"Dominance and Concentration of FDI: A Cross Country Analysis"

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Dominance and Concentration of FDI: A Cross Country Analysis

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ABSTRACT

With globalisation, there has been a phenomenal rise in Foreign Direct Investment (FDI). Since this is likely to lead to an international relocation of production and consequent generation of income and employment. This would lead to international specialisation of production and is likely to maximize of global welfare. This would however, be hampered if the distribution of FDI in terms of inflows and outflows are not rationally allocated. This implies that FDI outflows should not be dominated by few countries and FDI inflows should not be concentrated in few (developing) countries.

We use set of new indices, including Indices at three levels for FDI and Gross Domestic Product (GDP), at five point of time (namely, 1990, 1995, 2000, 2005, and 2008), Index of Rank Dominance, Bodenhorn's measure of Mobility and Turnover and Herfindal's Index of Concentration for periods 1990-2008. These indices are prepared to study and examine whether FDI outflows is dominated by few countries and FDI inflows is concentrated in few (developing) countries.

On examining dominance patterns of 53 countries, it was found that the FDI outflows were dominated by three countries whose index of rank dominance was in the range of 0.90. Similarly, in terms of FDI outward stock, USA got an absolute dominance with IRD = 1. In respect of concentration it is noticed that the ratio show a pattern whereby it increases when the world economy contracts and decreases when the world economy expands, with phases of instability during crisis.

I.0 Introduction

On account of globalisation, we expect that international capital flows would be rationally distributed. The implication is that both in terms of outflows as well as inflows, the distribution would be more rationale. The rationale distribution of outflows implies that the donor or home countries should compete with each other, so as to provide competitive conditions for FDI flows for the recipient or host countries. Otherwise home countries would be able to dictate the terms of FDI outflows. For instance they may seek profit guarantees. If such guarantees are granted they would encourage inefficient production. If there is a competition then we would expect that outflows would come from the most efficient source. The gain from such international relocation of production will go to the host countries. Similarly, FDI inflows should be rationally distributed. Such that there is a rational use of resources that are located in different parts of the world. It is therefore necessary that the pattern of FDI outflows should not be dominated by few countries and the pattern of FDI inflows should not be concentrated only in a few countries. Both these tendency would lead to misallocation of capital flows and would result in sub-optimal use of global resources that are employed by FDI flows. It may therefore result in a situation where the gains from opening of capital flows do not lead to a maximisation of global production and global economic welfare. It is expected that the managerial and technical efficiency of multinational enterprises (MNE) would result in more efficient use of host country resources. Implicit in the design of opening up and globalisation is the understanding that the objective of permitting global capital flows is to maximise international production and economic welfare.

Plan of the Study

The first section lays out the introduction. The second gives the data and methodology. Section III talks of Literature Review and Section IV gives the results. Section V is the concluding section.

II.0 Data and Methodology

Data

The required data for the analysis is collected from published sources. Data on country-wise FDI and GDP have been taken from UNCTAD.

Objectives of the Study

- To study global trends in FDI flows.
- To analyse pattern of dominance of FDI outflows.
- To analyze the pattern of concentration of FDI inflows.

Hypotheses

1. There is a high concentration of FDI inflows in few countries
2. There is a dominance of FDI outflows from few countries
3. The level of concentration differs between developed and developing countries.
4. The level of dominance differs between developed and developing countries.
5. Dominance patterns are stable.

Methodology

The methodology involved a number of empirical exercises: employing a number of statistical and econometric tools for analysing aspect of FDI distribution in India. A new set of simple, temporal and relative indices are calculated to find out distribution of FDI among countries on the line of their GDP. This relates to equity aspect of FDI distribution. Coefficient of variations is also calculated to study variations across the

centres in attraction of FDI. The above cross-sectional studies are done at four points of time, in year 1990, 1995, 2000, 2005 and 2008.

A new measure called Index of Rank Dominance of Centres is calculated to find out most dominant centres in attraction of FDI.

We have calculated percentage share of FDI inflows and outflows of developed, developing and transition countries at aggregate level during 1990-2008. This helps to know dynamics of change have been occurred in terms of FDI inflows and outflows.

Indices:

We are measuring 'equity' aspect of distribution of FDI amongst countries. We have given a set of formalised and stylized indices at four point of time for FDI and GDP across centres. These indices are based on Bhanu Murthy, et al. (1999).

There are two set of indices at the first level- one for FDI and another for GDP.

First level of indices- is based on the ratio of FDI and GDP in a particular centre with respect to national average of FDI and GDP respectively.

Relative Index of FDI

$$F_{rf}^{c} = \frac{f_t^c}{\left[\sum_{c=1}^{n} f_t^c / n\right]}$$

Where, t = 1990, 1995, 2000, 2005 and 2008.

c = 1, 2, ...13

n = 13

F_{rf}^{c} = FDI ratio of c^{th} country with respect to average FDI in t^{th} period.

Relative Index of GDP

$$P_{rf}^{c} = \frac{p_t^c}{\left[\sum_{c=1}^{n} p_t^c / n\right]}$$

P_{rf}^{c} = GDP ratio of c^{th} Country with respect to average GDP in

t^{th} period.

Second level of Indices – is a temporal ratio of first ratio at two point of time for both FDI and GDP

Temporal Index of FDI

$RF^{c}_{t/t} = \frac{F^{c}_{rt/}}{F^{c}_{rt}}$; where $RF^{c}_{t/t}$ = Relative Index of FDI.

This measures change in relative position of the FDI index of a particular country over between two periods of time. This yields three indices between 1995 and 1990; between 2000 and 1995; between 2005 and 2000 and between 2008 and 2005.

Average Ratio of Relative FDI

$$ARF_{T} = \sum_{c=1}^{n} RF^{c}_{t} / n$$

ARF_{T} = Average of ratio of relative FDI between two points of time

Change in FDI average

$$ARF_{T'T} = \frac{ARF_{T/}}{ARF_{T}}$$

$ARF_{T'T}$ = Change in average between two points of time.

Temporal Index of GDP

$RP^{c}_{t/t} = \frac{P^{c}_{rt/}}{P^{c}_{rt}}$; where $RP^{c}_{t/t}$ = Relative Index of GDP.

This is index of the ratio between GDP indices at two points of time. This measures change in relative position of the FDI index of a particular country between two points of time. This yields three indices between 1995 and 1990; between 2000 and 1995; between 2005 and 2000 and between 2008 and 2005.

Average Ratio of Relative FDI

$$ARP_{T} = \sum_{c=1}^{n} RP^{c}_{t} / n$$

ARP_T = Average of ratio of relative GDP between two points of time

Change in FDI average

$$ARP_{T'T} = \frac{ARP_{T'}}{ARP_T}$$

$ARP_{T'T}$ = Change in average between two points of time.

Third level of Indices – is ratio between the temporal indices of FDI and corresponding temporal indices of GDP.

$$RR_t^c = \frac{RF_{t'/t}^c}{RP_{t'/t}^c}$$

$$ARR_T = \sum_{c=1}^{n} RR_t^c / n$$

$$ARR_{T'T} = \frac{ARR_{T'}}{ARR_T}$$

Power of these indices lies in exposing what is the relative position of each country with respect to average both in terms of FDI and GDP. Also it tells us the change in relative position over time with the help of temporal indices. Overall change is measured by average across the countries, Murthy and Sinha (2010).

Herfindahl-Hirschman Index (HHI) of Concentration

HHI is a commonly accepted measure of market concentration. It is calculated by squaring the market share of each FDI recipient country in a market, and then summing the resulting numbers Murthy and Deb (2008). The HHI is expressed as:

$$HHI = \sum_{i=1}^{N} S_i^2$$

Where 'Si' is the market share of FDI recipient country i in the market and 'N' is the number of counties. This index range from 1/N to one, where 'N' is the number of countries.

A HHI index below 0.01 indicates a highly competitive.

A HHI index below 0.1 indicates not concentrated.

A HHI index between 0.1 to 0.18 indicates low concentration.

A HHI index above 0.18 to 0.30 indicates moderate concentration.

A HHI index above 0.30 indicates high concentration.

