RASHTREEYA SIKSHANA SAMITHI TRUST

R V INSTITUTE OF MANAGEMENT

Department of Finance

International Financial Management (4.2.2)

Course Facilitators

Prof. Dileep , Assistant Professor, R V Institute of Management

The articles and the reading materials contained in this docket are for classroom discussions only

The art is not in making money, but how best earned money we keep it and utilize for Better Cause – Dileep

RASHTREEYA SIKSHANA SAMITHI TRUST

R V INSTITUTE OF MANAGEMENT

Department of Finance

Course Outline

Programme:	MBA
Batch:	2017-2019
Term:	4
Subject Name:	INTERNATIONAL FINANCIAL MANAGEMENT
Subject Code:	4.2.2
Credits:	4 (40 sessions)
Course Instructors:	Mr. Dileep, (IV semester Sec D)

PART A

INTRODUCTION:

The International Financial Management subject is deals with the basic framework of International Monetary System in the world and finding the financial healthiness of the country by using Balance of Payment. This subject includes both theory and calculations. This subject covers broad area of International Financial Management like; monetary system, BOP, International Financial Market along with Market instruments, Exchange Rate determination, hedging the risk with different strategies and interest rate currency risk management.

After the end course students will able to understand the points

- Fixing the Exchange rates of the currency and the original concept of International Monetary System.
- Students could able to analyze financial healthiness of the country
- Able to find different financial instruments, which can be used as sources of finance.
- Able to understand Purchasing Power Parity, Interest Rate Parity and International Fisher Effect.
- Able to solve the problems related to cross rates.

- Able to hedge the business risk by using different hedging tools.
- Also able to manage the Interest Risks by using different hedging techniques.

POs	Program Outcomes
1	Apply knowledge of management theories and practices to solve business problems
2	Foster Analytical and critical thinking abilities for data-based decision making
3	Ability to develop Value based Leadership
4	Ability to understand, analyze and communicate global, economic, societal, cultural, legal and ethical aspects of business
5	Ability to lead themselves and others in the achievement of organizational goals, contributing effectively to a team environment
6	Ability to identify business opportunities, frame innovative solutions and launch new business ventures or be an intrapreneur
7	Ability to deal with contemporary issues using multi-disciplinary approach with the help of advanced Management and IT tools and techniques
8	Ability to apply domain specific knowledge and skills to build competencies in their respective functional area
9	Ability to engage in research and development work with cognitive flexibility to create new knowledge and be a lifelong learner
10	Ability to understand social responsibility and contribute to the community for inclusive growth and sustainable development of society through ethical behavior
11	Ability to function effectively as individuals and in teams through effective communication and Negotiation skills

COURSE OUTCOMES (CO):

At the successful completion of this course the students should be able to;

CO1	Understand the International Financial systems and its impact on international business
CO2	Analyze Balance of Payment Statement and its impact on inflow and outflow of funds
CO3	Classify the various sources of International Financial Markets and Instruments
CO4	Analyze various foreign exchange rate forecasting techniques
CO5	Evaluate the Foreign Exchange Risk and Risk Hedging Strategies

Mapping of Course Outcomes to Program Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	2	1	2		2	1	1	1	1	2	1
CO2	2	2	1	2	1	1	1	2	1	1	
CO3	1			2		1		1	1	1	1
CO4	2	2	1	2	1	1	2	3	2	2	1
CO5	3	3	2	2	1	1	1	3	2	2	1

KEY CONCEPTS:

MODULE 1: GLOBAL FINANCIAL MANAGEMENT

- Evolution of International Monetary System.
- Bimetallism, Classical Gold Standard, Interwar Period, Bretton Woods System, Flexible Exchange Rate Regime, The current Exchange Rate Agreements
- European Monetary System
- Fixed vs. Flexible Exchange Rate Regime

MODULE 2: BALANCE OF PAYMENTS

- Introduction, Accounting Principles in Balance of Payments
- Valuation and Timing, Components of the Balance of Payments
- Surplus' and 'Deficit' in Balance of Payments
- Importance and limitations of BOP Statistics, Relationship of BOP with other economic variables

MODULE 3: INTERNATIONAL FINANCIAL MARKETS

- Motives for using International Financial Markets. Foreign Exchange Market – History and Transactions, interpreting Foreign Exchange Quotations.
- International Money Markets, International Credit Markets and International Bond Markets
- Comparison of International Financial Markets.

MODULE 4: EXCHANGE RATE DETERMINATION

- Purchasing Power Parity Theory,
- Interest Rate Parity Theory
- International Fischer's Effect
- Pure Expectations Theory

MODULE 5: FOREIGN EXCHANGE RISK AND RISK HEDGING STRATEGIES

- Transaction Risk, Translation Risk, Economic Risk
- Risk Hedging Strategies: Internal – Netting, Leads and Lags
- External – Forwards, Futures, Options, Money-market Hedging, Currency Swaps

MODULE 6: INTEREST RATE RISK AND RISK HEDGING STRATEGIES

- Interest Rate Swaps, Forward Rate Agreements
- Interest Rate Futures, Interest Rate Options
- Caps, Floors and Collars, Swaption

MODULE WISE OUTCOMES:

MODULE 1: GLOBAL FINANCIAL MANAGEMENT

Post completion of this module, students should be able to attain the following module outcomes;

MO1: Understand the Evolution of International Monetary System

MO2: Recognize the current Exchange Rate Agreements,

MO3: Ascertain the impact of international financial system to the business

MODULE 2: BALANCE OF PAYMENTS

After completion of module 2, students should be able to attain the following module outcomes;

MO 4: Analyze Accounting principles in Balance of Payments

MO 5: Understand the different components of the Balance of Payments statement

MO 6: Find the BOP's impact on inflow and outflow of funds.

MODULE 3: INTERNATIONAL FINANCIAL MARKETS

Post completion of module 3, students should be able to attain the following module outcomes;

MO 7: Realize the concept of Foreign Exchange Market and its instruments

MO 8: Discuss the sources of international instrument and its importance in the business.

MODULE 4: EXCHANGE RATE DETERMINATION

Post completion of Exchange rate determination, students should be able to attain the following module outcomes;

MO 9: Identify the exchange rates based on Purchasing Power Parity

MO 10: Compute the forward rates by using interest rate and international fisher effects.

MODULE 5: FOREIGN EXCHANGE RISK AND RISK HEDGING STRATEGIES

Post completion of Foreign Exchange risk and risk hedging strategies, students should be able to attain the following module outcomes;

MO 11: Know the different exposure which associates in the business.

MO 12: Formulate the different methods of risk hedging tools in the stock market.

MODULE 6: INTEREST RATE RISK AND RISK HEDGING STRATEGIES

Post completion of module 6, students should be able to attain the following module outcomes;

MO 13: Construct the hedging technics to minimize the interest rate & currency risks.

COURSE EVALUATION PLAN:

(a) END - TERM

Evaluation	Weightage (%)	Duration (in Minutes)	Open / Close Book	CLO Tested
End Term Exam	70	180	Close book	All

(b) OTHER ASSESSMENT:

Sl. No.	Evaluation Item*	Unit of Evaluation	Marks Allotted	TIME	CO
1	**Attendance**	Individual	5	Every session	None
2	**One Internal**	Individual	5	Once in the semester	All
3	**Case Study** Students are exposed to calculate the different hedging technics related to cover the Receipts and Payments of the Business transactions.	Individual	10	During the discussion of different hedging techniques in the module 4 and 5	CO5

4	**Mini Project** Students will expose to 1. Triangular arbitrage opportunities based on current exchange rates between Rs/$, Rs/£ and $/£. 2. Identifying the correlation between the exchange rates, specifically INR, USD, GBP and JPY	Individual	10	Before the Internal Test	CO 4

PRESCRIBED TEXT BOOK:

1. Alan Shapiro: Multinational Financial Management , Prentice Hall, New Delhi.
2. Apte, Prakash, "International Finance – A Business Perspective", Tata McGraw Hill.
3. David B. Zenoff& Jack Zwick: International Financial Management.
4. Rita M. Rodriguez L. Bigame Carter: International Financial Management.
5. V. A. Avadhani: International Finance- Theory and Practice, Himalaya Publishing House.

References

1. Madura, Jeff, "International Corporate Finance", Thomson South-Western.
2. Sharan, Vyuptakesh, "International Financial Management", Prentice Hall of India.
3. Jain, Peyrard, and Yadav' "International Financial Management", MacMillan
4. J. Fred Weston, Bart: Guide to International Financial Management.
5. Robery O. Edmister: Financial Institutions - markets and Management.
6. A.V. Rajwade: Foreign Exchange International Finance and Risk Management, Prentice Hall.

COURSE FACILITATORS:

Mr. Dileep

Email ID: dileep.rvim@rvei.edu.in

PART B

SESSION PLAN

MODULE 1: GLOBAL FINANCIAL MANAGEMENT

Session	Coverage of the Key Concept	Pedagogy/Activity (Discussion Points)	Reading material to be Referred
1	Evolution of International Monetary System,	Classroom discussion with PPT & Video https://www.youtube.com/watch?v=OWtJC10QMtk	**Book** IFM by V Sharan and P G Apte
2	International Monetary System, Bimetallism,	Classroom discussion with PPT	**Book** IFM by V Sharan and P G Apte
3	Classical Gold Standard, Interwar Period,	Classroom discussion with PPT	**Book** IFM by V Sharan and P G Apte
4	Bretton Woods System,	Classroom discussion with PPT and Video https://www.youtube.com/watch?v=aXJbznLBg94	**Book** IFM by V Sharan and P G Apte
5	Flexible Exchange Rate Regime,	Classroom discussion with PPT	**Book** IFM by V Sharan and P G Apte
6	The current Exchange Rate Agreements,	Classroom discussion with PPT	**Book** IFM by V Sharan and P G Apte
7	European Monetary System,	Classroom discussion with PPT & Video https://www.youtube.com/watch?v=TAlcFwGIQBg	**Book** IFM by V Sharan and P G Apte
8	Fixed vs. Flexible Exchange Rate Regime	Classroom discussion with PPT	**Book** IFM by V Sharan and P G Apte

MODULE 2: BALANCE OF PAYMENTS

Session	Coverage of the Key Concept	Pedagogy/Activity (Discussion Points)	Reading material to be Referred
9	Introduction, Accounting Principles in Balance of Payments,	Classroom discussion with PPT and Video https://www.youtube.com/watch?v=LdWQ-Plvyhk	**Book** IFM by P K Jain, Madhu Vij and P G Apte
10	Valuation and Timing, Components of the Balance of Payments,	Classroom discussion with PPT	**Book** IFM by P K Jain, Madhu Vij and P G Apte
11	'Surplus' and 'Deficit' in Balance of Payments,	Classroom discussion with PPT, Solving Basic Problems on BOP	**Book** IFM by P K Jain, Madhu Vij and P G Apte
12	Importance and limitations of BOP Statistics,	Classroom discussion with PPT, RBI Website	**Book** IFM by P K Jain, Madhu Vij and P G Apte
13	Relationship of BOP with other economic variables.	Classroom discussion with PPT	**Book** IFM by P K Jain, Madhu Vij and P G Apte

MODULE 3: INTERNATIONAL FINANCIAL MARKETS

Session	Coverage of the Key Concept	Pedagogy/Activity (Discussion Points)	Reading material to be Referred
14	Motives for using International Financial	Classroom discussion with PPT & Video https://www.youtube.com/watch?v=XfVjBpXtFmU	**Book** IFM by P K Jain, Madhu

	Markets.		Vij and Jeff Madhura
15	Foreign Exchange Market – History and Transactions, interpreting Foreign Exchange Quotations,	Classroom discussion with PPT	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura
16	International Money Markets, International Credit Markets and International Bond Markets.	Classroom discussion with PPT	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura
17	Comparison of International Financial Markets.	Classroom discussion with PPT	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura
18	Problems on Foreign Exchange Quotations	Classroom discussion using Chalk & Board and MS Excel	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura

MODULE 4: EXCHANGE RATE DETERMINATION

Session	**Coverage of the Key Concept**	**Pedagogy/Activity (Discussion Points)**	**Reading material to be Referred**
19	Purchasing Power Parity Theory,	Classroom discussion with PPT, Video and basic Problems using MS Excel	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura

20	Purchasing Power Parity Theory,	Classroom discussion with PPT, Video and basic Problems using MS Excel	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura
21	Purchasing Power Parity Theory,	Classroom discussion with PPT, Video and basic Problems using MS Excel	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura
22	Interest Rate Parity Theory,	Classroom discussion with PPT, and basic Problems using MS Excel	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura
23	Interest Rate Parity Theory,	Classroom discussion with PPT, and basic Problems using MS Excel	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura
24	Interest Rate Parity Theory,	Classroom discussion with PPT, and basic Problems using MS Excel	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura
25	International Fischer's Effect,	Classroom discussion with PPT	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura
26	Pure Expectations Theory	Classroom discussion with PPT	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura

MODULE 5: FOREIGN EXCHANGE RISK AND RISK HEDGING STRATEGIES

Session	Coverage of the Key Concept	Pedagogy/Activity (Discussion Points)	Reading material to be Referred
27	Transaction Risk,	Classroom discussion with	**Book** IFM by P K Jain,

		PPT, and basic Problems using MS Excel	Madhu Vij and Jeff Madhura
28	Transaction Risk,	Classroom discussion with PPT, and basic Problems using MS Excel	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura
29	Translation Risk	Classroom discussion with PPT, and basic Problems using MS Excel	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura
30	Translation Risk	Classroom discussion with PPT, and basic Problems using MS Excel	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura
31	Economic Risk	Classroom discussion with PPT, and basic Problems using MS Excel	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura
32	Economic Risk	Classroom discussion with PPT, and basic Problems using MS Excel	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura
33	Risk Hedging Strategies: Internal – Netting	Classroom discussion with PPT, and basic Problems using MS Excel	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura
34	Risk Hedging Strategies: Leads and Lags.	Classroom discussion with PPT, and basic Problems using MS Excel	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura
35	External – Forwards, Futures,	Classroom discussion with PPT, and basic Problems using MS Excel	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura

36	Basic Options- Call Option	Classroom discussion with PPT, and basic Problems using MS Excel	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura
37	Basic Options- Put Option	Classroom discussion with PPT, and basic Problems using MS Excel	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura
38	Money-market Hedging,	Classroom discussion with PPT, and basic Problems using MS Excel	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura
39	Currency Swaps	Classroom discussion with PPT, and basic Problems using MS Excel	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura
40	Currency Swaps	Classroom discussion with PPT, and basic Problems using MS Excel	**Book** IFM by P K Jain, Madhu Vij and Jeff Madhura

MODULE 6: INTEREST RATE RISK AND RISK HEDGING STRATEGIES

Session	**Coverage of the Key Concept**	**Pedagogy/Activity (Discussion Points)**	**Reading material to be Referred**
41	Interest Rate Swaps,	Classroom discussion with PPT, and basic Problems using Chalk & Board	**Book** IFM by P G Apte, Madhu Vij and Ravi M K
42	Interest Rate Swaps,	Classroom discussion with PPT, and basic Problems using Chalk & Board	**Book** IFM by P G Apte, Madhu Vij and Ravi M K
43	Forward Rate		**Book**

	Agreements,	Classroom discussion with PPT, and basic Problems using Chalk & Board	IFM by P G Apte, Madhu Vij and Ravi M K
44	Interest Rate Futures, Interest Rate Options,	Classroom discussion with PPT, and basic Problems using Chalk & Board	**Book** IFM by P G Apte, Madhu Vij and Ravi M K
45	Caps, Floors and Collars, Swaption.	Classroom discussion with PPT, and basic Problems using Chalk & Board	**Book** IFM by P G Apte, Madhu Vij and Ravi M K
46	Revision of the syllabus and Discussion on Case Study		

WORLD MAP


AFRICA
(Political Map)
NORTH ATLANTIC OCEAN
SOUTH ATLANTIC OCEAN
INDIAN OCEAN
Mediterranean Sea
Red Sea
SPAIN
TURKEY
IRAQ
IRAN
SAUDI ARABIA
YEMEN
MOROCCO
TUNISIA
ALGERIA
LIBYA
EGYPT
WESTERN SAHARA
MAURITANIA
MALI
NIGER
CHAD
SUDAN
ERITREA
DJIBOUTI
CAPE VERDE
SENEGAL
THE GAMBIA
GUINEA BISSAU
GUINEA
BURKINA FASO
BENIN
NIGERIA
SIERRA LEONE
LIBERIA
COTE D'IVOIRE
GHANA
TOGO
CAMEROON
CENTRAL AFRICAN REPUBLIC
ETHIOPIA
SOMALIA
EQUATORIAL GUINEA
GABON
REP.OF CONGO
UGANDA
KENYA
RWANDA
BURUNDI
TANZANIA
CABINDA (Angola)
DEM. REP.OF THE CONGO
ANGOLA
ZAMBIA
MALAWI
ZIMBABWE
MOZAMBIQUE
NAMIBIA
BOTSWANA
MADAGASCAR
SWAZILAND
LESOTHO
SOUTH AFRICA
LEGEND
Int. Boundary
Country Capital
Major River
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EUROPE
Political Map
ICELAND
NORWAY
SWEDEN
FINLAND
Gulf of Bothnia
Gulf of Finland
RUSSIAN FEDERATION
ESTONIA
LATVIA
LITHUANIA
BELARUS
North Sea
DENMARK
Baltic Sea
UNITED KINGDOM
IRELAND
NETHERLANDS
GERMANY
POLAND
BELGIUM
LUXEMBOURG
CZECH REP.
SLOVAKIA
UKRAINE
MOLDOVA
LIECHTENSTEIN
AUSTRIA
HUNGARY
ROMANIA
SWITZERLAND
FRANCE
ITALY
SAN MARINO
MONACO
ANDORRA
PORTUGAL
SPAIN
ALBANIA
BULGARIA
VATICAN CITY
GREECE
MALTA
Black Sea
Mediterranean Sea
ASIA
English Channel
Bay of Biscay
1.Slovenia
2.Croatia
3.Bosnia-Herzegovina
4.Serbia
5.Macedonia
6.Montenegro
Map not to Scale
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ASIA
RUSSIA
EUROPE
N
Sea of Okhotsk
KAZAKHSTAN
MONGOLIA
NORTH PACIFIC OCEAN
UZBEKISTAN
KYRGYZSTAN
TURKEY
TAJIKISTAN
CHINA
NORTH KOREA
Sea of Japan
SOUTH KOREA
JAPAN
Yellow Sea
IRAN
AFGHANISTAN
PAKISTAN
NEPAL
BHUTAN
INDIA
East China Sea
TAIWAN
Philippine Sea
BANGLA-DESH
MYANMAR
LAOS
THAILAND
VIETNAM
CAMBODIA
South China Sea
PHILIPPINES
Arabian Sea
Bay of Bengal
PALAU
MICRONESIA
AFRICA
MALDIVES
SRI LANKA
BRUNEI
MALAYSIA
SINGAPORE
SEYCHELLES
INDIAN OCEAN
INDONESIA
PAPUA NEW GUINEA
EAST TIMOR
LEGEND
International Boundary
0 300 900 km
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AUSTRALIA
Political Map
N
Arafura Sea
Timor Sea
Darwin
Gulf of Carpentria
Coral Sea
INDIAN OCEAN
Northern Territory
Queensland
Western Australia
South Australia
Brisbane
New South Wales
Sydney
CANBERRA
Perth
Adelaide
Victoria
PACIFIC OCEAN
Melbourne
Bass Strait
Tasman Sea
Tasmania
Hobart
0 250 500 750 Km
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NORTH AMERICA
Political Map
N
ARCTIC OCEAN
Greenland (Denmark)
Alaska(USA)
Gulf of Alaska
Labrador Sea
Hudson Bay
Canada
PACIFIC OCEAN
ATLANTIC OCEAN
United States of America
Gulf of Mexico
Bahamas
Dominican Republic
Cuba
Haiti
Jamaica
West Indies
Caribbean Sea
Mexico
Belize
Guatemala
Honduras
El Salvador
Nicaragua
Costa Rica
Panama
SOUTH AMERICA
LEGEND
International Boundary
0 700 1400 Km
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SOUTH AMERICA
Political Map
N
Barranquilla
Cartagena
Maracaibo
Valencia
CARACAS
VENEZUELA
Medellín
Puerto Ayacucho
GEORGETOWN
PARAMARIBO
CAYENNE
Gulf of Panama
BOGOTÁ
COLOMBIA
GUYANA
FRENCH GUIANA (FR)
NORTH ATLANTIC OCEAN
Galapagos Islands (EC)
Boa Vista
Macapa
SURINAME
QUITO
ECUADOR
Guayaquil
Gulf of Guayaquil
Tonantins
Manaus
Santarém
Belém
São Luís
Fortaleza
Teresina
Natal
Cruzeiro do Sul
PERU
Rio Branco
Porto Velho
Recife
Maceió
Chimbote
B R A Z I L
Salvador
Aracaju
LIMA
Ica
Arequipa
BOLIVIA
Cuiabá
BRASÍLIA
LA PAZ
Santa Cruz
Goiânia
Belo Horizonte
Arica
SUCRE
Campo Grande
Vitória
Antofagasta
PARAGUAY
Sao Paulo
Rio de Janeiro
ASUNCIÓN
Santos
San Salvador de Jujuy
Curitiba
Paranaguá
CHILE
Santa Maria
Porto Alegre
ARGENTINA
Archipélago Juan Fernández (Chile)
Mendoza
San Luis
URUGUAY
Río Grande
SANTIAGO
MONTEVIDEO
San Rafael
BUENOS AIRES
SOUTH PACIFIC OCEAN
Concepción
Santa Rosa
Mar del Plata
SOUTH ATLANTIC OCEAN
Neuquen
Bahía Blanca
Puerto Montt
LEGEND
Int. Boundary
Country Capital
Major Cities
Comodoro Rivadavia
Falkland Islands (UK)
0 500 Km
0 250 Miles
Río Gallegos
Stanley
South Georgia Islands (UK)
Punta Arenas
Cabo de Hornos
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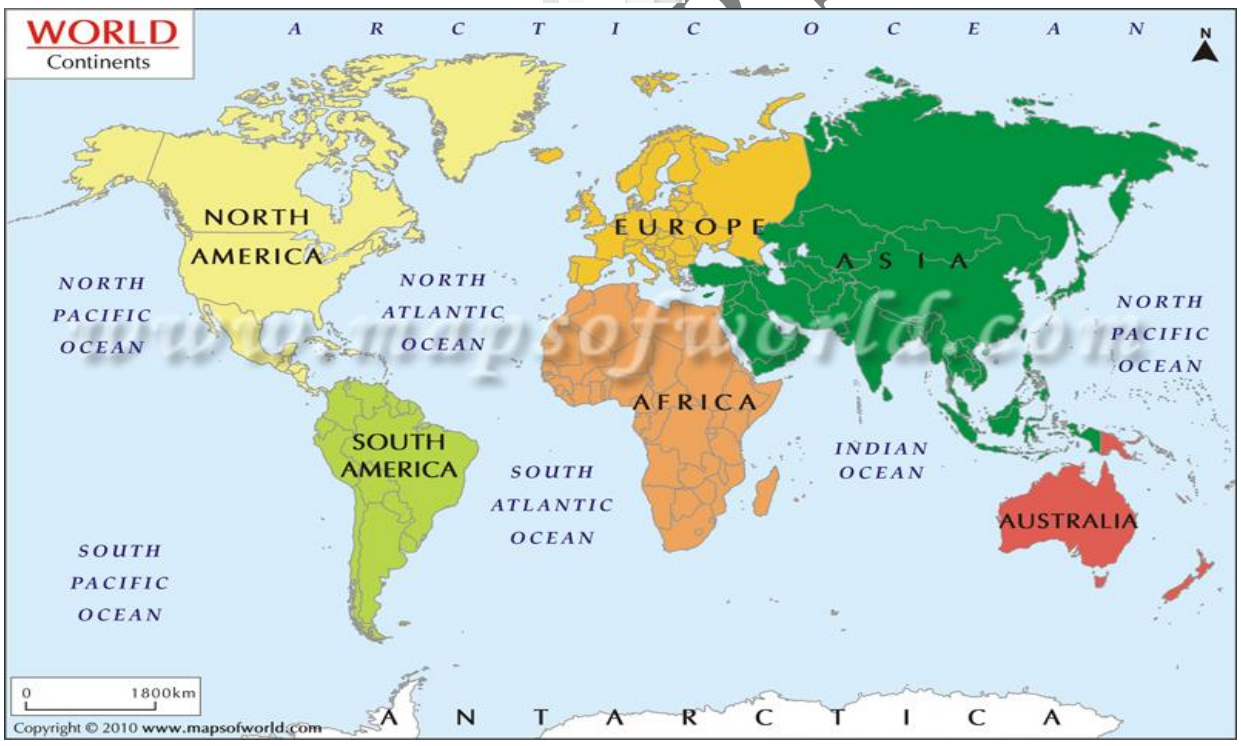
Arctic
North America
Europe
Asia
Atlantic
Africa
Pacific
EQUATOR
Pacific
South America
Oceania
Indian
Australia
Southern
Antarctica


