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Title of Research Paper:-

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This article is a part of the research work submitted to Shivaji University, Kolhapur India, for the degree of Doctor of Philosophy in the subject, Business Economics, under the Faculty of Commerce by Researcher ASHOK V.EDURKAR-B. Tech (Chemical Engg.), MBA under the guidance of Dr. Dattatrya G. Chougule, M.A. M. Phil., Ph.D. who is working as Associate Professor & Head of Department, with The New College, Shivaji University, Kolhapur, India.

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A Study of Financial Services provided by Foreign Financial Institutions (FFIs) Operating in India consistently during the period 2003-04 to 2012-13 with reference to India's Foreign Trade.

Abstract: - Both domestic and foreign trade need financial services at each and every step of the business cycle. This role is carried out by both domestic as well as Foreign Financial Institutions (FFIs). This paper aims to take a review of financial services provided by FFIs operating in India based on four major hypothesis. For this research study, 24 FFIs operating in India consistently as per "Profile of Banks" published by RBI, out of the universe consisting of 43 FFIs and 43 representative offices of FFIs in India between 2003-04 and 2012-13(ten years observation period), are considered. This paper broadly covers foreign financial institutions having legal entity and financial roots primarily in home country and entered in India for tapping Indian financial market for providing financial services in the form of term loans, cash credit, bridge loans, investments and funding for business activities(business financing operations) .

Key Words: - Financial Service, Foreign Financial Institutions, Foreign Banks, Finance, Foreign Trade.

1Foreign Financial Institutions (FFIs)

As per section 147(d)(5)- Hiring Incentives to Restore Employment Act (HIRE) of US government, the meaning of a FFI includes a legal entity having origin in a foreign country that collects deposits while carrying out banking or equivalent business; takes charge of assets of its clients which are financial in principle as a principal part of its business; is involved in principle in carrying out business of investing, reinvesting or marketing of securities and commodities covering various types of contracts like forward or option contract. This is a very broad definition of a foreign financial institution covering all commercial banks. It also includes mutual funds, hedge funds, pension plans, investment trusts and insurance companies. However, this particular paper broadly covers foreign financial institutions having legal entity and financial roots primarily in home country and entered in India for tapping Indian financial market for providing financial services in the form of term loans, cash credit, bridge loans, investment and funding for business activities under which scope only foreign banks are includable. Thus the paper covers only FFIs in the form of foreign banks operating in India between 2003-04 and 2012-13.

2FFIs Presence: - FFIs participation has increased steadily across various developing sectors in India since the mid-1990s. It is essential to study this trend to find out the leading factors

and effects of this phenomenon of FFIs participation. Possibility of creation of surplus in local financial market, presence of positive environment for entering in local business, availability of effective system for the solution of issues related business information have been the principal leading factors for pushing FFIs entry for providing financial services, across various business sectors in India. It is observed that FFIs presence does not endanger but rather enhances financial sector stability. Along with the basic target of profitability, FFIs presence in India has helped the host and home country to increase Foreign Trade volume by availing the necessary financial services. It is highly significant to relate FFIs presence in India for providing financial services and steady rise in India's Foreign Trade during last decade. Over the last 20 years, economic and political power has been shifting towards emerging economies. A number of developing countries have become centers of strong growth, raising their shares of global income significantly, which has made them major players in regional and global affairs. Furthermore, flows of trade, aid and investment between emerging and developing countries have all intensified. India is no exception to the aforesaid phenomenon with increasing presence of FFIs for providing financial services in various sectors.

3 FFIs and Foreign Trade (FT):- Foreign Trade (FT) in the modern economy is a complex system of value creation and transformation, wherein Foreign Trade policies of various countries, Foreign Trade players and Foreign Financial Institutions (FFIs) play significant role. The financial markets of various countries and FFIs project it to new heights of efficiency and funding accessibility for further value creation. Foreign Trade is to benefit from FFIs financial system implications, however, at the same time; it became dependent on it on account of FFIs' market oriented credit policies.

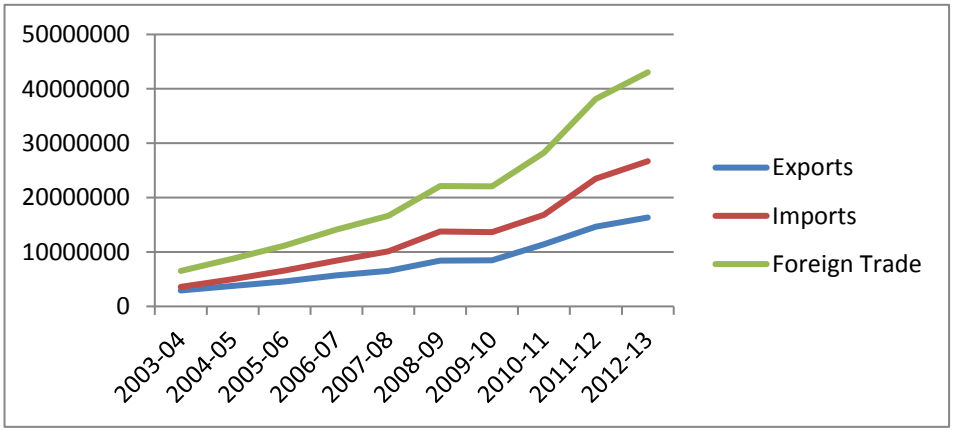
Over the past decade, FFIs have become much more important in domestic financial intermediation, heightening the need to understand their models. FFIs have helped in bettering the technology used in the financing sector. The first Automated Teller Machine (ATM) in India was brought up by Hong Kong and Shanghai Banking Corporation Ltd (HSBC) and from then on FFIs have contributed to the latest financing practices. FFIs have become more & more efficient today and their Return on Assets has clearly shown a positive trend bringing into forefront the improvements brought across by the operational improvements through better practices (Gaurav Shard and Namratha Swamy 2014).

During the period 2003-04 to 2012-13, foreign trade of India has increased substantially. India's exports, imports and foreign trade is as follows: - **Table 1.4.1 India's exports, imports and foreign trade: -** (figures in INR million)

Year	Exports	Imports	Foreign Trade
2003-04	2933670	3591080	6524750
2004-05	3753400	5010650	8764050
2005-06	4564180	6604090	11168270
2006-07	5717790	8405060	14122850
2007-08	6558640	10123120	16681760
2008-09	8407550	13744360	22151910
2009-10	8455340	13637360	22092700
2010-11	11429220	16834670	28263890
2011-12	14659590	23454630	38114220
2012-13	16343190	26691620	43034810

Source: DGCIS's Report-2013) Table 1.4.1 indicates that over the 10 year's period the foreign Trade growth is 559.56%. (((43034810-6524750)/6524750)*100)

Graph 1.4.1:- India's exports, imports and foreign trade



Source: DGCIS's Report-2013)Graph 4.1 indicates that exports, imports and foreign trade are increasing with positive slope during the period 2003-04 to 2012-13.

4 Raghuram Rajan Committee Report (2008):- As per Raghuram Rajan Committee Report on Financial Sector Reforms (FSR), 2008, opening up to foreign financial institutions and other financial firms and to foreign direct investment in the financial sector has many potential benefits. These include the introduction of financial innovations and sophisticated financial instruments by foreign financial firms, added depth in domestic financial markets due to foreign inflows, and more efficiency in the domestic banking sector through increased competition. For most foreign financial institutions, their relationship with Indian corporate clients is pivoted around their ability to provide access to global capital and debt markets. Although data relating to individual institution's exposure to India through onshore credit and offshore External Commercial Borrowing (ECB) and trade finance is not available, taking the total External Commercial Borrowing (ECB) data as a proxy for offshore exposure, it is interesting to see the consistent upward trend line for external debt. Understandably, the onshore exposure and its growth are related to the performance of the economy and market share of foreign financial institutions.

5 FFIs' Contribution: - With India emerging as a major Information Technology (IT) service provider in the 21st century, many foreign financial institutions set up Business Processing Offices (BPO) in India; primarily to take advantage of the low-cost technology and availability of English-speaking employees. Some foreign financial institutions also created Centers of Excellence CE) that provided services at the higher end of the value chain. These operations of foreign financial institutions have created attractive and large-scale employment opportunities for educated Indians and have been an interesting part of India's economic, social and cultural landscape. With the growing importance of IT to financial institutions, foreign financial institutions BPO centers in India have expanded the scope of their services, providing data analytics, and data-backed solutions, which contribute to the efficiency and profitability of these institutions globally. Liberalization of Foreign Direct Investment (FDI) norms for financial services provided further strategic entry routes for foreign financial institutions in the form of Non-Banking Financial Companies (NBFCs) that could provide specialized non-banking financial services such as stock broking, merchant banking, leasing and finance and others to specific segments of the economy. In addition to setting up the first formal financial institutions in India, foreign financial institutions have made considerable contribution to the financial sector over the years by bringing capital and global best practices as well as grooming talent. This paper aims to take a review of financial services provided by FFIs operating in India based on four major hypothesis. For this research study, 24 FFIs operating in India consistently as per "Profile of Banks" published by

RBI, out of the universe consisting of 43 FFIs and 43 representative offices of FFIs in India between 2003-04 and 2012-13(ten years observation period), are considered. This paper broadly covers foreign financial institutions having legal entity and financial roots primarily in home country and entered in India for tapping Indian financial market in the form of term loans, cash credit, bridge loans, investments and funding for business activities(business financing operations) .