Rank Dominance:

Among the top twenty (ten) countries which of the country has the dominant position (i.e. highest rank) for the longest period is estimated with the help of index of rank dominance.

$$I_{RD} = \frac{\sum_{i=1990}^{2008}(Rank\ Score)_i}{Maximum\ Rank\ Score\ X\ No.of\ Years}$$

I_{RD} = is the index of Rank Dominance.

Rank Score = 20, 19, 18, ... (in decreasing order of rank).

The value of I_{RD} lies between 0 and 1, that is,

$0 < I_{RD} \leq 1$

I_{RD} measures in relative terms the position of the most dominant centre over period from 1990 to 2008 for attracting FDI. The value of I_{RD} lies between zero and one but never become zero because in this index, countries included must be at least one time has placed in top twenty (ten) position over period 1990 to 2008. The maximum value

of I_{RD} shall be one provided a country has been at top position in all years from 1990 to 2008 in attracting FDI.

Mobility and Turnover

This is as a sum of rank changes among the top FDI donor countries. While mobility as churning in rank position of the leading FDI donor counties, the measure of turnover as the number of countries below the leading FDI donor countries replace the countries belonging to the leading FDI donor countries. This measures the competition among FDI donor countries in order to exploit the factors of production in recipient countries. This mobility and turnover are based on Bodenhorn, et al. (1990). Measure of mobility and turnover over the periods 1990 to 2008 are calculated and the significance of their difference are tested. This is done with a view to understand whether dominance pattern of FDI outflows has changed, Murthy and Deb(2008).

III.0 Literature Review

Jha (2003) points out that unless FDI makes its own contributions towards technology progress, productivity spillovers and a consolidation of niche export markets, it may be considered as a part of the level of general investment in the economy. FDI needs certain types of domestic policy support in order to flourish. This paper emphasizes the view that an enlightened FDI policy, both at the national and the states level, is to be seen as part of a general policy of enhancing investment in this economy under condition of sustained production efficiency.

Kumar (2003) -This paper has overviewed the evolution of Indian government's attitude towards FDI, examined the trends and patterns in FDI inflows during the 1990s and has considered its impact on a few parameters of development in a

comparative East Asian perspective. The paper finds a good correspondence between industrial growth rate in a year and the FDI inflows in the following year. The industrial growth seems to signal to the foreign investors about the prospects of the economy. Therefore, it appears that policy liberalization may be a necessary but not a sufficient condition for FDI inflows.

Rao and Murthy (2006) "Towards Understanding the State-wise Distribution of Foreign Direct Investments in the Post-Liberalisation Period" – This paper has overviewed the state-wise distribution of foreign direct investments in the post liberalisation period. It may be said that states in the western and southern regions attracted much of the approved FDI. Even if some of the backward states attracted foreign investment proposals based on their natural resources. However the manufacturing FDI would not go to the relatively backward states except in case of extractive activities and those based on natural resources. Overall, it does appear that, in line with experience elsewhere, FDI has shown a preference for developed states. The two factors combined may accentuate the differences between the developed and backward states. The backward states may neither be in a position to offer the incentives to offset disadvantages and even if they do, the net benefit for their economies is not guaranteed. States have to improve the overall investment climate to be able to attract investment, whether domestic or foreign. The private sector would not always be forthcoming to meet this basic requirement. The role of public investment is thus obvious:

> ..... although attracting FDI can be an important element of a regional development strategy, the key to successful development will ultimately be sound domestic macroeconomic and structural policies, adequate and efficient domestic savings and investment and human capital accumulation, supported

by sound and strong domestic institutions. FDI is not a substitute for getting domestic policies "right". Appropriate domestic policies will help attract FDI and maximise its benefit, while at the same time removing obstacles to local business (Ögütçü, 2002).

Targeting FDI, or expecting it to deliver the goods on its own, may thus not always be the right choice for the states. This is more so because, crowding in effects of FDI on domestic investment are not always guaranteed. Further, with performance requirements no longer significant and mergers and acquisitions (M&As) playing a major role in FDI flows, the need for looking at the disaggregated picture to understand the contribution of FDI to regional development becomes quite obvious.

IV.0 Results

We are explaining the pattern of world FDI distribution among developed, developing and transition countries with respect to world in terms of inward and outward as well as in terms of flows and stocks during the period 1990-2008.

FDI Inflows and Stock:

In 1990, FDI inflows directed towards developed countries. More than 80 percent FDI inflows concentrated in developed countries and less than percent FDI inflows directed towards developing countries. Presence of FDI inflows in transition countries was almost insignificant. The share of developing and transition countries had been growing over period of time and it reached more than 40 percent 2008 (Table 1). This shows that destination of FDI inflows has been somewhat shift from developed countries to developing countries. This indicates that developing countries has been changing and liberalizing their investment policy, so that it can compete with developed countries with respect to attraction of FDI inflows in their countries. But there is still majority of FDI inflows concentrated in developed countries.

Table 1: Percentage Share of FDI Inflows				
Year	World	Developing Countries	Transition Countries	Developed Countries
1990	100	16.93	0.03	83.04
1991	100	25.55	0.09	74.36
1992	100	31.89	0.92	67.19
1993	100	34.57	1.38	64.05
1994	100	40.38	0.77	58.85
1995	100	34.00	1.19	64.81
1996	100	37.67	1.51	60.82
1997	100	39.26	2.13	58.61
1998	100	27.04	1.14	71.82
1999	100	21.15	0.79	78.06
2000	100	18.59	0.51	80.90
2001	100	26.26	1.19	72.56
2002	100	27.94	1.79	70.27
2003	100	32.56	3.52	63.92
2004	100	39.52	4.12	56.36
2005	100	33.83	3.18	62.99
2006	100	29.69	3.73	66.58
2007	100	26.75	4.59	68.66
2008	100	36.57	6.74	56.69

FDI inward stock is the accumulation of FDI inflows over periods. So that FDI inward stock is generally follow the trends of FDI inflows. In 1990, more than 70 percent accumulated productive capital invested in developed countries and less than 30 percent invested in developing and transition countries. This proportion of FDI investment pattern has even been maintained in 2008 with slight changes (table 2). This indicates that even though competition has been increased amongst countries for attraction of FDI inflows. But still accumulated foreign productive capital in terms of stock has been concentrated in a few developed countries.

Table 2: Percentage Share of FDI Inward Stock				
Year	World	Developing Countries	Transition Countries	Developed Countries
1990	100	27.27	0.09	72.65

1991	100	27.04	0.10	72.85
1992	100	28.99	0.02	70.99
1993	100	30.21	0.11	69.68
1994	100	29.93	0.27	69.80
1995	100	29.24	0.39	70.36
1996	100	30.45	0.53	69.01
1997	100	32.06	0.84	67.10
1998	100	29.96	0.80	69.24
1999	100	32.16	0.87	66.97
2000	100	30.16	1.06	68.79
2001	100	29.29	1.44	69.27
2002	100	26.08	1.71	72.20
2003	100	24.61	1.89	73.50
2004	100	24.34	2.07	73.59
2005	100	27.09	2.72	70.19
2006	100	27.12	3.19	69.69
2007	100	28.05	4.32	67.63
2008	100	28.68	2.82	68.50

FDI Outflows and Stock:

Developed countries have ownership over productive capital resources. This is almost unchallengeable. This is also reflected from table 3 and table 4. In 1990, more than 95 percent of FDI outflows originated from developed countries. This shows that developed countries had controlled over productive capital resources. This proportion of controlling of developed countries over productive capital has been decreased over periods. However more than 80 percent of world productive capital is stilled owned and controlled by developed countries in 2008 (table 3). Developing countries owned and controlled less than 5 percent world capital in 1990. Due to globalisation and competition, developing countries have been owning and controlling more capital, which is however less than 20 percent in 2008. FDI outward stock has followed the same pattern of controlling over productive capital as revealed by FDI outflows. Developed countries has controlled over more than 80 percent of FDI outward stock (table 4). This means that most of FDI in terms of outflows and outward stock has

been originated from developed countries. This shows dominance of developed countries over world productive capital resources.