WORLD
Continents
ARCTIC OCEAN
N
NORTH AMERICA
EUROPE
ASIA
NORTH PACIFIC OCEAN
NORTH ATLANTIC OCEAN
NORTH PACIFIC OCEAN
AFRICA
SOUTH AMERICA
SOUTH ATLANTIC OCEAN
INDIAN OCEAN
AUSTRALIA
SOUTH PACIFIC OCEAN
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1800km
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ANTARCTICA

Currency Symbols

A			
	Argentine Peso	ARS	$
	Australian Dollar	AUD	$
B			
	Bahraini Dinar	BHD	n/a
	Barbadian Dollar	BBD	$
	Brazilian Real	BRL	R$
	British Pound	GBP	£
C			
	Canadian Dollar	CAD	$
	Central African CFA franc	XAF	n/a
	Chilean Peso	CLP	$
	Chinese Yuan	CNY	元
	Cyprus Pound	CYP	n/a
	Czech Koruna	CZK	Kč
D			
	Danish Krone	DKK	kr
E			
	East Caribbean Dollar	XCD	$
	Egyptian Pound	EGP	£
	Estonian Kroon	EEK	kr
	Euro	EUR	€
H			
	Hong Kong Dollar	HKD	元
	Hungarian Forint	HUF	Ft
I			
	Icelandic Krona	ISK	kr

Indian Rupee	INR	₹
Indonesian Rupiah	IDR	Rp
Israeli Sheqel	ILS	₪
J		
Jamaican Dollar	JMD	J$
Japanese Yen	JPY	¥
Jordanian Dinar	JOD	n/a
K		
Kenyan Shilling	KES	n/a
L		
Latvian Lats	LVL	Ls
Lebanese Pound	LBP	£
Lithuanian Litas	LTL	Lt
M		
Malaysian Ringgit	MYR	RM
Mexican Peso	MXN	$
Moroccan Dirham	MAD	n/a
N		
Namibian Dollar	NAD	$
Nepalese Rupee	NPR	Rs
New Zealand Dollar	NZD	$
Norwegian Krone	NOK	kr
O		
Omani Rial	OMR	ريال
P		
Pakistani Rupee	PKR	Rs
Panamanian Balboa	PAB	B/.
Philippine Peso	PHP	Ph

	Polish Zloty	PLN	zł
	Q		
	Qatari Riyal	QAR	ريال
	R		
	Romanian Leu	RON	
	Russian Rouble	RUB	
	S		
	Saudi Riyal	SAR	ريال
	Singapore Dollar	SGD	$
	South African Rand	ZAR	R
	South Korean Won	KRW	₩
	Sri Lankan Rupee	LKR	Rs
	Swedish Krona	SEK	kr
	Swiss Franc	CHF	CHF
	T		
	Thai Baht	THB	฿
	Turkish Lira	TRY	YTL
	U		
	United Arab Emirates Dirham	AED	n/a
	US Dollar	USD	$
V			
	Venezuelan bolivar	VEF	Bs
W			
	West African CFA franc	XOF	n/a

INTERNATIONAL FINANCIAL MANAGEMENT

Sub Code: **12MBAFM426/ 12MBABI436** IA Marks : 50
No.of Lecture Hrs/week : 04 Exam Hrs. : 03 Hours
Total No. of Lecture Hrs. : 56 Exam Marks : 100
Practical Component : 01 Hr/ Week

Module I (6Hours)

International financial Environment- The Importance, rewards & risk of international finance- Goals of MNC- International Business methods – Exposure to international risk- International Monetary system- Multilateral financial institution.

Module II (8Hours)

The international flow of funds and the International Monetary system: - International Flow of Funds: Balance of Payments (BoP), Fundamentals of BoP, Accounting components of BOP, Factors affecting International Trade and capital flows, Agencies that facilitate International flows. BOP, Equilibrium & Disequilibrium. Trade deficits. Capital account convertibility. (Problems on BOP) International Monetary System: Evolution, Gold Standard, Bretton Woods system, the flexible exchange rate regime, the current exchange rate arrangements, the Economic and Monetary Union (EMU).

Module III (6Hours)

Foreign Exchange Market: Function and Structure of the Forex markets, Foreign exchange market participants, Types of transactions and Settlements Dates, Exchange rate quotations, Nominal , Real and Effective exchange rates, Determination of Exchange rates in Spot markets. Exchange rates determinations in Forward markets. Exchange rate behavior- Cross Rates- Arbitrage profit in foreign exchange markets, Swift Mechanism. Triangular and locational arbitrage.

Module IV (6Hours)

International Financial Markets and Instruments :- Foreign Portfolio Investment. International Bond & Equity market. GDR, ADR, Cross listing of shares Global registered shares. International Financial Instruments: Foreign Bonds & Eurobonds , Global Bonds. Floating rate Notes, Zero coupon Bonds International Money Markets International Banking services –Correspondent Bank, Representative offices, Foreign Branches. Forward Rate Agreements

Module V (8 Hours)

International Parity Relationships & Forecasting Foreign Exchange rate:- Measuring exchange rate movements-Exchange rate equilibrium – Factors effecting foreign exchange rate- Forecasting foreign exchange rates .Interest Rate Parity, Purchasing Power Parity & International Fisher effects. Covered Interest Arbitrage.

Module VI (8Hours)
Foreign Exchange exposure:-Management of Transaction exposure- Management of Translation exposure- Management of Economic exposure- Management of political Exposure- Management of Interest rate exposure.

Module VII (8Hours)
Foreign exchange risk Management: Hedging against foreign exchange exposure – Forward Market- Futures Market- Options Market- Currency Swaps-Interest Rate Swap-problems on both two ways and three way swaps. Cross currency Swaps-Hedging through currency of invoicing- Hedging through mixed currency invoicing –Country risk analysis.

Module VIII (6Hours)
International Capital Budgeting: Concept, Evaluation of a project, Factors affecting, Risk Evaluation, Impact on Value, Adjusted Present Value Method.

Practical Component: Students can study the Balance of Payment statistics of India for the last five year and present the same in the class.
Students can carry out a survey of Exporters and report the foreign exchange risk management practices adopted by them.
Students can study the impact of exchange rate movement on the stock Index.
· Students can predicting exchange rates using technical analysis and find arbitrage opportunities using newspaper quotes present the same in the class.
· Students can visit a bank and study the foreign exchange derivatives offered by them.

RECOMMENDED BOOKS:
1. International Finance Management - Eun&Resnick, 4/e, Tata McGraw Hill.
2. Multinational Business Finance – Eiteman, Moffett and Stonehill, 12/e, Pearson, 2011.
3. International Corporate Finance - Jeff madura, Cengage Learning, 10/e 2012.
4. International Financial Management – VyupthakeshSharan, 5/e, PHI, 2011.
5. Multinational Financial Management – Alan C. Shapiro, 8/e, Wiley India Pvt. Ltd., 2011.
6. International Financial Management – MadhuVij, Excel Books, 2010.

REFERENCE BOOKS:
1. International Financial Management – Siddaiah T, 1/e, Pearson, 2011.
2. International Finance – ImadMoosa, 3/e, Tata McGraw Hill, 2011.
3. International Finance – Shailaja G, 2/e, University Press, 2011.
4. International Financial Management – Apte P. G, 6/e, TMH, 2011.
5. International Finance – Maurice Levi, 5/e, Routledge, 2009.
6. International Financial Management – Jain, Peyrard&Yadav, Macmillan 2010
7. International Finance – Thomas O'Brien, Oxford University Press, 2010.

"An investment in knowledge pays the best interest." Benjamin Franklin.

MODULE 1

	3 MARKS	
1	What is international Finance?	
2	How is international financial management deferent from domestic financial management?	
3	Explain the role of IBRD.	
4	What are the recent changes in global financing market?	
5	What are the technique elements of international financial system?	
6	What is crawling peg exchange rate regime?	
	What are the goals of MNC?	
	7 MARKS	
1	Explain the nature and scope IFM.	
2	Elucidate the Bretton Woods system of foreign exchange.	
3	Discuss the recent trends in international security market.	
4	Discuss the factors affecting exchange rate.	
5	What are the distinguish features of international finance? Explain.	
6	What are the factors affecting for exchange rate?	
7	Discuss the factors influencing exchange rate movements.	
8	What are the emerging challenges to today's finance manager?	
	Explain the organizational structure and functions of IMF.	
	10 MARKS	
1	Explain the role and function of international monetary fund with special reference to IFM	
2	Explain briefly different types of multilateral financial institutions.	

MODULE 2

	3 MARKS	
1	What is BOP?	
2	How is capital account convertibility different from current account convertibility?	
3	What are the components of BOP statement?	
4	What are special Drawing Rights (SDRs)?	
5	Explain the importance of BOP.	
	7 MARKS	
1	Define exchange rate equilibrium and explain the factors effecting foreign exchange rate.	
2	Why does equilibrium in BOP exist? What is J curve effect?	
3	What is SDR? Why it is used today?	
4	Elaborate on the factors affecting international flow of funds.	
5	How does disequilibrium in the BOP arise? What are the measures for correcting this disequilibrium?	
6	How do balance of trade default adjusted?	
	10 MARKS	
1	Write a short note on i) Unilateral Transfer payment ii) Current Account iii) Capital Account	

2	Define BOP. Explain the components of current account.	
3	What are the gains from international capital flow?	

MODULE 3

	3 MARKS	
1	What is foreign exchange market?	
2	What is SWIFT mechanism?	
3	What is Forward Rate Agreement? (FRA)	
4	Who are authorized to do foreign exchange?	
5	Name the major participants in a foreign exchange market.	
6	Distinguish between spot market and the forward market.	
7	What is cross rate?	
	7 MARKS	
1	Who are the major participants in the foreign exchange market?	
2	Explain : i) Cross rate ii) Direct Quote iii) Indirect Quote	

MODULE 4

	3 MARKS	
1	Under what condition does international Fisher effect hold?	
2	List the various forecasting techniques.	
	7 MARKS	
1	What are the key factors that you would monitor if you wanted to have a clear idea of the future direction of the rupee?	
	10 MARKS	
1	Critically examine the theory of purchasing Power Parity.	
2	Explain the Interest Rate Parity (IRP) theory with a neat diagram.	

MODULE 5

	3 MARKS	
1	What is the difference between risk and exposure with respect to foreign exchange management?	
2	Define translation exposure.	
3	Define the term exposure and briefly mention what you mean by the different points in the definitions.	
4	What are the methods used for translation of foreign currency financial statements?	
	7 MARKS	
1	What types of foreign exchange exposures a multinational corporation is subject to?	
2	What is political risk?	
3	What is translation exposure? Explain the translation methods.	

4	What is political risk? How MNC Hedge Political risk? Explain.	
5	How is transaction exposure different from economic exposure?	
6	How do you classify currency exposure? Explain the different exposure in brief.	
7	What is economic exposure? Give the marketing and production initiatives of managing economic exposure.	
8	Explain briefly power parity and interest rate parity theory.	
	10 MARKS	
1	What are the strategies of the company can use to manage its operating exposure?	

MODULE 6

	3 MARKS	
1	What are caps and floors?	
2	What is multilateral netting?	
3	Distinguish between forward and future contract.	
4	Distinguish between interest rate swap and currency swap.	
5	What is currency swap?	
6	What is multilateral netting?	
7	Difference between forward and future contract.	
	7 MARKS	
1	Review the techniques used for hedging transaction exposure.	
2	What is country risk? Explain the techniques to assess country risk.	
3	Write short notes on LIBOR and SWIFT.	
4	What is swap? Explain the types of swaps.	
	10 MARKS	
1	Explain the different internal techniques of hedging the exchange rate risk	
2	What are the kinds of risks a firm is exposed due to interest volatility?	
3	Compare and contrast between forward contracts	
4	Elucidate the various factors considered in techniques for country risk assessment.	
5	Define country risk. Explain the various techniques to handle country risk.	

MODULE 7

	3 MARKS	
1	What is international capital budgeting?	
	7 MARKS	
1	Briefly enumerate the variables that are unique to a multinational capital budgeting decisions.	
2	What are the issues involved international capital budgeting?	

MODULE 8

	3 MARKS	
1	What is Foreign Direct Investment?	
2	What is the difference between FDI and FII?	
3	To what extent does capital structure (debt v/s equity) of the subsidiary really matter and what are the key important effects?	
4	What are the sources of short term finance for a MNC?	
5	Differentiate between ADRs and GDRs.	
6	What are the factors influencing FDI?	
7	What are the advantages of depositary receipts?	
8	What are the features of international banking?	
	7 MARKS	
1	Define international cash management. Explain the factors to be considered in efficient cash management.	
2	Explain the various strategies for international cash management.	
3	Briefly explain the motives for FDI.	
4	What is FDI? Explain the various factors affecting FDI.	
5	Explain i) EBC ii) ADR iii) GDR	
6	What is depository receipt? Explain with example the ADR mechanism.	
7	Summarize the motives for FDI by a MNC.	
8	International cash management is a critical function in short term assets management.	
	10 MARKS	
1	Why do firms become multinational? Explain various reasons why firms invest abroad?	
2	Write a short note on i) Global Bonds ii) SWIFT iii) Nostro and Vostro a/c iv) J-Curve effect.	
3	Elucidate the methods used to invest internationally.	
4	Explain the various methods for international investment.	
1	What is chain rule? 3	
2	What does the term Euro dollar mean? 3	
3	Money and foreign exchange market in London and New York are very efficient. 10	
4	What is euro bond market? 3	

"Beware of little expenses; a small leak will sink a great ship."- Benjamin Franklin.

MODULE 1

International Finance: It is a branch of economics which studies the dynamics of exchange rates, foreign investment and how those affect the international trade.

International Financial Environment

IFM is concerned with management of International Business and it related financial function commonly known as the International Financial Functions. As understanding of IFM has become important has world entered an era of global economic activity with worldwide production and distribution.

Factors affect international finance deals:

a. Exchange rate risk
b. International taxation
c. Political risk or country risk
d. Inflation
e. Interest Rates
f. Comparative Advantage

InternationalFinancialManagement:

International Financial Management deals with the financial decision taken in the area of international business. It helps in taking the correct financial decision so that maximum gain may be derived from international business.

Managing the MNC

The commonly accepted goal of an MNC is to maximize shareholder wealth. Managersemployed by the MNC are expected to make decisions that will maximize thestock price and therefore serve the shareholders. Some publicly traded MNCs basedoutside the United States may have additional goals, such as satisfying their respectivegovernments, banks, or employees. However, these MNCs now place more emphasison satisfying shareholders so that they can more easily obtain funds from shareholdersto support their operations. There are even some firms in Russia,

Poland, and Sloveniathat have issued stock to investors and are focused on satisfying their shareholders.

FACING AGENCY PROBLEMS

Managers of an MNC may make decisions that conflict with the firm's goal to maximizeshareholder wealth. For example, a decision to establish a subsidiary in one locationversus another may be based on the location's appeal to a particular managerrather than on its potential benefits to shareholders. A decision to expand a subsidiarymay be motivated by a manager's desire to receive more compensation rather than toenhance the value of the MNC. This conflict of goals between a firm's managers andshareholders is often referred to as the **agency problem.**

The costs of ensuring that managers maximize shareholder wealth (referred toas *agency costs*) are normally larger for MNCs than for purely domestic firms for severalreasons. First, MNCs with subsidiaries scattered around the world may experiencelarger agency problems because monitoring managers of distant subsidiariesin foreign countries is more difficult. Second, foreign subsidiary managers raised indifferent cultures may not follow uniform goals. Third, the sheer size of the largerMNCs can also create large agency problems. Fourth, some non-U.S. managers tendto downplay the short-term effects of decisions, which may result in decisions for foreignsubsidiaries of the U.S.-based MNCs that are inconsistent with maximizingshareholder wealth.

Parent Control of Agency Problems. The parent corporation ofan MNC may be able to prevent agency problems with proper governance. It shouldclearly communicate the goals for each subsidiary to ensure that all subsidiaries focuson maximizing the value of the MNC rather than their respective subsidiary values.

The parent can oversee the subsidiary decisions to check whether the subsidiary managersare satisfying the MNC's goals. The parent can also implement compensationplans that reward the subsidiary managers who satisfy the MNC's goals. A commonincentive is to provide managers with the MNC's stock (or options to buy the stock ata fixed price) as part of their compensation,

so that they benefit directly from a higherstock price when they make decisions that enhance the MNC's value.

Corporate Control of Agency Problems. There are also variousforms of corporate control that can help prevent agency problems and therefore ensurethat managers make decisions to satisfy the MNC's shareholders. If the MNC's managersmake poor decisions that reduce its value, another fi rm may be able to acquire it at alow price and will likely remove the weak managers. In addition, institutional investorssuch as mutual funds or pension funds that have large holdings of an MNC's stock havesome influence over management because they can complain to the board of directorsif managers are making poor decisions. They may attempt to enact changes in a poorlyperforming MNC, such as the removal of high-level managers or even board members.

The institutional investors may even work together when demanding changes inan MNC because an MNC would not want to lose all of its major shareholders.

Government Influence on Exchange Rates

Exchange Rate Systems

Exchange rate systems can be classified according to the degree by which exchangerates are controlled by the government. Exchange rate systems normally fall into oneof the following categories:

- Fixed
- Freely floating
- Managed fl oat
- Pegged

IFM covers the study of:	**Goals (or) Importance of IFM**
1. Foreign Exchange Market 2. Exchange Rate Determination 3. Exchange Rate risk and its management 4. MNC's investment decision	➢ Growth of Business ➢ Globalization ➢ Diversification ➢ Exchange rate of Exposure ➢ Speculation of tradeoff countries

5. International working capital decision 6. Financing decision on MNCs 7. International Accounting & Taxation 8. International indebtedness.	➢ BOP analysis ➢ Investment in FDI
Risk and Rewards of International Finance ❖ Foreign Exchange Risk ❖ Political Risk ❖ Market imperfection Risk ❖ Expanded opportunity sets	**Goals or Objectives of MNC** ➢ Maximize the shareholder's wealth ➢ Cash Flow ➢ Recognize additional foreign opportunity ➢ Availability of Resources ➢ Availability of HR ➢ Fund Availability ➢ Technology utilization ➢ Investment Decision ➢ Benefits of the large scale Business activity ➢ Diversification

International Business Methods	
I Exporting ➢ Indirect Export ➢ Direct Export ➢ Intra corporate transits	**IV Special Modes** ➢ Contract Manufacturing ➢ Management Contracts ➢ Turnkey Projects
II Licensing ➢ International Licensing	**V FDI without Alliance** ➢ Green Field Strategy
III Franchising ➢ International Franchising	**VI FDI with Alliance** ➢ Merge & Acquisition

	➢ Joint Venture.

Nature of International Risk Exposure

1) Foreign Exchange Risk: The risk that foreign currency profits may evaporate in dollar terms due to unanticipated unfavorable exchange rate movements.

a) Transaction Exposure: It refers to the extent to which the future value of firm's domestic cash flow is affected by exchange rate fluctuation.
b) Translation Exposure: It is a degree to which firm foreign currency dominated financial statements are affected by exchange rate change.

2) Interest Rate Risk a) Fixed Interest Riskb) Floating Interest Risk

3) Credit Risk

4) Liquidity Risk

5) Legal Risk (Political risk): Sovereign governments have the right to regulate the movement of goods, capital, and people across their borders. These laws sometimes change in unexpected ways.

6) Settlement Risk

International Monetary System

Economic and financial transactions of different countries require some sort of arrangements that could facilitate settlement of payments. These arrangements form the subject matter of the international monetary system.

IMS helps the firms to carry on worldwide transaction in goods and services and finances by providing international liquidity

The earliest form of international trade, exchange was based on barter system. But there was a problem of store of value in the barter system as the goods are perishable. Then the international payment system was based on precious metals.

- **Bimetallism (Before 1875)**

It is a double standard system of free coin age for both silver and gold. Both silver and gold were used as international means of payment and the exchange rate among countries currency were determined by either gold or silver reserves.

- **The Gold Standard :**

During 19th and early 20th century, the increase in trade resulted in the emergence of more formalized system for settling the balances of trade. Every country set a par value for their currency in terms of gold. Certain weight of gold was assigned to each trading currency. This came to be known as Classical Gold Standard and was accepted as an international monetary system in Western Europe in 1870s.

The rule of Gold standard was very simple. Each and every country set a rate at which its currency unit could be converted into gold. As each country's government agreed to buy or sell gold on demand, the value of individual currency in terms of gold and the exchange rates of those currencies were fixed. And there was free movement of gold. Every country was supposed to maintain adequate reserves of gold to back up its currency's value.

EG: Fixing exchange rate.

Dollar was valued at $20.67 per ounce of gold

Pound was valued at £4.2474 per ounce of gold

So Exchange rate between pound and dollar is

$20.67 / ounce of gold

£4.2474 /ounce of gold

= $4.8665/ £

The gold standard was used till the outbreak of World War I. But during the world war, the free movement of gold and the international trade was widely affected and the gold standard was suspended.

- **Free floating currencies between the war**:

The currencies were allowed to fluctuate widely in terms of gold and among each other during the time of World War I and during 1920. Market forces determined exchange rates. As the exchange rate were fluctuating and very much flexible, it was very difficult to achieve equilibrium.

Further, the speculators started shorting weak currency and went long on strong currency which resulted in further more weakening of weak currency and strengthening of strong currency. The fluctuations in currency could not be offset because of illiquid forward currency markets. This resulted in huge decline of trade and lead to Great Depression of 1930.

- **Modified Gold Standard:** It was adopted in 1935 by United States. According to this system, the export and import of the gold was completely banned. The US treasury would buy and sell gold for foreign currency with a government agency only like Foreign Central Banks. United States devalued its dollar value to $35 per ounce from $20.67 per ounce. During the World Was II the international trade declined much more and as a result of the war, many of the trading currencies lost their convertibility into other currencies. Only the dollar was able to sustain. And after the World War II the dollar was the only major trading currency which was convertible into other currencies.

- **Bretton Woods:**
  After the World War II, the Allied Powers met at Bretton woods, New Hampshire. The major discussion was made to create a Post War International Monetary System.

  The main objective of the Bretton Wood System was - provision of liquidity and creation of complete and sophisticated mechanism for the international trade and exchange. The Bretton Woods agreement created U S Dollar based international monetary system. And also resulted in the creation of two International Institutions viz., International Monetary Fund and World Bank (International Bank for Reconstruction and Development).

  IMF was established with the objective of providing assistance to the member countries to protect their currencies against cyclical, seasonal, random barriers. It also helps the member countries in defending their trade barriers. It has assisted the countries facing financial crisis. It helps its member countries to maintain proper Balance of payment position.

  As per the Bretton Woods Agreement, all the countries fixed their value of currency in terms of gold. As dollar remained convertible at $35 per ounce of gold, all other

currencies declared their exchange rate against U S Dollar, and then decided gold par value for their currency to create desired dollar exchange rate.

The Agreement strictly stated that devaluation of currency should not be used as a weapon against the competition in international trade. An in case, if the currency becomes too weak, in order to defend the weakening currency, a devaluation range of 10% was allowed. Larger devaluation above 10% requires formal approval from IMF.

