million in 1990 to US\$1524 million in 2005, thus growing at the annual compound rate of 21.47 percent. The decline to US\$322.5 million in 2000-01 can be attributed to many factors including the US sanctions imposed in the aftermath of the nuclear tests, the East Asian financial crisis and political instability.

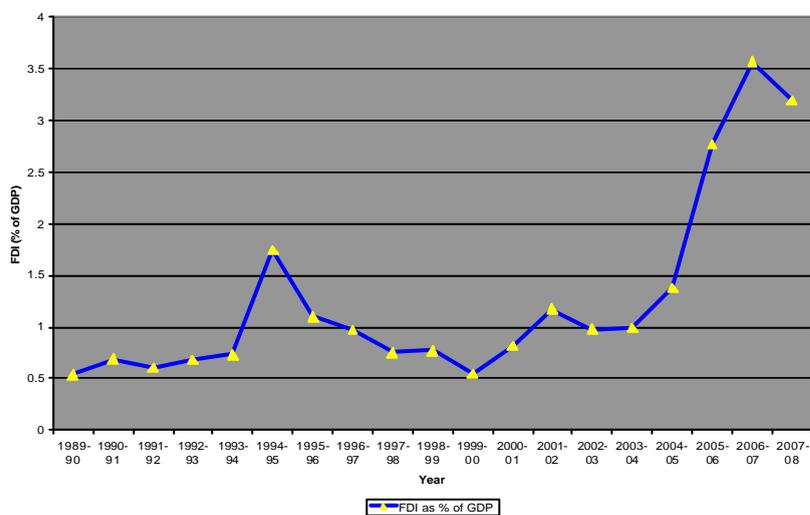
Table 2

*FDI Inflows in Pakistan, from 1989-90 to 2007-08*

Year	FDI (in Million US\$)	Annual Growth Rate	FDI as % of GDP
1989-90	216.2	–	0.54
1990-91	246.0	13.78	0.69
1991-92	335.1	36.22	0.60
1992-93	306.4	–8.56	0.68
1993-94	354.1	15.57	0.73
1994-95	442.4	24.94	1.74
1995-96	1101.7	149.03	1.10
1996-97	682.1	–38.09	0.97
1997-98	601.3	–11.85	0.75
1998-99	472.3	–21.45	0.77
1999-00	469.9	–0.51	0.55
2000-01	322.5	–31.37	0.82
2001-02	484.7	50.29	1.17
2002-03	798.0	64.64	0.98
2003-04	949.4	18.97	0.99
2004-05	1524.0	60.52	1.38
2005-06	3521.0	131.04	2.77
2006-07	5139.6	45.97	3.57
2007-08	5152.8	0.26	3.20

Source: State Bank of Pakistan.

Fig. 2. Trends of FDI as Percentage of GDP



The flow of FDI picked up after 2001-02, due to the revival of closer US-Pak ties and the liberalised foreign investment environment. In the year 2007-08, FDI was \$5152.8 million. Since 2003, Pakistan has registered an increasing trend of FDI inflows and the FDI-GDP ratio (Figure 2), except for the year 2008. This decrease was as a result of the global economic slowdown, caused by the financial crisis, fears of Pakistan running bankrupt and the deteriorating security conditions as fallout of the 'War on Terrorism'.

Table 3 shows the inflows of FDI by origin, since 1989-90. The US, UK and UAE remain the major source of FDI inflows in Pakistan despite considerable fluctuations in their shares. The share of FDI from UAE fluctuated between 1.61 percent in 2000-01 to 40.46 percent in 2005-06; that of UK between 28.07 percent in 2000-01 to 6.25 percent in 2001-02 and that of USA between 67.34 percent in 2001-02 to 14.67 percent in 2005-06.