Table 3: Percentage Share of FDI Outflows				
Year	**World**	**Developing Countries**	**Transition Countries**	**Developed Countries**
1990	100	4.98	0.00	95.02
1991	100	6.73	0.00	93.27
1992	100	11.39	0.77	87.84
1993	100	16.26	0.43	83.31
1994	100	16.51	0.11	83.38
1995	100	15.21	0.17	84.62
1996	100	16.07	0.24	83.69
1997	100	15.48	0.72	83.80
1998	100	7.35	0.20	92.45
1999	100	6.36	0.21	93.43
2000	100	11.11	0.26	88.63
2001	100	11.12	0.37	88.52
2002	100	9.25	0.87	89.88
2003	100	8.08	1.90	90.02
2004	100	12.96	1.52	85.52
2005	100	13.96	1.63	84.41
2006	100	15.41	1.70	82.89
2007	100	13.30	2.40	84.30
2008	100	15.76	3.15	81.09

Table 4: Percentage Share of FDI Outward Stock				
Year	World	Developing economies	Transition economies	Developed economies
1990	100	8.13	0.03	91.84
1991	100	8.04	0.05	91.91
1992	100	8.87	0.03	91.09
1993	100	9.79	0.13	90.08
1994	100	10.61	0.13	89.26
1995	100	11.22	0.15	88.64
1996	100	11.72	0.17	88.12
1997	100	15.04	0.24	84.72
1998	100	13.38	0.23	86.39
1999	100	14.21	0.21	85.58
2000	100	14.21	0.35	85.44
2001	100	13.23	0.70	86.07
2002	100	11.91	0.90	87.19
2003	100	10.96	1.10	87.94
2004	100	11.06	1.10	87.84
2005	100	12.11	1.43	86.46
2006	100	13.37	1.72	84.91
2007	100	14.55	2.39	83.07
2008	100	14.54	1.39	84.07

Table 5: Regression Statistics			
	Developing Countries	Transition Countries	Developed Countries
	FDI Inflows		
Adjusted R Sq.	-0.0284	0.6064	0.0372
Coefficient	0.0076	0.1844	-0.0062
P Value	0.4881	**0.0001**	0.2102
	FDI Inward Stock		
Adjusted R Sq.	0.0671	0.8612	-0.0181
Coefficient	-0.0048	0.2393	-0.0010
P Value	0.1482	**0.0000**	0.4209
	FDI Outflows		
Adjusted R Sq.	-0.0629	0.5513	-0.0504
Coefficient	-0.0035	0.1585	-0.0010
P Value	0.8212	**0.0004**	0.6368
	FDI Outward Stock		
Adjusted R Sq.	0.4789	0.9403	0.6594
Coefficient	0.0247	0.2340	-0.0043
P Value	**0.0006**	**0.0000**	**0.0000**

Indices

We have given a set of formalised and stylized indices at five point of time (i.e. 1990, 1995, 2000, 2005 and 2008) for FDI inflows and GDP across countries. These indices are based on Bhanu Murthy, et al. (1999).

- I level index: Relative Index.
- II level Index: Temporal Index.
- III level Index: Ratio of Temporal Index of FDI and GDP.

The aggregate level changes can be understood with the help of average, change in average, standard deviation, coefficient of variation (CV) of the individual indices and ratio of coefficient of variation at four points of time. Further, the aggregate changes can be understood by taking the minimum CV as the base.

In terms of absolute amount of FDI inflows, the average FDI inflows have been continuously increasing except 2005. In 2000, the average FDI inflows have increased more than four times of FDI inflows in 1995. This fluctuation in FDI inflows has also increased standard deviation. Table 6 clearly shows that there has been increased in standard deviation with increase in FDI inflows and vice-versa. Coefficient of variation (CV) and CV ratio of FDI inflows among countries also follow the trend of standard deviation.

Now we see temporal indices of FDI between two periods. Average of temporal index has been continuously decreasing except 2005/2000. However Standard deviation, CV and CV ratio have been continuously decreasing across countries.

In case of absolute amount of GDP, the standard deviation increases significantly with the increase of average GDP. However the CV and CV ratio have been continuously decreasing except in 2000. In case of Temporal Index of GDP, the average is almost constant with a small change for all this period. However the standard deviation, CV and CV ratio have been continuously decreasing.

Table 6: Indices of Distribution of FDI & GDP

	FDI:US $ in millions					Relative Index					Temporal Index			
Country	1990	1995	2000	2005	2008	1990	1995	2000	2005	2008	1995/1990	2000/1995	2005/2000	2008/2005
Argentina	1836	5609.4234	10418.314	5265.2632	8852.8682	0.49	0.94	0.41	0.28	0.31	1.94	0.44	0.69	1.09
Australia	8120.6189	11967.858	13963.115	32592.95	46773.977	2.15	2.01	0.55	1.75	1.63	0.94	0.27	3.17	0.93
Austria	653	1904.4785	8839.7181	10784.46	13551.104	0.17	0.32	0.35	0.58	0.47	1.85	1.09	1.66	0.82
Bahrain	370.38	430.59	363.56383	1048.6702	1793.883	0.10	0.07	0.01	0.06	0.06	0.74	0.20	3.92	1.11
Belgium-Luxembourg	8046.73	10688.7	88738.714	40350.068	62691.604	2.13	1.80	3.51	2.17	2.19	0.84	1.95	0.62	1.01
Brazil	988.8	4405.122	32779.24	15066.292	45058.156	0.26	0.74	1.30	0.81	1.57	2.83	1.75	0.62	1.94
British Virgin Islands	18.35	893.53	9877.2672	12182.255	3000	0.00	0.15	0.39	0.65	0.10	30.92	2.60	1.67	0.16
Canada	7582.2763	9254.772	66795.052	25691.556	44712.476	2.01	1.56	2.64	1.38	1.56	0.77	1.70	0.52	1.13
Chile	661.2	2956.1	4860.0067	6983.8014	16786.862	0.18	0.50	0.19	0.37	0.59	2.84	0.39	1.95	1.56
China	3487.11	37520.53	40714.81	72406	108312	0.92	6.31	1.61	3.89	3.78	6.83	0.25	2.41	0.97
China, Hong Kong SAR	3275.0723	6213.3625	61924.057	33618	63003	0.87	1.05	2.45	1.81	2.20	1.20	2.34	0.74	1.22
China, Taiwan Province of	1330	1559	4928	1625	5432	0.35	0.26	0.19	0.09	0.19	0.74	0.74	0.45	2.17
Colombia	500	968.36827	2436.4599	10251.967	10563.872	0.13	0.16	0.10	0.55	0.37	1.23	0.59	5.71	0.67
Costa Rica	162.4	336.9	408.56445	861.04203	2021.0029	0.04	0.06	0.02	0.05	0.07	1.32	0.28	2.86	1.53
Czech Republic	165	2561.8315	4984.4	11602.8	10730.6	0.04	0.43	0.20	0.62	0.37	9.86	0.46	3.16	0.60
Denmark	1132.15	4328.9242	16458.196	8916.1514	10921.37	0.30	0.73	0.65	0.48	0.38	2.43	0.89	0.74	0.80
Egypt	734	595.2	1235.4	5375.6	9494.6	0.19	0.10	0.05	0.29	0.33	0.51	0.49	5.91	1.15
France	15629.204	23673.158	43252.257	84951.251	117509.8	4.14	3.98	1.71	4.56	4.10	0.96	0.43	2.67	0.90
Germany	2962.4188	12024.737	198276.51	47440.095	24938.524	0.79	2.02	7.84	2.55	0.87	2.58	3.87	0.32	0.34
Hungary	553.80899	5103.4866	2763.1746	7705.7905	6514.3591	0.15	0.86	0.11	0.41	0.23	5.85	0.13	3.79	0.55
India	236.69	2151	3585	7606	41554	0.06	0.36	0.14	0.41	1.45	5.77	0.39	2.88	3.55
Ireland	621.91112	1442.9251	25779.436	16970.104	22772.368	0.16	0.24	1.02	0.91	0.80	1.47	4.20	0.89	0.87
Israel	137.12	1576.598	5919.443	4272.272	9638.8	0.04	0.27	0.23	0.23	0.34	7.30	0.88	0.98	1.47
Italy	6344.8761	4816.5152	13374.793	19974.631	17031.53	1.68	0.81	0.53	1.07	0.59	0.48	0.65	2.03	0.55
Jamaica	174.9	147.4	468.8	682.484	789	0.05	0.02	0.02	0.04	0.03	0.54	0.75	1.98	0.75
Japan	1753	41.5	8322.7393	2775.4087	24425.546	0.46	0.01	0.33	0.15	0.85	0.02	47.13	0.45	5.72
Lebanon	6.45	35	964.10314	2623.5	3606.4	0.00	0.01	0.04	0.14	0.13	3.45	6.47	3.69	0.89
Malaysia	2611	5815	3787.6316	4063.6	8052.9	0.69	0.98	0.15	0.22	0.28	1.41	0.15	1.46	1.29
Mauritius	41.04	18.69	276.76612	41.564676	382.77361	0.01	0.00	0.01	0.00	0.01	0.29	3.48	0.20	5.99
Mexico	2633.238	9526.3	18028.347	21922.061	21949.502	0.70	1.60	0.71	1.18	0.77	2.30	0.44	1.65	0.65