And International Reserve was created known as the Special Drawing Right (SDR) by IMF. This was mainly created to supplement the foreign exchange reserves. It serves as an account for various international institutions including IMF and also acts as a base against which countries can peg their exchange rate.

SDR is weighted in terms of fixed gold quantity and after various revisions, now it is weighted in terms of value of currencies of U S Dollar, Euro, Japanese Yen, and U.K. Pound. Individual countries hold SDRs in the form of Deposits in IMF and these are regarded as international monetary reserves of each country. Member countries may settle their transactions among themselves by transferring SDRs.

Fixed Exchange Rates:

The Bretton Woods agreement worked well in the post World War II period. And there was a huge growth and development of international trade. The differential rates if inflation and other barriers resulted in the efficiency of the system. United States started to face adverse balance of payment. There was a requirement of heavy outflows in terms of dollars to meet the deficit balance of payment and growing demand for dollars from businesses and investors. Gradually, there was lack of confidence on United States to meet its commitment to convert dollars to gold.

This resulted in suspension of official purchase or sales of gold By U S treasury. Exchange rate of most of the trading countries was allowed to float in relation to the dollar and indirectly in relation to gold.

Thus there was a devaluation of U S Dollar again by 10% in 1973 and US Dollar was valued at $ 42.22 per ounce of gold.

By late 1973, fixed rate system cased to work and foreign exchange market was closed for several weeks.

An Electric Currency Arrangement:

After 1973, there was huge amount of volatility in exchange rates when the foreign exchange market reopened and most of the currencies were allowed to float to the levels determined by the market forces i.e. demand and supply. The huge amount of volatility in exchange rates was due to various shocking events such as devaluation of U S Dollar, Currency market crisis, depreciation of U S Dollar, Raise in price of oil, Debt crisis in Latin America, US Dollar and Japanese Yen peaked by reaching all time high, Asian and Russian Crisis etc.

Multilateral Financial Institutions are….

1. World Bank.
2. International Bank for Reconstruction and Development. (IBRD)
3. International Development Association (IDA)
4. International Financial Corporation. (IFC)

1. World Bank:

The World Bank group is multinational financial institution established at the end of World War II (1944) to help provide long-term capital for the reconstruction and development of member of countries. The group is important to Multinational Corporation because it provides much of planning and financing for economic projects involving billion of dollars for which private business can act as constructors and suppliers goods and engineering related service.

The World Bank is world's largest source of assistance, providing nearly $30 billion in loans, annually, to its client countries. The bank uses its financial resources it's highly trained staff and its extensive knowledge base to individually help each developing country on to a path of stable, sustainable and equitable growth. The main focus is on developing the poorest people and the poorest countries but for all its clients, the Bank emphasizes the need for investing in people, particularly through basic health and education; protecting the environment; supporting and encouraging private business development; strengthening the ability of the governments to deliver quality service efficiently and transparently; promoting reforms to create a stable macroeconomic environment conducive to investment and long term planning.

The purpose of setting Bank:

1. To assist in the reconstruction and development
2. To promote private foreign investment by means of guarantees or participation in loans and other investments made by private investors.
3. To promote long - range balanced growth of international trade and the maintenance of equilibrium in balance of payment.
4. To arrange loans made or guaranteed by it.
5. To assist in bringing about a smooth transaction from a wartime to a peacetime economy.

2. International Bank for Reconstruction and Development. (IBRD)

The International Bank for Reconstruction and Development (IBRD) aims to reduce poverty in middle-income and creditworthy poorer countries by promoting sustainable development through loans, guarantees, risk management products, and analytical and advisory services. Established in 1944 as the original institution of the World Bank Group, IBRD is structured like a cooperative that is owned and operated for the benefit of its 186 member countries.

IBRD raises most of its funds on the world's financial markets and has become one of the most established borrowers since issuing its first bond in 1947. The income that IBRD has generated over the years has allowed it to fund development activities and to ensure its financial strength, which enables it to borrow at low cost and offer client's good borrowing terms.

At its Annual Meeting in September 2006, the World Bank — with the encouragement of its shareholder governments — committed to make further improvements to the services it provides its members. To meet the increasingly sophisticated demands of middle-income countries, IBRD is overhauling financial and risk management products, broadening the provision of free-standing knowledge services and making it easier for clients to deal with the Bank.

3. International Development Association (IDA)

The International Development Association (IDA) is the part of the World Bank that helps the world's poorest countries. It complements the World Bank's other lending arm — the International Bank for Reconstruction and Development (IBRD) — which serves middle-income countries with capital investment and advisory services.

IDA was created on September 24, 1960 and is responsible for providing long-term, interest-free loans to the world's 80 poorest countries, 39 of which are in Africa. IDA provides grants and credits (subject to general conditions), with repayment periods of 35 to 40 years. Since its inception, IDA credits and grants have totaled $161 billion, averaging $7–$9 billion a year in recent years and directing the largest share, about 50%, to Africa. While the IBRD raises most of its funds on the world's financial markets, IDA is funded largely by contributions from the governments of the richer member countries. Additional funds come from IBRD income and repayment of IDA credits.

IDA loans address primary education, basic health services, clean water supply and sanitation, environmental safeguards, business-climate improvements, infrastructure and institutional reforms. These projects are intended to pave the way toward economic growth, job creation, higher incomes and better living conditions.

4. **International Financial Corporation (IFC)**

Since IFC is an institute of the World Bank Group, its organizational set up is similar to that of the World Bank. The main function of IFC supplements the financing activities of the World Bank. It seeks to achieve the objective through providing and bringing together finance, technical assistance and management. The focus is definitely on the private sector. The loans maturity between 7 and 12 years, although it can be extended to 20 and grace period can go up to 4 years.

The IMF and World Bank – How do they differ?

International Monetary Fund	World Bank
Overseas the International Monetary System	Seek to promote the economic development of the world's poorest countries.
Promote exchange stability and orderly exchange relations among its member countries.	Assists developing countries through long term financing of development projects and programmes
Assists all members both industrial and developing countries.	Provides to the poorest developing countries whose per capita GNP is less than $865 a year special finance assistance to through IDA
Supplements the currency reserve of its	Encourage private enterprise in developing

members through the allocation of SDRs; to date SDR 21.4 billion has been issued to member countries in proportion to their quotas.	countries through its affiliate, IFC
Draws its financial resources principally from the quota subscription of its member countries.	Acquire its most of financial resource by barrowing on the international bond market.
Has at its disposal fully paid in quotas now totaling SDR 212 billion (about $300 billion).	Has an authorized capital of $ 184 billion, of which members pay in about 10 %.
Has a staff of 2,300 drawn from 182 members countries.	Has a staff of 7,000 drawn from 180 members countries.

The functions of IMF are:

1. Providing financial assistance to member countries
2. Act as a consultative Body
3. Regulation the financial relation of member countries
4. Development of International Trade
5. Assisting member countries suffering from deficit balance of trade.
6. Promoting International Monetary System
7. Promote Exchange rate stability
8. Increase International Monetary Cooperation

The purposes of setting up of IMF under Bretton Wood System are:

1. To support smooth flow of international trade, balanced growth and expansion.
2. To provide financial assistance and stability to member countries
3. To provide assistance to avoid adverse balance of payments issues
4. To promote cooperation and common practices in international monetary system
5. To provide exchange stability and liquidity
6. To strengthen financial confidence in member countries

"The most powerful force in the universe is compound interest." - Albert Einstein

MODULE 2

THE BALANCE OF PAYMENT

MEANING:

Balance of payment of a Country is a systematic accounting record of all economic transactions during a given period of time between the residents of the country and residents of foreign countries. It represents an accounting of country's international transactions for a particular period of time, generally a year. It accounts for transactions by individual, businesses and Government.

INTERNATIONAL FLOW OF FUNDS

Balance of Payments

The **balance of payments** is a summary of transactions between domestic and foreignresidents for a specifi c country over a specified period of time. It represents an accountingof a country's international transactions for a period, usually a quarter or ayear. It accounts for transactions by businesses, individuals, and the government.

A balance-of-payments statement can be broken down into various components.Those that receive the most attention are the current account and the capital account.The **current account** represents a summary of the flow of funds between one specifiedcountry and all other countries due to purchases of goods or services, or the provisionof income on fi nancial assets. The **capital account** represents a summary of the flowof funds resulting from the sale of assets between one specified country and all othercountries over a specified period of time. Thus, it compares the new foreign investmentsmade by a country with the foreign investments within a country over a particulartime period. Transactions that reflectinflows of funds generate positive numbers(credits) for the country's balance, while transactions that reflectoutflows of fundsgenerate negative numbers (debits) for the country's balance.

Current Account

The main components of the current account are payments for (1) merchandise(goods) and services, (2) factor income, and (3) transfers.

Payments for Merchandise and Services. Merchandise exportsand imports represent tangible products, such as computers and clothing thatare transported between countries. Service exports and imports represent tourismand other services, such as legal, insurance, and consulting services, provided forcustomers based in other countries. Service exports by the United States result in an inflow of funds to the United States, while service imports by the United States result in an outflow of funds.

The difference between total exports and imports is referred to as the **balance oftrade.** A deficit in the balance of trade means that the value of merchandise and servicesexported by the United States is less than the value of merchandise and servicesimported by the United States.

Factor Income Payments. A second component of the current accountis **factor income,** which represents income (interest and dividend payments) receivedby investors on foreign investments in financial assets (securities). Thus, factor income received by U.S. investors reflects an inflow of funds into the United States. Factor income paid by the United States reflects an outflow of funds from the United States.

Transfer Payments.A third component of the current account is transferpayments, which represent aid, grants, and gifts from one country to another.

Capital and Financial Accounts

The capital account category has been changed to separate it from the financial account,which is described next. The capital account includes the value of financialassets transferred across country borders by people who move to a different country.It also includes the value of non-produced nonfinancial assets that are transferredacross country borders, such as patents and trademarks. The capital account items are relatively minor compared to the financial account items.

The key components of the financial account are payments for (1) direct foreigninvestment, (2) portfolio investment, and (3) other capital investment.

Direct Foreign Investment. Direct foreign investment represents the investment in fixed assets in foreign countries that can be used to conduct businessoperations. Examples of direct foreign investment include a firm's acquisition of a foreigncompany, its construction of a new manufacturing plant, or its expansion of an existing plant in a foreign country.

Portfolio Investment. Portfolio investment represents transactions involvinglong-term financial assets (such as stocks and bonds) between countries that donot affect the transfer of control.

Other Capital Investment.A third component of the financial accountconsists of other capital investment, which represents transactions involving short-term financial assets (such as money market securities) between countries. In general,direct foreign investment measures the expansion of firms' foreign operations,whereas portfolio investment and other capital investment measure the net flow of funds due to financial asset transactions between individual or institutional investors.

Errors and Omissions and Reserves. If a country has a negativecurrent account balance, it should have a positive capital and financial account balance.This implies that while it sends more money out of the country than it receivesfrom other countries for trade and factor income, it receives more money from othercountries than it spends for capital and financial account components, such as investments.

In fact, the negative balance on the current account should be offset by a positive balance on the capital and financial account. However, there is not normally aperfect offsetting effect because measurement errors can occur when attempting tomeasure the value of funds transferred into or out of a country. For this reason, thebalance-of-payments account includes a category of errors and omissions.

FACTORS AFFECTING INTERNATIONAL TRADE FLOWS

Because international trade can significantly affect a country's economy, it is importantto identify and monitor the factors that influence it. The most influential factors are:

• Inflation

• National income

• Government policies

• Exchange rates

Impact of Inflation

If a country's inflation rate increases relative to the countries with which it trades, itscurrent account will be expected to decrease, other things being equal. Consumersand corporations in that country will most likely purchase more goods overseas (dueto high local inflation), while the country's exports to other countries will decline.

Impact of National Income

If a country's income level (national income) increases by a higher percentage thanthose of other countries, its current account is expected to decrease, other things beingequal. As the real income level (adjusted for inflation) rises, so does consumptionof goods. A percentage of that increase in consumption will most likely reflect anincreased demand for foreign goods.

Impact of Government Policies

A country's government can have a major effect on its balance of trade due to itspolicies on subsidizing exporters, restrictions on imports, or lack of enforcement onpiracy.

- Subsidies for Exporters
- Restrictions on Imports
- Lack of Restrictions on Piracy

Impact of Exchange Rates

Each country's currency is valued in terms of other currencies through the use ofexchange rates, so that currencies can be exchanged to facilitate international trans-actions. The values of most currencies can fluctuate over time because of market andgovernment forces. If a country's currency beginsto rise in value against other currencies, its current account balance should decrease,other things being equal. As the currency strengthens, goods exported by that country

will become more expensive to the importing countries. As a consequence, the demandfor such goods will decrease.

ECONOMIC TRANSACTIONS:

It refers to transfer of economic value from one economic agent to another. Transfer can be Bilateral or Unilateral. The following are the different types of economic transactions:

a) One Real and another Financial Transfer.

   Ex: Purchase or Sale of goods and services.

b) Two Real Transfers.

   Ex: Barter transactions.

c) Two Financial Transfers.

   Ex: Purchase of foreign securities for payment in cash.

d) One Real Transfer.

   Ex: A Unilateral gift in kind.

e) One Financial Transfer.

   Ex: A Unilateral Financial gift.

BALANCE OF PAYMENT ACCOUNTING:

BOP conforms to the principles of double entry system i.e. every international transaction should have a debit and corresponding credit. BOP is neither an income statement nor a Balance sheet. It is a statement of Sources and Application of funds that reflects changes in assets, liabilities and Net worth during a specified period of time.

Decrease in assets, increase in liabilities and increase in Net worth represent credit or Sources of fund and similarly Increase in assets, decrease in liabilities and decrease in Net worth represent debit or Application of funds. Sources of funds (Credits) include export of goods and services, investment and interest earnings, unilateral transfers received from abroad and loans from foreigners. Application of funds (Debits) include import of goods and services, dividends paid to foreign investors, transfer payments abroad, loans to foreigners and increase in reserve assets. In

short transactions which earn foreign exchange inflows are credits and those which expend or use up foreign exchange are debits.

If expenditure abroad by residents of one nation exceeds what the residents of that nation can earn from abroad, that nation is supposed to have a "Deficit" in BOP. However if a nation receives from abroad more than what it spends, then it is supposed to have "Surplus".

COMPONENTS OF BALANCE OF PAYMENT:

1. **The Current Account**:

It is typically divided into 3 categories namely, merchandise trade balances, services balance and the balance on unilateral transfers. Entries are recorded at their current value and surplus in current account represents an inflow of funds while a deficit represents an outflow of funds. The balance of merchandise trade refers to balance between exports and imports of goods such as machinery, automobiles etc. Services also called Invisibles include interest payments, shipping and insurance fees, tourism, dividends, military expenses etc. Unilateral transfers include gifts and grants from both private and Government.

2**. The Capital Account:**

Capital account consists of Foreign investment including direct Investment and portfolio Investments, Loans, Banking Capital, Rupee debt service and other Capital. It includes acquisition of firms, Purchase and sale of stocks, Establishment of subsidiaries, etc.

3. **The Official Reserve Account:**

These are Government owned assets which represents purchases and sales by the central bank of the country. The changes in the Official reserve account are necessary to account for the deficit or surplus in the BOP.

Format:

I. Current Account:

a) Merchandise

b) Services (Invisibles)

c) Other Income (Transfers and others)

II. Capital Account:

a) Foreign Investment.

b) Loans.

c) Banking Capital.

d) Rupee Debt service.

e) Other Capital.

III. Official Reserve Account:

a) Errors and Omissions.

b) Overall balance. (Total of Current Account, Capital Account and Errors and Omissions)

c) Monetary Movements.

International Capital Flow

Capital flow usually refers to foreign Direct investment (FDI) or Portfolio Investment. The capital flow position inside and outside the US have rise substantially over time an induction of increasing globalization.

Agencies that facilitate International flows

The variety of agencies has been established to facilitate international trade and financial transactions. These agencies often represent a collection of nations.

1. International Monetary Fund (IMF)
2. World Bank
3. World Trade Organization (WTO)
4. International Financial Corporation (IFC)
5. International Development Association (IDA)
6. Bank for international settlements
7. Regional Development agencies

EQUILIBRIUM DISEQUILIBRIUM AND ADJUSTMENT OF BOP

Accounting Equilibrium:

Since the BOP is constructed on the basis of double entry book keeping credit is always equal to debit. If debit on current a/c is greater than credit funds, flow into the country that are recorded on the credit side of the capital a/c and excess of debit is wiped out. Thus concept of BOP is based on the accounting equilibrium, that is

Current a/c + Capital a/c = 0

The accounting is exposit concept. It describes what has actually happened over a specific past period.

DISEQUILIBRIUM

In economic sense, a BOP equilibrium occurs when surplus or deficit is eliminated from the BOPs. But normally, such equilibrium not found. Rather it is disequilibrium in the BOP that is normal phenomenon. Through several external economic variables influence the balance of payments and give rise to disequilibrium, domestic variables like national output and national spending, money supply, exchange rate and interest are more significant causative factors.

If national income exceeds national spending, the excess amount (saving) will be invested abroad, resulting in capital account deficit. Conversely, excess of national spending over national income causes barrowing from abroad which would push the capital account into a surplus.

Different Approach to Adjustment

1. **The Classical View;**

The issue of connection between domestic economic variables and the balance of payments responsible for disequilibrium in the later and its adjustment have been investigated by number of experts. The classical economist had thought of the balance of payments disequilibrium, but they held the view that it was self adjusting. Their view, which was based on the price-specie-flow mechanism, stated that an increase in money supply raises domestic prices, export become uncompetitive, export earns drop, foreign goods become cheaper and imports rise. As a result, the current a/c balance goes deficit. Precious metal flows out of the country to finance import, the quantity of money drops and that lower the price level. Lower price in the economy leads to increase exports resulting in trade balance regaining equilibrium. This way the classic version of the balance of payments adjustment was a refutation of the mercantilist belief that a country could achieve a lasting balancing of trade surplus through trade protection and export promotion.

2. Elasticity Approach;

After the collapse of gold standard, the classical view could not remain tenable (acceptable). The adjustment of balance of payment disequilibrium was thought of in terms changes in fixed exchange rate that is by devaluation or upward revaluation but its success was dependent upon the elasticity of demand for export and import.

The elasticity approach is based on partial equilibrium analysis where everything is held constant expect the effects of exchange rate changes on export or import.

SWIFT

It refers to Society for World Wide Inter Bank Financial Telecommunication. The SWIFT operates a worldwide financial messaging network which exchanges messages between banks and financial institutions.

Rule No. 1: Never lose money. Rule No. 2: Never forget rule No. 1. - Warren Buffett

MODULE 4

SOURCE OF INTERNATIONAL FINANCE

Most countries of the world which raced to the path of economic and industrial development had to depend on foreign capital to some extent. Under developed countries like India have to depend on foreign capital for financing their development programmes as they suffer from low level of income and low level of capital accumulation. The degree of dependence, however, varies from country to country depending upon its level of mobilization of domestic capital, technology development, attitude of the government, etc. But the fact cannot be denied that foreign capital contributes in many ways to the process of rapid economic growth and industrialization.

NEED FOR FOREIGN CAPITAL:

The need for foreign capital in a developing country like India arises on account of the following:

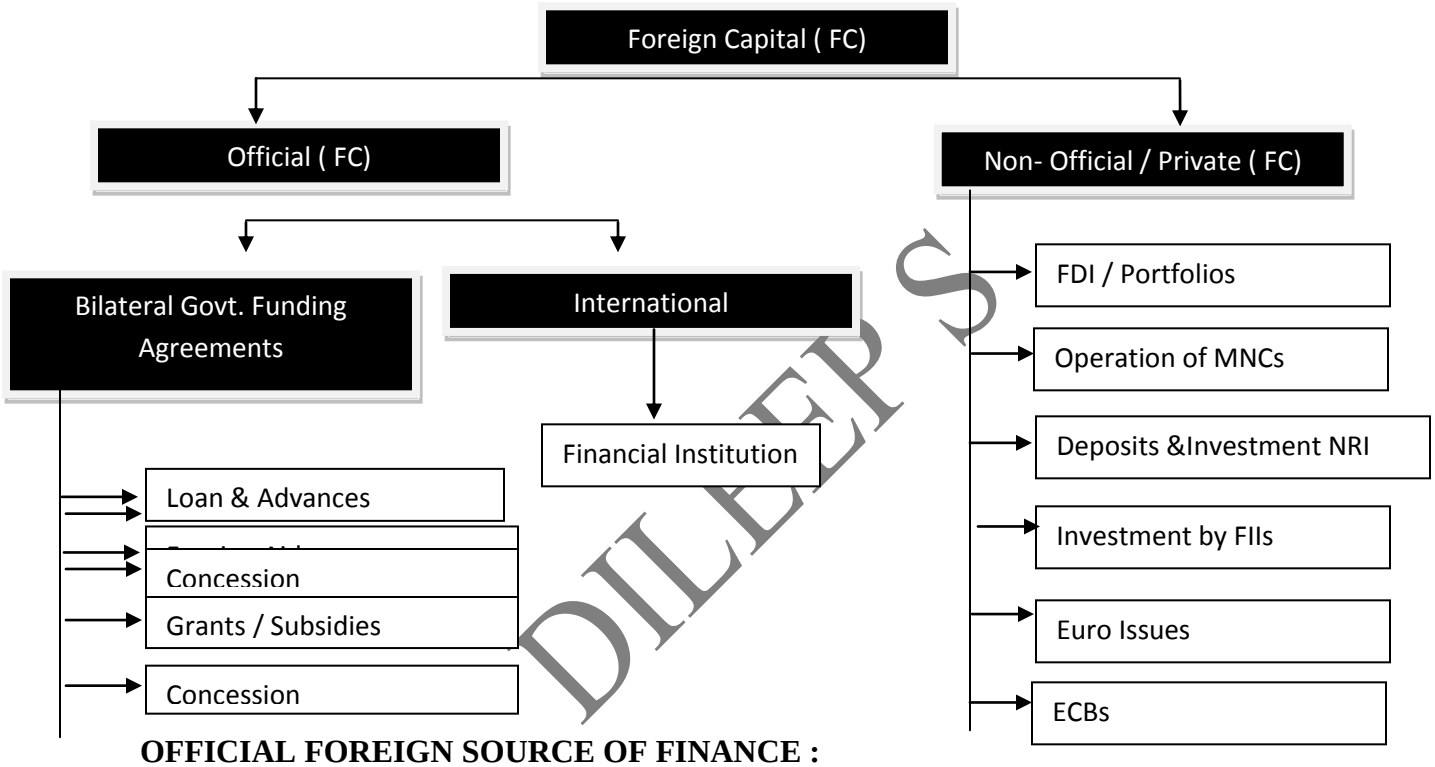
1. Inadequacy of Domestic Capital: In view of the inadequacy of domestic capital, foreign capital is needed to meet the huge requirements of development projects in the path of rapid economic development and industrialisation.

2. The Technology Gap: As compared to the advanced countries there is a lot of technology gap which necessitates import of foreign technology. Such technology usually comes along with foreign capital in the form of private foreign investment or foreign collaborations. Thus, there is utmost need of foreign capital.

3. The Initial Risk: Due to lack of experience, expertise and heavy initial risk, there is always a lack of flow of domestic capital into lines of production. The foreign capital taking initial risk stimulates the flow of domestic capital and stock entrepreneurship.

4. Development of Basic Infrastructure: There is also a lack of basic infrastructure which is very essential for the economic development of the underdeveloped countries. Foreign capital helps in the development of infrastructural facilities such as transport, communication, power etc.

5. Balance of Payment Support: During the process of economic development, the underdeveloped countries usually face a crisis of balance of payments due to heavy imports of capital goods, technical know-how, spare parts and even industrial raw materials. Thus, foreign capital is needed to face the crisis during this period.



OFFICIAL FOREIGN SOURCE OF FINANCE :

1. Foreign Collaboration: In India joint participation of foreign and domestic capital has been quite common in recent years. Foreign collaboration could be either in the form of joint participation between private firms, or between foreign firms and Indian Government, or between foreign governments and Indian Government.