Annexure 1 indicates Performance of Selected FFIs whereas Annexure 2 indicates Average values of variables for a period 2003-04 to 2012-13.

6 Hypothesis and Testing of Hypothesis

During this research study, the following hypotheses are formulated keeping in view the overall objectives of the study and the various internal and external factors:-

6.1 FFIs' models generally help in the growth of Foreign Trade of India.

6.2 FFIs provide advisory and promotional services to Indian exporters and importers which results in enhancing Foreign Trade.

6.3 FFIs provide services to Indian companies at a very competitive and concessional cost.

6.4 FFIs apply models which have positive effect on industrialization efforts in India.

The above mentioned hypothesis are tested with the use of tables supported by appropriate graphs and relevant statistical test using appropriate statistical formulae deriving necessary statistic which is compared against critical value for right tailed test and for 5% level of significance at distribution of test statistic is N (0, 1) or using regression analysis confirming correlation between an independent variable(x) and a dependent variable(y) following an equation $y= a + bx$, which indicates that any increase in independent variable will result appropriate increase in dependent variable following above equation.

Statistical tests, tables and supporting graphs are prepared with the use of various variables like Foreign Trade (FT), Operating Expenses, Total Expenses, Advances, Investments, Cost of Funds, Return on Advances, Return on Assets and IIP.

For this research study, 24 FFIs studied during the period 2003-04 to 2012-13 and related data are collected for the above variables consisting of N=24 and 28 variables x 10 years =280 observations during the observation period.

Since the term model is a very generic term, here an implied meaning of model is considered while testing these hypothesis. It means that a good model or a well acceptable model has correlation with above mentioned variables and positive outcome of tests based on these variables supports our hypothesis. Since each & every model contributes to foreign trade, while testing the above mentioned hypothesis, neither Model A/B nor Model C is considered

separately but an average of data pertaining to these models is used for computing statistical tests and various tables supported with appropriate graphs.

A) Regression Analysis using Least Square Estimation: - The simplest relationship between an independent variable x and a dependent variable y is a linear relationship which is given by x and y = a + bx. To obtain some reasonably good estimate of a and b we use the method of least squares. It may be noted that the exact relationship between x and y is not linear, we are only approximating the relationship by a line. Therefore, it is not correct to write the line equation as y=a +bx.

We write it as y bar= a +bx. Where, y bar is the predicted or fitted or estimated value of y. The exact relationship between x and y can be written as y= a + bx + error.

This error is the difference between the observed value and the predicted value of y. Using collected observations (x1,y1), (x2,y2)…….(xn,yn), these errors or residuals can be written as (yi-a-bx) for i=1,2,…..n. We wish to have such values of a and b for which these residuals are minimum. In least square method, we minimize the summation of squared residuals. For this we differentiate $\sum_{n=1}^{\infty}(\text{yi} - \text{a} - \text{bxi})2$ with respect to a and b separately and equate the derivatives to zero. Solving those two equations we get following estimates of a and b: - a= y bar –b*x bar

$b = \sum_{i=0}^{n}(xi - x\ bar)(yi - ybar) / \sum_{i=1}^{n}(xi - x\ bar)2$

= SSXY / SSX. The values of a and b obtained using least squares method are called as least square estimates (LSE) of a and b. Also the relation between the correlation coefficient between x and y.

(r) and LSE of b is given by r =$\sqrt{\text{SSX/SSY}}$ In the above model Y=a + Bx + error , if b = 0 , then the model cannot be considered as a linear model. Therefore, here we test Ho: b=0 against Ha: b≠0, the test statistic is as under:-

$$\boldsymbol{Tc} = \frac{\boldsymbol{bbar}}{\sqrt{\boldsymbol{SSY}/(\boldsymbol{n-2})\boldsymbol{SSX}}}$$

Value of ‘R’, ‘R square’ and ‘Beta’ are calculated using SPSS.

B) Statistical Test when standard deviation is known: - Here, the test statistic is

$$Zc = \frac{\text{x bar} - \mu\text{o}}{\sigma/\sqrt{n}}$$

Where x bar =sample mean, σ= known population standard deviation, n= sample size. Distribution of this test statistic is N (0, 1). Hence critical value for right tailed test and for 5% level of significance is 1.645. We have computed test statistic value using above equation and compared it against critical value for testing hypothesis.

Testing of Hypothesis 1: -

6.1 H1: FFIs' models generally help in the growth of Foreign Trade of India.

6.1.1 HO: FFIs' models generally do not help in the growth of Foreign Trade of India.

Statistical Test: -This hypothesis is tested using statistical test-regression analysis and table supported with graph by comparing ,A) FFIs' Advances - Independent Variable, B) Foreign Trade (FT) - Dependent Variable, Statistical Test using Regression Analysis: - y= a + bx , x = Advances, independent variable,y = FT-Average, dependent variable,

Table 1 FFIs' Advances and India's FT: -

Year	Advances	FT	xi-x bar	yi-y bar	SSX=(xi-x bar)^2	SSY=(yi-y bar)^2	(x-x bar)*(y-y bar)
2003-04	515820	6524750	-801404	-14567171	6.42248E+11	2.12202E+14	1.16742E+13
2004-05	626080	8764050	-691144	-12327871	4.7768E+11	1.51976E+14	8.52033E+12
2005-06	785200	11168270	-532024	-9923651	2.8305E+11	9.84788E+13	5.27962E+12
2006-07	1040891	14122850	-276333	-6969071	76359926889	4.8568E+13	1.92578E+12
2007-08	1365475	16681760	48251	-4410161	2328159001	1.94495E+13	-2.12795E+11
2008-09	1435312	22151910	118088	1059989	13944775744	1.12358E+12	1.25172E+11
2009-10	1426562	22092700	109338	1000779	11954798244	1.00156E+12	1.09423E+11
2010-11	1721003	28263890	403779	7171969	1.63037E+11	5.14371E+13	2.89589E+12
2011-12	1979991	38114220	662767	17022299	4.3926E+11	2.89759E+14	1.12818E+13
2012-13	2275906	43034810	958682	21942889	9.19071E+11	4.8149E+14	2.10363E+13
	X bar= 1317224	Y bar= 21091921			SSX= 21091921	SSY= 1.35549E+15	SSXY= 6.26357E+13

b=SSXY/SSX =6.26357E+13/21091921=**2969653.641** and a= y bar –b * x bar =21091921 – (2969653.641*1317224)= **-3.91172E+12** . Value b =2969653.641 is the change in the value of Y for a unit change in the value of X. The intercept is a constant or the value of Y when X is zero**.** The values of a and b obtained using least square method are called as least square estimates (LSE) of a and b. Also the relation between the correlation coefficient for X and Y (r) and LSE of b is given as under:-

$$r = b\sqrt{(\int_{i=1}^{i=n}(xi - xbar)\text{^}2)/(\int_{i=1}^{i=n} yi - ybar)\text{^}2)} = b\sqrt{(SSX/SSY)}$$

= 2969653.641 * (21091921/ 1.35549E+15) ^0.5= **370.4381514**

In the above model Y=a + Bx + error , if b = 0 , then the model cannot be considered as a linear model. Therefore, here we test Ho: b=0 against Ha: b≠0, the test statistic is

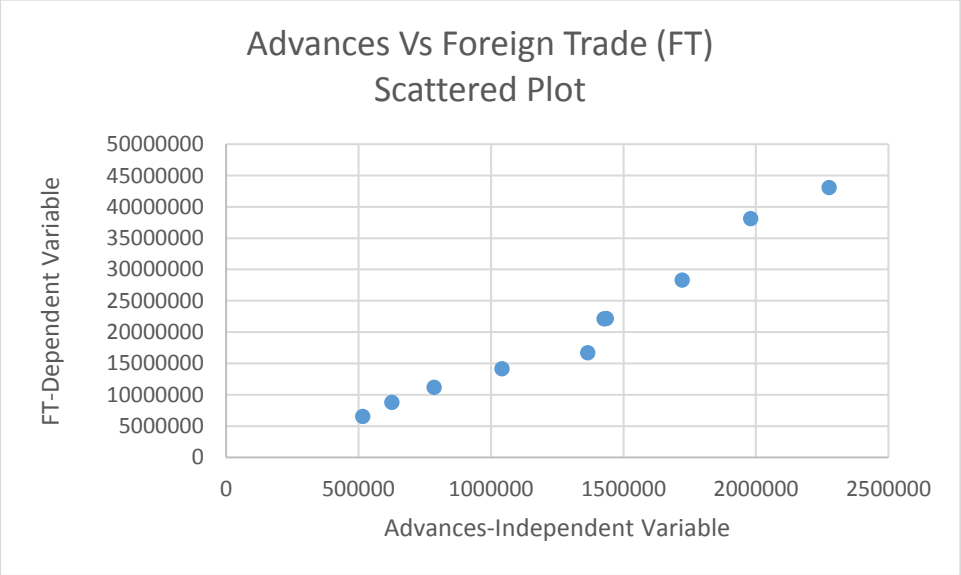
$$Tc = \frac{bbar}{\sqrt{SSY/(n-2)SSX}}$$

= (2969653.641) / ((1.35549E+15)/((24-2)*(21091921)))^0.5

=**1737.508944**

At 5% level of significance and 22 d.f., the critical value using t distribution is 2.074 which is smaller than the computed value. Therefore, at 5% level of significance we reject the null hypothesis and conclude that there is an evidence of linear relationship between the independent variable-Advances and the dependent variable-Foreign Trade (FT)

Graph 1 Advances Vs Foreign Trade (FT) –Scattered Plot



Using SPSS the calculated value of 'R' is 0.978 and 'R square' is 0.956. Also the calculated value of standardised coefficient 'Beta' is 0.978. Since these values are closer to 1, it is

concluded that there exists linear correlation between independent variable 'Advances' and dependent variable 'Foreign Trade'. This means that regression explains most of the variability in the dependent variable and the fitted model is good.