Table 3

<i>Country-wise FDI Inflows (Million \$)</i>									
Country	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
USA	92.7	326.4	211.5	238.4	325.9	516.7	913.1	1,309.3	869.9
UK	90.5	30.3	219.4	64.6	181.5	244.0	860.1	460.2	263.4
UAE	5.2	21.5	119.7	134.6	367.5	1,424.5	661.5	588.6	178.1
Japan	9.1	6.4	14.1	15.1	45.2	57.0	64.4	131.2	74.3
Hong Kong	3.6	2.8	5.6	6.3	32.3	24.0	32.6	339.8	156.1
Switzerland	3.6	7.4	3.1	205.3	137.5	170.6	174.7	169.3	227.3
Saudi Arabia	56.6	1.3	43.5	7.2	18.4	277.8	103.5	46.2	92.3
Germany	15.5	11.2	3.7	7.0	13.1	28.6	78.9	69.6	76.9
Korea(South)	3.7	0.4	0.2	1.0	1.4	1.6	1.5	1.2	2.3
Norway	41.9	0.1	0.3	146.6	31.4	252.6	25.1	275.0	101.1
China		0.3	3.0	14.3	0.4	1.7	712.0	13.7	101.4
Others		76.6	173.9	108.6	369.3	521.9	1,512.2	1,748.7	1964.2
Total	322.4	484.7	798.0	949.0	1523.9	3521.0	5139.6	5,152.8	3719.9
Privatisation									
Proceeds	-	127.4	176.0	198.8	363.0	1540.3	266.4	133.2	0.0
FDI Excluding									
Pvt. Proceeds	322.4	357.3	622.0	750.2	1,160.9	1,980.7	4,873.2	5,276.6	3,719.9

Source: State Bank of Pakistan, Board of Investment, Government of Pakistan.

Note: 57.4 percent decrease in FDI Including Pvt. Proceeds as compared to July-April FY 08 and 57.4 percent decrease in FDI Excluding Pvt. Proceeds as compared to July-April FY 08.

Figure 3 indicates that over 74 percent of the FDI shares to Pakistan collectively originated from USA, UAE, UK, Switzerland, China, Norway, Saudi Arabia, Hong Kong and Japan. The top two investors during the year 2007-08 in Pakistan were USA, which accounted for nearly 25.41 percent, and UAE, which accounted for nearly 11.42 percent of FDI flows to Pakistan. UK, Hong Kong, Norway and Switzerland accounted for 8.93, 6.59, 5.34 and 3.29 percent of FDI flows to Pakistan, while all other sources amounted to about 39 percent (Table 4).

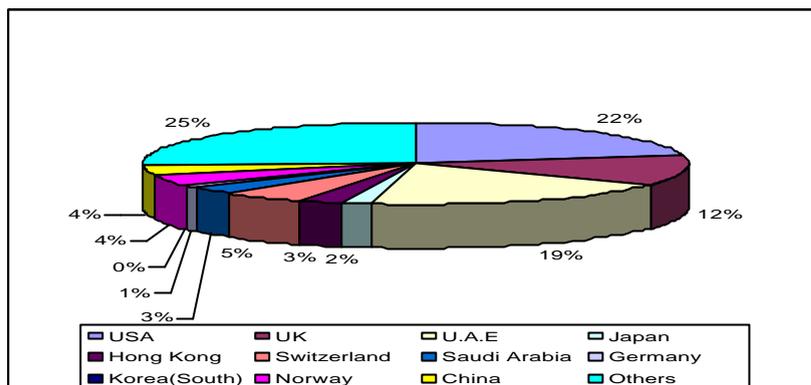
**Fig. 3. Country-wise Share of FDI Inflows, 2001–08**

Table 4

<i>Country-wise Shares of FDI Inflows in Pakistan (%)</i>								
Country	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
USA	28.75	67.34	26.50	25.12	21.39	14.67	17.77	25.41
UK	28.07	6.25	27.49	6.81	11.91	6.93	16.73	8.93
UAE	1.61	4.44	15.00	14.18	24.12	40.46	12.87	11.42
Japan	2.82	1.32	1.77	1.59	2.97	1.62	1.25	2.55
Hong Kong	1.12	0.58	0.70	0.66	2.12	0.68	0.63	6.59
Switzerland	1.12	1.53	0.39	21.63	9.02	4.85	3.40	3.29
Saudi Arabia	17.56	0.27	5.45	0.76	1.21	7.89	2.01	0.90
Germany	4.81	2.31	0.46	0.74	0.86	0.81	1.54	1.35
Korea(South)	1.15	0.08	0.03	0.11	0.09	0.05	0.03	0.02
Norway	13.00	0.02	0.04	15.45	2.06	7.17	0.49	5.34
China		0.06	0.38	1.51	0.03	0.05	13.85	0.27
Others		15.80	21.79	11.44	24.23	14.82	29.42	33.94
Total	100	100	100	100	100	100	100	100

Source: State Bank of Pakistan, Board of Investment, Government of Pakistan.