2. Bilateral Government Funding Arrangement: Generally, advanced countries provide aid in the form of loans and advances, grants, subsidies to governments of under-developed and developing countries. The aid is provided usually for financing government and public sector projects. Funds are provided at concessional terms in respect of cost (interest), maturity, and repayment schedule.

3. NRI Deposits and Investments: Non-resident Indian have always been making a contribution in Indian economy. Government has been making efforts to encourage their deposits and investments. Various schemes have been devised which ensure higher returns; procedures have been simplified to attract investments in primary and secondary market. Tax incentives are given on interest earned and dividends received by NRIs.

4. Loans from International Financial Institutions : International Bank for Reconstruction and Development (IBRD), International Monetary Fund (IMF), Asian Development Bank (ADB), and World Bank have been the major source of external finance to India.

5. External Commercial Borrowing (CEB) : Our country has also been obtaining foreign capital in the form of external commercial borrowings from agencies like US EXIM Bank, Japanese EXIM Bank, ECGC of UK, etc.

NON OFFICIAL FOREIGN SOURCE OF FINANCE :

Foreign Direct Investment (FDI) :

Foreign direct investment is one of the most important sources of foreign investment in developing countries like India. It is seen as a means to supplement domestic investment for achieving a higher level of growth and development. FDI is permitted under the forms of investments.

1. Through financial collaborations / capital / equity participation;
2. Through Joint ventures and technical collaborations;
3. Through capital markets (Euro Issues);
4. Through private placements or preferential allotment.

Capital participation / financial collaboration refers to the foreign partner's stake in the capital of the receiving country's companies while technical collaboration refers to such facilities provided by foreign partner as licensing, trade- marks and patents (against which he gets lump sum fee or royalty payments for specified period); technical services etc.

From investors' point of view, the FDI inflows can be classified into the following groups.

(a) Market seeking: The investors are attracted by the size of the local market, which depends on the income of the country and its growth rate.

(b) Lower cost: Investors are more cost-conscious. They are influenced by infrastructure facilities and labour costs.

(c) Location and other factors: Technological status of a country, brand name, goodwill enjoyed by the local firms, favourable location, openness of the economy, policies of the government and intellectual property protection granted by the government are some of the factors that attract investors to undertake investments.

Factors that attracts FDIs in India

The following factors can be held responsible for the flow of foreign direct investments in India:

1. India has a well developed network of banking and financial institutions and an organized capital market open to foreign institutional investors that attracts them to undertake investments.
2. India has vast potential of young entrepreneurs in the private sector. India skills and competence is used as a base for carrying out production activities and export to neighbour countries.
3. For the last few years there has been political stability in the country.
4. India enjoys good reputation among other countries as to honouring of its commitments about repayment obligations, remittance of dividends etc.
5. India has vast potential of unskilled labour available at cheap rates as compared to other countries, and vast natural resources that attract foreign investors.

Factors that Discourage FDIs

Factors that discourage foreign investors to undertake investments in India include:

(i) High rates of taxation;

(ii) Lack of infrastructure facilities;

(iii) Favouritism in the selection of investment;

(iv) Complicated legal framework of rules, regulations procedures for foreign direct investments into India;

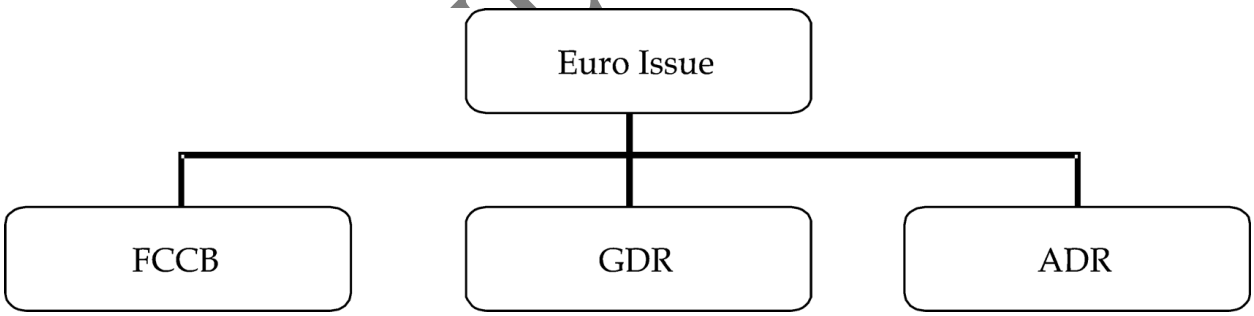
(v) Lack of transparency.

Investments by Foreign Institutional Investors (FIIs)

SEBI (Foreign Institutional Investors) Regulations, 1995, define Foreign Institutional Investors as an institution established or incorporated outside India which proposes to make investment in India in securities. The regulations make it mandatory for FIIs to seek registration with SEBI before operating in Indian securities market. Before granting certificate of registration, the applicant's track record, professional competence, financial soundness experience, general reputation of fairness and integration is taken into consideration by SEBI.

Euro Issues

After the onset of the process of globalization of Indian economy, the govt. thought it imperative to allow the companies in India to raise funds from foreign market in foreign exchange. It may be noted that in case of foreign capital, the foreign exchange is involved, so, it is controlled and regulated by the RBI and the govt. Euro issues are outside the ambit of SEBI. In November1993, the govt. announced the scheme of issue of securities by Indian companies in capital markets abroad. This scheme is known as "issue of foreign currency convertible bonds and ordinary shares scheme 1993". The scheme has been reviewed and several amendments have been made in the scheme from time to time.



The scheme has permitted Indian companies to two types of securities:

(a) Foreign currency convertible bonds ,and

(b) Equity shares through depositary receipts.

The regulatory provisions of these securities are as follows:

Foreign Currency Convertible Bonds (FCCBs):the FCCB means bonds issued in accordance with the relevant scheme and subscribed by a non-resident in foreign currency and convertible

into depositary receipts or ordinary shares of the issuing company in any manner, either in whole or in part, on the basis of any equity related warrants attached to debt instruments. A company seeking to issue FCCBs should have consistent track record of good performance for a period of three years. The FCCBs are unsecured; carry a fixed rate of interest and an option for conversion into affixed number of equity shares of the issuer company. Interest on redemption price (if conversion option is no exercised) is payable in dollars. Interest rates are very low by Indian domestic standards. FCCBs are denominated in any freely convertible foreign currency, generally in US $.

FCCB has been popular with issuers. Local debt markets can be restrictive with comparatively short maturities and high interest rates. On the other hand, straight equity may cause a dilution in earnings, and certainly dilutions in control, which many share holders, especially major family share holders, would find unacceptable. Thus the low many coupon security which defers share holders dilution for several years in form of FCCB, can be alternative to issuer.

Foreign investor also prefer FCCBs because of dollar denominated servicing, the conversion option and the arbitrage opportunities presented by conversion of the FCCBs into equity at discount on prevailing market price in India.

The major drawbacks of FCCBs are that the issuing company cannot plan capital structure as it is not assured of conversion of FCCBs. Moreover, the projections for cash outflows at the time of maturity cannot be made. In addition, FCCBs would result in creation of external debt for the country, as there would be foreign exchange outflow from the country if conversion option is not exercised by the investors. Some other regulations of FCCBs are

(1) Interest payment on bond, until the conversion option is exercised, shall be subjected to TDS @ 10%

(2) Conversion of FCCBs into shares shall not give rise to capital gain in India.

(3) Transfer of FCCBs shall not give rise to capital gain in India.

Depository Receipts (DRs): A DR means any instrument in the form of depository receipt or certificate created by the overseas depository bank outside India and issued to non-resident investors against the issue of ordinary shares. In depository receipt, negotiable instrument

evidencing a fixed number of equity shares of the issuing company generally denominated in U.S. $. DRs are commonly used by the company which sells their securities in international market and expanding their share holdings abroad. These securities are listed and traded in international stock exchanges. These can be either American depository receipt (ADR) or global depositary receipt (GDR). ADRs are issued in case the funds are raised through retail market in United States. In case of GDR issue, the invitation to participate in the issue cannot be extended to retail US investors.

While DR is denominated in any freely convertible foreign currency, generally in US dollars are issued by the depository in the international market, the underlying shares denominated in Indian rupees are issued in the domestic market by the issuing company. These shares are issued by the company are custodized in the home market with the local bank called custodian.

An investor has an option to convert the DR into fixed number of equity shares of Issuer Company after a cooling period of 45 days. He can do so by advising the depository. The depository in turn, will instruct the custodian about cancellation of DR and release the correspondence shares infavour of non resident investor, for being sold directly on behalf of the non-resident or being transferred in books of accounts of the issuing company in the name of the non resident. Once the underlying shares are released, the same cannot be recustodized. In addition, shares acquired in open market cannot be custodized. Until such conversion the DRs, which are negotiable, are traded on an overseas stock exchange, entitled for dividend in dollar but that carry no voting rights, yield rupee dividend and are tradable on Indian stock exchanges like another equity shares. Some other regulatory provisions are:

i. DR may be issued for one or more underlying shares.

ii. Dividend on shares will be subjected to TDS @10%.

iii. Transfer or trading of DR outside India will not give rise to any capital gain in India.

Issue of ADRs by an Indian Company: An Indian company may think of floating an ADR issue primarily with an intention of getting its shares listed at NASDAQ or New York Stock Exchange. ADR issue should be attempted in two phases:

i. Preparing for the ADR issue: Before a company goes for issue of ADRs, it has to adequately and systematically prepare for it. It has to prepare the business plan for which the funds are required. Next, it should get fair valuation of its equity shares. The current market price, projected earnings and intrinsic worth will help in this matter. The company has to prepare and redraft its financial statements for last at least 3 years as per US GAAP.

It has to empanel and select merchant bankers in the US capital market. These would include Overseas Depository, Legal Advisors and Certified Public Accountants. The company then has to obtain necessary approval from the government. Thereafter, it has to get itself registered with the Securities Exchange Commission of US and the NYSE or NASDAQ where the ADRs are planned to be listed. Then the company can proceed with the offer of ADRs to the investors for which Roadshows. Presentations,

conference, etc. may be planned.

ii. Offering the ADRs: The ADRs are issued through the depository mechanism. The subscription list will be kept open as per the SEC regulations. If the company has opted for green shoe option, it has to prepare for this also. Once the subscriptions are received in the designated overseas banks, the company shall create shares and will hand over these shares to the custodian in India. The depository shall issue ADRs to the foreign investors against the underlying shares.

The foreign investors can transact in the ADRs either by selling at the stock exchange, or can get the underlying shares handing over the ADRs to the depository. These underlying shares can then be sold at the recognized stock exchange in India.

FOREIGN DIRECT INVESTMENT:

Foreign direct investment (FDI) is a measure of foreign ownership of productive assets, such as factories, mines and land. Increasing foreign investment can be used as one measure of growing economic globalization. FDIs require a business relationship between a parent company and its foreign subsidiary.

FDI is any form of investment that earns interest in enterprises which function outside of the domestic territory of the investor. In order to qualify as FDI there should be parent enterprise's control over its foreign affiliate by making some investment. The IMF defines control in this case as owning 10% or more of the ordinary shares or voting power of an incorporated firm or its equivalent for an unincorporated firm. And lower investment shares are known as portfolio investment.

Determinants of FDI:

1. **Size and growth prospects of the country:** It is normally assumed that if the country has a big market, it can grow quickly from an economic point of view and it is concluded that the investors would be able to make the most of their investments in that country.

2. **Availability and quality of human resources:** The status of the human resources in a country is also instrumental in attracting direct investment from overseas. There are certain countries like China that have taken an active interest in increasing the quality of their workers.

3. **Availability of natural resources:** If a particular country has plenty of natural resources it always finds investors willing to put their money in them. A good example would be Saudi Arabia and other oil rich countries that have had overseas companies investing in them in order to tap the unlimited oil resources at their disposal.

4. **Availability of cheap labour:** Inexpensive labor force is also an important determinant of attracting foreign direct investment. The BPO revolution, as well as the boom of the Information Technology companies in countries like India has been a proof of the fact that inexpensive labor force has played an important part in attracting overseas direct investment.

5. **Economies of Scale:** MNCs enter the new markets with the objective to realize the full benefits of economies of scale.

6. **International Diversification:** The advantage of diversification is reduction of risk. When investors cannot effectively diversify their portfolio holdings internationally

because of barriers to cross border capital flows, firm may help its share holders with indirect diversification services by making direct investment in foreign countries.

7. **New sources of demand:** When there is a limited growth in home country, the companies which aspires for additional growth, can invest in the form of FDI

INSTRUMENTS IN INTERNATIONAL MARKET

1. Equity Instruments in International Market

DEPOSITORY RECEIPTS

- **Depositary receipt** (DR) is a type of negotiable (transferable) financial security that is traded on a local stock exchange but represents a security, usually in the form of equity, that is issued by a foreign publicly listed company.

- **Global depository receipts(GDR)** represents the shares traded in various local stock exchanges around the world (such as NSE and BSE in india, Nikkie in Japan, Hongkong stock exchange in China, New York stock exchange in America, London Stock exchange in Europe)issued by foreign public listed company. The global depository receipts will be traded all over the world expect the issuing country.

An American Depositary Receipt (ADR) represents the ownership in the shares of a foreign company trading on US financial markets. The stock of many non-US companies trades on US exchanges through the use of ADRs. ADRs enable US investors to buy shares in foreign companies without undertaking cross-border transactions. ADRs carry prices in US dollars, pay dividends in US dollars, and can be traded like the shares of US-based companies.

Each ADR is issued by a US depository bank and can represent a fraction of a share, a single share, or multiple shares of foreign stock.

What is the difference between ADR and GDR?

Both ADR and GDR are depository receipts, and represent a claim on the underlying shares. The only difference is the location where they are traded.

If the depository receipt is traded in the United States of America (USA), it is called an **American Depository Receipt**, or an ADR.

If the depository receipt is traded in a country other than USA, it is called a **Global Depository Receipt**, or a GDR.

- **An European Depositary Receipt (EDR**) represents the ownership in the shares of a foreign company trading on European financial markets. The stock of many non-European companies trades on European exchanges through the use of EDRs. EDRs are denominated in Euro.

- **An Indian Depository Receipts (IDR)** represents the ownership in the shares of a foreign company trading on Indian Financial markets. The stock of many non-Indian companies trades on Indian Stock exchanges through the use of IDRs.

  IDR is an instrument denominated in Indian Rupees in the form of a depository receipt created by a Domestic Depository (custodian of securities registered with the Securities and Exchange Board of India) against the underlying equity of issuing company to enable foreign companies to raise funds from the Indian securities Markets.

Advantages of Depository receipts:

General Benefits

- To increase global trade, which in turn can help increase not only volumes on local and foreign markets but also the exchange of information, technology, regulatory procedures as well as market transparency.
- To raise capital in international markets
- To get international recognition
- Domestic shares can be traded globally

Benefits For the Company:

- A company may opt to issue a DR to obtain greater exposure and raise capital in the world market.
- Issuing DRs has the added benefit of increasing the share's liquidity while boosting the company's prestige on its local market
- In many countries, especially those with emerging markets, obstacles often prevent foreign investors from entering the local market. By issuing a DR, a company can still encourage investment from abroad without having to worry about barriers to entry that a foreign investor might face.

Benefits For the Investor:

- Buying into a DR immediately turns an investors' portfolio into a global one. Investors gain the benefits of diversification while trading in their own market under familiar settlement and clearance conditions.
- DR investors will be able to reap the benefits of these usually higher risk, higher return equities, without having to endure the added risks of going directly into foreign markets, which may pose lack of transparency or instability resulting from changing regulatory procedures

Risk in Depository Receipts:

Analyzing foreign companies involves more than just looking at the fundamentals. There are some different risks to consider such as the following:

a. **Political Risk** – Is the government in the home country of the DR stable?

b. **Exchange Rate Risk** – Is the currency of the home country stable? DRs track the shares in the home country; therefore, if its currency is devalued, it trickles down to your DR and can result in a loss.

c. **Inflationary risk** – This is an extension of the exchange rate risk. Inflation is a big blow to business and the currency of a country with high inflation becomes less and less valuable each day.

2. DEBT Instruments:

1. Euro Bonds:

Euro bond is issued outside the country of the currency in which it is denominated. It is like any other Euro instrument and through international syndication and underwriting, the paper can be sold without any limit of geographical area.

a. **Fixed Rate or Straight Debt Bonds:** Straight debt bonds are fixed interest bearing securities which are redeemable at face value. These unsecured bonds which are floated in domestic markets or international markets, are denominated in the respective currency with the fixed interest rates. These bonds are redeemed on bullet basis (one time lump sum payment on maturity.)

b. **Floating rate notes (FRNs):** These are the bonds issued with a maturity period varying from 5 – 7 years having varying coupon rates. The interest rate payable for

the next 6 months is set with reference to market reference such as LIBOR (London Inter Bank Offer Rate).

2. **Foreign Bonds:**

   a. **Yankee Bonds:** These are US dollar denominated issues by foreign borrowers (Non US borrowers) in US Bonds markets. Usually foreign government or entities, supernationals and highly rated corporate borrowers issue yankee bonds.

   b. **Samurai Bonds:** These are bonds issued by Non-japanese borrowers in domestic Japanese markets with a maturity varying over 3 to 20 years. The borrowers are supernationals and have at least a minimum investment grade rating (A Rated)

   c. **Bull dog Bonds:** These are sterling denominated foreign bonds which are raised in the UK domestic securities market. The maturity of these bonds vary from 5 to 25 years. These bonds are subscribed by the long term institutional investors like pension funds and life insurance companies. These bonds are redeemed on bullet basis (one time lump sum payment on maturity.)

   d. **Shibosai Bonds:** These are privately placed bonds issued in the Japanese markets. The qualifying criteria is less stringent as compared to Samurai or Euro Yen bonds. Shibosai bonds are offered to a different set of investors such as institutional investors and banks.

3. **Euro Notes:**

Euro notes are the short term instruments and the return on these instruments are based on the varying bench mark LIBOR. The funding instruments in the form of Euro notes possess flexibility and can be tailored to suit the specific requirements of different types of borrowers.

a. **Commercial Paper:** These are the short term unsecured promissory notes which repay a fixed amount on a certain future date. These are not underwritten and have a maturity of one year.

b. **Note Issuance Facilities (NIFs):** The currency involved in this instrument is US dollars. A NIF is a medium term legally binding commitment under which a borrower can issue short term paper with a maturity up to one year. NIFs investors include commercial banks, non banking financial institutions, insurance companies and pension funds.

c. **Medium term notes (MTNs):** MTNs are defined as sequentially issued fixed interest securities which have a maturity of over one year. It enables the issuer to issue euronotes for different maturities from over one year up to desired level of maturity. The advantage of borrowing via MTN is its flexibility and much less formalities of documentation compared to bond issue.

4. **Euro Credit Syndication:**

It is a private arrangement between the lending banks and borrowers. Lending banks join together and advance the loans to the borrower.

Working Capital policy:

Any business firm has to determine the appropriate levels of Cash balances, receivable and payables. The objective of working capital management is to determine the optimal amount of investment in various current assets. It is very important to provide for various current assets and to meet the short term credit requirements.

The operating cycle of a business generates funding needs, cash flows and foreign exchange rate and credit risks. The funding needs generated by the operating cycle of the firm constitute working capital.

But as the multinational companies operate across the borders, they have to face political, tax, foreign exchange and other economic risks.

All these constraints have to be taken care by the management in framing the working capital policy of the MNC.

The various factors to be considered by the management in this regard are:

Quotation Period:

The quotation period extends from the time of price quotation to the point when the customer places an order.

Input Sourcing Period:

Once the quotation is accepted and order is placed, the buyer and seller sign a contract describing the product to be delivered, likely timing of delivery, conditions of delivery and price and financing terms.

Inventory Period:

The length of time required for processing of goods from raw material to work in process and finished goods.

Accounts Payable period:

The time taken to make the payments for the raw material purchased for further processing.

Accounts Receivable Period:

The time taken by debtors to pay for the finished goods purchased by them.

International Cash Management:

In MNCs, the funds move from one country to another. When the funds flow from one country to another, it has to abide to the rules of both home as well as foreign country. Movement of fund generally arises from operational activities of the business.

The firm has to manage its activities in such a manner that it has enough liquidity and well as profit. If the firm keeps more cash to attain liquidity, it will lose the opportunity of investing. If the firm invests the cash to gain profits, it has to forego liquidity. So the firm has to plan its activities in such a manner that it should meet both the objectives of managing liquidity and attaining profits.

The firm should look for short term investments in order to avoid the funds being idle.

International Cash Management involves estimation of various cash inflows from both domestic as well as international projects and optimum utilization of funds.

The main objectives of cash management are

- Minimise the currency exposure risk
- Minimize the country and political risk
- Minimize the overall cash requirements of the company without disturbing the smooth operations of the subsidiary or affiliate
- Optimum conservation and utilization of funds
- Controlling the cash resources efficiently

Effective cash management indicates accurate and timely forecasting, improving cash collection and disbursement, minimizing the required level of cash balances. International cash management is a complicated task as it has wider scope and has to meet the customs, policies and practices of other countries, multiple tax jurisdictions and multiple currencies.

The factors to be considered in efficient cash management are:

Collection and Disbursement of funds:
Collections within the country and across borders is one of the vital factor for international cash management. Accelerating the receipt of international funds involves analyzing the various means available for receiving payments and selecting the most efficient method.

Payments Netting:
Payments among the parties to the international trade go back and forth. But only the actual netted amount will be transferred.

Managing short term investment portfolio:
The levels and currency denominations of investment in cash balances and money market instruments should be determined. To manage investments properly, future cash needs should be estimated and minimum cash position should be analyzed

Multinational Cash mobilization:
Multinational cash mobilization helps in optimum utilization of funds, by tracking short term cash positions. This can be even used for the purpose of nettings.

Objectives

a) To maximize foreign exchange risk exposure
b) To minimize political risk
c) To minimize country risk
d) To minimize transaction costs
e) To minimize cash requirement of multinational firm

Centralized Perspective of Cash flow Analysis:

A centralized cash management group may be needed to monitor and manage the parent subsidiary and inter subsidiary cash flows. Centralization in this case refers to centralization of information, reports and more specifically, the decision making process as to cash mobilization, movement and investment outlets.

A carefully centralized cash system will benefit the MNC in the following ways:

1. Maintaining minimum cash balance during the year
2. Helping the centre to generate maximum possible returns by investing all cash resources optimally.
3. Judiciously manage the liquidity requirements of the centre.
4. Helping the centre to take complete advantage of multinational netting so as to minimize transaction costs and currency exposure
5. Optimally utilize the various hedging strategies so as to minimize the MNCs foreign exchange exposure
6. Achieve maximum utilization of the transfer pricing mechanism so as to enhance the profitability and growth by the firm.

Techniques of optimize cash flow

1) **Accelerating cash inflows:** It refers to the quick recovery of the cash flows. Various innovative measures and new technologies and banking system helps in maintaining the system to accelerate the cash flows.
2) **Managing blocked funds**: Some times the host government insists the subsidiary to invest the income in the host country itself. This increases the pay back period of the MNC.
3) **Leading and lagging strategy:** Leading and lagging involves an adjustment in the timing of the payment or disbursement to reflect expectations about the future currency movements.

   Leading means fastening (Paying or receiving early) and lagging means delaying (paying or receiving late).

4) **Netting**: It refers to offsetting exposure in one currency with exposure in the same or another currency whose exchange rates are expected to move in a way such that loss or gain on first exposed position will be offset by gain or loss in the second exposed position.
5) **Minimization of tax using international transfer pricing:** If the intra company transfer is made, and if the transfer price is higher, then it leads to high profits and hence more tax has to be paid. This decision is more complicated in an MNC because of exchange restrictions, difference in tax rates between the two countries, inflation differentials and import duties and blockage of funds in host country etc.

International Receivables Management:

The level of receivables depend upon the volume of credit sales and the average collection period. These two variables in turn depend upon credit standards, credit terms and collection policy.