Morocco	165	332	422.21159	1653.3721	2387.5039	0.04	0.06	0.02	0.09	0.08	1.28	0.30	5.32	0.94
Netherlands	10515.5	12304	63853.9	47791.4	19947.4	2.79	2.07	2.53	2.57	0.70	0.74	1.22	1.02	0.27
Nigeria	1002.5	1271.0534	1309.6652	4978.26	20278.5	0.27	0.21	0.05	0.27	0.71	0.80	0.24	5.16	2.65
Norway	1563.803	2409.4103	7090.4493	5412.9608	5420.2491	0.41	0.41	0.28	0.29	0.19	0.98	0.69	1.04	0.65
Panama	135.535	223.061	700.3	962.1	2401.7	0.04	0.04	0.03	0.05	0.08	1.04	0.74	1.87	1.62
Philippines	550	1459	2240	1854	1520	0.15	0.25	0.09	0.10	0.05	1.68	0.36	1.12	0.53
Poland	88	3659	9343	10249	16533	0.02	0.62	0.37	0.55	0.58	26.40	0.60	1.49	1.05
Portugal	2901.5	689.7	6635.316	3929.564	3531.9574	0.77	0.12	0.26	0.21	0.12	0.15	2.26	0.80	0.58
Russian Federation	3.9	2065.7235	2714.23	12885.808	70320	0.00	0.35	0.11	0.69	2.46	336.29	0.31	6.45	3.55
Seychelles	0.262482	45.782448	24.329623	85.879603	364.48987	0.00	0.01	0.00	0.00	0.01	110.74	0.12	4.79	2.76
Singapore	5574.7491	11535.308	16484.489	14374.189	22724.51	1.48	1.94	0.65	0.77	0.79	1.31	0.34	1.18	1.03
South Africa	125.8	1241.3	887.92205	6643.7749	9009.1739	0.03	0.21	0.04	0.36	0.31	6.26	0.17	10.16	0.88
South Korea	759.196	1270.4564	9003.5812	7055.3965	7603.2	0.20	0.21	0.36	0.38	0.27	1.06	1.67	1.06	0.70
Spain	13294.256	8070.4772	39575.103	25020.184	65539.448	3.52	1.36	1.57	1.34	2.29	0.39	1.15	0.86	1.70
Sri Lanka	43.3514	65	172.951	272	752.2	0.01	0.01	0.01	0.01	0.03	0.95	0.63	2.14	1.80
Sweden	1971.1766	14448.292	23405.167	10079.658	43655.161	0.52	2.43	0.93	0.54	1.52	4.65	0.38	0.58	2.82
Switzerland	5483.8895	2222.4665	19255.288	15885.496	17414.82	1.45	0.37	0.76	0.85	0.61	0.26	2.04	1.12	0.71
Thailand	2575	2070	3349	8048.08	10090.51	0.68	0.35	0.13	0.43	0.35	0.51	0.38	3.26	0.82
Tunisia	88.7	377.5	778.8	782.4	2761.2	0.02	0.06	0.03	0.04	0.10	2.70	0.48	1.36	2.29
Turkey	684	885	982	10031	18198	0.18	0.15	0.04	0.54	0.64	0.82	0.26	13.87	1.18
United Kingdom	30461.116	19969.448	118764.29	176006.09	96938.71	8.07	3.36	4.70	9.45	3.38	0.42	1.40	2.01	0.36
United States	48422	58772	313997.19	104809.31	316112	12.83	9.89	12.42	5.63	11.04	0.77	1.26	0.45	1.96
Venezuela (Bolivarian Republic of)	778.192	985	4701	2589	1716	0.21	0.17	0.19	0.14	0.06	0.80	1.12	0.75	0.43
Average	3772.76	5942.23	25287.06	18623.58	28643.11	1.00	1.00	1.00	1.00	1.00	11.34	1.95	2.41	1.39
Change in Average		1.58	4.26	0.74	1.54							0.17	1.23	0.58
Standard Deviation	8112.56	10145.93	53382.28	30732.00	48962.45						48.16	6.44	2.52	1.18
Coefficient of Variation	215.03	170.74	211.11	165.02	170.94						424.53	329.67	104.81	85.08
Coefficient of Variation Ratio	1.30	1.03	1.28	1.00	1.04						4.99	3.88	1.23	1.00

GDP:US $ in millions					**Relative Index**					**Temporal Index**				**Ratio of Temporal Index of FDI & GDP**			
1990	**1995**	**2000**	**2005**	**2008**	**1990**	**1995**	**2000**	**2005**	**2008**	**1995/1990**	**2000/1995**	**2005/2000**	**2008/2005**	**1995/1990**	**2000/1995**	**2005/2000**	**2008/2005**