The inflows of FDI over the last four years were relatively broad-based, with almost all sectors witnessing an increasing trend (Tables 5 and 6). Table 6 indicates that the services sector attracted the major chunk of FDI. The significant increase of FDI in the services sector has enhanced its contribution towards GDP by 66 percent. Within the services sector, Telecommunications sector remained most dominant, as depicted by the \$1.63 billion investment in it. During 2007-08, the contribution of Telecommunications in total FDI exceeded 31 percent.

Table 5

*Foreign Direct Investment by Economic Group*

Economic Group	FY 04	FY 05	FY 06	FY07	FY08
Food and Food Packing	3.3	10	53.3	37.5	49.6
Beverages	0.7	6.2	6.2	88.8	-1.7
Tobacco and Cigarettes	0.5	6.7	2.5	389.5	9.2
Sugar	0.4	4.2	5.1	16.2	9.4
Textiles	35.4	39.3	47	59.4	30.1
Rubber and Rubber Products	-	-	4.7	4.3	3.7
Paper and Pulp	1.7	-	0.1	1.2	1.1
Leather and Leather Products	3.5	6.5	3.5	3	1.8
Chemicals	15.3	51	62.9	46.2	78
Petro Chemicals	1.5	1.1	9.5	6.3	27.4
Petroleum Refining	70.9	23.7	31.2	155.2	74.5
Mining and Quarrying	1.1	0.5	7.1	23.7	42.3
Oil and Gas Explorations	202.4	193.8	312.7	545.1	634.8
Pharmaceuticals and OTC Products	13.2	38	34.5	38.4	45.6
Fertiliser	-	3.5	-107.6	3.9	0
Cosmetics	-	1.1	0.8	0.5	0.1
Cement	1.9	13.1	39	33.7	102.5
Ceramics	0.1	0.4	0.4	0.4	1.2
Basic Metal	0.1	0.4	3.1	5.3	1
Metal Products	1.3	2.1	4	7.8	15.2
Machinery other than Electrical	0.7	2.8	1.2	4	5.9
Electrical Machinery	8.7	3.4	1.7	3.4	18.3
Electronics	7.5	10.3	18.1	18.6	27.6
Transport Equipment (Automobiles)	3.3	33.1	33.1	50.4	111.5
Power	-14.2	73.3	320.6	204.6	70.3
Construction	32	42.7	89.5	157.1	88.5
Trade	35.6	52.1	118	173.4	175.5
Transport	8.8	10.6	18.4	30.2	73
Tourism	0.1	-	3.4	18.8	6.6
Storage Facilities	-	3.7	0.2	18.3	0.6
Communications	221.9	517.6	1,937.70	1,898.70	1,625.30
Financial Business	242.1	269.4	329.2	930.1	1,607.60
Social Services	0.9	1.1	3.1	4.3	14.1
Personal Services	15.5	23.5	61.6	84.1	92.9
Others	33.2	78.8	65.5	76.9	109.3
<b>Total</b>	<b>949.4</b>	<b>1,524.00</b>	<b>3,521.00</b>	<b>5,139.60</b>	<b>5,152.80</b>

Source: Statistics and Data Warehouse Department, State Bank of Pakistan.

Table 6

*Sector-wise Share of FDI (%)*

Sectors	FY04	FY05	FY06	FY07	FY08
<b>I. Manufacturing</b>	<b>17.9</b>	<b>16.8</b>	<b>7.1</b>	<b>18.8</b>	<b>11.9</b>
1. Transport Equipment	0.3	2.2	0.9	1	2.2
2. Cement	0.2	0.9	1.1	0.7	2
3. Chemicals	1.6	3.3	1.8	0.9	1.5
4. Textile	3.7	2.6	1.3	1.2	0.6
5. Others	12	7.9	2	15.1	5.6
<b>II. Non-manufacturing</b>	<b>82.1</b>	<b>83.2</b>	<b>92.9</b>	<b>81.2</b>	<b>88.1</b>
<b>A. Extractive Industries</b>	<b>21.4</b>	<b>12.8</b>	<b>9.2</b>	<b>11.2</b>	<b>13.2</b>
1. Oil and Gas Explorations	21.3	12.7	8.9	10.6	12.3
2. Others	0.1	0.1	0.3	0.6	0.8
<b>B. Other Services</b>	<b>60.6</b>	<b>70.4</b>	<b>83.7</b>	<b>69.9</b>	<b>75</b>
1. Communication	23.4	34	55	37	31.5
(a) Telecommunication	21.8	32.4	54.1	35.6	27.9
(b) IT	1.4	1.5	0.9	1.4	3.5
2. Financial Business	25.5	17.7	9.3	18.2	31.2
3. Trade	3.8	3.4	3.4	3.4	3.4
4. Construction	3.4	2.8	2.5	3.1	1.7
5. Transport	0.9	0.7	0.5	0.6	1.4
6. Power	-1.5	4.8	9.1	3.8	1.4
7. Others	5.2	7	3.8	3.9	4.3