Considering time value of money, receivables have a cost in terms of interest. But still MNCs sell on credit in order to expand sales volume and profits. Easier the credit terms, more sales can be achieved.

Multinational receivables are created by intra company sales and sales outside the company. There is more risk in sales outside the company. The manager should be able to handle all related risk in collecting and realizing the receivables in time.

Receivables in hard currency can be lagged and that of soft currency should be collected as early as possible to avoid the foreign exchange risk.

Multinational accounts receivable are created by two types of transactions

1. Sales to related subsidiaries
2. Sales to unrelated buyers

- **Independent customers (unrelated buyers)**

  It involves decisions regarding selection of currency and terms of payment. Seller prefers to price the commodity in stronger currency where buyer prefers weaker currency.

  Receivables from sales in weaker currency should be collected as soon as possible whereas receivables from sales in a stronger currency should be delayed

- **Self liquidating bills**

If the sale deed has the bills accepted by the buyer and endorsement of the seller, it can be rediscounted with the banker and net investment in receivable can be brought down to zero.

International Inventory Management:

Inventory is a part of current asset. It may be in the form of raw materials, work in process or finished goods. Inventory management is a very difficult task. MNCs find it difficult to control their overseas inventory and to realize inventory turnover objectives because of long and variable transit times, lengthy procedures, high disruptions, higher inventory carrying cost, change in currency values etc.

Further, if there is no sufficient inventory, the demand cannot be met in time. If, huge inventory is maintained, there is a cost to company. So firm should make a proper match in maintaining the inventory level.

Further they should follow a stable method of inventory maintenance. There are various methods such as FIFO, LIFO etc. Firm should depend on stable inventory policy depending upon its suitability.

The various factors to be considered in inventory management are:

Production location and inventory control:

Many companies prefer offshore production because of low-wage labor, tax holidays, low-interest rates on loans. But having low manufacturing cost does not suffice everything. There exists other cost of transport and shipment of goods which should be properly managed.

Advanced inventory purchases:

Sometimes it may not be able to hedge in forward foreign currency market. So the other means of hedging is to engage in anticipatory purchases of goods, especially imported items.

Inventory stockpiling:

If the business is expected to face the risk of long delivery lead times, lack of transportation, currency restriction, problem of supply failure, it can opt for inventory stock piling.

Maintaining Excess Stock:

A multinational firm might maintain inventory and re-order level far in excess of the economic order quantity. The following reasons shall be attributable for the same.

1) **Anticipating devaluation**

   If devaluation of local currency is expected in near future, after devaluation imported inventory will cost more in local currency. Hence higher level of inventory is maintained but however a trade off on higher holding cost and high local interest rate is to be made.

2) **Anticipating price freeze**

   When local government enforces price freeze following devaluation, the organization establishes price of an imported item at a high level with actual sales made at discount. In the event of devaluation sales continue at the posted price but discounts are withdrawn

3) **Hedging**

Future purchases can be hedged with exchange rate fluctuations by entering into a forward, futures or option contracts.

"If you can, you will quickly find that the greatest rate of return you will earn is on your own personal spending. Being a smart shopper is the first step to getting rich." -Mark Cuban

MODULE 5

PARITY THEOREMS

INTRODUCTION:

Foreign exchange includes Foreign Currency, Drafts, Bills, Letters of credit and travellerscheques that are denominated and eventually payable in foreign currency. The exchange rate isthe price of foreign currency expressed in terms of local currency. The factors influencing ratesare the purchasing power parity (inflation). The differences between two countries, vis-à-vis inflation and interest are addressed and suggested means are expressed to bring andequilibrium.

THEORY OF PURCHASING POWER PARITY (PPP) :

This theory was enunciated by Gustav Cassel. The purchasing power of a currency is determinedby the amount of goods and services that can be purchased with one unit of that currency. Ifthere is more than one currency, it is fair and equitable that the exchange rate between thesecurrencies provides the same purchasing power for each currency. This is referred to as purchasingpower parity.

It is ideal if the existing exchange rate is in tune with this cardinal principle of purchasingpower parity. On the contrary, if the existing exchange rate is such that the purchasing power parity does not exist in economic terms, it is a situation of disequilibrium. It is expected thatthe exchange rate between the two currencies conform eventually to purchasing power parity.

Likewise, if the rate of inflation is different in the two countries, the floating exchange rate shouldaccordingly vary to reflect that difference. Let us consider two countries, A and B. The rate ofinflation in the country A is higher than that in the country B. As a result, imports of

thecountry A increases since the price of foreign goods tend to be lower. Similarly exports fromthe country A decrease since the prices of its goods appear to be higher for foreigners (residentsof country B included). This situation cannot persist for long. In consequence, the currencyof country A will depreciate with respect to that of the country B.

If I_h and I_f are the inflation rates in the home country and the foreign country; and ERo is thevalue in terms of home currency of one unit of foreign currency at the beginning of the givenperiod and ERt is the value in terms of home currency at the end of the period,

Change in the exchange rate = $\frac{(1+i_h)}{(1+i_f)}$

Criticism of the PPP Theory

Conceptually, this theory is sound. However, there are a number of recognized factors thatprevent this theory from determining exchanges rates, in practice. Some of the major factors inthis regard are:

1. Government intervention, directly in the exchange markets or indirectly through traderestrictions;
2. Speculation in the exchange market;
3. Structural changes in the economy of the countries;
4. Continuation of long-term flows in spite of the disequilibrium between purchasingpower parity and exchange rates.

Another criticism leveled against this theory is that the rate of inflation or the relevant pricelevel indices are not well defined. Questions pertaining to what constitutes an appropriatesample and weight assigned to each commodity are not satisfactorily answered. For example,should the sample represent all the goods and services, or only those that are traded internationally?

The theory takes into account only the movement of goods and services and not that of capital.In operational terms, it is concerned only with the current account segment of the balance ofpayment and not with the total **BOP.**

Above all, this theory ignores the fact that a currency may be an instrument of payment byother countries (e.g. US dollar). In this situation the exchange rate may evolve in a manner thathas nothing to do with the price levels of the country (i.e. the USA).

The PPP theory can be considered as an ideal theory to determine exchange rates in specificsituations, such as high inflation or monetary disturbances. In such situations, the response toindividuals to changes in value of real and monetary assets can be expected to be strong andthe exchange rate prediction by PPP theory may turn out to be realistic.

Absolute Purchasing Power Parity : A theory which states that the exchange rate between onecurrency and another is in equilibrium when their domestic purchasing powers at that rateofexchange are equivalent. In short, what this means is that bundle of goods should cost thesame in India and the United States once you take the exchange rate into account. To see why,we'll use an example.

First suppose that one Australian Dollar (AUD) is currently selling for 25 Indian Rupees (INR)on the exchange rate market. In Australia cricket bats sell for AUD 40 while in India they sellfor only Rs.800. Since 1 AUD = Rs.25, then while the bat costs AUD 40 if we buy it in Australia,it costs only AUD 32 if we buy it in India. Clearly there's an advantage to buying the bat inIndia, so consumers are much better off going to India to buy their bats. If consumers decide todo this, we should expect to see three things happen :

1. Australian consumers would buy Indian Rupees in order to buy cricket bats in India. Sothey go to an exchange rate office and sell their Australian Dollars and buy Indian Rupees.This will cause the Indian Rupee to become more valuable relative to the Australian Dollar.
2. The demand for cricket bats sold in Australia decreases, so the price Australian retailerscharge goes down.
3. The demand for cricket bats sold in India increases, so the price Indian retailers chargegoes up.

Eventually these three factors should cause the exchange rates and the prices in the two countriesto change such that we have purchasing power parity. If AUD declines in value to 1 AUD =Rs.23, the price of cricket bats in the AUD goes down to AUD 38 each and the price of cricketbats in India goes up to Rs. 874 each, we will have purchasing power parity. This is

because aconsumer can spend AUD 38 in Australia for a cricket bat, or he can take his AUD 38, exchange

it for Rs. 874 (since 1 AUD = Rs.23) and buy a cricket bat in India and be no better off.

Purchasing-power parity theory tells us that price differentials between countries are notsustainable in the long run as market forces will equalize prices between countries and changeexchange rates in doing so. The example of consumers going overseas to buy cricket bats mayseem unrealistic as the expense of the longer trip would wipe out any savings you get frombuying the bat for a lower price. However it is not unrealistic to imagine an individual orcompany buying hundreds or thousands of the bats in India then shipping them to Australiafor sale. In the long run having different prices in Australia and India is not sustainable becausean individual or company will be able to gain an arbitrage profit by buying the good cheaply inone market and selling it for a higher price in the other market.

Thus Absolute PPP says that,PIndia = Spot (Rs.lAUD) × PAustralia implies

Spot Exchange rate (Rs./AUD) = PIndia/PAustralia

Thus it is the price levels in countries that determine the exchange rate.

Since the price for any one good should be equal across markets, the price for any combinationor basket of goods should be equalized.

So, why Purchasing Power Parity theory doesn't always work in practice?

Anything which limits the free trade of goods will limit the opportunities people have in takingadvantage of these arbitrage opportunities. A few of the larger limits are :

1. **Import and Export Restrictions :** Restrictions such as quotas, tariffs and laws will make itdifficult to buy goods in one market and sell them in another. If there is a 300% tax onimported cricket bats, then in our first example it is no longer profitable to buy the bat inIndia instead of the Australia. Australia could also just pass a law make it illegal to importcricket bats.

2. **Travel Costs :** If it is very expensive to transport goods from one market to another, wewould expect to see a difference in prices in the two markets.

3. **Perishable Goods :** It may be simply physically impossible to transfer goods from onemarket to another. There may be a place which sells cheap sandwiches in Indore, but thatdoesn't help me if I'm living in Delhi. Of course, this effect is mitigated by the fact thatmany of the

ingredients used in making the sandwiches are transportable, so we'd expectthat sandwich makers in Delhi and Indore should have similar material costs.

4. **Location :** You can't buy a piece of property in Indore and move it to New Delhi. Becauseof that realestate prices in markets can vary wildly. Since the price of land is not the same everywhere, we would expect this to have an impact on prices, as retailers in New Delhihave higher expenses than retailers in Indore.

So while purchasing power parity theory helps us understand exchange rate differentials,exchange rates do not always converge in the long run the way PPP theory predicts.

Absolute PPP works as a theoretical construct to understand an imaginary world of perfectcompetition. It does not serve well as a practical model to forecast exchange rates.

As a practical matter, a relative version of PPP has evolved, which states that the change in theexchange rate over time is determined by the difference in the inflation rates of the two countries.

THEORY OF INTEREST RATE PARITY :

There is a relationship between the foreign exchange market and the money market. Thisrelationship affects the rate of exchange as well as the difference between sopot rate and forward

rate. The IRP says that the spread between the forward rate and the sopt rate should beequal but opposite in sign to the difference in interest rates between two countries. So, as perIRP, a change in interest rate in any country will affect the exchange rates of its currency withother currencies and vice-a-versa. The basic principle is that there is an interconnection betweenthe interest rates and the exchange rates. As per IRP, the forward exchange rates betweentwo currencies will be equal to the spot rate adjusted for the interest rates differentialbetween the currencies. According to IRP, the currency of one country with a lower interestrate should be at a forward premium in terms of the currency of the country with the higherinterest rates. So, in an efficient market, the interest rate differential should be equal to theforward rate differential. When this condition is met, the forward rate is said to be at interestparity and the quilibrium prevails in the exchange market.

When the nominal interest rates differ from one country to another, the spot rate and the forward rate will also be different. The relationship can be expressed as follows:

$$\frac{\text{Forward Rate}}{\text{Spot Rate}} = \frac{(1+r_h)}{(1+r_f)}$$

Where rh is the home interest rate and rf is the foreign country rate.

Criticism of the theory of Interest Rate Parity

The theory of interest rate parity is a very useful reference for explaining the differential betweenthe spot and future, exchange rate, and international movement of capital. Acceptingthis theory implies that international finance markets are perfectly competitive and functionfreely without any constraints. However, reality is much more complex. Some of the majorfactors that inhibit the theory from being put into practice are as follows:

Availability of funds that can be unused for arbitrage is not infinite. Further, the importance ofcapital movements, when they are available, depends on the credit conditions practiced between

the financial places and on the freedom of actions of different operators as per the rulesof the country in vogue.

Fisher effects

All interest rates in a country are nominal interest rates consisting of two elements:

a) The real interest rate, and

b) The expected rate of inflation

The real interest rate is also known as the real required rate of return. The expected rate ofinflation embodies an inflation premium sufficient to compensate lenders or investors for expectedloss of purchasing power. So, the nominal interest rate depends on the rate of inflation and is defined as:

Nominal Interest Rate = (1+ Real Rate) (1+ Inflation Rate) – 1

The real interest rate is relatively stable over time and is identical every where, but the nominalinterest rate will vary by the differences in expected rates of inflation. The Fisher Effect saysthat the real interest rates are equalized across the countries, otherwise arbitrage will takeplace. So, in the equilibrium stage, the nominal rate differential will approximately equal theanticipated inflation rate differential. This can be stated follows:

$$\frac{(1+r_h)}{(1+r_f)} = \frac{(1+i_h)}{(1+i_f)}$$

Where rh and rf are nominal interest rates for home currency and foreign currency and ih and ifare inflation rates.

So, the Fisher Effect analyses the relationship between the interest rates and the expectedinflation.

The countries with higher rate of inflation will have higher nominal interest rates.

Implications of IRP

If domestic interest rates are less than foreign interest rates, foreign currency must tradeat a forward discount to offset any benefit of higher interest rates in foreign country toprevent arbitrage. IRP states that if foreign currency does not trade at a forward discountor if the forward discount is not large enough to offset the interest rate advantage of foreigncountry, then arbitrage opportunity exists for domestic investors. In such case, domesticinvestors can benefit by investing in the foreign market.

_ **If domestic interest rates are more than foreign interest rates**, foreign currency must tradeat a forward premium to offset any benefit of higher interest rates in domestic country toprevent arbitrage. If foreign currency does not trade at a forward premium or if the forwardpremium is not large enough to offset the interest rate advantage of domestic country,arbitrage opportunity exists for foreign investors. Foreign investors can benefit by investingin the domestic market.

Interest rate parity plays a fundamental role in foreign exchange markets, enforcing an essentiallink between short-term interest rates, spot exchange rates and forward exchange rates.

Covered Interest Arbitrage

First, let us examine what is an, uncovered interest arbitrage. Uncovered interest arbitrage isthe notion that the forward exchange rate is an unbiased estimate of the future spot rate.Uncovered interest arbitrage assumes that, on average, an investor who borrows in a low interestrate country, converts the funds to the currency of a high interest rate country, and lends inthat country will not realize a profit or suffer a loss. It follows from uncovered interest arbitragethat the expected return of a forward contract equals 0 percentA covered interest arbitrage exists when an arbitrage profit can be made. The process ofborrowing in one currency and simultaneously investing in another **with the exchange riskhedged in the forward market** is referred to **Covered Interest Arbitrage**.

INTERNATIONAL FISHER EFFECT (IFE):

IFE holds that the interest rates differentials should reflect the expected movement in the spotexchange rates, i.e., the spot exchange rate should move an equal amount but in a differentdirection to the difference in interest rates in two countries. The spot rate of a currency withhigher interest rate would depreciate and that of a lower interest rate would appreciate.

So, the interest rate differentials between two countries are offset by the spot and forwardexchange rates which is as follows:

$$\frac{S_1}{S_0} = \frac{(1+r_h)}{(1+r_f)}$$

Where S0 = Current Spot Rate

S1 = Future Sport Rate

rh = Home Interest Rate

rf = Foreign Exchange Rate

Advantages of International Fisher Effect

- Uses interest rate differentials to explain changes in exchange rates
- Assumes real interest rates are the same globally
- Believes high nominal rates indicate, potentially higher inflation and probable weakening of the currency.

PARITY CONDITIONS IN INTERNATIONAL FINANCE AND CURRENCY FORECASTING

Meaning of Arbitrage:

It is simultaneous purchase and sale of the same assets or commodities at the same time on different markets to profit from price discrepancies. Arbitrage also called as "Basis Trading" is a process of making riskless profits by exploiting price differences of identical or similar financial instruments on different markets or in different forms. Arbitrage exits as a result of market inefficiencies and it provides a mechanism to ensure prices do not deviate substantially from fair value for long periods of time. A person who engages in the process of arbitrage is called as "Arbitrageur".

Ex: If 1gm of gold costs Rs.1,500 in Mumbai market and the same costs Rs.1,650 in Bangalore market, an arbitrageur can buy gold in Mumbai and sell the same in Bangalore market to profit from price difference. However cost of transportation, taxes, Government interference etc are all ignored in the above case.

Conditions for Arbitrage:

1. The same asset does not trade at the same price on all markets i.e. there exists No "Law of One price".
2. Two different substitutable assets will identical cash flows do not trade at the same price.
3. An asset with the known price in the future does not today trade at its future price discounted at the risk free interest rate.

Triangular Arbitrage:

It refers to taking advantage of the state of imbalance that exists between three or more foreign exchange markets. It is a process of converting one currency to another, converting it again to a third currency and finally converting it back to the original currency during the same time to profit from the price differences that exits between these markets.

Ex:

Suppose you have $1 million and you are provided with the following exchange rates:

EUR/USD = 0.8631, EUR/GBP = 1.4600 and USD/GBP = 1.6939.

With these exchange rates there is an arbitrage opportunity:

Sell Dollars for Euros: $1 million x 0.8631 = 863,100 Euros
Sell Euros for Pounds: 863,100/1.4600 = 591,164.40 Pounds
Sell Pounds for Dollars: 591,164.40 x 1.6939 = $1,001,373 Dollars
Triangle Arbitrage Profit = $1,001,373 - $1,000,000

= $1,373

Law of One Price:

In competitive markets characterized by numerous buyers and sellers, having low cost access to information, exchange adjusted prices of identical tradable goods and financial assets must be within transition costs of equality worldwide.

International arbitrageurs who follow the principle of "Buy low and sell high" enforce the above rule of law of one price.

Forward Premium and Discount:

A foreign currency is said to be at premium if forward rate expressed is terms of home currency is greater than spot rate or else it is said to be at discount.

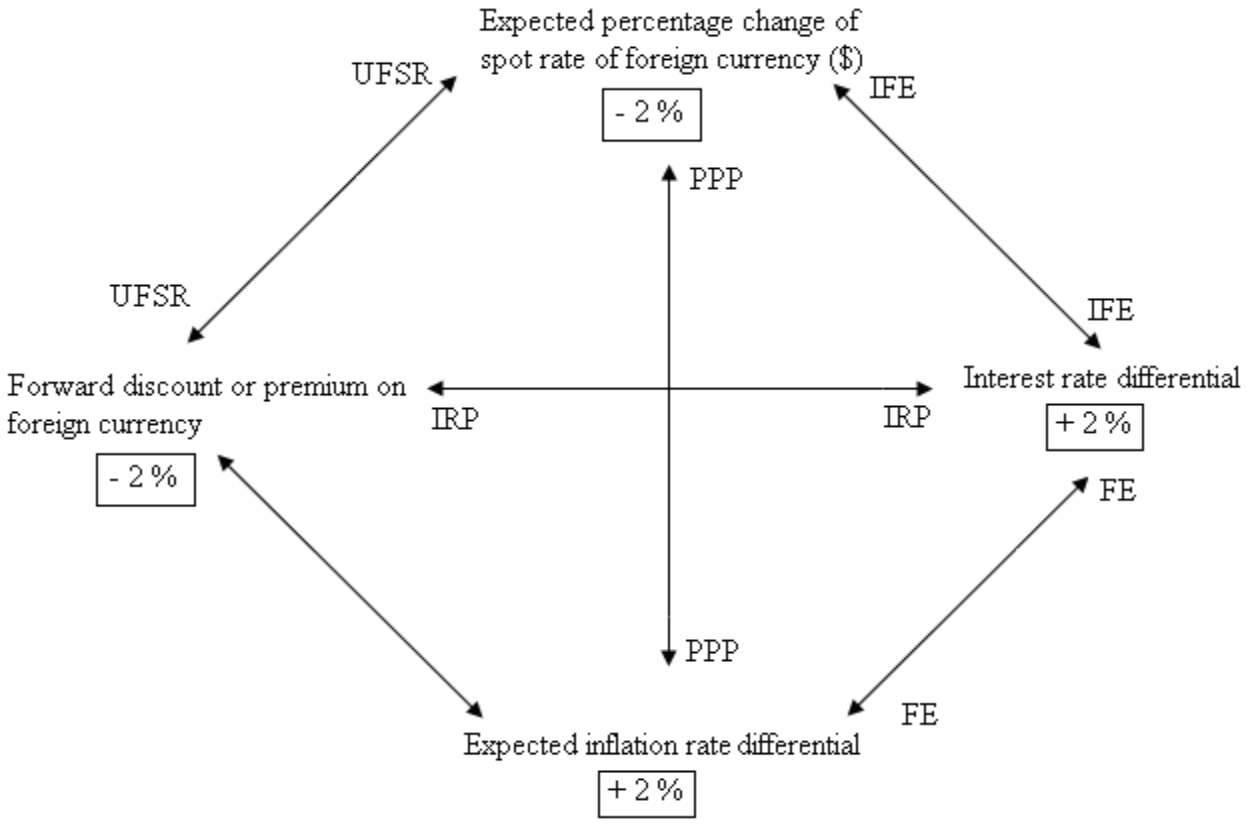
$$\text{Annualized \% of forward} = \frac{FR - SR}{SR} \times \frac{360}{\text{Forward contract period in days}}$$

Premium or Discount

The following five economic relationships arise due to the prevalence of "law or one price" and international arbitraging opportunities.

1. PURCHASE POWER PARITY (PPP)

2. FISHER EFFECT (FE)
3. INTERNATIONAL FISHER EFFECT (IFE)
4. INTEREST RATE PARITY(IRP)
5. FORWARD RATES AS UNBIASED PREDICTORS OF FUTURE SPOT RATES (UFSR)



PURCHASING POWER PARITY [PPP]

If international arbitrage enforces the law of one price, then the exchange rate between the home currency and domestic goods must be equal to the exchange rate between home currency and foreign goods.

In other words, one unit of home currency should have the same purchasing power worldwide. Ex: - If a pen costs Rs 50 in India and the same model pen costs $1 in US, then exchange rate shall be $1 = Rs 50.

For same purchasing power to remain constant world-wide, the foreign exchange rate must change approximately the same as difference between the domestic and foreign rates of inflation.

Swedish economist 'Gustav Cassel' first stated purchasing power parity in a rigorous manner in 1918. He used it as the basis for recommending a new set of official exchange rates at the end of World War I.

Assumptions of PPP:

1. The financial markets are perfectly liquid, transparent and free with no controls, taxes, transaction costs etc.
2. Goods markets are perfect, with international shipment of goods able to take place freely, instantaneously and without any cost.
3. There is a single consumption goods common to everyone.
4. The same commodities appear in the same proportions in each country's consumption basket.

Absolute PPP:

Purchasing power parity in its absolute version states that price levels should be same world wide when expressed in common currency. A unit of home currency should have the same purchasing power worldwide. This theory is application of law of one price to national price levels or else arbitrage opportunities would exist. However, absolute PPP ignores the effects of transportation costs, tariffs quotas and other restrictions and product differentiations in free trade.

Relative PPP:

The relative version of PPP states that the exchange rate between the home currency and foreign currency will adjust to reflect changes in the price levels of two countries. Ex: - If inflation in India is 10 % and in US is 3% then the rupee value of the USD must rise by about 7 % to equalize the Rupee price of goods in both the countries.

If i_h and i_f are inflations of home country and foreign country respectively, e_0 is home currency value of 1 unit of foreign currency at the beginning of the period and e_t is the spot exchange rate in period t, then

$$\frac{e_t}{e_0} = \frac{(1 + i_h)^t}{(1 + i_f)^t}$$

$$e_t = e_0 \frac{(1 + i_h)^t}{(1 + i_f)^t}$$

$(1 + i_f)^t$

The value of e_t represents PPP rate.