Table 2 for Exports.

Year	Exports Advance	Foreign Trade	xi-x bar	yi-y bar	(xi-x bar)^2	(yi-y bar)^2	(x-x bar)*(y-y bar)
2003-04	97600	6524750	-218684	-14567171	47822691856	2.12202E+14	3.18561E+12
2004-05	123390	8764050	-192894	-12327871	37208095236	1.51976E+14	2.37797E+12
2005-06	173260	11168270	-143024	-9923651	20455864576	9.84788E+13	1.41932E+12
2006-07	207110	14122850	-109174	-6969071	11918962276	4.8568E+13	7.60841E+11
2007-08	289540	16681760	-26744	-4410161	715241536	1.94495E+13	1.17945E+11
2008-09	315110	22151910	-1174	1059989	1378276	1.12358E+12	-1244427086
2009-10	333960	22092700	17676	1000779	312440976	1.00156E+12	17689769604
2010-11	424870	28263890	108586	7171969	11790919396	5.14371E+13	7.78775E+11
2011-12	586000	38114220	269716	17022299	72746720656	2.89759E+14	4.59119E+12
2012-13	612000	43034810	295716	21942889	87447952656	4.8149E+14	6.48886E+12
	316284	21091921			SSX=	SSY=	SSXY=
					2.9042E+11	1.35549E+15	1.9737E+13

b=SSXY/SSX =19736957064360 /290420267440= **67.95998516** and a= y bar –b * x bar = 21091921- 67.95998516*316284= **-402734.9463** Value b = 67.95998516 is the change in the value of Y for a unit change in the value of X. The intercept is a constant or the value of Y when X is zero. The values of a and b obtained using least square method are called as least square estimates (LSE) of a and b. The values of a and b obtained using least square method are called as least square estimates (LSE) of a and b. Also the relation between the correlation coefficient for X and Y (r) and LSE of b is given as under:-

$$r = b\sqrt{(\int_{i=1}^{i=n}(xi - xbar)\text{^}2)/(\int_{i=1}^{i=n} yi - ybar)\text{^}2)} = b\sqrt{(SSX/SSY)}$$

= 67.95998516 * (2.9042E+11 /1.35549E+15)^0.5= **0.994760145**

In the above model Y=a + Bx + error , if b = 0 , then the model can not be considered as a linear model. Therefore, here we test Ho: b=0 against Ha: b≠0, the test statistic is

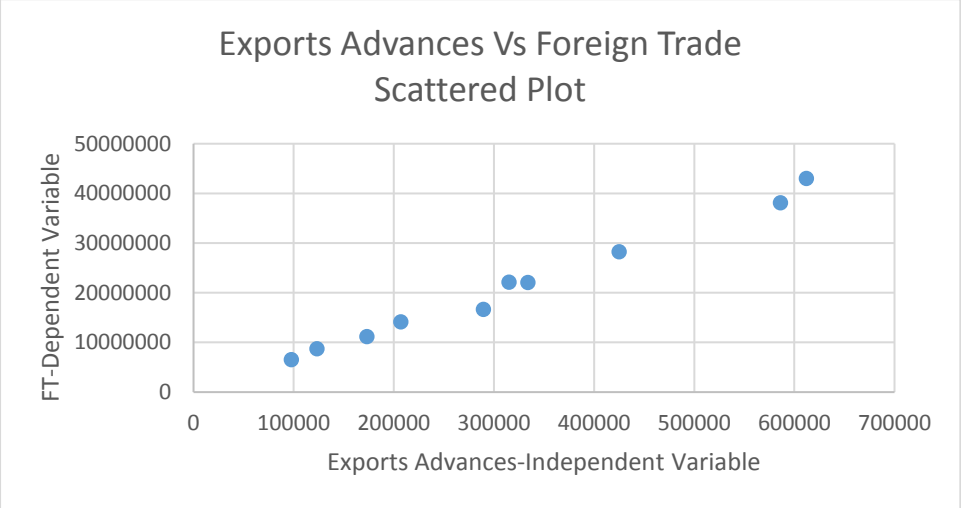
$$Tc = \frac{bbar}{\sqrt{SSY}/(n-2)SSX}$$

= (67.95998516) / ((1.35549E+15)/((24-2)*(2.9042E+11)))^0.5

= **4.665838661**

At 5% level of significance and 22 d.f., the critical value using t distribution is 2.074 which is smaller than the computed value. Therefore, at 5% level of significance we reject the null hypothesis and conclude that there is an evidence of linear relationship between the independent variable-Exports Advances and the dependent variable-Foreign Trade FT

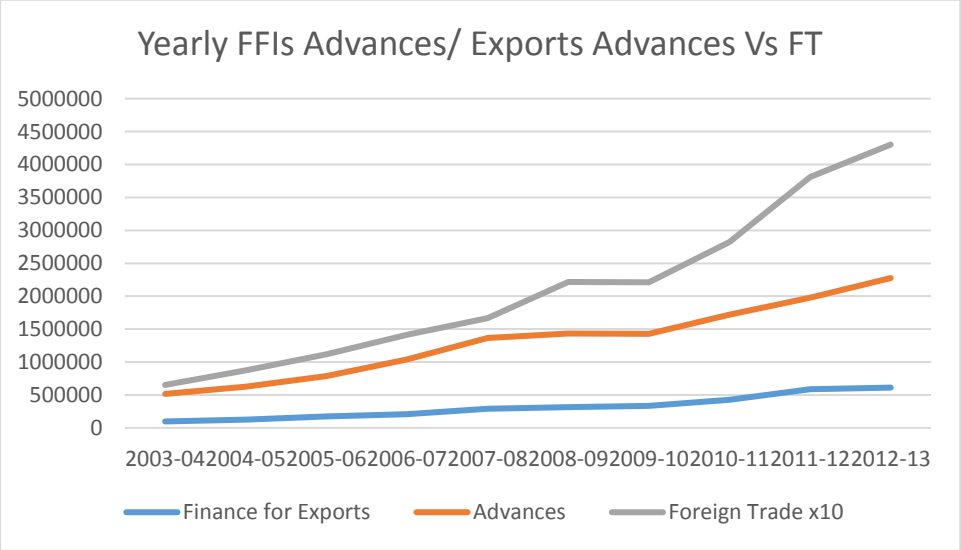
Graph 2 Exports Advances Vs Foreign Trade- Scattered Plot



Using SPSS the calculated value of 'R' is 0.995 and 'R square' is 0.988. Also the calculated value of standardised coefficient 'Beta' is 0.995. Since these values are closer to 1, it is concluded that there exists linear correlation between independent variable 'Export

Advances' and dependent variable 'Foreign Trade'. This means that regression explains most of the variability in the dependent variable and the fitted model is good.

Graph 3 Yearly FFIs Advances/Exports Advances Vs FT



Help from FFIs model should result in growth. From tables and graphs it is observed that with an increase in advances given by FFIs there is an increase in foreign trade (FT). There is a liner relationship between the independent variable-advances and the dependent variable-foreign trade.

This follows the equation y=a +bx. The average growth of foreign trade is 23.26% during observation period. This is possible because of typical characteristics of all three models of FFIs, i.e. model-A, model-B, model-C. From above statistical tests, tables and graphs it is observed that with increase in FFIs' advances there is increase in foreign trade. Hence H1 is acceptable whereas HO is rejected and we conclude that FFIs' models generally help in the growth of Foreign Trade of India.

Testing of Hypothesis 2: -

6.2 H1: FFIs provide advisory and promotional services to Indian exporters and importers which results in enhancing Foreign Trade.

6.2.1 HO: FFIs provide advisory and promotional services to Indian exporters and importers which do not result in enhancing Foreign Trade.