141353.185	258096.4241	284345.8729	183196.0974	330134.7041	0.37	0.49	0.50	0.23	0.32	1.34	1.03	0.46	1.37	1.45	0.43	1.48	0.80
319149.816	384085.6317	399612.3282	738811.5324	1032990.584	0.83	0.73	0.71	0.94	1.00	0.88	0.97	1.33	1.06	1.06	0.28	2.38	0.88
164988.472	239575.9782	193838.3522	305091.3769	416470.8105	0.43	0.45	0.34	0.39	0.40	1.06	0.75	1.13	1.04	1.74	1.45	1.46	0.79
4293.23649	5848.404709	8027.555894	13459.80111	22531.27475	0.01	0.01	0.01	0.02	0.02	1.00	1.28	1.21	1.27	0.74	0.16	3.25	0.87
215359.308	305001.6967	252203.2793	412871.2479	554800.107	0.56	0.58	0.45	0.53	0.54	1.04	0.77	1.18	1.02	0.81	2.53	0.52	0.99
478574.728	768951.3258	644728.9234	882043.9486	1552655.578	1.24	1.46	1.14	1.12	1.50	1.18	0.78	0.98	1.34	2.41	2.24	0.63	1.45
104.907547	397	784	972	1262.588407	0.00	0.00	0.00	0.00	0.00	2.77	1.84	0.89	0.99	11.17	1.41	1.88	0.16
582735.317	590499.7726	724913.9794	1134776.043	1498303.191	1.51	1.12	1.28	1.44	1.45	0.74	1.14	1.13	1.00	1.05	1.48	0.46	1.13
33507.4269	72064.7269	75196.92172	118250.1584	169607.3724	0.09	0.14	0.13	0.15	0.16	1.57	0.97	1.13	1.09	1.80	0.40	1.72	1.43
404494.194	756960.1964	1192836.266	2302717.941	4348302.843	1.05	1.44	2.11	2.93	4.20	1.37	1.47	1.39	1.43	4.99	0.17	1.74	0.68
76889.5022	144229.9688	169121.0131	177830.7475	215493.4404	0.20	0.27	0.30	0.23	0.21	1.37	1.09	0.76	0.92	0.88	2.14	0.97	1.32
164739.247	273837.0565	321186.8627	355974.5482	390591.0601	0.43	0.52	0.57	0.45	0.38	1.22	1.09	0.80	0.83	0.61	0.68	0.56	2.61
47743.2486	92502.92017	83766.43335	122935.4957	197334.04	0.12	0.18	0.15	0.16	0.19	1.42	0.84	1.06	1.22	0.87	0.70	5.41	0.55
7254.06407	11715.88919	15946.49856	19973.04919	29424.90304	0.02	0.02	0.03	0.03	0.03	1.18	1.27	0.90	1.12	1.12	0.22	3.18	1.36
53608.8762	55255.65798	56716.54925	124709.6898	215166.741	0.14	0.10	0.10	0.16	0.21	0.75	0.96	1.58	1.31	13.08	0.48	2.00	0.46
135839.069	181984.6969	160081.7669	258794.4458	343077.9897	0.35	0.35	0.28	0.33	0.33	0.98	0.82	1.16	1.01	2.48	1.09	0.63	0.79
39412.0752	68893.9056	99600.52419	98322.96023	166895.4759	0.10	0.13	0.18	0.13	0.16	1.28	1.35	0.71	1.29	0.40	0.36	8.32	0.89
1245063.34	1570716.161	1328661.953	2137504.38	2822496.501	3.23	2.98	2.35	2.72	2.73	0.92	0.79	1.16	1.00	1.04	0.54	2.30	0.90
1714446.54	2522623.668	1900219.658	2791374.422	3652048.697	4.45	4.79	3.36	3.55	3.53	1.08	0.70	1.06	0.99	2.40	5.52	0.31	0.34
36742.8924	45877.07429	47943.263	110506.1466	154746.3921	0.10	0.09	0.08	0.14	0.15	0.91	0.97	1.66	1.06	6.41	0.13	2.28	0.52
326795.486	369240.196	467801.5378	808884.1052	1252902.718	0.85	0.70	0.83	1.03	1.21	0.83	1.18	1.24	1.18	6.98	0.33	2.32	3.02
47845.6116	67091.65027	96388.65238	200837.9049	266945.694	0.12	0.13	0.17	0.26	0.26	1.03	1.34	1.50	1.01	1.44	3.14	0.60	0.86
56922.8782	94588.31343	120895.9006	131240.8924	199008.9696	0.15	0.18	0.21	0.17	0.19	1.22	1.19	0.78	1.15	6.01	0.74	1.25	1.27
1133465.45	1126076.543	1097343.289	1769696.123	2282921.267	2.94	2.14	1.94	2.25	2.21	0.73	0.91	1.16	0.98	0.66	0.72	1.75	0.57
4270.85095	5796.483517	7889.004948	9714.573774	13078.44075	0.01	0.01	0.01	0.01	0.01	0.99	1.27	0.89	1.02	0.54	0.59	2.23	0.73
3018269.95	5247611.188	4667448.374	4552191.443	4912353.841	7.84	9.96	8.26	5.79	4.75	1.27	0.83	0.70	0.82	0.01	56.86	0.65	6.98
2811.54576	10965.12508	16678.60697	21558.20896	27894.50369	0.01	0.02	0.03	0.03	0.03	2.85	1.42	0.93	0.98	1.21	4.57	3.97	0.91
45715.9687	92245.57606	93789.73684	137954.1469	221964.3164	0.12	0.18	0.17	0.18	0.21	1.48	0.95	1.06	1.22	0.96	0.16	1.38	1.05
2587.70473	4042.431836	4582.553294	6283.785387	9171.666328	0.01	0.01	0.01	0.01	0.01	1.14	1.06	0.99	1.11	0.25	3.29	0.21	5.40
262709.854	286165.6717	580791.5522	767222.4624	948476.4162	0.68	0.54	1.03	0.98	0.92	0.80	1.89	0.95	0.94	2.88	0.24	1.74	0.69
28860.2714	36863.56071	37059.99282	58956.40256	84495.80957	0.07	0.07	0.07	0.08	0.08	0.93	0.94	1.14	1.09	1.37	0.32	4.65	0.86
294868.506	418955.6502	385074.3312	632945.3315	853773.5521	0.77	0.80	0.68	0.81	0.83	1.04	0.86	1.18	1.02	0.71	1.42	0.86	0.26
35026.1617	30301.93187	46385.99603	112248.3246	222867.1993	0.09	0.06	0.08	0.14	0.22	0.63	1.43	1.74	1.51	1.27	0.17	2.96	1.76
117623.704	148920.8633	168287.6216	302012.5728	450464.9556	0.31	0.28	0.30	0.38	0.44	0.93	1.05	1.29	1.13	1.06	0.66	0.80	0.57

6076.50277	9041.90291	11620.549	15464.7	23393.55164	0.02	0.02	0.02	0.02	0.02	1.09	1.20	0.96	1.15	0.96	0.62	1.95	1.41
44311.5938	74119.79508	75912.13391	98717.56161	168600.6788	0.12	0.14	0.13	0.13	0.16	1.22	0.95	0.94	1.30	1.38	0.38	1.20	0.41
64549.5954	139061.5743	171275.9214	303911.9348	519227.7792	0.17	0.26	0.30	0.39	0.50	1.58	1.15	1.28	1.30	16.76	0.52	1.17	0.81
75278.2805	112958.3855	112649.8122	185308.536	242885.2761	0.20	0.21	0.20	0.24	0.23	1.10	0.93	1.18	1.00	0.14	2.43	0.68	0.59
473777.286	399165.5358	259717.8362	764381.7599	1670358.273	1.23	0.76	0.46	0.97	1.62	0.62	0.61	2.12	1.66	545.80	0.51	3.04	2.14
368.584759	508.1505048	618.0982356	722.6181818	652.8177142	0.00	0.00	0.00	0.00	0.00	1.01	1.13	0.84	0.69	109.84	0.11	5.70	4.02
36901.3903	83931.91639	92716.82112	119787.9713	175749.4549	0.10	0.16	0.16	0.15	0.17	1.66	1.03	0.93	1.11	0.79	0.33	1.27	0.92
112013.94	151113.0839	132877.6384	242331.7242	275827.2806	0.29	0.29	0.24	0.31	0.27	0.99	0.82	1.31	0.86	6.35	0.21	7.74	1.02
263775.575	517115.8949	511658.9262	791429.2642	847054.9423	0.68	0.98	0.91	1.01	0.82	1.43	0.92	1.11	0.81	0.74	1.81	0.96	0.86
520938.251	596753.9328	580673.0386	1129744.317	1603743.747	1.35	1.13	1.03	1.44	1.55	0.84	0.91	1.40	1.08	0.46	1.27	0.61	1.58
8204.35674	13362.68111	16716.88916	24272.39095	40728.05616	0.02	0.03	0.03	0.03	0.04	1.19	1.17	1.04	1.27	0.80	0.54	2.04	1.41
244717.053	253706.424	245571.6044	366009.0552	480800.6339	0.64	0.48	0.43	0.47	0.46	0.76	0.90	1.07	1.00	6.14	0.42	0.55	2.82
239641.331	318376.6449	252396.3338	376033.7743	493765.7846	0.62	0.60	0.45	0.48	0.48	0.97	0.74	1.07	1.00	0.26	2.76	1.05	0.71
85360.9743	168018.5622	122725.2477	176419.593	272522.9507	0.22	0.32	0.22	0.22	0.26	1.44	0.68	1.03	1.17	0.35	0.56	3.15	0.69
12313.9798	18030.13481	19443.58653	29029.31429	40327.70769	0.03	0.03	0.03	0.04	0.04	1.07	1.00	1.07	1.06	2.52	0.48	1.27	2.17
150676.183	169319.3537	199263.8706	362614.236	550206.1927	0.39	0.32	0.35	0.46	0.53	0.82	1.10	1.31	1.15	1.00	0.24	10.59	1.02
995933.488	1141102.065	1450879.505	2243599.526	2651956.374	2.59	2.17	2.57	2.86	2.56	0.84	1.18	1.11	0.90	0.50	1.18	1.81	0.40
5789487	7387641	9834008	12462564	14558108.14	15.03	14.03	17.40	15.9	14.1	0.93	1.24	0.91	0.89	0.83	1.01	0.50	2.21
47027.5418	74888.53045	117147.5718	145513.4897	331956.9731	0.12	0.14	0.21	0.19	0.32	1.16	1.46	0.89	1.73	0.69	0.77	0.84	0.25
385196.72	526720.73	565245.71	785655.06	1034123.02	1.00	1.00	1.00	1.00	1.00	1.14	1.06	1.11	1.11	14.68	2.11	2.13	1.31
	1.37	1.07	1.39	1.32							0.93	1.04	1.00		0.14	1.01	0.61
915107.39	1258519.49	1486084.30	1846715.79	2191648.84						0.41	0.27	0.28	0.20				
237.57	238.93	262.91	235.05	211.93						36.26	25.00	25.19	18.31				
1.12	1.13	1.24	1.11	1.00						1.98	1.37	1.38	1.00				