Note: - the above formula works for direct quote. In case of indirect quote the formula shall be

$$e_t = e_0 \frac{(1 + i_f)^t}{(1 + i_h)^t}$$

Ex: - The US (hc) and Switzerland (fc) are running annual inflation rates of 5 % and 3 % respectively and the spot rate is SFr 1 = \$0.75 then calculate the PPP rate after 1,2 and 3 years

$$e_t = e_0 \frac{(1 + i_h)^t}{(1 + i_f)^t}$$

$$e_1 = 0.75 \frac{(1 + 0.05)^1}{(1 + 0.03)^1} = \$0.7646$$

$$e_2 = 0.75 \frac{(1 + 0.05)^2}{(1 + 0.03)^2} = \$0.7794$$

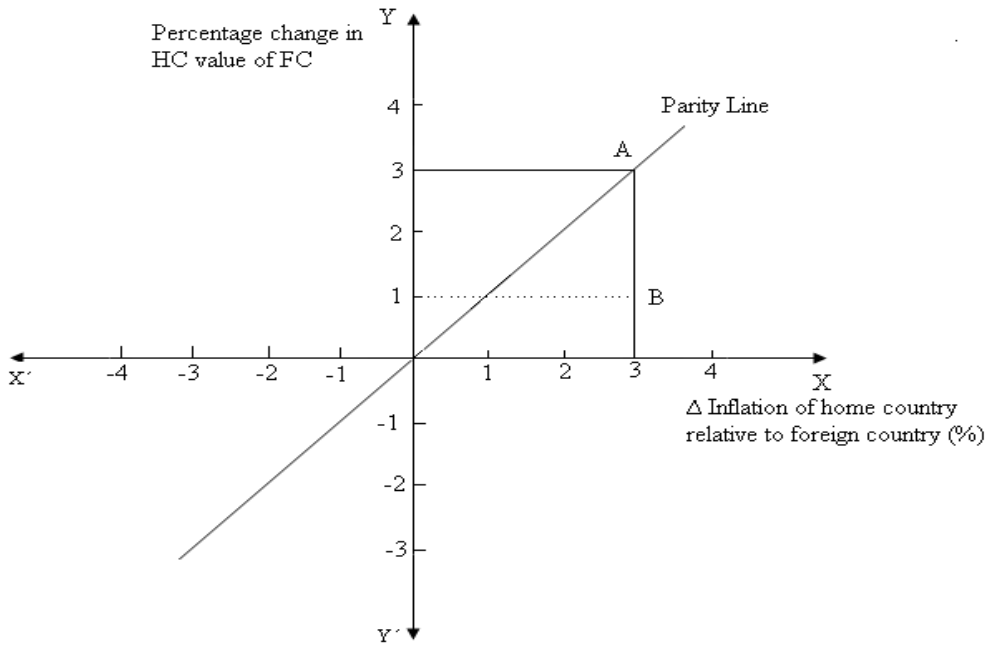
$$e_3 = 0.75 \frac{(1 + 0.05)^3}{(1 + 0.03)^3} = \$0.7945$$

Thus according to PPP the exchange rate change during a period should be equal to the inflation differential for the same time-period. In effect, PPP says that currencies with high rates of inflation should devalue relative to currencies with lower rate of inflation.

Inflation change of 2 % more in US should result in devaluation of USD by 2 %.

Therefore e_1 = \$ 0.75 × 102 % = \$ 0.765

Point 'A' on the parity line is an equilibrium point wherein 3 % change in inflation is offset by 3 % appreciation in foreign currency, whereas Point 'B' is at disequilibrium since 3 % change in inflation is offset just by 1 % appreciation in foreign currency.



Real Exchange rate: -

The real exchange rate is the nominal exchange rate adjusted for changes in the relative purchasing power of each currency since some base period

$$é_t = e_t \times \frac{P_f}{P_h}$$

By indexing these price levels to 100 as of the base period their ratio reflects the change in the relative purchasing power of these currencies since time 0. Increase in foreign price level and foreign currency depreciation have offsetting effects on the real exchange rate and similarly home price level increases and foreign currency appreciation offset each other.

An alternative way to represent the real exchange rate is to directly reflects the change in relative purchasing powers of these currencies by adjusting the nominal exchange rate for inflation in both countries since time 0 (base period).

$$é_t = e_t \times \frac{(1 + i_h)^t}{}$$

$$(1 + i_f)^t$$

Note: - e_t shall be in direct quote.

Empirical Evidence: -

The strictest version of PPP, that all goods and financial assets obey the law of one price is demonstrably false. The assumptions of PPP are highly unrealistic, the risk and costs of shipping goods internationally as well as Government erected barriers to trade and capital flows, are at times high enough to cause exchange adjusted prices to systematically differ between countries.

The general conclusion from empirical study of PPP is that theory holds up well in long run, but not as well over shorter time-periods. Thus in long run the real exchange rate tends to revert to its predicted value of e_0. That is if $\acute{e}_t > e_0$, then the real exchange rate should fall over time towards e_0. Where as if $\acute{e}_t < e_0$ the real exchange rate should rise over time towards e_0.

THE FISHER EFFECT: (Δ NIR = Δ EXPECTED INFLATION)

The real interest rate shall be adjustable to reflect expected inflation to obtain the nominal interest rate. According to Fisher effect the interest rate(r) is made of two components

a) Real interest rate (a)
b) Expected inflation rate (i)

Therefore

(1 + Nominal interest rate) = (1 + real interest rate) (1 + expected inflation rate)

(1 + r) = (1 + a) (1 + i)

(1 + r) = 1 + a + i + ai

r = a + i + ai

However often approximated 'r' is calculated as equal to 'a + i'.

Ex: If required real interest rate is 3 % and expected inflation rate is 10 %. Calculate the nominal interest rate

(1 + r) = (1 + a) (1 + i)

$(1 + r) = (1 + 0.03)\ (1 + 0.10)$

$(1 + r) = 1.133$

$r = 0.133$ or 13.3 %

Alternatively

$r = a + i + ai$

$r = 0.03 + 0.10 + (0.03)\ (0.10) = 0.133$ or 13.3 %

According to FE the lender should not only be compensated for interest (3 %) but also for depreciation in principal value by (10.3 %) for passage of time

"According to generalized version of FE the real returns are equalized across the countries through arbitrage" i.e. $a_h = a_f$. If expected real returns were higher in one currency than the other, capital would flow from the second to the first currency.

In an equilibrium with no government interference, the nominal interest rate differential will approximately equal the anticipated inflation differential between the two currencies.

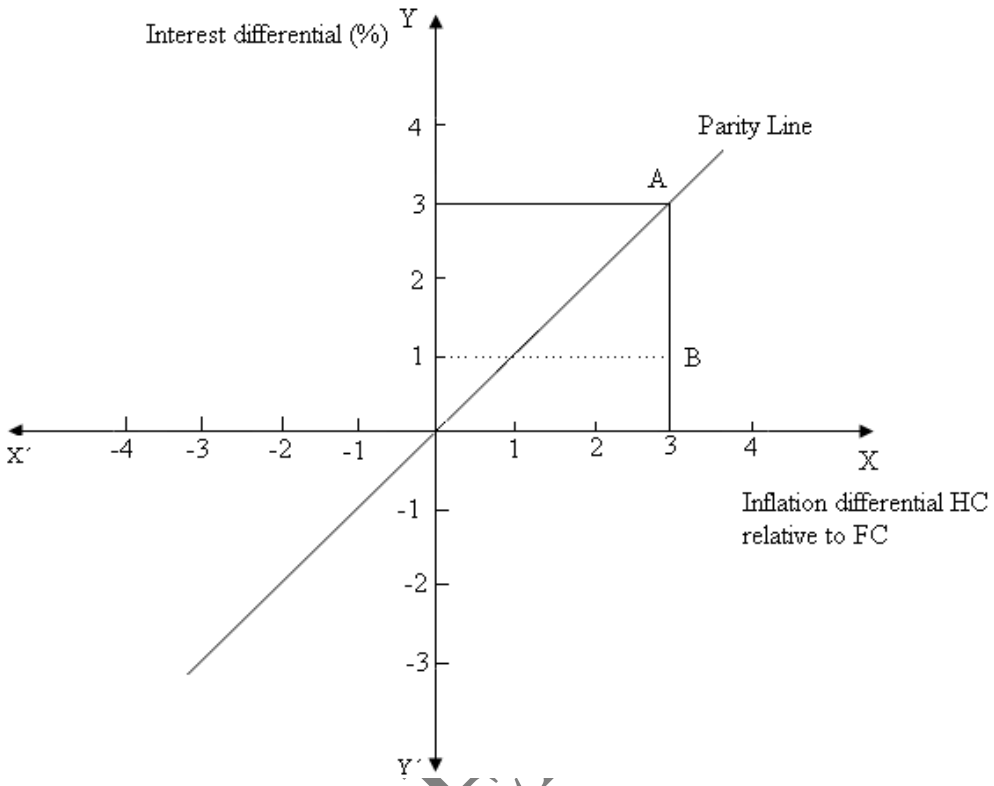
$r_h - r_f = i_h - i_f$

Δ NIR = Δ Inflation

Where r_h and r_f represents nominal interest rate at home country and foreign country respectively, i_h and i_f represents inflation at home country and foreign country respectively.

In other words, according to FE,

$$\frac{(1 + r_h)^t}{(1 + r_f)^t} = \frac{(1 + i_h)^t}{(1 + i_f)^t}$$



THE INTERNATIONAL FISHER EFFECT [IFE]

It is the combination of Purchasing power parity (PPP) and generalized Fisher Effect (FE) which gives way to International Fisher Effect (IEF)

According to PPP

$$\Delta ER = \Delta IR$$

$$\frac{e_t}{e_0} = \frac{(1 + i_h)^t}{(1 + i_f)^t} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

According to FE

$$(1 + NIR) = (1 + RIR)(1 + IR)$$

$$(1 + r) = (1 + a)(1 + i)$$

Therefore Δ NIR = Δ Expected Inflation rate

$$\frac{(1 + r_h)^t}{(1 + r_f)^t} = \frac{(1 + i_h)^t}{(1 + i_f)^t} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Equation 1 and 2 gives

$$\frac{e_t}{e_0} = \frac{(1 + r_h)^t}{(1 + r_f)^t}$$

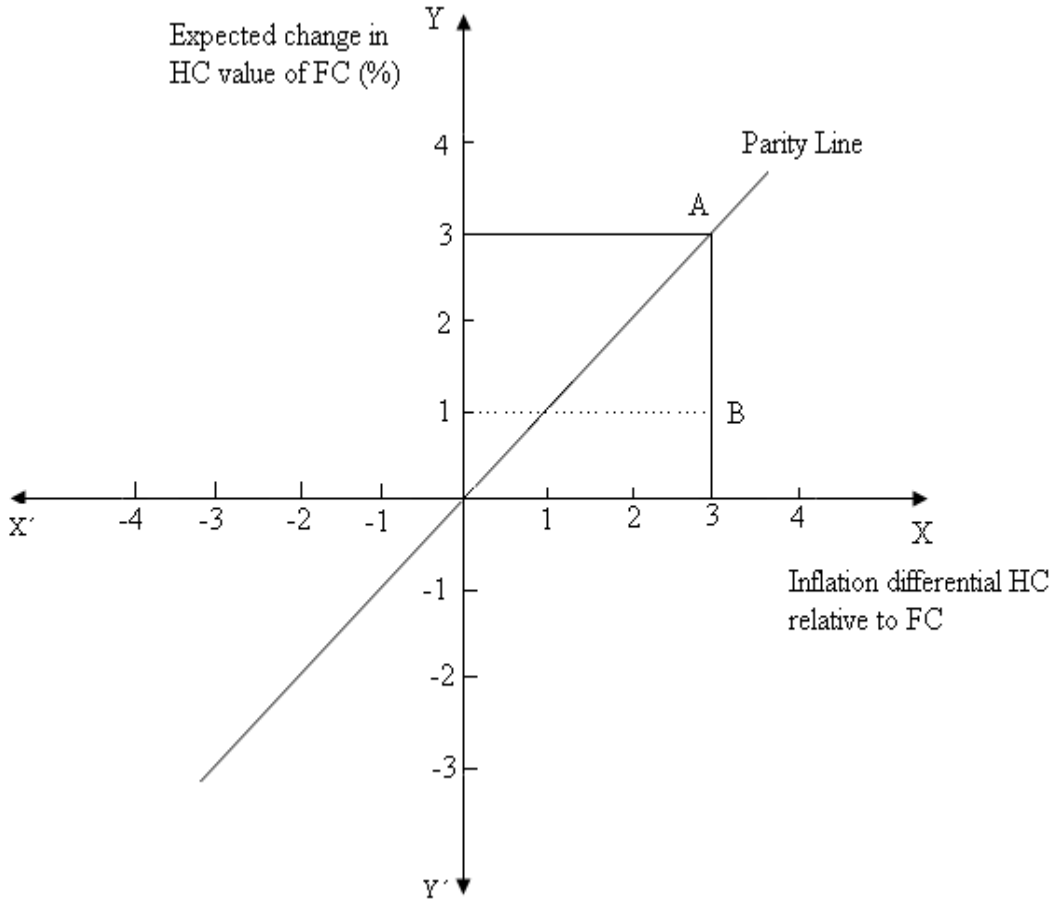
i.e. Δ ER = Δ NIR

There fore

$$e_t = e_0 \frac{(1 + r_h)^t}{(1 + r_f)^t}$$

According to IFE, the nominal interest rate differential between any two countries is an unbiased predictor of the future change in spot exchange rate. Hence currency with higher nominal interest rates will depreciate and those with low interest rates will appreciate.

Point 'A' on parity line is at equilibrium whereas point 'B' outside the parity line is not at equilibrium.

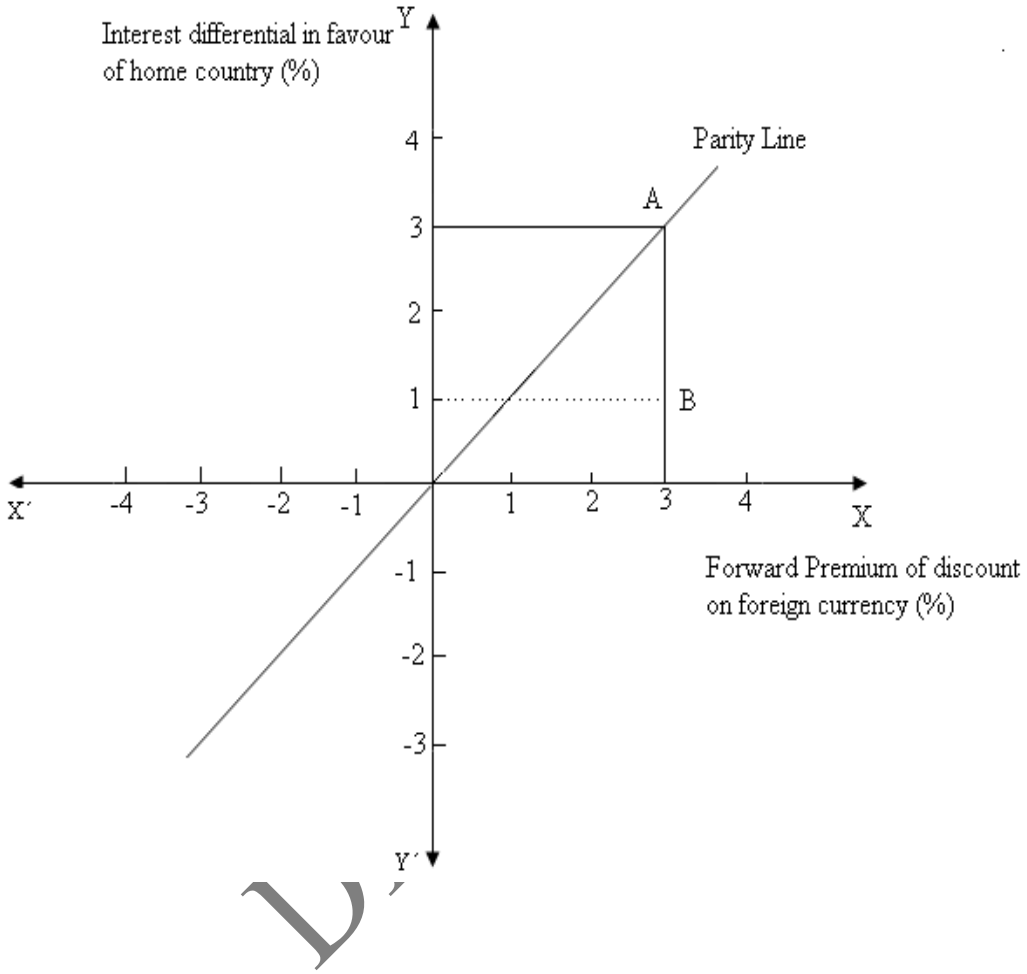


INTEREST RATE PARITY THEORY [IRP]

According to IRP theory, the interest differential should be equal to the forward differential i.e. the currency of the country with a lower interest rate should be at a forward premium in terms of the currency of the country with higher interest rate. If the above condition is satisfied, the forward rate is said to be at interest rate parity and equilibrium prevails in money market.

Covered Interest Differential:

Interest parity ensures that the return on a hedged or covered foreign investment will just equal the domestic interest rate on investment of identical risk or else it gives rise to covered interest arbitrage. The process of covered interest arbitrage continues until interest parity holds, unless there is government interference.



THE RELATIONSHIP BETWEEN THE FORWARD RATE AND FUTURE SPOT RATE

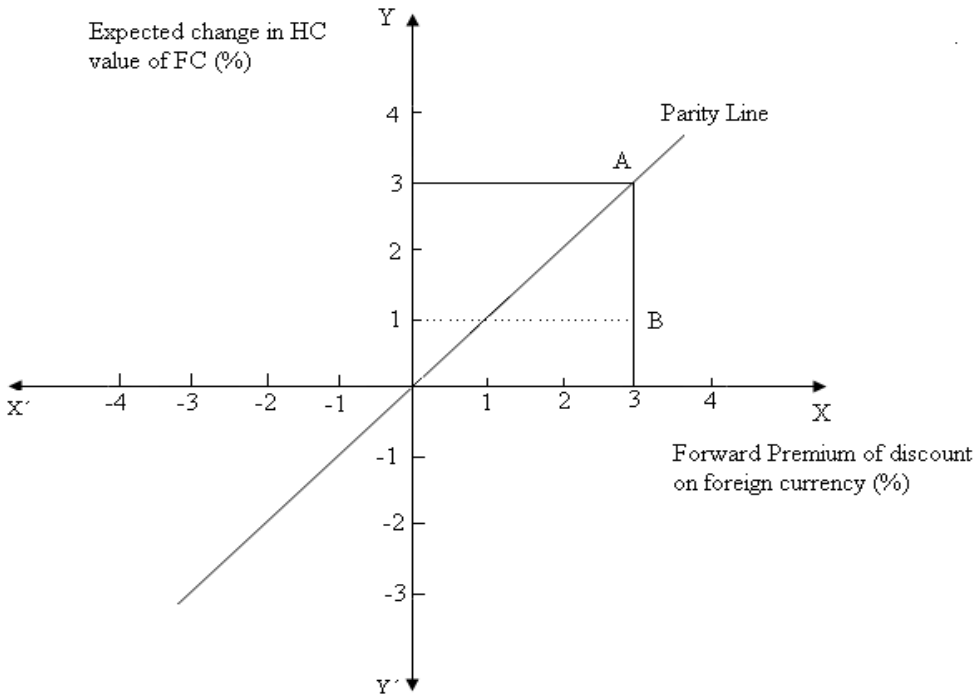
An unbiased nature of forward rate is that the forward rate should reflect the expected future spot rate on the date of settlement of the forward contract.

$F_t = \bar{e}_t$

Where F_t = forward rate at time‘t’.

$\bar{e}t$ = expected future spot rate

Equilibrium is achieved only when the forward differential equals the expected change in the exchange rate.



PARITY CONDITIONS IN BRIEF:

I. PURCHASING POWER PARITY [PPP]

Δ ER = Δ IR

$\frac{e_t}{} = \frac{(1 + i_h)^t}{}$

$e_0 \quad (1 + i_f)^t$

$e_t = e_0 \frac{(1 + i_h)^t}{}$

$(1 + i_f)^t$

II. FISHER EFFECT [FE]

Δ NIR = Δ Expected Inflation rate

$(1 + NIR) = (1 + RIR)(1 + IR)$

$(1 + r) = (1 + a)(1 + i)$

$(1 + r) = 1 + a + i + ai$

r = a + i + ai

III. INTERNATIONAL FISHER EFFECT [IFE]

Δ ER = Δ NIR

$\frac{e_t}{e_0} = \frac{(1 + r_h)^t}{(1 + r_f)^t}$

$e_t = e_0 \frac{(1 + r_h)^t}{(1 + r_f)^t}$

IV. INTEREST RATE PARITY [IRP]

Forward rate differential = Interest differential

$\frac{F_t}{e_0} = \frac{(1 + r_h)^t}{(1 + r_f)^t}$

V. UNBIASED FORWARD RATES [UFR]

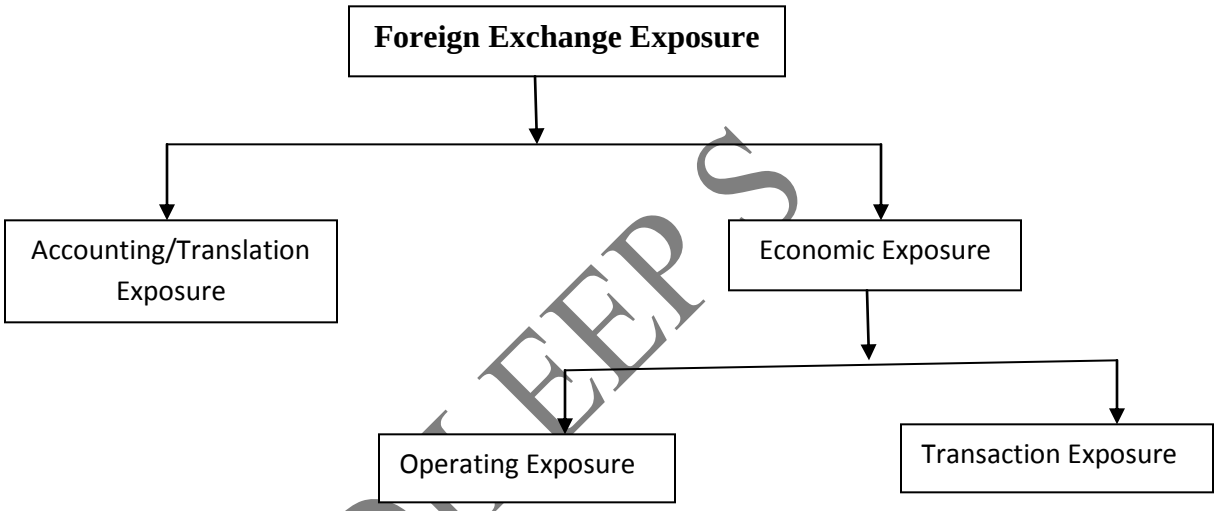
$F_t = \bar{e}_t$

$\frac{Ft - e_0}{e_0 e_0} = \frac{\bar{e}_t - e_0}{}$

"It's not how much money you make, but how much money you keep, how hard it works for you, and how many generations you keep it for." - Robert Kiyosaki

MODULE 6

Foreign Exchange Risk Management



Meaning of Exposure:

Exposure refers to the level of commitment and the degree to which a company is effected by exchange rate movements.

Types of exposure:

1. **Accounting Exposure:**

   It is also called as translation exposure, where in measurement of exposure is retrospective in nature. It is based on past activities and it measures the effect of exchange rate changes on published financial statements. It effects both income statement and balance sheet items.

   Due to change in exchange rate, the foreign exchange translation gains or losses will appear. The assets and liabilities which are to be translated at current rate are considered

to be exposed and those assets and liabilities which are translated at historical rate are not considered to be exposed. Hence, translation exposure refers to the difference between exposed assets and exposed liabilities.

In translation exposure, the concept of exposure is examined and studied from the perspective of the accountant. It involves the sensitive task of determining which foreign currency denominated assets and liabilities will be translated at current exchange rate and which will be translated at historical rate.