Source: State Bank of Pakistan.

Financial Sector is the second major area of interest, followed by the communication sector, in attracting FDI. More than 800 percent growth of FDI in the financial sector over the last four years is due to the financial sector reforms. Liberalisation and privatisation of the financial sector appears to be the main factor responsible for a massive inflow of foreign capital. FDI inflows in this sector increased up to \$1,607.6 million at the end of 2007-08, as compared to \$930.1 million in 2006-07. This trend is likely to discontinue due to the global financial crisis and the exclusion of Pakistan from the MSCI Emerging Markets Index. Moreover, setting a floor for stock prices at the Karachi Stock Exchange in 2008, to halt a plunge, has further weakened investor confidence in Pakistan's financial markets. If the government wishes to keep foreign investment inflows high, serious actions need to be taken to regain investor confidence in the financial sector of Pakistan.

Power generation is a sector that attracted significant FDI due to its immense potential for investment; however, in 2007-08 this sector experienced a steep decline in investment. In 2005-06 and 2006-07, investment in these sectors was \$320.6 million and \$204.6 million, respectively, and it declined to \$70.3 million in 2007-08. This decline can in part be attributed to the decrease in oil prices and in part to the poor line management that results in considerable power

theft. Another important sector is Oil and Gas Exploration. Pakistan has the fifth largest reservoir of coal (184 billion tons) in Thar but only 4.5-5.0 million tons is mined annually, representing significant upside potential for the industry. The flow of FDI in this sector is continuously increasing and reached \$634.8 million in 2007-08. Trade attracted \$175.5 million, automobiles \$111.5 million, cement \$102.5 million and construction \$88.5 million.

Pakistan has a lot of potential to attract foreign investment. Although the rising trend of FDI reflects the success of policy; however, FDI inflows are considerably hindered by institutional weakness, corruption, ineffective legal institutions, political uncertainty, poor law, weak regulatory systems, law and order situation, and low labour productivity.

#### 4. MODEL, DATA, AND METHODOLOGY

##### 4.1. Model

To examine the relationship between FDI and economic growth we take the lead from the work of Basu, *et al.* (2003) and Chakraborty and Nannenkamp (2008) to specify the following two variable model.

$$gdp_{it} = \alpha_i + \delta_t + \beta_i fdi_{it} + \varepsilon_{it} \quad \dots \quad \dots \quad \dots \quad \dots \quad (1)^4$$

where  $\alpha_i$  (1, 2, ....., 15) refers to the industry specific effects,  $\delta_t$  refers to the time effect and  $\varepsilon_{it}$  is the estimated residuals indicating deviations from the long-run steady state relationship. The short-run dynamics can be obtained by estimating the following error correction model,

$$\Delta gdp_{it} = a_i + \sum_q \gamma_i \Delta gdp_{it-q} + \sum_q \eta_i \Delta fdi_{it-q} + \lambda_i \varepsilon_{it-1} + u_{it} \quad \dots \quad (2)$$

Where  $q$  is the optimal lag length for each industry in the panel,  $g_i$  is the speed of adjustment towards the long-run equilibrium path,  $\lambda_i$  is the long-run effect of innovations in  $fdi$  on  $gdp$  and  $\eta_i$  represents the short-run effect of  $fdi$  on  $gdp$ .

##### 4.2. Data Description

To assess the linkage between GDP and FDI we included 23 industries in the panel for a period of 1981-2008. The broad sectoral breakdown of the 23 industries is given in Table 7.

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<sup>4</sup>Lower case letters represents logarithms of the variables.