Source: *World Investment Report 2010*

Concentration Pattern

Table 7: Herfindahl's Index of Concentration of FDI: 1990-2008		
Year	**Inflows**	**Inward Stocks**
1990	0.104	**0.090**
1991	0.068	0.086
1992	0.059	0.081
1993	0.099	0.081
1994	0.077	0.075
1995	0.073	0.073
1996	0.089	0.072
1997	0.083	0.075
1998	0.104	0.072
1999	**0.111**	0.075
2000	0.101	0.084
2001	0.081	0.084
2002	0.061	0.074
2003	0.054	0.065
2004	0.069	0.062
2005	0.069	0.064
2006	0.069	0.061
2007	0.064	0.057
2008	0.073	0.060
Average	**0.079**	**0.073**

Table 8: Herfindahl's Index of Concentration of FDI: 1990-2008				
	FDI: nflows		**FDI:Inward Stock**	
Year	**Developed**	**Developing**	**Developed**	**Developing**
1990	0.141	0.082	0.131	**0.197**
1991	0.102	0.088	0.126	0.176
1992	0.097	0.096	0.124	0.156
1993	0.170	**0.182**	0.129	0.141
1994	0.130	0.171	0.119	0.133
1995	0.118	0.161	0.115	0.123
1996	0.169	0.132	0.118	0.112
1997	**0.171**	0.103	0.128	0.102
1998	0.164	0.115	0.120	0.088
1999	0.164	0.093	0.128	0.113
2000	0.141	0.119	0.141	0.114
2001	0.127	0.109	**0.142**	0.101
2002	0.087	0.147	0.117	0.087
2003	0.080	0.126	0.101	0.083
2004	0.124	0.094	0.094	0.082
2005	0.113	0.086	0.102	0.078
2006	0.113	0.070	0.097	0.085
2007	0.101	0.073	0.091	0.102
2008	0.139	0.080	0.097	0.078
Average	**0.129**	**0.112**	**0.117**	**0.113**

Figure 1

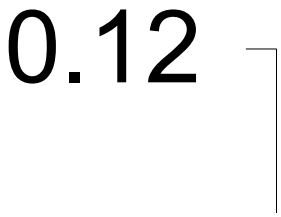

Figure 2

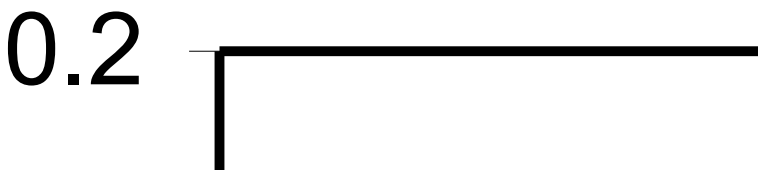

Table 9: Regression Statistics of Herfindahl's Index of Concentration:1990-2008		
	FDI Inflows	FDI Inward Stocks

Adjusted R Sq	0.077	0.678
Coefficient	-0.014	-0.020
P value	0.132	**0.000**

Table 10: Regression Statistics of Herfindahl's Index of Concentration:1990-2008				
	FDI: Inflows		**FDI:Inward Stock**	
	Developed	**Developing**	**Developed**	**Developing**
Adjusted R Sq.	0.014	0.124	0.463	0.781
Coefficient	-0.011	-0.021	-0.017	-0.044
P Value	0.279	**0.077**	**0.001**	**0.000**

The first observation is that inward capital movements as measured by flows and stock generally show a decline in the concentration ratio. Table 10 suggests that on three out of four counts the global economy has experienced declining concentration ratios. This means that except for inflows in the case of developed countries (which they largely receive from developed countries) the distribution of capital flows is more uniform across countries. This should augur well for the global economy. Since our interest lies with developing economies it shows (Table 10) that developing economies gain significantly in both terms – stock and flow (-0.044 and -0.021). The gain is greater in stock, which points to a more uniform factor endowment of capital emerging in developing countries. A caveat to this trend may be whether the developing countries that are beneficiaries of the spreading out are able to utilize these capital stocks better and further attract FDI. While Figure 2 shows that the patterns in concentration of flows are divergent, as between developed and developing countries. This trend points towards a substitution between, the two broad groups of countries, in terms of concentration of capital flows.

Dominance Pattern

Dynamic changes in the pattern of outward FDI would result in changing ranks of different countries in terms of the outflows and outward stocks. This represents a state of competition amongst different countries. It is normally not possible for any single country to dominate FDI outward investment pattern for whole period 1990 to 2008. Even if a country is not at top for one or more years it should be possible to capture the dominating country. It is interesting to know whether there is any dominant country or a constant flux in the ranking of different countries. The index of rank dominance (IRD) is an innovative measure which tells us a coefficient that expresses the degree of dominance of an ordinal measure such as rank. IRD has further refined as a relative- Relative Index of Rank Dominance (RIRD), which measures dominance in a relative sense. This gives the proportionate weight of the rank dominance index.

Table 11 shows that most dominant country in terms of FDI outflows is United States in case of top 20 countries of the world during 1990-2008. The next best countries United Kingdom and France have an IRD almost nearer to United States. The RIRD shows that FDI outflows are top heavy. The first ten countries dominate the pattern of outflow such that they represent almost 70 percent of the outflows. These top ten countries are belonging to developed countries. And most of the bottom countries are belonging to developing countries. This means that the pattern of distribution of FDI outflows is highly dominating by developed countries. RIRD shows that FDI outflows are skewed in nature.

Table 11: FDI Outflows(1990-2008) Index of Rank Dominance for Top Twenty Countries

S.NO.	ECONOMY	Total Score	IRD	RIRD
1	United States	357	0.9395	0.0895
2	United Kingdom	343	0.9026	0.0860
3	France	331	0.8711	0.0830
4	Germany	286	0.7526	0.0717
5	Japan	283	0.7447	0.0709
6	Netherlands	267	0.7026	0.0669
7	Belgium-Luxembourg	231	0.6079	0.0579

8	Switzerland	226	0.5947	0.0566
9	Canada	225	0.5921	0.0564
10	Spain	222	0.5842	0.0556
11	China, Hong Kong SAR	219	0.5763	0.0549
12	Italy	182	0.4789	0.0456
13	Sweden	164	0.4316	0.0411
14	Australia	80	0.2105	0.0201
15	Singapore	70	0.1842	0.0175
16	Denmark	60	0.1579	0.0150
17	British Virgin Islands	60	0.1579	0.0150
18	Norway	54	0.1421	0.0135
19	Finland	49	0.1289	0.0123
20	China, Taiwan Province of	47	0.1237	0.0118
21	Russian Federation	45	0.1184	0.0113
22	Ireland	38	0.1000	0.0095
23	China	36	0.0947	0.0090
24	Austria	30	0.0789	0.0075
25	Korea, Republic of	22	0.0579	0.0055
26	Bermuda	14	0.0368	0.0035
27	Brazil	14	0.0368	0.0035
28	Portugal	14	0.0368	0.0035
29	South Africa	5	0.0132	0.0013
30	Indonesia	5	0.0132	0.0013
31	New Zealand	3	0.0079	0.0008
32	Malaysia	3	0.0079	0.0008
33	Cayman Islands	2	0.0053	0.0005
34	Israel	2	0.0053	0.0005
35	Iceland	1	0.0026	0.0003
			10.5	1

Table 12 shows that most dominant country in terms of FDI outward stock is United States in case of top 20 countries of the world during 1990-2008. United States has an absolute dominance. This means that United States had been at top every year during 1990-2008. The value of IRD is one for United States. The next best two countries are United Kingdom and Germany. The RIRD shows that FDI outward stocks are top heavy. The first ten countries dominate the pattern of outward stock such that they represent more than 70 percent of the outward stock. These top ten countries except China, Hong Kong SAR are belonging to developed countries. And most of the bottom countries are belonging to developing countries. This means that the pattern of distribution of FDI outward stock is highly dominating by developed countries. RIRD shows that FDI outflows are skewed in nature.