2. **Economic Exposure:**

Operating exposure and transaction exposure together constitutes a firms economic exposure. It is the extent to which the value of the firm measured by its present value of expected cash flow changes with the change in exchange rate movements.

a. Operating Exposure:

It measures the extent to which currency exposure can alter a company's future operating cash flows. The measurement of operating exposure is prospective in nature and it is based on future activities of the firm. It effects revenues and costs associated with future sales.

b. Transaction Exposure:

It arises due to changes in the value of outstanding foreign currency denominated contracts. The measurement of transaction exposure is both retrospective and prospective because it is based on activities that occur in the past but will be settled in the future.

Methods of Accounting/ Translation Exposure:

1. **Current and non current method:**

Under this method, all current assets and current liabilities of foreign affiliate are translated into home currency at the current exchange rate while the non current assets and non current liabilities are translated at historical rates that is, the rate in effect when the asset was acquired or liability was incurred.

The income statement is translated at the average exchange rate of the period, except for those revenues and expense items associated with non current assets or liabilities.

2. Monetary and Non monetary method:

According to this method all monetary assets and monetary liabilities are translated at current rates where as non monetary assets and liabilities are translated at historical rates.

Monetary items are those items which represent a claim to receive an obligation to pay a fixed amount of foreign currency units. Eg: Cash, account receivables (Debtors + Bills receivable), Accounts payables (creditors + Bills payable), other current liabilities, long term debt etc.

Non Monetary items are those items that do not represent a claim to receive on an obligation to pay a fixed amount of foreign currency units. Eg: Stock, fixed assets, equity shares, preference shares etc.

The income statement is translated at the average exchange rate of the period, except for those revenues and expense items associated with non monetary assets or liabilities.

3. Temporal Method:

It is a modified version of monetary and non monetary method. The only difference between monetary and non monetary method and temporal method is "valuation of stock".

Under monetary/non monetary method, stock is considered as non monetary assets and it is valued at historical rate; where as under temporal method, stock is valued at historical rate, if it is shown at cost price or it is valued at current rate if it is shown at market price.

4. Current Rate Method:

Under this method, all balance sheet items are translated at current exchange rate, expect for share holder's equity (share capital + reserves and surplus) which is translated at historical rate.

Exchange Rate under Accounting Exposure Method

Items	Current/ Non-current Method	Monetary/Non-monetary Method	Temporal Method	Current Rate Method
Cash	CR	CR	CR	CR
Receivables	CR	CR	CR	CR
Inventory	CR	HR	HR /CR	CR
Fixed Assets	HR	HR	HR	CR
Payables	CR	CR	CR	CR
Long term Debt	HR	CR	CR	CR
Net worth	HR	HR	HR	HR

CR = Current Rate, HR = Historical Rate

Methods for managing Translation Exposure (Accounting Exposure)

1) **Adjusted fund flows: -** It involves altering either the amount of currencies or both cash flows of parent or subsidiary to reduce the firm's local currency exposure

   If local currency devaluation is expected then exports are priced in hard currency (Foreign currency) and imports are priced in soft currency (Local currency).

   Other techniques like investing in hard currency replacing hard currency borrowing with soft currency loans etc are also considered.

2) **Entering into forward contracts: -** It demands a formal market in the respective local currency. Forward contract creates an offsetting asset or liability in the foreign currency, the gain or loss on the transaction exposure is offset by a corresponding loss or gain in forward market.

If a firm cannot find a forward market for currency in which it has exposure it can hedge such risk through a forward contract on a related currency whose relationship is estimated by examining historical currency fluctuations between actual and related currency.

3) **Exposure netting: -** It refers to offsetting exposure in one currency with exposure in the same or another currency whose exchange rates are expected to move in a way such that loss or gain on first exposed position will be offset by gain or loss in the second exposed position.

Managing Transaction Exposure

Transaction exposure can be managed by using

- Price adjustment
- Forward market
- Money market
- Currency option
- Borrowing or lending in foreign currency etc.

EXPOSURES IN INTERNATIONAL FINANCE

INTRODUCTION :

The exposure indicates a situation of being open or being vulnerable to risks. As soon as a firmenter into transactions dealings involve foreign currency, it is exposed to foreign exchangerisk. The dealings may be related to sale or purchase of goods and services, overseas investmentsor financing its operations in foreign currencies by issue of shares/debentures/loans toforeign investors.

The exposure of a firm to variations in exchange rates, may be of four types:

i. Transaction Exposure

ii. Translation Exposure

iii. Economic Exposure

iv. Political Exposure

(i) TRANSACTION EXPOSURE :

Usually there is a time gap between sale of goods and services and the receipt and payment.During this period the exchange rates may change and there may arise a risk due to exchangerates. This risk is known as transaction exposure. A transaction exposure occurs when a valueof future transaction, though known with certainty, is dominated in some currency other thanthe domestic currency. In such cases, the monetary value is fixed in terms of foreign currencyat the time of agreement which is completed at a later date. For example, an Indian exporteris to receive payment in Roubles 90 days time for an export made today. His receipt in Roublesis fixed and certain but as far as the revalue is concerned, it is uncertain and will dependupon the exchange rate prevailing at the time of receipt. All fixed money value subjected totransaction exposure. The transaction exposure look at the effects of fluctuations denominatedin foreign currency. It may be noted that if the payment is denominated in foreign currency,then the importer carries the risk of transaction exposure. However, if the payment in domesticcurrency of the importer then the risk of transaction exposure goes with the exporter.

So, the receipts and payments denominated in foreign currency have transaction exposure. Ifreceipts (denominated in foreign currency) are more than payment (denominated in foreigncurrency), the decrease in value of foreign currency will cause exchange loss and appreciationin the value of foreign currency will bring exchange gains. However, if receipts are lowerthan the payments, decrease in value of currency will create gain and appreciation will createlosses.

(ii) TRANSLATION EXPOSURE :

Translation exposure is the profit or loss associated with converting foreign currency denominatedassets / liabilities (also income and expenses) in reporting currency. It emerges when forthe limited purpose of financial reporting, items of income, expenses, assets & liabilities denominatedin foreign currency translated into home currency, i.e., reporting currency. Theeffect of such translation need not necessarily affect the cash flows of an entity. [Risk underthis category relates to the accounting treatment of changes in exchange rates for reportingpurposes

and is some what technical. And it is governed by accounting standard -11 revisedand issued by the Accounting Standard Board, and is dealt with there elaborately.

(iii) ECONOMIC EXPOSURE:

When an exchange rate changes, one currency depreciates and the importers of that countrywould pay more for the current transactions. This is known as transaction exposure. The othereffect of the change in exchange rate would be that goods will be dearer and customers have topay more for the same product. This would affect the future cash flows by affecting the salesand competitiveness.

In case, the currency of the exporter's country depreciates, the exporter stands to gain in termsof current transaction. The goods /services will become cheaper relative to competing countriesand there exists a possibility of making increased sales and profits. This is known as theeconomic exposure of the firm.

The economic value of an asset, or collection of assets, is the present value of the future cashflows that the asset would generate. For a firm, the economic value is the present value of thefuture cash flows. The economic exposure refers to the profitability that the changes in foreignexchange rate will affect the value of the firm. Since the intrinsic value of the firm is equal tosum of the present values of future cash flows discounted at an appropriate rate of return, therisk contained in economic exposure requires a determination of the effect of changes in exchangerates on each of the expected future cash flows.

The value of the foreign assets or foreign subsidiary is affected not only by the business riskbut also by the exchange rate risks. The value of the foreign operation at any time dependsupon the future cash flows, expected exchange rate and the appropriate discount rate to beapplied to find out the present values.

Economic exposure is a broader and more subjective concept than the transaction and translationexposure because it involves potential effects of changes in exchange rates on all operationof the firm. So, the measurement of economic exposure requires that a detailed analysis ofthe effects of exchange rate changes should be made.

(iv) POLITICAL EXPOSURE :

Political risk refers to consequences that political activities in a country may have on the valueof a firm's overseas operations.

Explanation: while political risks can cause either a negative or positive effect on the value ofthe firm. We confine ourselves to adverse effects, on any firm operating in a foreign market.**Political risk includes :**

Discrimination against foreign business.

Compulsory acquisition of properties of government.

Boycott of products

Rules specifying the use of labour and materials, or prices setting constraints.

Exchange controls-limitations on the extent to which a country's currency can be usedto transfer funds or restrictions on the conversion of currency into other currencies.

Tax regulations biased against foreign investment, or foreign operations.

The link between transactions or events attributable to political risk, and change in exchangerate, is rather week. Nevertheless, such risks associated with operations in a foreign centercannot be ignored either.

The political risks are perceived to be high in foreign country, does not necessarily follow thata company should refrain from investing in a country, if the project returns are large enough tojustify taking on that risk. The bottom line is- assess the risk- reward ratio and take decision.

"Pursuing your passion is fulfilling and leads to financial freedom." - Robert G Allen

MODULE 7

HEDGING

Hedging in a particular currency exposure, means establishing an offsetting currency position so as to lock in the home currency value for the currency exposure and eliminate currency fluctuation risk.

Exposure Netting: - It refers to offsetting exposure in one currency with exposure in the same or another currency whose exchange rates are expected to move in a way such that loss or gain on first exposed position will be offset by gain or loss in the second exposed position.

Eg: - If A limited has $ 10000 receivable position and $ 6000 payable position both for 3 months, exposure netting can be done and it is enough if A limited hedges for $ 4000 receivable positions.

Centralized v/s Decentralized Hedging

Centralized hedging refers to total corporate exposure hedged as a totality instead of each individual hedging where specific exposure are hedged at branch levels which is referred to as decentralized hedging.

Centralized hedging reduces cost of hedging because of netting however centralized hedging requires strong real time information, qualified and trained employees to operate real time system etc.

Thus before deciding for centralized or decentralized hedging a detailed cost benefit analysis should be undertaken i.e. if the cost of implementation is lesser than its benefit, then go for centralized hedging or else decentralized hedging is a better option.

Methods for managing Translation Exposure (Accounting Exposure)

4) **Adjusted fund flows: -** It involves altering either the amount of currencies or both cash flows of parent or subsidiary to reduce the firm's local currency exposure

If local currency devaluation is expected then exports are priced in hard currency (Foreign currency) and imports are priced in soft currency (Local currency).

Other techniques like investing in hard currency replacing hard currency borrowing with soft currency loans etc are also considered.

5) **Entering into forward contracts: -** It demands a formal market in the respective local currency. Forward contract creates an offsetting asset or liability in the foreign currency, the gain or loss on the transaction exposure is offset by a corresponding loss or gain in forward market.

   If a firm cannot find a forward market for currency in which it has exposure it can hedge such risk through a forward contract on a related currency whose relationship is estimated by examining historical currency fluctuations between actual and related currency.

6) **Exposure netting: -** It refers to offsetting exposure in one currency with exposure in the same or another currency whose exchange rates are expected to move in a way such that loss or gain on first exposed position will be offset by gain or loss in the second exposed position.

Managing Transaction Exposure

Transaction exposure can be managed by using

- Price adjustment
- Forward market
- Money market
- Currency option
- Borrowing or lending in foreign currency etc.

Forward market hedge v/s money market hedge

In a forward market hedge a company that is long (buy) on foreign currency will sell foreign currency forward where as a company that is short (sell) on foreign currency will buy the foreign currency forward. In this way the company can fix the home currency value of future foreign currency cash flow.

Hedging with forward contract eliminates the downside risks at the expense of foregoing upside potentials (cost of hedging).

Money market hedge is alternative to forward market hedge which involves simultaneous borrowing and lending activities in two different currencies to lock in home currency value of a future foreign currency cash flow. The effective rate on forward contract will equal the actual forward rate if interest parity holds.

Futures Hedge:

a) Purchasing Currency Futures:

A firm that buys a currency futures contract is entitled to receive a specified amount in a specified currency for a stated price on a specified date. To hedge a payment on futures payables in a foreign currency, the firm may purchase a currency futures contract for the currency it will need in the near future. By holding this contract, it locks in the amount of its home currency to make the payment.

b) Selling Currency Futures:

A firm that sells a currency futures contract is entitled to sell a specified amount in a specified currency for a stated price on a specified date. To hedge the home currency value of futures receivables in a foreign currency, the firm may sell a currency futures contract for the currency it will be receiving. By holding this contract, it locks in the amount of its home currency value of its receivables in foreign currency.

Forward Hedge:

A forward hedge is very similar to that of a futures contract hedge, except that forward contracts are commonly used for large transactions whereas futures contracts tend to be used for smaller amounts. Forward contracts are negotiated between the firm and a commercial bank and specify the currency, the exchange rate, and the date of the forward transaction. Forward contracts specify the exact number of units that they desire, whereas futures contracts represent a standardised number of units for each currency.

Money Market Hedge:

Money market hedge is alternative to forward market hedge which involves simultaneous borrowing and lending activities in two different currencies to lock in home currency value of a future foreign currency cash flow. The effective rate on forward contract will equal the actual forward rate if interest parity holds.

Currency Option Hedge:

Forward, Futures and Money market hedge will always be at the cost of future profitable opportunity and if the payable currency depreciates or the receivable currency appreciates over the hedged period, then cost of hedging through the above techniques will prove a very cost mistake. Thus Option hedge is considered to be a better one in these situations which protects the firm from adverse exchange rate movements but also allows the firm to benefit from favorable exchange rate movements. However a firm must assess whether the advantage of Option hedge is worth the premium paid for it. Payable positions are hedged with Currency Call Options and Receivables with Currency Put Options. A currency call option will be exercised if the future spot on the expiry is above the exercise (Strike) price or else it will be allowed to lapse. Similarly Currency Put option will be exercised if the future spot on the expiry is below the exercise price or else it will be allowed to lapse.

SWAPS

A swap is an agreement between two companies to exchange cash flows so as to gain the difference.

Types of Swaps

1. Interest Rate Swaps
2. Currency Swaps

An **interest rate swap** is a swap where in a company borrows fixed rate of interest (Comparative advantage in fixed rate interest) and ends up paying in floating rate (wishes to pay floating rate of interest) by entering into swap agreement with other company with opposite cash flows.

LIBOR (**L**ondon **I**nter **B**ank **O**ffer **R**ate)

It is the rate of interest at which bank deposits money with other banks in the euro currency markets generally 1-month, 3-month, 6-month and 1-year LIBOR's are used.

Advantages of Swap

1. A swap agreement can be used to transform a floating rate of loan into fixed rate of loan and vice versa.
2. A swap agreement can also be used to transform an asset turning fixed rate of interest into an asset turning floating rate of interest.

Comparative Advantage Theory

- ✓ The popularity of swaps comes into picture only because of Comparative Advantage Theory.
- ✓ According to this theory a company should borrow or invest for that rate of interest in which it has comparative advantage.
- ✓ But however it wants to satisfy its wish of opposite rate, it should enter into swap agreement.
- ✓ Critics of Comparative Advantage Theory argue that the benefit of swap will not exist in reality because of arbitragers operating in market.
- ✓ Comparative Advantage Theory makes an assumption that floating rate of interest remains unchanged throughout the period of swap agreement. However in reality floating rate might change due to change in the creditworthiness of the company.

Currency Swap

It involves exchange of principal and interest payment of receipts and payments in one currency with that of another currency**.**

Advantages of currency swap

- ✓ Transformation of liabilities.
- ✓ Transformation of assets.

"It's not your salary that makes you Rich, it's your spending habits." - Charles A. Jaffe

THEORY QUESTIONS:

3 Marks:

2. **What is international finance?**

   It is a branch of economics which studies the dynamics of exchange rates, foreign investment and how those affect the international trade.

3. **What is chain rule?**

   The chain rule is the formula for the derivative of the composite of two functions.

4. **What is foreign exchange market?**

   The Foreign Exchange market is a market where one currency is traded for another. The foreign exchange market allows currencies to be exchanged in order to facilitate international trade or financial transactions.

5. **What is international Capital Budgeting?**

   It refers to the analysis of cash inflows and outflows associated with prospective long-term foreign investment projects. It helps in identifying the cash flows put to risk and estimate cash flows to be derived over time.

6. **What is caps and floors?**

   Interest rate caps are portfolios of simple call and puts respectively on interest rate.

   A corporation borrowing medium-term floating rate funds wishes to protect itself against the risk of rising interest rates. It can do so by buying an interest rate cap for the duration of the loan.

   A fund manager who plans to invest $50 million in 5 year Floating Rate Notes. The notes pay 6 month LIBOR + 0.50%, the rate being reset every six months. The current 6 month LIBOR is 8.6%. As a protection against the falling rates the manager decides to buy an interest rate floor.

7. **What is foreign direct investment?**

   Foreign direct investment (FDI) is a measure of foreign ownership of productive assets, such as factories, mines and land. Increasing foreign investment can be used as one measure of growing economic globalization. FDIs require a business relationship between a parent company and its foreign subsidiary.

   FDI is any form of investment that earns interest in enterprises which function outside of the domestic territory of the investor. In order to qualify as FDI there should be parent enterprise's control over its foreign affiliate by making some investment. The IMF defines control in this case as owning 10% or more of the ordinary shares or voting power of an incorporated firm or its equivalent for an unincorporated firm. And lower investment shares are known as portfolio investment.

8. **What are the main objectives of European Monetary system?**

   The European system of central banks is composed of European central bank and national central banks of all 15 EU member states. The objectives of European monetary system are:

   a. To define and implement the monetary policy of the euro area

   b. To conduct foreign exchange operations

   c. To hold and manage the official foreign reserves of the Member states

   d. To promote the smooth operation of payment systems

9. **What are the attributes of an ideal currency?**

   The attributes of an ideal currency are:

   a. Exchange rate stability

   b. Full financial integration

   c. Monetary independence

10. **What is multilateral netting?**

    It refers to offsetting exposure in one currency with exposure in the same or another currency whose exchange rates are expected to move in a way such that loss or gain on first exposed position will be offset by gain or loss in the second exposed position.

11. What is transfer pricing?

It refers to pricing of assets, tangibles, intangibles, services and funds when transferred within an organization. For eg. Goods from production division may be sold to the marketing division or goods from a parent company may be sold to subsidiary.

12. **What are depository receipts?**

It is a type of negotiable (transferable) financial security that is traded on a local stock exchange but represents a security, usually in the form of equity, that is issued by a foreign publicly listed company.

13. What do you mean by dirty float?

It is an exchange rate system in which exchange rates are allowed to fluctuate without set boundaries and governments do intervene as they wish.

14. What is a Euro currency?

It refers to the currency held by non residents and placed on deposit withd banks outside the country of the currency. Eg. US dollars owned by a Middle East country and deposited in London.

15. What is back to back loan?

It is a type of loan where by two companies in different countries borrow offsetting amounts from one another in each others currency. The purpose of this transaction is to hedge against currency risk. But with the advent of currency swaps, these types transactions are no longer used.

16. Explain the term forfeiting?

It refers to the purchasing of an exporter's receivables (the amount importers owe the exporter) at a discount by paying cash. The forfaiter, the purchaser of the receivables, becomes the entity to whom the importer is obliged to pay its debt.

17. What is SWIFT?

It refers to Society for World Wide Inter Bank Financial Telecommunication. The SWIFT operates a worldwide financial messaging network which exchanges messages between banks and financial institutions.

18. What is Balance of Payment?

Balance of payment of a Country is a systematic accounting record of all economic transactions during a given period of time between the residents of the country and residents of foreign countries. It represents an accounting of country's international transactions for a particular period of time, generally a year. It accounts for transactions by individual, businesses and Government.

19. Distinguish between reciprocal rate and cross rate.

The price of one currency in terms of another when the official quote gives the second currency in terms of the first is known as **reciprocal rate**. It is also known as **indirect quote**.

But when the quotations are not available for a pair of currency, third currency is used to find out the exchange rate between the pair of currency. Determining the exchange rate by using two other currencies is known as **cross rate**. The third currency used will be some popularly traded currency.Eg: If you want to find out the quotation for Yen/$, and Pound being Common currency which is popularly traded, given $/Pound = 1.5240, Yen/Pound = 235.20. Then yen/$=154.33Yen/$.

20. Distinguish between spot, forward and future market.

The **spot market** is where securities (e.e. shares, bonds, funds warrants and structured products) and gods (e.g commodities) are traded. The spot market is characterized by simultaneous delivery and payment. The payment for the transaction takes place immediately or in T+2 days.

Forward transactions are transactions in which the price, number and delivery date of the securities to be traded are agreed upon between the buyer and the seller. It is over the counter market consisting of tailor made contracts. And the contracts are executed at a future agreed date.

Future market is a market where the price, number and delivery date of the securities to be traded are standardized and are traded over the exchange and the contract agreed upon will be executed at a future date.

21. Distinguish between depreciation and devaluation.

Weakening of home country currency against the other currency is known as **depreciation** of home currency.

Devaluation refers to drop in the foreign exchange value of a currency.

22. Explain 'Nostro' and 'Vostro' types of bank account.

It is an arrangement in which two correspondent banks (in different countries) keep a local currency account with one another.

If SBI open an account with Bank of America, SBI considers it as Nostro account but the same account will be called as vostro account from the perspective of BOA.

23. What is the difference between balance of trade and balance of payment?

Balance of trade is the difference between the monetary value of exports and imports over a certain period of time. A positive balance is known as trade surplus and consists of more exports than imports. A negative balance is known as trade deficit.

Balance of payment of a Country is a systematic accounting record of all economic transactions during a given period of time between the residents of the country and residents of foreign countries. It represents an accounting of country's international transactions for a particular period of time, generally a year. It accounts for transactions by individual, businesses and Government.

Balance of trade is a part of balance of payment.

24. What is currency call and put option?

The right but not the obligation to buy one currency against another currency is known as **Call option**.

The right but not the obligation to sell one currency against another currency is known as **Put option**.

25. Distinguish between bilateral and multilateral setting.

Bilateral netting is netting done between two parties and two currencies whereas multilateral netting is done between more than two parties and more than two currency can be involved. Whenever more than two currencies are involved, cross rates are determined for multilateral netting.

26. **Distinguish leading and lagging technique.**

Leading and lagging involves an adjustment in the timing of the payment or disbursement to reflect expectations about the future currency movements.

Leading means fastening (Paying or receiving early) and lagging means delaying (paying or receiving late).

Hard Currency: It is the currency which is expected to appreciate.

Soft Currency: It is the currency which is expected to depreciate.

Particulars	Position
Receivables in hard currency	Lag
Payables in hard currency	Lead
Receivables in soft currency	Lead
Payables in soft currency	lag

27. What factors affect international finance deals?

a. Exchange rate risk
b. International taxation
c. Political risk or country risk
d. Inflation
e. Interest Rates
f. Comparative Advantage

28. Who are the major participants in Foreign Exchange Market?

The Major participants in the foreign exchange market are:

Level 1: Traditional users such as tourists, importers, exporters, investors, traders, speculators

Level 2: Commercial Banks, Clearing Houses and Foreign Exchanges or dealers

Level 3: Foreign Exchange Brokers (interbank or wholesale market)

Level 4: Nation's Central Bank and Treasuries

29. What is a currency call option?

Buying the right but not the obligation to buy one currency against another currency is known as **Call option**.

30. What is Swap Option?

It is an option that provides the holder with the right to enter into a swap in the future.

It gives a firm right, but not the obligation, to enter into a swap on a predetermined notional principal at some defined future date at a specified strike rate.

31. What is current account generally composed of?

Current generally consists of merchandise trade balances, services balance and the balance on unilateral transfers.

32. What do you mean by SDR?

The SDR is an international reserve asset, created by the IMF in 1969 to supplement the existing official reserves of member countries. SDRs are allocated to member countries in proportion to their IMF quotas. The SDR also serves as the unit of account of the IMF and some other international organizations. Its value is based on a basket of key international currencies.

33. Explain International Fishers Effect?

It is the combination of Purchasing power parity (PPP) and generalized Fisher Effect (FE).

$$e_t = e_0 \frac{(1 + r_h)^t}{(1 + r_f)^t}$$

According to IFE, the nominal interest rate differential between any two countries is an unbiased predictor of the future change in spot exchange rate. Hence currency with higher nominal interest rates will depreciate and those with low interest rates will appreciate.