This hypothesis is tested using statistical test-regression analysis and table supported with graph by comparing

A) FFIs' Operating Expenses - Independent Variable

B) FFIs' Total Expenses - Independent Variable

C) Foreign Trade (FT) - Dependent Variable

Statistical Test using Regression Analysis: - y= a + bx

x = Operating Expenses, independent variable, y = Foreign Trade (FT), dependent variable,

Table 3 India's Foreign Trade and FFIs' Op. Expenses INR million

Year	Op. Expenses (xi)	FT (yi)	xi-x bar	yi-y bar	(xi-x bar)^2	(yi-y bar)^2	(x-x bar)*(y-y bar)
2003-04	29560	6524750	-51018.9	-14567171	2602928627	2.122E+14	7.43201E+11
2004-05	34910	8764050	-45668.9	-12327871	2085648847	1.52E+14	5.63E+11
2005-06	47440	11168270	-33138.9	-9923651	1098186998	9.848E+13	3.28859E+11
2006-07	63490	14122850	-17088.9	-6969071	292030660.4	4.857E+13	1.19094E+11
2007-08	89290	16681760	8711.095	-4410161	75883183.07	1.945E+13	-3.8417E+10
2008-09	102875.3	22151910	22296.36	1059989	497127776.3	1.124E+12	23633898884
2009-10	95775.09	22092700	15196.18	1000779	230923959.5	1.002E+12	15208020226
2010-11	108546.6	28263890	27967.69	7171969	782191650.4	5.144E+13	2.00583E+11
2011-12	113983.1	38114220	33404.19	17022299	1115840137	2.898E+14	5.68616E+11
2012-13	119919	43034810	39340.1	21942889	1547643106	4.815E+14	8.63235E+11
	X bar= 80578.9	Y bar= 21091921			SSX= 10328404944	SSY= 1.355E+15	SSXY= 3.38701E+12

b=SSXY/SSX = 3.38701E+12 /10328404944=**327.9315653** and a= y bar –b * x bar = 21091921 – (327.9315653*80578.9) = **-5332443.807** Value b =327.9315653 is the change in the value of Y for a unit change in the value of X. The intercept is a constant or the value of Y when X is zero. The values of a and b obtained using least square method are called as least square estimates (LSE) of a and b. The values of a and b obtained using least square method are called as least square estimates (LSE) of a and b. Also the relation between the correlation coefficient for X and Y (r) and LSE of b is given as under:-

$$r = b\sqrt{(\int_{i=1}^{i=n} (xi - xbar)\text{^}2)/(\int_{i=1}^{i=n} yi - ybar)\text{^}2)}$$

= b√((SSX)/SSY)

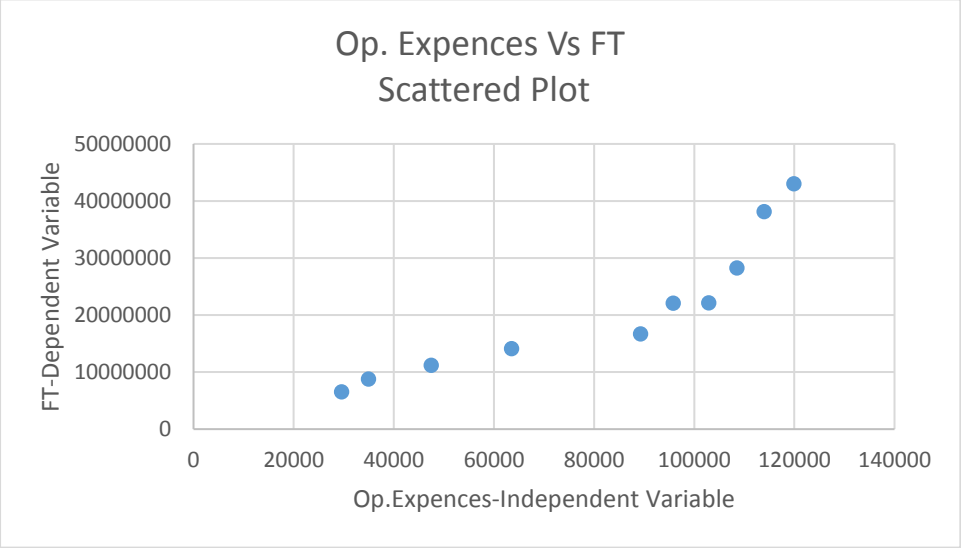
=327.9315653 * (10328404944 /1.355E+15)^0.5 = **0.905378554** In the above model Y=a + Bx + error , if b = 0 , then the model cannot be considered as a linear model. Therefore, here we test Ho: b=0 against Ha: b≠0, the test statistic is $Tc = \frac{bbar}{\sqrt{SSY}/(n-2)SSX}$

= (327.9315653) / ((1.355E+15)/((24-2)*(10328404944)))^0.5

= **4.246601837**

At 5% level of significance and 22 d.f., the critical value using t distribution is 2.074 which is smaller than the computed value. Therefore, at 5% level of significance we reject the null hypothesis and conclude that there is an evidence of linear relationship between the independent variable-Op. Expenses and the dependent variable-FT

Graph 4 Operating Expenses Vs FT- Scattered Plot



Using SPSS the calculated value of 'R' is 0.905 and 'R square' is 0.819. Also the calculated value of standardised coefficient 'Beta' is 0.905. Since these values are closer to 1, it is

concluded that there exists linear correlation between independent variable 'Operating Expenses' and dependent variable 'Foreign Trade'. This means that regression explains most of the variability in the dependent variable and the fitted model is good.

Table 4 India's Foreign Trade and FFIs' Total Expenses INR million

: - Statistical Test using Regression Analysis: - y= a + bx

x = Total Expenses, independent variable y = Foreign Trade (FT), dependent variable

Year	Total Expenses (xi)	FT (yi)	xi-x bar	yi-y bar	(xi-x bar)^2	(yi-y bar)^2	(x-x bar)*(y-y bar)
2003-04	64670	6524750	-101342.089	-14567171	10270219003	2.12202E+14	1.47627E+12
2004-05	68030	8764050	-97982.089	-12327871	9600489765	1.51976E+14	1.20791E+12
2005-06	88920	11168270	-77092.089	-9923651	5943190186	9.84788E+13	7.65035E+11
2006-07	126360.8805	14122850	-39651.20852	-6969071	1572218337	4.8568E+13	2.76332E+11
2007-08	179156.2976	16681760	13144.20862	-4410161	172770220.2	1.94495E+13	-57968076220
2008-09	214029.0414	22151910	48016.95243	1059989	2305627721	1.12358E+12	50897441391
2009-10	176456.7485	22092700	10444.65947	1000779	109090911.3	1.00156E+12	10452795855
2010-11	204374.008	28263890	38361.919	7171969	1471636829	5.14371E+13	2.7513E+11
2011-12	248835.414	38114220	82823.325	17022299	6859703164	2.89759E+14	1.40984E+12
2012-13	289288.5	43034810	123276.411	21942889	15197073509	4.8149E+14	2.70504E+12
	X bar= 166012.089	Y bar= 21091921			SSX= 53502019646	SSY= 1.35549E+15	SSXY= 8.11894E+12

b=SSXY/SSX =8.11894E+12 /53502019646 = **151.7501592** and a= y bar –b * x bar =21091921 - 151.7501592 *166012.089 = **-4100439.935**. The value b =151.7501592 is the

change in the value of Y for a unit change in the value of X. The intercept is a constant or the value of Y when X is zero. The values of a and b obtained using least square method are called as least square estimates (LSE) of a and b. Also the relation between the correlation coefficient for X and Y (r) and LSE of b is given as under:-

$$r = b\sqrt{(\int_{i=1}^{i=n} (xi - xbar)\text{^}2)/(\int_{i=1}^{i=n} yi - ybar)\text{^}2)}$$

= b√((SSX)/SSY)

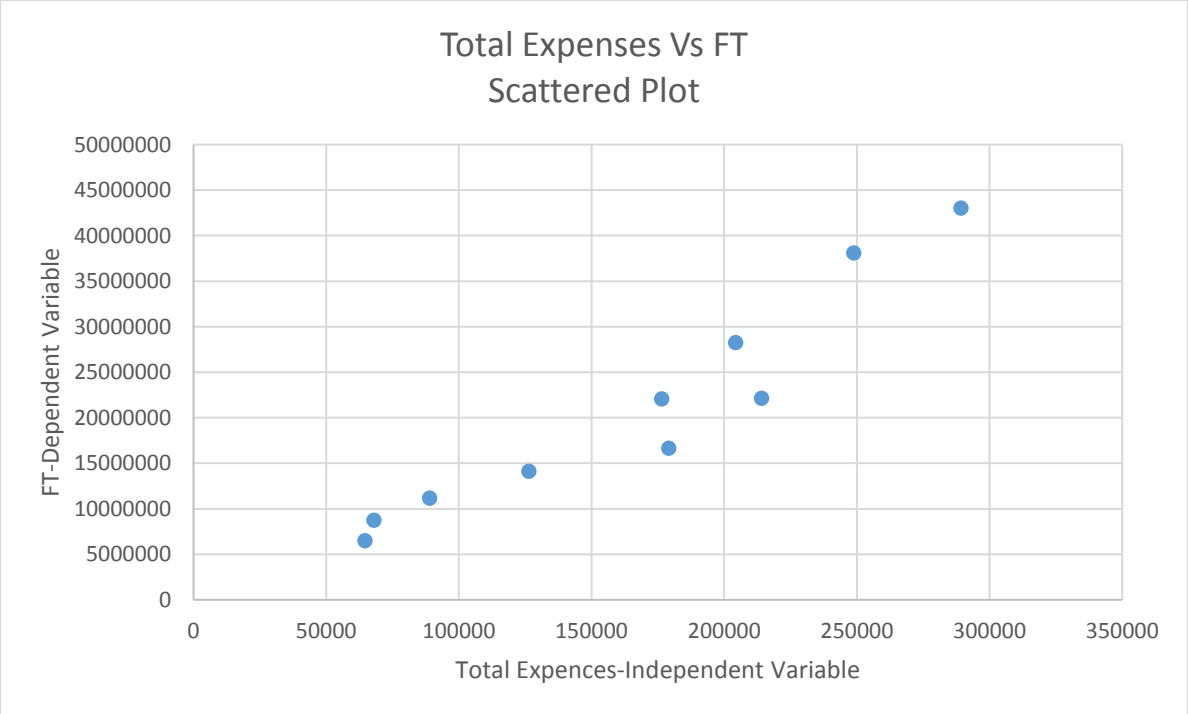
=151.7501592 * (53502019646 /1.35549E+15) ^0.5= **0.953380104**