Table 12: FDI Stocks(Outwards)1990-2008: Index of Rank Dominance for Top Twenty Countries				
S.NO.	**ECONOMY**	**Total Score**	**IRD**	**RIRD**
1	United States	380	1.0000	0.0952
2	United Kingdom	359	0.9447	0.0900
3	Germany	336	0.8842	0.0842
4	France	316	0.8316	0.0792
5	Netherlands	286	0.7526	0.0717
6	Japan	279	0.7342	0.0699
7	Switzerland	245	0.6447	0.0614
8	Canada	230	0.6053	0.0576
9	China, Hong Kong SAR	212	0.5579	0.0531
10	Italy	194	0.5105	0.0486
11	Belgium-Luxembourg	190	0.5000	0.0476
12	Sweden	159	0.4184	0.0398
13	Spain	144	0.3789	0.0361
14	Australia	125	0.3289	0.0313
15	Norway	118	0.3105	0.0296
16	China, Taiwan Province of	88	0.2316	0.0221
17	Brazil	78	0.2053	0.0195
18	Denmark	69	0.1816	0.0173
19	Singapore	57	0.1500	0.0143
20	Ireland	38	0.1000	0.0095
21	British Virgin Islands	32	0.0842	0.0080
22	South Africa	22	0.0579	0.0055
23	Russian Federation	15	0.0395	0.0038
24	Finland	10	0.0263	0.0025
25	Turkey	4	0.0105	0.0010
26	Austria	3	0.0079	0.0008
27	China	1	0.0026	0.0003
			10.5000	1.0000

Table 11 and 12 clearly show that developed countries has a very high dominance with respect to outward FDI distribution pattern both in terms of outflows and stocks. Table 13 show the dominance pattern of FDI outflows amongst developed countries. Amongst top ten developed countries during 1990-2008, top six countries represent around 75% of dominance. This means that most of FDI outflows are originated from United States, United Kingdom, France, Germany, Netherlands, and Japan.

Table 13: Rank Dominance among Top Ten Developed Countries for FDI Outflows during 1990-2008				
S.No.	**Country**	**Score**	**IRD**	**RIRD**
1	**United States**	176	0.926	0.168
2	**United Kingdom**	153	0.805	0.146
3	**France**	150	0.789	0.144

4	**Germany**	117	0.616	0.112
5	**Netherlands**	96	0.505	0.092
6	**Japan**	95	0.500	0.091
7	**Belgium-Luxembourg**	64	0.337	0.061
8	**Spain**	52	0.274	0.050
9	**Switzerland**	50	0.263	0.048
10	**Canada**	46	0.242	0.044
11	**Italy**	23	0.121	0.022
12	**Sweden**	20	0.105	0.019
13	**Australia**	3	0.016	0.003
			5.5	1

It is obvious that most of FDI outflows are originated from developed countries across the world. United States is most dominating one amongst all countries. However it is not clear that which countries amongst developing countries are dominating with respect to FDI outflows. For this we have prepared a separate table of dominance pattern of developing countries with respect to FDI outflows (Table 14). Table 14 shows that China, Hong Kong SAR is a most dominating. However next best country British Virgin Islands has an IRD almost two-third of China, Hong Kong SAR. Top six countries represent around 70% FDI outflows amongst developing countries only. Table 13 and 14 show that there is more competition for FDI outflows amongst developed countries than developing countries.

Table 14: Rank Dominance among Top ten Developing Countries for FDI Outflows during 1990-2008

S.No.	Country	Score	IRD	RIRD
1	**China, Hong Kong SAR**	184	0.9684	0.1761
2	**British Virgin Islands**	121	0.6368	0.1158
3	**China, Taiwan Province of**	116	0.6105	0.1110
4	**Singapore**	115	0.6053	0.1100
5	**South Korea**	95	0.5000	0.0909
6	**China**	92	0.4842	0.0880
7	**Russian Federation**	82	0.4316	0.0785
8	**Cayman Islands**	52	0.2737	0.0498
9	**Brazil**	42	0.2211	0.0402

10	**Malaysia**	25	0.1316	0.0239
11	**Panama**	20	0.1053	0.0191
12	**India**	17	0.0895	0.0163
13	**Argentina**	16	0.0842	0.0153
14	**South Africa**	14	0.0737	0.0134
15	**Mexico**	13	0.0684	0.0124
16	**Indonesia**	10	0.0526	0.0096
17	**United Arab Emirates**	10	0.0526	0.0096
18	**Chile**	10	0.0526	0.0096
19	**Nigeria**	4	0.0211	0.0038
20	**Venezuela**	3	0.0158	0.0029
21	**Saudi Arabia**	2	0.0105	0.0019
22	**Colombia**	2	0.0105	0.0019
			5.5	1

Table 15 and table 16 show the dominance pattern of FDI outward stock separately for developed countries and developing countries. United States has an absolute IRD that is equal one. Top six developed countries represent more than 80 percent FDI outward stock and less than 20 percent from other developed countries. China, Hong Kong SAR is a most dominating country amongst developing countries. Top six developing countries represent more than 70 percent FDI outward stock.

Dominance pattern of FDI outward stock follow the dominance pattern of FDI outflows because stock is accumulation of flow over periods.

Table 15: Rank Dominance among Top Ten Developed Countries for FDI Outward Stock during 1990-2008

S.No.	Country	Score	IRD	RIRD
1	**United States**	190	1.000	0.182
2	**United Kingdom**	169	0.889	0.162
3	**Germany**	147	0.774	0.141
4	**France**	125	0.658	0.120
5	**Netherlands**	105	0.553	0.100
6	**Japan**	104	0.547	0.100
7	**Switzerland**	71	0.374	0.068
8	**Canada**	57	0.300	0.055
9	**Belgium-Luxembourg**	40	0.211	0.038
10	**Italy**	27	0.142	0.026
11	**Spain**	8	0.042	0.008
12	**Sweden**	2	0.011	0.002
			5.5	1

Table 16: Rank Dominance among Top Ten Developing Countries for FDI Outward Stock during 1990-2008				
S.No.	Country	Score	IRD	RIRD
1	China, Hong Kong SAR	181	0.9526	0.1732
2	China, Taiwan Province of	146	0.7684	0.1397
3	Singapore	137	0.7211	0.1311
4	Brazil	135	0.7105	0.1292
5	British Virgin Islands	100	0.5263	0.0957
6	South Africa	85	0.4474	0.0813
7	China	84	0.4421	0.0804
8	Russian Federation	62	0.3263	0.0593
9	South Korea	41	0.2158	0.0392
10	Argentina	36	0.1895	0.0344
11	Cayman Islands	15	0.0789	0.0144
12	Panama	11	0.0579	0.0105
13	Malaysia	7	0.0368	0.0067
14	Mexico	4	0.0211	0.0038
15	Indonesia	1	0.0053	0.0010
			5.5	1

Table 17 and table 18 show that change in the ranks of top ten countries of 1990 in 2000 as well as 2008 with respect to FDI outflows and FDI outward stock respectively. The change in ranks of outflows is more than stocks. This means that even though there is a competition among FDI donor countries but capital resources are controlled by few developed countries.

Table 17: Ranks of FDI Outflows			
Country	1990	2000	2008
Japan	1	13	4
France	2	2	2
United States	3	3	1
Germany	4	8	3
United Kingdom	5	1	5
Sweden	6	11	15
Netherlands	7	5	10
Italy	8	14	13
Switzerland	9	10	6
Belgium-Luxembourg	10	4	14

Table 18: Ranks of FDI Outward Stock			
Country	1990	2000	2008
United States	1	1	1

United Kingdom	2	2	2
Japan	3	7	8
Germany	4	3	3
France	5	4	4
Netherlands	6	6	5
Canada	7	8	11
Switzerland	8	9	7
Italy	9	10	12
Sweden	10	13	13

Table 19 and table 20 show that change in ranks of 1990 in 2000 as well as 2008 of top ten of developed countries and of developing countries with respect to FDI outflows respectively. The change in ranks of developing countries FDI outflows is more than that of developed countries. This means that developed countries has more control over capital and productive resources than developing countries. This also reveals that there is high level of competition among developing countries for investing in host countries.