Table 7

*List of Selected Industries*

Broad Sector	Included Industries
<b>Primary Sector</b>	Agriculture, Forestry, Hunting and Fishing, Mining and Quarrying
<b>Secondary Sector</b>	Manufacturing: Large-scale and Small-scale; Food, Beverages, Tobacco, Textiles, Leather, Clothing, Chemical and Chemical Products, Basic Metals and Metal Products, Machinery Equipment and Electrical Machinery, Motor Vehicles and other Transport Equipment
<b>Tertiary Sector</b>	Construction, Electricity and Gas Distribution, Wholesale and Retail Trade, Transport, Storage and Communication, Finance, Ownership of Dwellings, Other Services

Data on FDI inflows and GDP for each sector are supplied by State Bank of Pakistan and consumers price index (CPI) is used to calculate real GDP.

### 4.3. Methodology

The econometric methodology proceeds in three steps. First, we employed panel unit root test proposed by Im, Pesaran, and Shin (2003) to determine the order of integration of the individual series. In the second step, conditional on the findings that all variables were integrated of order I (1), we tested for cointegration, using the approach proposed by Kao (1999) and Pedroni (1999). Finally, conditional on cointegration findings, we applied Panel Dynamic Least Squares (PDOLS) technique to estimate the long-run coefficients.

#### 4.3.1. Panel Unit Root Tests

Before proceeding to examine the long-run relationship, we needed to verify the time series properties of the data. Testing the stationarity of the variables, we used Im, Pesaran, and Shin (2003) panel unit root test, which is commonly known as IPS. The IPS static was based on averaging individual Augmented Dickey-Fuller unit root test ( $t_i$ ). IPS panel unit root test is given by

$$t_{IPS} = \sqrt{N} \frac{(\bar{t} - E[t_i | \rho_i = 0])}{\sqrt{\text{var}[t_i | \rho_i = 0]}} \rightarrow N(0,1) \quad \dots \quad \dots \quad \dots \quad (3)$$

where  $\bar{t} = N^{-1} \sum_{i=1}^N t_i$ . The moments of  $E[t_i | \rho_i = 0]$  and  $\text{var}[t_i | \rho_i = 0]$  are obtained by Monte Carlo simulation and tabulated in IPS.

#### 4.3.2. Testing for Long-run Relationship

The next step was to test for the existence of cointegration among the variables specified in equation (1). Three cointegration tests are commonly employed in panel data analysis, namely Pedroni (1999), Kao (1999) and McCoskey and Kao (1998). Kao (1999) cointegration test is based on the Engle-Granger two-step procedure and imposes homogeneity on the members in the panel. The null of cointegration is tested using ADF-type test. McCoskey and Kao (1998) test the null hypothesis of cointegration and this test is similar to the Hadri LM-test for unit root [Harris and Sollis (2003)]. However, Pedroni proposes seven residual-based cointegration tests based on the null hypothesis of no cointegration. Pedroni cointegration test allows for heterogenous variance across categories in the panel. Four of the tests are based on within-dimension of the panel and three on the average along the between-dimension [Maeso-Frnandez, *et al.* (2006)]. The starting point in the Pedroni cointegration test is a group-by-group estimation of the proposed long-run relationship:

$$y_{it} = \alpha_i + \delta t + \theta_t + \beta_1 x_{1it} + \dots + \beta_K x_{Kit} + \varepsilon_{it} \quad \dots \quad (4)$$

where  $k$  is the number of regressors,  $\beta_K$  is the coefficients,  $\alpha$  and  $\delta$  are deterministic elements, and  $\theta$  is capture time effect.

To examine the long-run relationship between real GDP and FDI, we applied the Panel Dynamic Ordinary Least Squares (PDOLS) method, which is an appropriate framework for estimating and testing hypothesis for homogeneous cointegrating vectors [Kao and Chiang (2000) and Mark and Sul (2003)]. The long-run PDOLS is specified as:

$$gdp_{it} = \alpha_i + \delta t + \theta_t + \beta fdi_{it} + \sum_{-q}^q \psi_{ij} \Delta fdi_{it} + \varepsilon_{it} \quad \dots \quad (5)$$

where  $q$  is the number of lags and leads used for first difference terms. Coefficients of these terms capture the short-run dynamics. We allow heterogeneous short-run dynamics (i.e.  $\psi_{ij}$  differ across  $i$ ).