In the above model Y=a + Bx + error , if b = 0 , then the model can not be considered as a linear model. Therefore, here we test Ho: b=0 against Ha: b≠0, the test statistic is $Tc = \frac{bbar}{\sqrt{SSY}/(n-2)SSX}$

= (151.7501592) / ((1.35549E+15)/((24-2)*(53502019646)))^0.5

= **4.471749067** At 5% level of significance and 22 d.f., the critical value using t distribution is 2.074 which is smaller than the computed value. Therefore, at 5% level of significance we reject the null hypothesis and conclude that there is an evidence of linear relationship between the independent variable- Total Expences and the dependent variable- Foreign Trade FT

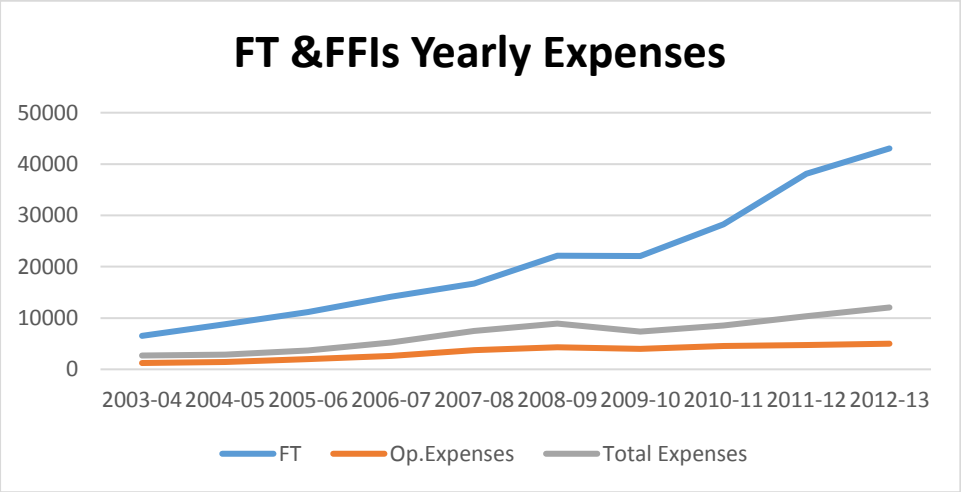
Graph 5 Total Expenses Vs FT- Scattered Plot



Graph 6 India's Foreign Trade and FFIs' Yearly Expenses

Values for FT in INR million x 1000 whereas

Values for Op. Expenses & Total Expenses in INR million



Using SPSS the calculated value of 'R' is 0.953 and 'R square' is 0.909. Also the calculated value of standardised coefficient 'Beta' is 0.953. Since these values are closer to 1, it is concluded that there exists linear correlation between independent variable 'Total Expenses' and dependent variable 'Foreign Trade'. This means that regression explains most of the variability in the dependent variable and the fitted model is good. Advisory and promotional services are part of operating expenses and total expenses. From above statistical tests, tables and graphs it is observed that with increase in operating expenses or total expenses there is increase in foreign trade. There exists a linear relationship between an independent variable and a dependent variable. This follows the equation y=a +bx. Hence H1 is acceptable whereas HO is rejected.

Testing of Hypothesis 3: -

6.3 H1: FFIs provide services to Indian companies at a very competitive and concessional cost.

6.3.1 HO: FFIs do not provide services to Indian companies at a very competitive and concessional cost.

This hypothesis tested using statistical test, table supported with graph by comparing A) FFIs' cost of funds, B) Return on advances and C) Return on assets against SBI since in India SBI is the lead financial institution for providing advances to manufacturing & trading.

Here we are comparing FFIs cost of funds against SBI's cost of funds since in India SBI is the lead financial institution for providing advances to manufacturing & trading.

Table 5 FFIs' Cost of Funds - Comparison with State Bank of India

	FFIs (24) N Average		SBI-Average
Year	Cost of Funds	Year	Cost of Funds
2003-04	3.80	2003-04	5.74
2004-05	3.56	2004-05	4.90
2005-06	4.39	2005-06	4.88
2006-07	4.12	2006-07	4.55
2007-08	4.28	2007-08	5.64
2008-09	4.41	2008-09	5.72
2009-10	2.95	2009-10	5.14
2010-11	2.90	2010-11	4.67
2011-12	3.67	2011-12	5.35
2012-13	3.93	2012-13	5.63
Average=	3.80	Average=	5.22

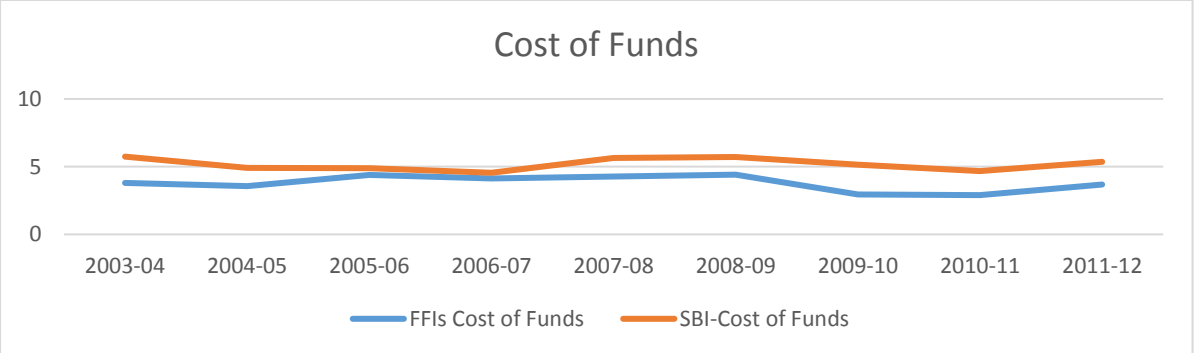
Statistical Test: - Here x bar= 5.22, μo =3.80, σ= 0.43109, n=24

$$Zc = \frac{\text{x bar} - \mu o}{\sigma/\sqrt{n}}$$

= (5.22-3.80)/ (0.43109/ (24^0.5)) = (1.42)/ (0.43109)/ 4.8989 =1.42/0.0879 =16.15

Distribution of test statistic is N (0, 1). So critical value for right tailed test and for 5% level of significance is 1.645. Since, computed value > critical value at 5% level of significance, we reject Ho at 5%level of significance in favor of H1 and conclude that FFIs provide services to Indian companies at a very competitive and concessional cost because FFIs cost of Funds is lower than SBI's Cost of Funds.

Graph 7 FFIs' Cost of Funds- Comparison with State Bank of India (SBI)



From above table and graph it is observed that FFIs cost of Funds is lower than SBI's Cost of Funds during the observation period. Hence H1 is acceptable whereas HO is rejected.

B) Here we are now, comparing FFIs return on advances against SBI's return on advances since in India SBI is the lead financial institution for providing advances to manufacturing & trading

Table 6 FFIs' Returns on Advances – Comparison with State Bank of India (SBI)

	FFIs 24(N) Average		SBI-Average
Year	Return on Advances	Year	Return on Advances
2003-04	4.27	2003-04	1.88
2004-05	3.66	2004-05	2.34
2005-06	3.08	2005-06	2.74
2006-07	5.16	2006-07	3.74
2007-08	4.96	2007-08	3.70
2008-09	6.57	2008-09	3.95
2009-10	5.35	2009-10	3.48
2010-11	4.74	2010-11	3.97
2011-12	5.04	2011-12	4.63
2012-13	4.72	2012-13	3.83
Average=	4.75	Average=	3.42

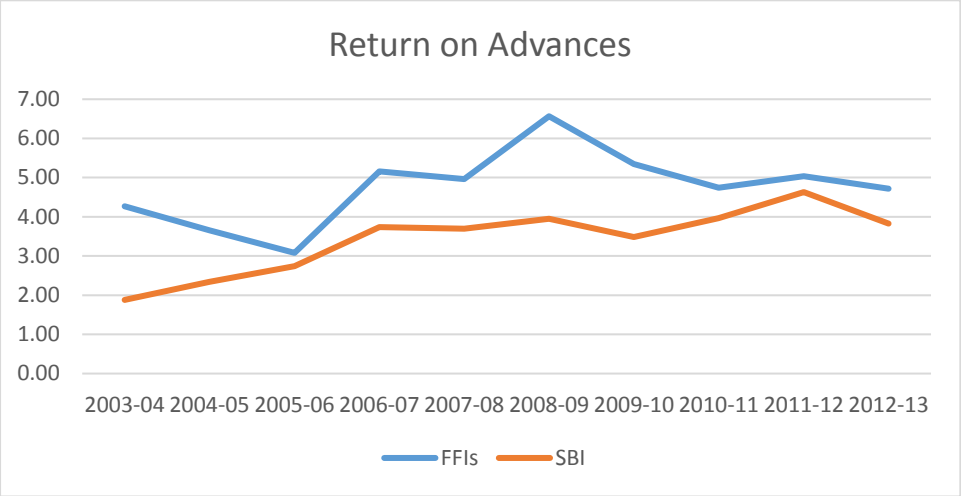
Statistical Test: - Here x bar= 4.75, µo =3.43, σ= 0. 0.90339, n=24

$$Zc = \frac{\text{x bar} - \mu o}{\sigma/\sqrt{n}}$$

= (4.75-3.43)/ (0.90339/ (24^0.5)) = (1.32)/ (0.90339)/ 4.8989 =1.32/0.1844 =7.15

Distribution of test statistic is N (0, 1). So critical value for right tailed test and for 5% level of significance is 1.645. Since, computed value > critical value at 5% level of significance, we reject Ho at 5%level of significance in favor of H1 and conclude that FFIs provide services to Indian companies at a very competitive and concessional cost because FFIs Return on Advances is higher than SBI's Return on Advances.