Table 19: Ranks of FDI Outflows of Developed Countries

Country	1990	2000	2008
Japan	1	11	4
France	2	2	2
United States	3	3	1
Germany	4	7	3
United Kingdom	5	1	5
Sweden	6	10	12
Netherlands	7	5	9
Italy	8	13	10
Switzerland	9	9	6
Belgium-Luxembourg	10	4	11

Table 20: Ranks of FDI Outflows of Developing Countries

Country	1990	2000	2008
China, Taiwan Province of	1	4	10
China, Hong Kong SAR	2	1	1
Singapore	3	5	11
South Korea	4	6	9
China	5	12	3
Panama	6	15	20
Brazil	7	9	5
British Virgin Islands	8	2	4

Nigeria	9	23	31
Venezuela	10	16	16

Ranks among developing countries with respect to FDI outward stock has been changing more in recent times because of level of competition increased over period due to globalisation (table 22). However there are a few changes in ranks for developed countries (table 21).

Table21: Ranks of FDI Outward Stocks of Developed Countries			
Country	**1990**	**2000**	**2008**
United States	1	1	1
United Kingdom	2	2	2
Japan	3	6	7
Germany	4	3	3
France	5	4	4
Netherlands	6	5	5
Canada	7	7	10
Switzerland	8	8	6
Italy	9	9	11
Sweden	10	12	12

Table 22: Ranks of FDI Outward Stocks of Developing Countries			
Country	**1990**	**2000**	**2008**
Brazil	1	5	6
China, Taiwan Province of	2	3	5
South Africa	3	6	10
China, Hong Kong SAR	4	1	1
Singapore	5	4	3
Argentina	6	9	16
China	7	7	7
Panama	8	14	18
Mexico	9	15	14
South Korea	10	8	8

Mobility and Turnover

The Index of Rank Dominance is a summary measure and it has to be interpreted along with the Bodenhorn's Measure of Mobility and Turnover. IRD conceals dynamic changes in ranks. Bodenhorn's Measure, on the other hand captures the dynamic changes in rivalry amongst donor countries, both in terms of flows and

stocks. Tables 23 and 24 clearly show that changes in ranks in stock terms are much less. This is expected because stocks are accumulated. In flow terms there is a 6% growth in competition amongst donor countries. This is statistically significant. There is decline in rivalry amongst developing country outflows, but it is not significant. This is an expected result because they are not major exporters of capital. In fact, very few countries amongst developing countries may be dominating the total capital outflow and outward stock. Figure 3 clearly shows that the volatility in developing country outflows is extreme. Therefore, in Table 26 we find that the competition amongst developing country outflows is not significant.

Table 23: Bodenhorn's Measure of Mobility and Turnover

Year	FDI Outflows	FDI Outward Stocks
1990	8	0
1991	17	3
1992	16	0
1993	10	4
1994	22	2
1995	12	1
1996	13	8
1997	17	6
1998	15	8
1999	18	0
2000	21	2
2001	25	3
2002	22	10
2003	33	4
2004	41	0
2005	33	0
2006	18	6
2007	24	8

Table 24: Bodenhorn's Measure of Mobility and Turnover

	Outflows		Outward Stocks	
Year	Developed	Developing	Developed	Developing
1991	8	18	1	3
1992	18	58	3	4
1993	11	55	0	9
1994	9	55	4	8

1995	16	21	2	1
1996	11	16	0	6
1997	14	27	0	2
1998	14	25	4	2
1999	15	33	6	4
2000	12	13	0	9
2001	19	34	2	11
2002	20	33	2	4
2003	19	17	6	4
2004	17	52	3	6
2005	38	37	0	8
2006	32	33	0	4
2007	30	22	4	6
2008	24	16	6	4

Table 25: Regression Statistics of Bodenhorn's Measure of Mobility and Turnover: 1990-2008

	FDI Outflows	FDI Outward Stock
Adjusted R Sq.	0.52	-
Coefficient	0.06	-
P Value	**0.00**	-

Table 26: Regression Statistics of Bodenhorn's Measure of Mobility and Turnover: 1990-2008

	Outflows		Outward Stocks	
	Developed	**Developing**	**Developed**	**Developing**
Adjusted R Sq.	0.637	-0.016	-	-0.017
Coefficient	0.065	-0.019	-	0.024
P Value	**0.000**	0.407	-	0.412

Figure 3

V.0 Conclusion

In this paper we have analyzed the global capital flows in terms of FDI outflows and inflows, in stock and flow terms. The purpose of the paper was to investigate whether over a period of 19 years, since liberalization, these flows have lead to a rational distribution of capital flows internationally. The international economic order and the globalization of capital flows, amongst other things, has lead to a competition amongst donor countries (home countries), especially developed countries. It has also lead to a decline in the concentration of FDI in recipient countries (host countries), especially in developing countries. The first and second primary hypotheses are found to be rejected. Also hypothesis 5 is rejected. Dominance patterns are not stable, when seen with the Bodenhorn's measure of mobility and turnover. The two intermediate hypotheses are accepted, namely, the level of concentration and dominance differ between developed and developing countries. Our results do confirm that international relocation of production has been on relatively efficient

lines. However, there are large fluctuations and variations that do not augur well for global welfare.

BIBLIOGRAPHY

Bikker, J.A. and Haaf, K. (2002), "Competition, Concentration and their relationship: An Empirical Analysis of the Banking Industry", *Journal of Banking and Finance*, 26(11), pp.2191-2214

Bodenhorn, H. (1990) "Entry, Rivalry and Free Banking", *Review of Economics and Statistics*, 72(4), pp. 682-686.

Chakravorty, Sanjay. (2002), "How does Structural Reform Affect Regional Development? Resolving Contradictory Theory with Evidence from India", *Economic Geography*, vol. 76, no. 4, pp.367-94

Jha, R., "Recent trends in FDI Flows and Prospects for India", Working Paper at www.ssrn.com, Electronic Network paper collection.

Kumar, Nagesh (2003) "Liberalisation, Foreign Direct Investment Flows and Economic Development: The Indian Experience in the 1990s" *RIS Discussion Papers-working paper*.

Morris, Sebastian. (2004), "A Study of Regional Determinants of Foreign Direct Investments in India, and the case of Gujarat", *Working Paper No. 2004/03/07*, Ahmedabad: Indian Institute of Management.

Murthy, K.V. and Deb, A.T. (2008) "Operationalizing and Measuring Competition: Determinants of Competition in Private Banking Industry in India" *Paper presented in 10th Annual Conference on Money and Finance* at IGIDR, Mumbai.

Murthy, K.V. Bhanu and Sinha, M.K. (2010) "Equity and Efficiency of Foreign Direct Investment in Indian States", *Paper presented in TIES conference* at Jammu University.

Ögütçü, Mehmet. (2002), 'Foreign Direct Investment and Regional Development: Sharing Experiences from Brazil, China, Russia and Turkey', OECD Secretariat, in the *International Conference on Regional Development and Foreign Investment in Brazil*, Fortaleza, Brazil, 12-13 December.

Padhi, Satya Prasad (2002), "Attracting Foreign Direct Investment: A Regional Perspective', *Foreign Trade Review*, vol. 37, no.3-4, pp. 32-47.

Rao, K. S. Chalapati and Murty, M. R. (2006) "Towards Understanding the State-wise Distribution of FDI in Post Liberalization periods." Institute for Studies in Industrial Development, *ISID Working Paper*, New Delhi.

RBI, "Handbook of Statistics", 2009.

Sinha, M. K.,(2004) "An Analysis of Regional and Sectoral Distribution of FDI in India", M.Phil dissertation submitted to Department to Commerce, Delhi School of Economies, University of Delhi, New Delhi, September, 2004.

Sinha, M.K., (2010) "Trends and Policies of Foreign Direct Investment in Indian States" *Paper presented in National Conference* organised by Shyamlal (E) College, Delhi University.

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