## 5. EMPIRICAL RESULTS

The empirical results are reported in three steps. First, we examined the time series property of the data by means of panel unit root test advanced by Im, *et al.* (2003). Conditional to the results of panel unit root test and allowing for fixed and time effects, in the second step we looked for cointegration using residual based test in the panel developed by Pedroni (1995, 1997). We then

obtained long-run parameters using the panel dynamic ordinary least squares (PDOLS) method. Finally, we examined the short-run and long-run causality between GDP and FDI by estimating the dynamic error-correction model.

### 5.1. Unit Root Test

Before estimating Equation (1), we first checked the order of integration of each variable using IPS panel unit root test [Im, Pesaran, and Shin (2003)]. IPS tests the unit root null against a more general alternative of a heterogeneous autoregressive coefficient. The results of the IPS test are reported in Table 8.

Table 8

#### *Panel Unit Root Test*

Series	Level	First Difference
$gdp_{it}$	-0.117 (0)	-5.124 (0)*
$fdi_{it}$	-0.439 (2)	-7.969 (1)*

\* indicates significant at the 1 percent level of significance. The critical values are -2.16960 and -1.97240 at 1 percent and 5 percent level, respectively.

The IPS panel unit root test suggests that both the series are non-stationary at their level and stationary at their first difference at the 1 percent level of significance. This means that both series follow I (1) process.

### 5.2. Cointegration Test

Following the results of unit root test, in the next step we used a panel cointegration technique based on Pedroni (1999) residual-based cointegration tests. This technique allows for cointegrating vectors of differencing magnitudes between categories, and also allows for fixed and time effects [Basu, *et al.* (2003)]. The results of the cointegration tests are reported in Table 9.

Table 9

#### *Results for Cointegration Tests between GDP and FDI*

Test Statistic	Within Dimension	
	None	Constant
Panel v	-1.14 [0.874]	-0.52 [0.698]
Panel Rho	-3.36 [0.000]*	-2.24 [0.013]**
Panel PP	-3.18 [0.000]*	-2.22 [0.013]**
Panel ADF	-0.96 [0.169]	0.02 [0.507]
Kao (ADF)		
	Between Dimension	
Panel Rho	-1.83 [0.034]**	-1.42 [0.077]***
Panel PP	-4.09 [0.000]*	-2.04 [0.021]**
Panel ADF	-0.52 [0.302]	0.55 [0.710]

Note: p-values are in brackets [ . ]. Null hypothesis: no cointegration; \*, \*\* and \*\*\* indicate significant at the 1 percent, 5 percent and 10 percent level respectively.

It is clear from the cointegration results (Table 9) that the null hypothesis of no cointegration is rejected by panel Rho and panel PP tests. Panel v and panel Rho tests also reject the hypothesis of no cointegration between dimensions. However, panel v and panel ADF tests fail to reject the hypothesis of no cointegration. Since panel rho and panel PP are assumed to be more reliable tests of cointegration [Maeso-Fernandez, *et al.* (2006)], we had enough statistical backing to conclude that cointegration existed between GDP and FDI. Hence, we proceeded to estimate Equation (1) by employing the DOLS method. Table 10 reports the DOLS results.

Table 10

<i>Dynamic OLS Results of FDI and Economic Growth</i>	
Dependent Variable: $gdp_{it}$	Coefficients
Constant	9.85 (9.21)*
$fdi_{it}$	0.31 (2.44)**
N	69
$\bar{R}^2$	0.78
<i>F-stat</i>	34.66

\*and \*\* indicate significance at the 1 percent and 5 percent level, respectively.

Table 10 presents DOLS estimates of FDI and real GDP with one lag and one lead of the first-difference terms.<sup>5</sup> To account for heterogeneity across sectors we have specified fixed effects model and the results based on cross-section weights are reported. To ensure contemporaneous effect of the regressors we employ the White cross-section and period random effects method. This method treats the panel regression as a multivariate regression and computes White-type robust standard errors. The estimates are therefore robust to cross-correlation and differenced error variances in each cross-section. The coefficient of FDI is positive (i.e. 0.31) and significant, which suggests that FDI influences real GDP in the long-run. This implies that a one percent increase in FDI leads to an increase in real GDP of about 0.31 percent in the long-run. However, the impact of FDI inflows is not as large as many policymakers and experts expected in the past. This may be due to the inflow of just market seeking FDI.