Graph 8 FFIs' Return on Advances- Comparison with State Bank of India (SBI)



From above statistical tests, tables and graph it is observed that FFIs return on advances is higher than SBI's return on advances during the observation period. Hence H1 is acceptable whereas HO is rejected.

C) Here we are now, comparing FFIs return on assets against SBI's return on assets since in India SBI is the lead financial institution for providing advances to manufacturing & trading.

Table 7 FFIs' Returns on Assets - Comparison with State Bank of India

	FFIs 24 (N) Average		SBI-Average
Year	Return on Advances	Year	Return on Advances
2003-04	1.87	2003-04	0.94
2004-05	0.87	2004-05	0.99
2005-06	1.71	2005-06	0.89
2006-07	1.95	2006-07	0.84
2007-08	2.65	2007-08	1.01
2008-09	2.69	2008-09	1.04
2009-10	1.41	2009-10	0.88
2010-11	1.91	2010-11	0.71
2011-12	2.23	2011-12	0.88
2012-13	2.16	2012-13	0.91
Average=	1.95	Average=	0.91

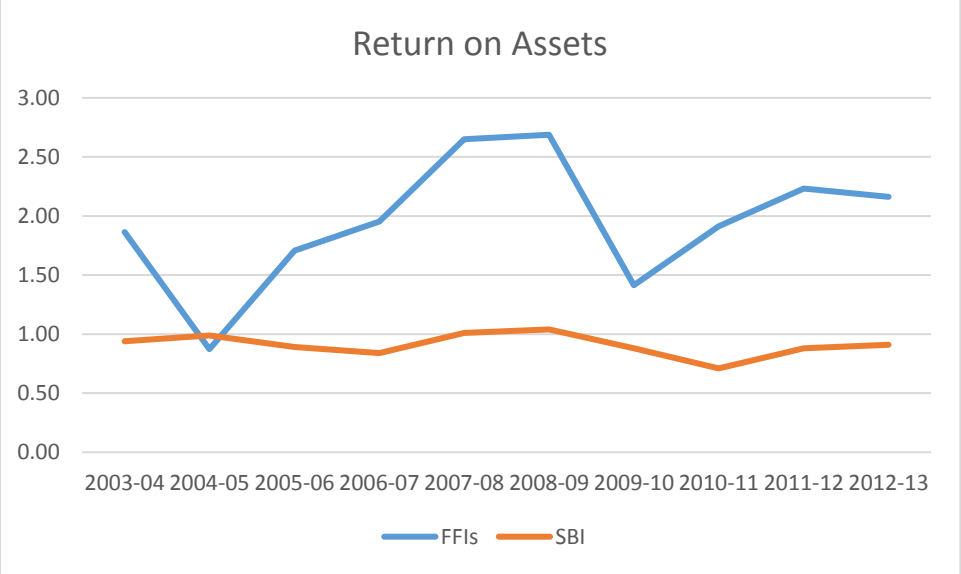
Statistical Test: - Here x bar= 1.95, μo =0.91, σ= 0.51709, n=10

$$Zc = \frac{\text{x bar} - \mu o}{\sigma/\sqrt{n}}$$

= (1.95-0.91)/ (0.51709/ (24^0.5)) = (1.04)/ (0.51709)/ 4.8989 =1.04/0.0.1055 = 9.85

Distribution of test statistic is N (0, 1). So critical value for right tailed test and for 5% level of significance is 1.645. Since, computed value > critical value at 5% level of significance, we reject Ho at 5%level of significance in favor of H1 and conclude that FFIs provide services to Indian companies at a very competitive and concessional cost because FFIs Return on Assets is higher than SBI's Return on Assets.

Graph 9 FFIs' Return on Assets- Comparison with State Bank of India (SBI)



From above statistical test, table and graph it is observed that FFIs return on assets is higher than SBI's return on assets during the observation period. Hence H1 is acceptable whereas HO is rejected.

Testing of Hypothesis 4: -

6.4 H1: FFIs apply models have positive effect on industrialization efforts in India.

6.4.1 HO: FFIs apply models do not have positive effect on industrialization efforts in India.

This hypothesis tested using statistical test and tables supported with graphs by comparing

A) Advances- Independent Variable

B) Investments- Independent Variable

C) IIP- Dependent Variable

against SBI since in India SBI is the lead financial institution for providing advances to manufacturing & trading.

Statistical Test using Regression Analysis: - y= a + bx

x = Advances, independent variable

y = Index of Industrial Production (IIP)-Average, dependent variable

Table 8 FFIs' Advances and India's IIP

Year	Advances	IIP-Average	xi-x bar	yi-y bar	(xi-x bar)^2	(yi-y bar)^2	(x-x bar)*(y-y bar)
2003-04	515820	100	-801404	-63.2	6.42248E+11	3994.24	50648732.8
2004-05	626080	111	-691144	-52.2	4.7768E+11	2724.84	36077716.8
2005-06	785200	129	-532024	-34.2	2.8305E+11	1169.64	18195220.8
2006-07	1040891	158	-276333	-5.2	76359926889	27.04	1436931.6
2007-08	1365475	165	48251	1.8	2328159001	3.24	86851.8
2008-09	1435312	176	118088	12.8	13944775744	163.84	1511526.4
2009-10	1426562	195	109338	31.8	11954798244	1011.24	3476948.4
2010-11	1721003	198	403779	34.8	1.63037E+11	1211.04	14051509.2
2011-12	1979991	198	662767	34.8	4.3926E+11	1211.04	23064291.6
2012-13	2275906	202	958682	38.8	9.19071E+11	1505.44	37196861.6
	X bar= 1317224	Y bar= 163.2			SSX= 3.02893E+12	SSY= 13021.6	SSXY= 185746591

.b=SSXY/SSX =185746591/3.02893E+12=**6.13242E-05** and a= y bar –b * x bar = 163.2-6.13242E-05 * 1317224 = **82.42229198**. The value b =82.42229198 is the change in the value of Y for a unit change in the value of X. The intercept is a constant or thevalue of Y when X is zero. The values of a and b obtained using least square method are called as least square estimates (LSE) of a and b. Also the relation between the correlation coefficient for X and Y (r) and LSE of b is given as under:-

$$r = b\sqrt{(\int_{i=1}^{i=n} (xi - xbar)\text{^}2)/(\int_{i=1}^{i=n} yi - ybar)\text{^}2)}$$

= b√((SSX)/SSY)

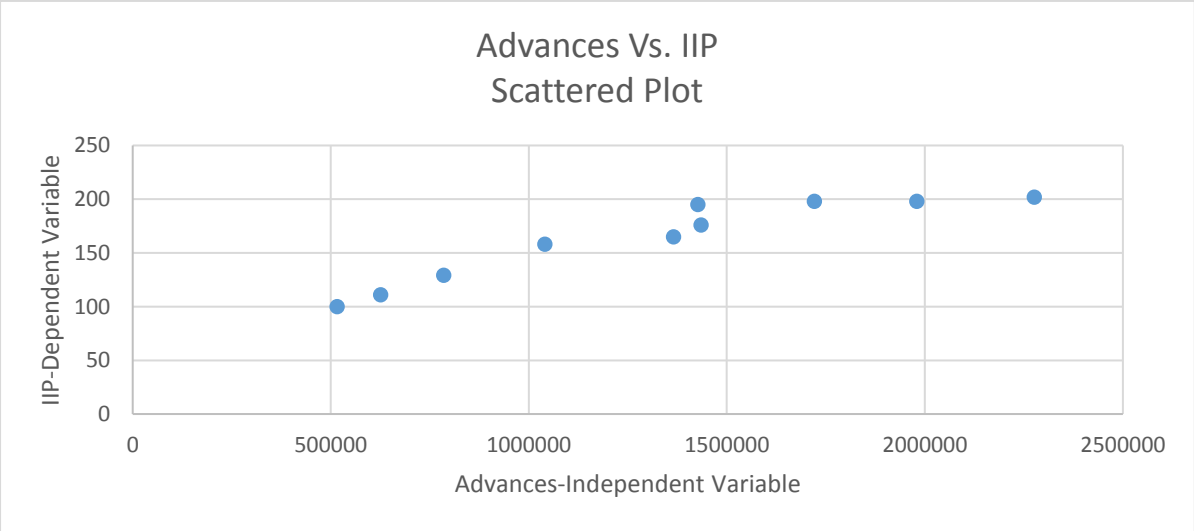
=82.42229198 * (3.02893E+12 /13021.6) ^0.5= **1257063.25**

In the above model Y=a + Bx + error , if b = 0 , then the model can not be considered as a linear model. Therefore, here we test Ho: b=0 against Ha: b≠0, the test statistic is $\boldsymbol{Tc} = \frac{bbar}{\sqrt{SSY}/(n-2)SSX}$ = (82.42229198) / ((13021.6)/((24-2)*(3.02893E+12)))^0.5

= **5896149.281**

At 5% level of significance and 22 d.f., the critical value using t distribution is 2.074 which is smaller than the computed value. Therefore, at 5% level of significance we reject the null hypothesis and conclude that there is an evidence of linear relationship between the independent variable- Advances and the dependent variable-IIP

Graph 9 Advances Vs IIP- Scattered Plot



Using SPSS the calculated value of 'R' is 0.935 and 'R square' is 0.875. Also the calculated value of standardised coefficient 'Beta' is 0.935. Since these values are closer to 1, it is concluded that there exists linear correlation between independent variable 'Advances' and dependent variable 'IIP-Average'. This means that regression explains most of the variability in the dependent variable and the fitted model is good.

Table 9 FFIs' Investment and India's IIP: - -

Statistical Test using Regression Analysis: - y= a + bx x = Investments, independent variable

y = IIP-Average, dependent variable

Year	Investments (xi)	IIP-Average	xi-x bar	yi-y bar	(xi-x bar)^2	(yi-y bar)^2	(x-x bar)*(y-y bar)
2003-04	364610	100	-633691	-63.2	4.01564E+11	3994.24	40049271.2
2004-05	370980	111	-627321	-52.2	3.93532E+11	2724.84	32746156.2
2005-06	454500	129	-543801	-34.2	2.9572E+11	1169.64	18597994.2
2006-07	609524	158	-388777	-5.2	1.51148E+11	27.04	2021640.4
2007-08	810502	165	-187799	1.8	35268464401	3.24	-338038.2
2008-09	1073079	176	74778	12.8	5591749284	163.84	957158.4
2009-10	1358713	195	360412	31.8	1.29897E+11	1011.24	11461101.6
2010-11	1377481	198	379180	34.8	1.43777E+11	1211.04	13195464
2011-12	1670077	198	671776	34.8	4.51283E+11	1211.04	23377804.8
2012-13	1893544	202	895243	38.8	8.0146E+11	1505.44	34735428.4
	X bar= 998301	Y bar= 163.2			SSX= 2.80924E+12	SSY= 13021.6	SSXY= 176803981

b=SSXY/SSX =176803981/2.80924E+12= **6.29366E-05** and a= y bar –b * x bar = 163.2-6.29366E-05* 998301=**100.3703293**. The value b =6.29366E-05 is the change in the value of Y for a unit change in the value of X. The intercept is a constant or the value of Y when X is zero. The values of a and b obtained using least square method are called as least square estimates (LSE) of a and b. Also the relation between the correlation coefficient for X and Y (r) and LSE of b is given as under:-

$$\boldsymbol{r = b\sqrt{(\int_{i=1}^{i=n} (xi - xbar)\text{^}2)/(\int_{i=1}^{i=n} yi - ybar)\text{^}2)}}$$

= b√((SSX)/SSY)

=6.29366E-05 * (2.80924E+12 /13021.6)^0.5= **0.924411893**

In the above model Y=a + Bx + error , if b = 0 , then the model cannot be considered as a linear model. Therefore, here we test Ho: b=0 against Ha: b≠0, the test statistic is $\boldsymbol{Tc} = \frac{\boldsymbol{bbar}}{\sqrt{\boldsymbol{SSY}/(\boldsymbol{n}-\boldsymbol{2})\boldsymbol{SSX}}}$

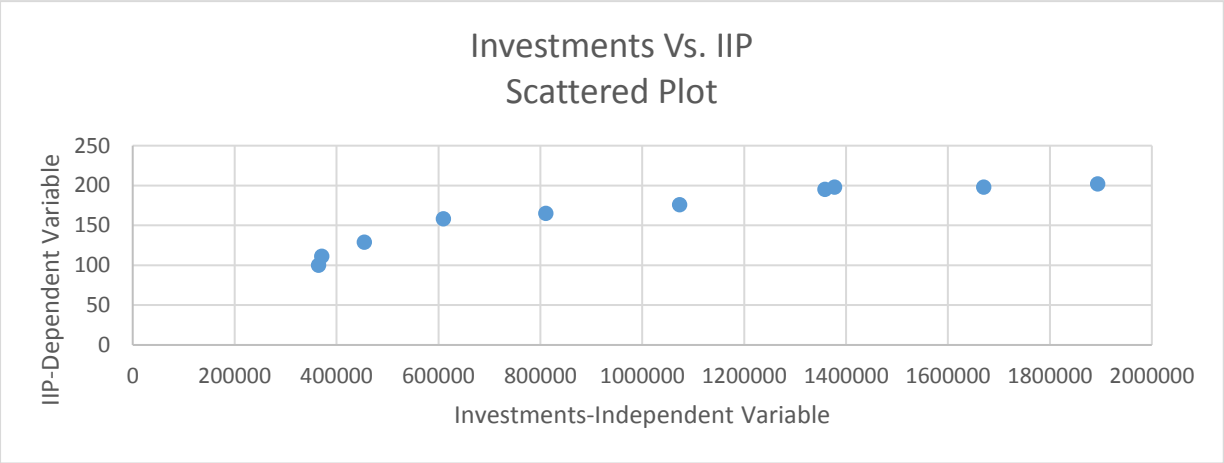
= (6.29366E-05) / ((13021.6)/((24-2)*(2.80924E+12)))^0.5

= **4.335876109**

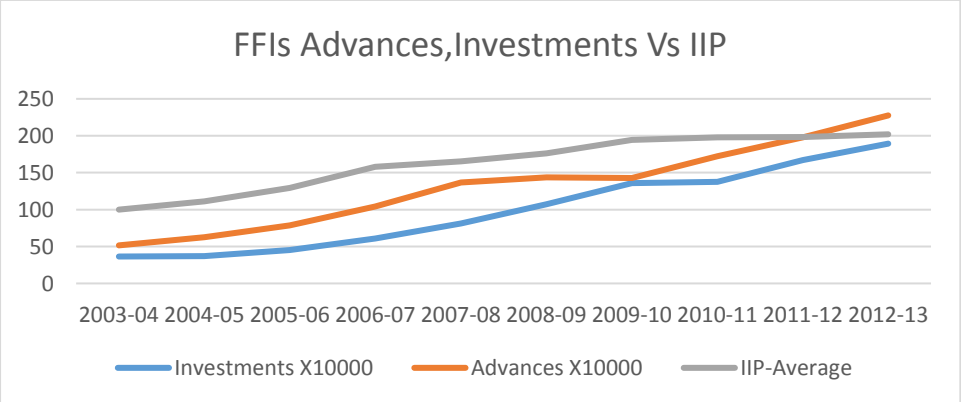
At 5% level of significance and 22 d.f., the critical value using t distribution is 2.074 which is smaller than the computed value. Therefore, at 5% level of significance we reject the null hypothesis and conclude that there is an evidence of linear relationship between the independent variable- Investments and the dependent variable-IIP.

Using SPSS the calculated value of 'R' is 0.924 and 'R square' is 0.855. Also the calculated value of standardised coefficient 'Beta' is 0.924. Since these values are closer to 1, it is concluded that there exists linear correlation between independent variable 'Investments' and dependent variable 'IIP-Average' This means that regression explains most of the variability in the dependent variable and the fitted model is good.

Graph 10 Investments Vs IIP- Scattered Plot



Graph 11 FFIs' Advances, Investment and India's IIP



From the above statistical test, table and graph it is observed that IIP-Average increase with increase in FFIs' advances & investment. Hence H1 is acceptable whereas HO is rejected. Based on tables, graphs and statistical tests using regression analysis it is concluded that all the four hypothesis are acceptable.

Final Conclusion: -FFIs are developing their Indian business along with increasing their client base and implementing potential opportunities for massive entry into the market. Most of the FFIs have the greatest experience in working with private depositors, and also lending actively to the real and various business sectors .FFIs desire to enter the Indian market is understandable. Bilateral trade with various countries has been growing rapidly as economies are recovering from the global financial crisis. India's Foreign Trade climbed to a value of US$ 800 billion over the last decade from US$ 50 billion and GDP achieved a figure of US$ two trillion with an average GDP growth of seven percent. Along with the basic target of profitability, FFIs presence in India has helped the host and home country to increase both domestic and Foreign Trade volume by availing the necessary financial services with the application of appropriate business practices models. It is highly significant to relate FFIs presence in India for providing financial services and steady rise in India's domestic and Foreign Trade during the last decade.