<sup>5</sup>We initially set 3 lags and leads for each first differenced variable. However, the final lag length is selected on the basis of general-to-specific methodology. Initially we select 4 lags and tested down. At lag 1 AIC gets its minimum value.

To examine the long-run and short-run causality between FDI and real GDP, we estimated the dynamic error-correction model using seemingly unrelated regression (SUR) method. Table 11 reports the results.

Table 11

<i>Dynamic Panel Causality Test</i>			
Dependent Variables	Independent Variables		
	$\Delta gdp$	$\Delta fdi$	$\epsilon_{t-1}$
$\Delta gdp$	–	30.83 [0.000]*	0.38 [0.536]
$\Delta fdi$	25.60 [0.000]*	–	4.49 [0.026]**

\* and \*\* indicate significant at the 1 percent and 5 percent level.

As is apparent from the table, the null of no short-run causality running from FDI to GDP and vice versa is rejected, indicating a strong bi-directional causality between FDI and output. For the long-run, only the null of no causality running from GDP to FDI is rejected. This result implies that in Pakistan only market seeking FDI inflows in the long-run.

### 5.3. Sector-wise Causality Test

To explore sector-wise direction of causality, we repeated the Granger causality for primary, manufacturing and services sectors. The results are reported in Table 12.<sup>6</sup>

Table 12

<i>Sector-wise Causality Test</i>			
Sector	Dependent Variable	Independent Variable	
		$\Delta gdp$	$\Delta fdi$
Primary	$\Delta gdp$	–	49.87 [0.000]*
	$\Delta fdi$	0.81 [0.937]	–
Manufacturing	$\Delta gdp$	–	0.32 [0.852]
	$\Delta fdi$	5.63 [0.060]***	–
Services	$\Delta gdp$	–	10.00 [0.040]**
	$\Delta fdi$	4.48 [0.345]	–

\* and \*\*\* indicate significant at the 1 percent and 10 percent level respectively. Causality based on chi-square test with degrees of freedom 4.

The results reported in Table 12 reveals that the nature of the causal link between FDI and output is strikingly different across sectors. For the primary

<sup>6</sup>Due to the absence of cointegration for individual sectors we estimate only short-run causality.

sector the null of no causality running from FDI to output is rejected. This implies that in the short-run, FDI significantly affects the productivity of primary sector. By contrast, for the manufacturing sector the null of no causality running from FDI to real output cannot be rejected. However, an evidence of causality running from real GDP to FDI is observed. This result implies that in manufacturing sector the bulk of FDI may be market-seeking and resource-seeking type. For the services sector the evidence of uni-directional causality from FDI to GDP is seen. This result is consistent with the fact that in the recent year there is a substantial inflow of FDI in the services sector, especially in telecom sector, which played an integral role in growing the economy.

## 6. CONCLUSIONS

Since the introduction of reforms related to trade and payments system, there has been a substantial increase in the FDI flows Pakistan. However, the composition and types of FDI has changed considerably. The primary industries have attracted varying FDI. In the manufacturing industries, there is still local-market-seeking FDI, while services sector has enjoyed a rising share of FDI in recent years.

We assessed the growth implication of FDI in Pakistan using sector-specific FDI and output data, and applying panel cointegration technique over the period of 1981-2008. We found that FDI and real GDP were cointegrated and the DOLS estimates suggested that at the aggregate level, FDI is positively related to real output. Whereas, in the long-run an evidence of uni-directional causality between FDI and real GDP is observed and in the short-run there exists bi-directional causality. At the sectoral level, we found uni-directional causality running from FDI to real GDP in the primary sector. For manufacturing sector, an evidence of uni-directional causality running from GDP to FDI is found. An evidence of uni-directional causality running from FDI to output is also found for the services sector. These results suggest that FDI promotes output in the primary and services sectors. Thus, policymakers should increasingly focus on attracting FDI in these sectors in order to attain short-term growth. In the manufacturing sector, the inflow of FDI is relatively small; especially the textile sector has received meager FDI inflows. This means that Pakistan has received little export-oriented FDI. Hence, there is limited role of FDI in export promotion. Finally, by analysing the sectoral effects of FDI on the domestic economy, this study provides significant information to policy-makers in formulating investment policies in Pakistan.

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