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Annexure 1:-Performance of Selected FFIs (which are operating consistently as per profile of banks RBI during 2003-04 to 2012-13 (Values in INR Million))

Case No.	Name of FFI	Business	Advances	Investment
1	AB Bank Limited	689.20	374.33	127.86
2	Abu Dhabi Commercial Bank Limited	7597.23	2021.00	4178.72
3	Antwerp Diamond Bank N.V.	5592.99	5399.19	1603.60
4	Bank of America NA	81790.70	42689.60	43381.06
5	Bank of Bahrain and Kuwait B.S.C.	8109.92	3580.48	2139.22
6	Bank of Ceylon	1717.35	586.24	408.86
7	Barclays Bank PLC	71792.28	51374.34	62156.03
8	BNP Paribas	71871.31	37821.67	26126.57
9	CTBC Bank Co.,Ltd.	2651.91	1637.60	401.47
10	Citibank N.A.	757288.94	345373.51	230106.83
11	DBS Bank Ltd.	70173.18	46119.61	67793.86
12	Deutsche Bank AG	243959.31	92063.16	69540.06
13	JPMorgan Chase Bank	35019.65	17135.28	70139.71
14	Krung Thai Bank Public Company Ltd.	917.28	114.91	282.61
15	Mashreq bank psc	618.35	355.27	739.81
16	Mizuho Bank Ltd.	19109.32	16092.98	3969.87
17	Shinhan Bank	8699.00	4332.52	1887.69
18	Societe Generale	15232.36	5664.84	14498.80
19	Sonali Bank Ltd.	353.18	89.93	56.04
20	Standard Chartered Bank	758245.01	369421.38	170748.12
21	State Bank of Mauritius Ltd.	7215.56	3994.01	2201.44
22	The Bank of Nova Scotia	66185.25	44802.37	19798.60
23	The Bank of Tokyo-Mitsubishi UFJ, Ltd.	42134.03	30815.38	13493.78
24	The Hong-Kong and Shanghai Banking Corpn.Ltd.	651544.67	241832.05	260351.51

Source: - https://www.rbi.org.in/Scripts/Publications.aspx?publication=Annual

Annexure 2:- Average values of variables for a period 2003-04 to 2012-13.

Case No.	Advances	Interest Income	Net Profit	Net Worth	Deposits	Investmer	Other Income	Total Income
1	0.075151	43.8134	47.93819	531.5655	417.1836	0.100436	94.0111	137.8245
2	0.405733	596.4668	144.6181	1433.942	7750.156	3.282207	123.4759	668.2895
3	1.083933	377.1952	86.5328	1819.67	629.8798	1.25956	108.4462	483.2839
4	8.570286	6178.131	3443.636	25838.4	41952.85	34.07395	3427.549	9605.212
5	0.718812	479.7283	111.3826	1295.653	4782.346	1.680269	90.7858	569.6926
6	0.117693	130.1293	85.73568	876.3367	951.2952	0.321147	57.6074	188.2314
7	10.31382	9065.067	-439.026	35880.32	45184.81	48.82088	2625.642	11689.79
8	7.593009	4913.651	1366.48	13033.78	35091.98	20.52129	1626.03	5986.015
9	0.328762	187.9065	13.712	910.3369	995.5634	0.315342	29.0727	216.229
10	69.33656	53758.74	16679.69	99661.99	447915.7	180.739	17177.3	70935.49
11	9.258889	8344.631	2310.356	13996.96	59807.56	53.24915	1044.025	9388.656
12	18.48243	14153.77	5001.229	39262.5	112327.7	54.62072	7744.555	21899.64
13	3.440048	5361.748	3264.549	24558.35	43242.6	55.09172	2836.417	8204.067
14	0.02307	82.1844	21.0976	443.5653	866.9246	0.221984	14.1611	96.314
15	0.071324	129.9595	82.2996	839.7577	955.5095	0.581091	114.1018	241.6044
16	3.230798	1274.236	594.851	13221.21	6288.849	3.118168	396.0624	1670.584
17	0.869791	685.5371	213.9429	2814.713	5578.31	1.482705	93.8473	782.2434
18	1.137264	1458.734	298.1882	4359.767	9648.415	11.38818	271.6336	1730.336
19	0.018055	14.3541	9.499031	62.4212	294.5599	0.04402	48.3475	63.14486
20	74.16436	51699.46	18836.64	92940.9	416442.7	134.1153	20082.57	71852.82
21	0.801832	593.6765	85.40633	2273.813	3641.168	1.729137	75.862	670.1248
22	8.994443	3988.717	1584.072	8600.663	32306.82	15.55095	1274.11	5262.895
23	6.18644	2863.675	1060.98	16126.01	17542.37	10.59878	820.067	3683.498
24	48.54976	43857.57	12919.08	92001.51	413797.1	204.4949	16027.52	59885.22

Annexure 2 Continued: - Average values of variables for a period 2003-04 to 2012-13.

Case No.	Interest Expended	Operating Expenses	Total Expenses	Cost of Funds	on Advances	on Assets	CRAR	Net NPA
1	5.2742	51.8309	57.1051	1.592846	6.354355	4.704	61.474	3.313
2	619.1629	200.8647	498.5562	5.725984	3.230653	1.039	43.026	5.98
3	162.062	96.7826	271.1048	2.224303	2.892833	0.89	36.901	2.267
4	2302.402	2203.741	4506.562	3.166396	4.490603	2.797	18.058	0
5	256.1434	149.5937	405.7836	4.464146	4.70348	0.658	24.114	3.439
6	42.8481	33.923	76.22146	4.18408	6.647047	2.927	57.625	7.832
7	4546.924	4413.386	8796.007	5.193408	9.205074	1.901	19.875	1.481
8	2189.788	2063.796	4247.156	5.077408	3.329056	1.26	13.386	0.093
9	64.6503	89.2132	157.1371	4.340328	4.737434	-0.392	37.548	2.926
10	19982.92	21144.78	41128.27	3.317731	6.873367	2.479	13.689	1.395
11	4701.185	1731.285	6432.47	4.594502	2.830329	1.012	24.428	0.488
12	4553.562	8116.914	12665.88	3.233051	5.90056	1.871	14.251	0.235
13	2252.027	1219.237	3470.678	2.615328	2.294875	2.706	20.401	0.844
14	28.7083	30.9674	59.3	3.157066	5.266961	1.788	91.214	0
15	70.6079	69.2621	137.5054	3.384267	3.34988	4.535	72.071	0
16	296.2555	348.1234	644.0441	3.490809	3.855291	2.227	46.5	0.25
17	278.2324	134.0562	412.228	3.425068	4.943309	1.962	53.25	0.08
18	851.7249	482.903	1334.35	4.239087	3.906913	1.276	32.079	0.137
19	9.0565	37.0362	45.39638	1.885575	8.149363	2.18	46.447	4.579
20	21533.57	19433.5	40966.16	3.978731	6.48731	2.465	11.219	1.105
21	381.7894	83.5198	465.6713	7.224513	2.021624	1.166	39.378	1.988
22	2393.521	500.8424	2894.537	4.258191	2.034303	1.609	15.07	1.36
23	1019.768	648.711	1668.142	2.739569	4.286336	2.118	40.831	0.011
24	17376.18	17294.64	34671.82	3.711139	6.287041	1.512	14.534	0.838

Annexure 2 Continued: - Average values of variables for a period 2003-04 to 2012-13.

Case No.	Total Assets	Operating Profit	Profit Per Employee	Business Per Employee	No.of Employee	No.of Offices	Wages as a % of TE
1	1004.768	82.4107	1.576	24.7026	27.9	1	18.07216
2	10274.44	169.7357	1.09029	168.4531	45.1	2	12.11498
3	9474.317	257.1901	3.2758	256.5594	21.8	1	18.36223
4	148290.5	6094.65	9.1727	263.7559	310.1	5	25.01976
5	8819.033	192.91	0.41	89.12	91	2	16.09609
6	2316.229	131.009	2.2425	58.0186	29.6	1	14.29878
7	240573.3	3527.787	6.6371	101.7176	705.8	5	31.57544
8	121104	2951.904	3.02	216.5451	331.9	9.1	21.58325
9	3049.052	59.0937	-0.3512	94.7111	28	1.1	19.39872
10	1138294	37331.23	3.0513	174.6354	4336.4	39.3	16.20449
11	180835.9	5230.27	3.0249	192.6776	364.2	6.4	17.18687
12	302167	10628.74	3.7534	164.8151	1480.2	11	26.88934
13	167094.7	6107.39	13.7328	219.0097	159.9	1	24.44333
14	1815.272	39.0304	1.9135	89.0565	10.3	1	13.40693
15	4663.985	120.098	5.3007	45.8039	13.5	1.7	26.32301
16	113444.4	1131.529	3.9013	170.619	112	1.7	23.23686
17	15428.12	411.0154	3.8496	183.9114	47.3	2	13.89535
18	27607.41	485.9805	2.5831	158.3406	96.2	2.1	19.39847
19	476.9954	17.72746	0.2133	9.5456	37	1.7	48.85536
20	1068690	35833.66	2.1989	107.8953	7027.6	89.2	19.22794
21	10555.3	195.3515	2.1	211.6	34.1	3	6.989311
22	97942.94	2747.365	6.5996	343.2845	192.8	5	7.167538
23	83137.66	2212.355	4.3942	229.4882	183.6	3.1	22.46892
24	983194.3	31246.38	1.8522	115.0895	5661.2	46	20.26016