34. Define translation exposure.

Translation Exposure is also called as **Accounting Exposure.** It is exposure is retrospective in nature. It is based on past activities and it measures the effect of

exchange rate changes on published financial statements. It effects both income statement and balance sheet items.

35. **List one situation when Multi National corporation is exposed to interest rate risk.**

When the multinational firm borrows at floating rate of interest, or invests at floating rate, it will be exposed to interest rate risk.

7 Marks:

1. **What are the distinguishing features of international finance? Explain.**

Multinational accounting and financing:

When a company goes global, it has to follow the accounting norms for subsidiaries in different currency depending on the country where the subsidiary is functioning. Further, it has to abide to the rules and regulations of the country where the subsidiary is functioning.

Comparative Advantage: Any company wishes to have subsidiary or to expand the business or to have branches at other locations (countries) because of comparative advantages such as availability of skilled labour, raw materials technology etc.

Increasing boundaries of business: A company can go global by merging with some foreign company or by acquiring some other foreign company. When merger, acquisition or take over happens, the knowledge of international finance is very important for solving the issues such as treatment of assets, profits and losses, transfer of shares etc.

Growing financial instruments markets and systems: As the boundary of the business becomes wider, there emerges more requirement of financial instruments and a well organized financial system.

Currency exposure: When a company has its business established in various countries, it will be exposed to the currency risk of that country which has to be managed very efficiently.

Interest rate risk: When a company has its business established in various countries, it will be exposed to the interest rate risk. The interest rate of home country and the interest rate of the country where the subsidiary is established will vary and hence the company will have to manage with the interest rate risk which will have an impact on currency risk

Taxation: The tax policies and regulations imposed in the home country varies widely to that of other countries where the subsidiaries are established. So proper measures have to be taken to have a efficient tax planning and reduction of tax burden.

Inflation: Inflation rate in the home country will be different from that of the country where the subsidiary is established. The difference in inflation rate will have a bearing on the currency risk. Hence this has to be given reasonable importance to manage the business efficiently.

Balance of payments: The adverse balance of payments can be avoided by more cash flows from the foreign countries. And establishment of subsidiaries, or business units in other countries in one major factor which helps in getting cash inflows form foreign countries.

Hedging: The knowledge of international finance helps the company to manage financial crisis by hedging against the risks such as currency risk, inflation, interest rate risk etc.

Arbitrage: The knowledge of International finance helps the arbitrages to take advantage of differences in two different markets such as difference in interest rate, inflation etc.

2. List the advantages of Fixed and flexible exchange rate system?

The advantages of Fixed exchange rate system are:

a. Fixed rates provide stability in international prices for the conduct of trade. Stable prices aid in the growth of international trade and lessen risks for all businesses
b. Fixed exchange rates are inherently anti inflationary
c. It necessitates the central banks to maintain large quantities of international reserves (hard currencies and gold).

The advantages of flexible exchange rate system are:

a. It represents the change in the value of the currency
b. It reacts well to the demand and supply factors to the currency
c. Unlike fixed exchange rate system it does not result in restrictive monetary and fiscal policies
d. It represents the changes in the nations economy
e. It represents the timely value of the currency in terms of other

3. Write a note on European Monetary System?

European countries were concerned about the negative impact of volatile exchange rates on their respective economies since the collapse of the Bretton Woods Agreement on

fixed exchange rates in early 1970. The Smithsonian Agreement (Called SNAKE) was designed to keep the European Economic Community countries exchange rates within a narrower band for their currencies.

The Snake was adopted by EEC countries because they felt that stableexchange rates among the EEC countries was essential for deepening economic integration nd promoting intra-EEC trade. Later SNAKE arrangement was replaced by the European Monetary System (EMS) in 1979.

The Chief objectives of European Monetary System are:

a. To form a "Zone of monetary stability" in Europe.
b. To Coordinate the exchange rate policies Vs the non EMS currencies
c. To help in the eventual formation of a European Monetary Union.

The European Monetary System had three components:

a. The Exchange rage mechanism (ERM):

It refers to the procedure by which the EMS member countries collectively manage their exchange rates. The ERM is based on a "parity grid mechanism" that places an upper and lower limit on the possible exchange rates between each pair of member currencies. Exchange rate mechanism has got three features:

i. A bilateral responsibility for the maintenance of exchange rates

ii. Availability of additional support mechanism that helps in maintaining the parities

iii. If the currencies irretrievably diverge from parity a last resort or safety valve of agreed upon realignments

b. **The European Currency Unit:**The ECU is a 'basket' currency based on a weighted average of the currencies of member countries of the European Union. The ECU serves as the accounting unit of the EMS and helps in the working of exchange rate mechanism.

c. The European Monetary Cooperation Fund: The EMS has its own institutional set up for monetary cooperation. Member countries extend credit to each other for the

purpose of carrying out exchange market intervention through the European Monetary Co operation Fund.

4. Who are the major participants in foreign exchange market.

The Major participants in the foreign exchange market are large Commercial banks, foreign exchange brokers in inter bank market, Commercial customers, multinational corporations, central banks which smoothen exchange rate fluctuations from time to time. The participants can of foreign exchange market may be classified under various levels:

Level 1: Traditional users such as tourists, importers, exporters, investors, traders, speculators

Importers, exporters and tourists use foreign exchange market to facilitate their transactions. Investors and business firms use foreign exchange markets to hedge against foreign exchange risk. Speculators and arbitragers try to profit from trading various currencies in the market. Arbitragers buy and sell currencies in different markets and gain by the different prices in different markets where as speculators take long or short positions based on their prediction and analysis and gain from the foreign exchange market.

Level 2: Commercial Banks, Clearing Houses and Foreign Exchanges or dealers

Banks and few dealers are the market makers in foreign exchange money market. They buy currency from foreign exchange at bid price and sell at higher prices and make profit from the spread. The existence of various foreign exchange dealers makes the market very competitive and thus the spread between bid and ask is very less thereby making the foreign exchange markets very efficient..

Level 3: Foreign Exchange Brokers (interbank or wholesale market)

Foreign exchange brokers act as dealers and facilitate trading in currency market. Broker charges a small commission for his service. He finds out both buyers and sellers in the market, without revealing the identity of either party and helps them in executing their trade.

Level 4: Nation's Central Bank and Treasuries

Central banks and treasuries influence on the price at which their own currency should be traded in the market. Their motive is not to make profit but to manage the value of the currency in the market.

5. What does the world bank do? What are its purposes?

The Bretton Woods agreement created U S Dollar based international monetary system. And resulted in the creation of two International Institutions viz., International Monetary Fund and World Bank(International Bank for Reconstruction and Development). World bank is a multinational financial institution established at the end of World War II to help provide long term capital for the reconstruction and development of member countries.

World bank was established in 1945 with 144 member countries.
The major objectives of world bank are:

a. To promote economic progress in developing countries
b. To provide financial and technical assistance
c. To encourage public and private sector projects
d. To provide loans for poorest countries
e. To provide support to governments, government agencies, private enterprises etc.

The purpose of establishing world bank are:

- To assist in the reconstruction and development of territories of members by facilitating the investment of capital for productive purposes, including the restoration of economies destroyed or disrupted by war
- To promote private foreign investment by means of guarantees or participation in loans and other investments
- To promote the long range balanced growth of international trade and the maintenance of equilibrium in balance of payments
- The activities of world bank consists of promoting Agriculture and rural development, energy, education, transportation, telecommunications, industry, mining, development finance companies, urban development, water supply, sewerage, population, health and nutrition etc.

6. Compare and contrast the following:

a. Netting and Matching
b. Leading and Lagging

7) Netting: It refers to offsetting exposure in one currency with exposure in the same or another currency whose exchange rates are expected to move in a way such that loss or gain on first exposed position will be offset by gain or loss in the second exposed position.

8) Leading and lagging involves an adjustment in the timing of the payment or disbursement to reflect expectations about the future currency movements.

9) Leading means fastening (Paying or receiving early) and lagging means delaying (paying or receiving late).

10) Hard Currency: It is the currency which is expected to appreciate.

11) Soft Currency: It is the currency which is expected to depreciate.

Particulars	Position
Receivables in hard currency	Lag
Payables in hard currency	Lead
Receivables in soft currency	Lead
Payables in soft currency	lag

7. What is SDR? Why was it created by the IMF?

SDR refers to the Special Drawing Rights. It is a composite fiduciary asset to supplement existing reserve assets. It serves as an account for various international institutions including IMF and also acts as a base against which countries can peg their exchange rate.

SDRs are used as a unit of account by the IMF and several other international oragnisations. A few countries peg their currencies against SDRs, and it is also used to denominate some private international financial instruments.

Purpose of creation of SDR:
IMF created a special International Reserve known as the Special Drawing Right (SDR). This was mainly created to supplement the foreign exchange reserves. It serves as an account for various international institutions including IMF and also acts as a base against which countries can peg their exchange rate.

SDR is weighted in terms of fixed gold quantity and after various revisions, now it is weighted in terms of value of currencies of U S Dollar, Euro, Japenese Yen, U K Pound. Individual countries hold SDRs in the form of Deposits in IMF and these are regarded as international monetary reserves of each country. Member countries may settle their transactions among themselves by transferring SDRs.

8. How do spot and forward market differ from each other?

Sl.No	Spot Market	Forward market
1	The delivery and payment for the contract will be done on the spot or with the duration of T+2	The delivery and payment for the contract happens on a future agreed upon date.
2	The exchange acts as the intermediary between the parties to the contract	There is no intermediary between the parties to the contract
3	The major participators are speculators	The major participatory are hedgers
4	The risk is less	The risk is more
5	IT is a standardized market	IT is tailor made market
6	IT is more liquid market	It is comparatively less liquid

9. Explain the reasons for the growing importance of international trade.

The reasons for growing international trade are:

a. Introduction of systematic monetary system
b. Globalization
c. Emergence of organized exchange rate system
d. Comparative Advantage
e. Support from export credit institutions
f. Scarcity of resources in one country and excess of the same resources in another country necessitates the requirement and growth of international trade
g. Growth and development of technology
h. Growth and development of transportation facilities
i. Growth of safe method of making international payments

10. Briefly explain the various techniques to assess country risk.<u>OR</u>Identify the factors when assessing the country risk. Briefly elaborate on how each factor can affect the risk to the MNC.

There is great interest developed in recent years among private and official lending institution in the systematic evaluation of country's risk.

Need

Whether a country will be able to get loans at reasonable cost?

Whether a country will be able to attract foreign capital?

Factors to be considered in country-risk analysis

1. **Political Risk Factors**

   According to Hans, it is said that "Political risk is 50 % of the country's risk analysis but it is inseparable from economic risk".

   The following factors indicate political risk

   a) **Political Stability**: Changes in government, level of violence in country, internal and external conflicts etc determine political risk of each nation.

   b) **Attitude of host government**: -The host government may impose restrictions on transfer of funds by subsidiary to parent company by charging the corporate tax, with-holding tax etc.

   c) **War:** Safety of local employees hired by MNCs and the project cash inflows are subject to volatility because of war.

   d) **Business Cycle**: The period of Business Cycle in which a country is operating decides the risk factor. In periods of trough, risk factor is more and in periods of boom risk factor is less

   e) Priorities: The host government may support the MNC and be friendly with the subsidiaries of parent company which determines the risk levels.

2. **Economic Risk Factors**

   The following factors indicate economic risk of a country

   a) **Rate of inflation:**It determines economic instability, government's mismanagement, purchasing power of consumers etc

   b) Current and potential state of country:

   An MNC which exports to a country or sets up a subsidiary there is concerned with present and future dement of its product.

   Levels of external debt, foreign exchange reserve, BOP, GDP growth rate etc determines the country's state or position.

   c) **Exchange rate:**It signifies the influence of the demand for a country's export which in turn affects the country's product and income level.

   d) **Resource base:** It includes natural resources, human resources and other intangible resources available in a country which measures the economic risk level.

e) **Adjustment to external shock:**Countries with greater adaptability to external shocks have lesser economic risk compared to other countries whose level of adaptability is low.

Techniques to assess country risk

1) **Debt related factors**
   - ✓ Borrowing capacity of the country
   - ✓ Debt servicing capacity.
   - ✓ Liquidity and solvency problem

   Indicators of debt servicing

   Debt/GDP

   Debt/foreign exchange receipt

   Interest payment/foreign exchange receipt

2) **Balance of payment**

   It represents difference between national income and national expenditure. It indicates the rate at which a country is building its foreign assets or foreign liabilities.

   Indicators of BOP

   a) Current account balance
   b) Capital account balance
   c) Reserve balance

3) **Economic performance**

   It can be measured in terms of country's rate of growth and rate of inflation

   Indicators of Economic performance

   a) GDP/GNP
   b) Gross domestic savings/GNP
   c) Gross domestic investment/GDP

4) **Political instability**

   Direct effect: - It includes political protest like strikes, lock outs etc

   Indirect effect: - Adverse consequences on growth, inflation, foreign exchange reserve etc

5) **Checklist approach**

   a) Identification of country risk factors

b) Assign weights

c) Prepare rating scale

d) Calculation of product (wt × rating scale)

e) Calculate country risk score

11. How does exchange rate stability affect international trade?

a. Lesser the stability of the exchange rate, higher the foreign exchange risk. This impacts the exports, imports and BOP of the country.

b. The instability of exchange rate results in the reduction in the form of FDI and FII

c. The foreign exchange risk is an obstacle for establishment of subsidiaries in host country.

d. It results in the heavy fluctuation of currency rates. This may have a negative impact on the currency rates. This may have a negative impact on the currency of some particular countries

e. The exchange rate fluctuations increase the hedging cost to hedge against the foreign exchange risk

12. Discuss the advantages and disadvantages of maintaining multiple manufacturing sites in various countries as a hedge against exchange rate exposure.(6)

Advantages:

a. Reduction in exchange risk
b. Reduction in cost of hedging
c. Capacity expansion
d. Goods and services become more cheaper as tax becomes cheaper
e. Increases the good will
f. Easy access to international markets
g. Easy access to international capital

Disadvantages:

a. Heavy expenses on expansion
b. The affiliate established abroad is more prone to country, political and economic risk
c. The lack of support from the host country makes the surviving of subsidiary difficult.
d. Taxation policy, blockage of funds etc. makes the option more critical

13. As an investor, what factors would you consider before investing in the emerging stock market of a developing country.

The factors to be considered are:

1. The fundamentals of the country such as country specific, economy specific and company specific
2. The growth prospects of the country
3. The economic cycle of the company such as boom, recession etc.
4. The policies of the host country government
5. Past performance of the country and company
6. Volatility, liquidity and other related features of the security

10 MARKS

1. Write short notes on:
- **a. Unilateral transfer payment**
- **b. Current Account**
- **c. Capital Account**

a. **Unilateral transfer payment:** It refers to the movement of benefits from one country to another with the receipt of and benefits in return. Eg. Gifts, charity etc.

b. **The Current Account:** It is typically divided into 3 categories namely, merchandise trade balances, services balance and the balance on unilateral transfers. Entries are recorded at their current value and surplus in current account represents an inflow of funds while a deficit represents an outflow of funds. The balance of merchandise trade refers to balance between exports and imports of goods such as machinery, automobiles etc. Services also called Invisibles include interest payments, shipping and insurance fees, tourism, dividends, military expenses etc. Unilateral transfers include gifts and grants from both private and Government.

c. **The Capital Account:**Capital account consists of Foreign investment including direct Investment and portfolio Investments, Loans, Banking Capital, Rupee debt service and other Capital. It includes acquisition of firms, Purchase and sale of stocks, Establishment of subsidiaries, etc.

2. Why do firms become multinational? Explain various reasons why firms invest abroad.

The firms go global or become multinational for the following reasons:

1. **Multinational accounting and financing:**

   When a company goes global, it has to follow the accounting norms for subsidiaries in different currency depending on the country where the subsidiary is functioning. Further, it has to abide to the rules and regulations of the country where the subsidiary is functioning.

2. **Comparative Advantage:** Any company wishes to have subsidiary or to expand the business or to have branches at other locations(countries) because of comparative advantages such as availability of skilled labour, raw materials technology etc.

3. **Increasing boundaries of business:** A company can go global by merging with some foreign company or by acquiring some other foreign company. When merger, acquisition or take over happens, the knowledge of international finance is very important for solving the issues such as treatment of assets, profits and losses, transfer of shares etc.

4. **Growing financial instruments markets and systems**: As the boundary of the business becomes wider, there emerges more requirement of financial instruments and a well organized financial system.

5. **Currency exposure:** When a company has its business established in various countries, it will be exposed to the currency risk of that country which has to be managed very efficiently.

6. **Interest rate risk:**When a company has its business established in various countries, it will be exposed to the interest rate risk.The interest rate of home country and the interest rate of the country where the subsidiary is established will vary and hence the company will have to manage with the interest rate risk which will have an impact on currency risk

7. **Taxation:** The tax policies and regulations imposed in the home country varies widely to that of other countries where the subsidiaries are established. So proper measures have to be taken to have a efficient tax planning and reduction of tax burden.

8. **Inflation:** Inflation rate in the home country will be different from that of the country where the subsidiary is established. The difference in inflation rate will have a bearing

on the currency risk. Hence this has to be given reasonable importance to manage the business efficiently.

9. **Balance of payments:** The adverse balance of payments can be avoided by more cash flows from the foreign countries. And establishment of subsidiaries, or business units in other countries in one major factor which helps in getting cash inflows form foreign countries.

10. **Hedging:** The knowledge of international finance helps the company to manage financial crisis by hedging against the risks such as currency risk, inflation, interest rate risk etc.

11. **Arbitrage:** The knowledge of International finance helps the arbitrages to take advantage of differences in two different markets such as difference in interest rate, inflation etc.

3. What are the main distinctions between forward and future contracts?

Sl.No	Forward Market	Future Market
1	It is an over the counter market	It is a exchange traded market
2	The parties to the contract directly enter into the agreement with one another	The parties to the contract enter into the contract with the exchange
3	The contracts are tailor made	The contracts are standardized
4	The price, date, lots etc. are decided by the parties to the contract	The details of price, date and lots are decided by the exchange
5	IT is comparatively cheaper as there is no commission to be paid for exchange	It is comparatively costlier as the commission has to be paid to exchange
6	Settlement occurs at the end of the contract	The marked to market settlement is followed in futures market
7	Risk is high	Risk is comparatively low
8	There is a chance of counter party default	There is no chance of country party default

4. **Write a note on the following:**
    a. **Correspondent Bank**
    b. **Forward Rate Agreement**
    c. **Floating Rate notes**
    d. **Dual Currency bonds**
    e. **LIBOR**

Correspondent Banks: Large banks, when they do not have offices or branches in foreign countries, maintain correspondent accounts with local banks in those countries. The purpose is to facilitate payments and collections on behalf of their clients who may have business dealings with parties in foreign country.

Forward Rate Agreement:
Forward rate is the rate at which the bank is willing to exchange one currency for another and some specified date in future.
Forward rate agreement is an interbank traded contract to buy or sell interest rate payments on a notional principal.

Floating rate notes:
These are the bonds issued with a maturity period varying from 5 – 7 years having varying coupon rates. The interest rate payable for the next 6 months is set with reference to market reference such as LIBOR (London Inter Bank Offer Rate).

Dual currency bonds: These are the long term securities denominated in two currencies – for example a bond with initial payment and interim coupon payments in non U S dollar currency and a fixed final bullet principal payment in U S dollars.

LIBOR: IT is the benchmark deposit rate applicable to interbank loans in London. It is also used as the reference rate for many international interest rate transactions.

5. **Write a note on the following**
    a. **Letter of credit**
    b. **Consignment**
    c. **Bill of lading**
    d. **Forfaiting**
    e. **Open account**

Letter of Credit: It is the popularly used instrument in international trade. It is an instrument addressed to the seller, written and signed by the issuing bank (the bank acting on behalf of the buyer). This instrument indicates the promise of the bank to honour the drafts (on behalf of its customer/importer) drawn on itself if the seller conforms to specific conditions mentioned in the LC.

The advantages of letter of credit to exporter are:

a. It eliminates credit risk.
b. It reduces uncertainty.
c. It guards against pre-shipment risks
d. It reduces delay of payment

The disadvantages of letter of credit to importer are:

a. The importer can get the goods within the specified time, and of specified quality without any error as per the conditions mentioned in the L/C.

b. As L/C is as good as cash in advance, importer can claim better credit terms.

Consignment: Goods sent on consignment are shipped to the importer but not sold. Only the possession will be transferred but not the title. Consignor (exporter) retains the title of goods until the importer (consignee) sells the goods to the third party. After selling the goods to the third party, the consigner receives the payment from the importer.

The features of consignment are:

a. There is very little evidence for the credit worthiness of the importer
b. There is high risk of credit default.

Bill of lading: Of all the shipping documents, the bill of lading is the most important document. It acts as a contract between the carrier and the exporter in which the carrier agrees to carry the goods from port of shipment to port of destination. It is the shipper's receipt for the goods.

Forfaiting: This kind of service is usually used in international trade. Usually Banks and financial institutions offer the services of Forfaiting. It refers to the purchasing of an exporter's receivables (the amount importers owe the exporter) at a discount by paying cash. The forfaiter, the purchaser of the receivables, becomes the entity to whom the importer is obliged to pay its debt.

Whenever exporter sends the goods as specified and agreed by the importer, exporter receives the Bill of payment from the importer approved by the Importer's Bank. The Banks then come into picture i.e they purchase the approved Bills of exchange from the Exporter by providing him the discounted value and on the maturity date of the bill, the banker collects the actual value from the importer. Thus it's a win win situation where the exporters working

capital gets released early and banker also makes the profit (Actual value of the bill – discounted value paid).

Open Account: Open account refers to the shipment of goods before billing the importer. The exporter first ships the goods to the importer and then expects the payment from the importer later as per the agreed upon terms.

The features of open account are:

a. There is very high credit risk

b. There is very little evidence for the credit worthiness of the importer

6. What are the principle means of payment and document in international trade?
The means of payment in international trade are:

1. **Cash in advance:** Cash in advance gives the exporter the greatest protection as the payment has been received before the shipment of goods. This method of payment is used with those countries where there is very high political instability, currency volatility and the importer is doubted of his credit worthiness.

2. **Letter of Credit:** It is the popularly used instrument in international trade. It is an instrument addressed to the seller, written and signed by the issuing bank (the bank acting on behalf of the buyer). This instrument indicates the promise of the bank to honour the drafts (on behalf of its customer/importer) drawn on itself if the seller conforms to specific conditions mentioned in the LC.

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The disadvantages of letter of credit to importer are:

c. The importer can get the goods within the specified time, and of specified quality without any error as per the conditions mentioned in the L/C.

d. As L/C is as good as cash in advance, importer can claim better credit terms.

3. **Draft:** Draft refers to the Bill of exchange. It is an unconditional order signed by the maker (exporter), addressed to the drawee (importer or buyer) containing an order to

make the payment of certain sum of money (payable on demand) on a future date to the drawer or the holder(bearer) of the instrument.

The features of Bank draft are:

a. It acts as an evidence against the financial obligation

b. IT is a negotiable and a unconditional order

c. Less costly method

4. **Consignment:** Goods sent on consignment are shipped to the importer but not sold. Only the possession will be transferred but not the title. Consignor (exporter) retains the title of goods until the importer (consignee) sells the goods to the third party. After selling the goods to the third party, the consigner receives the payment from the importer.

   The features of consignment are:

   c. There is very little evidence for the credit worthiness of the importer

   d. There is high risk of credit default.

5. **Open Account:** Open account refers to the shipment of goods before billing the importer. The exporter first ships the goods to the importer and then expects the payment from the importer later as per the agreed upon terms.

   The features of open account are:

   c. There is very high credit risk

   d. There is very little evidence for the credit worthiness of the importer

The important documents in international trade are:

a. Bill of lading: Of all the shipping documents, the bill of lading is the most important document. It acts as a contract between the carrier and the exporter in which the carrier agrees to carry the goods from port of shipment to port of destination. It is the shipper's receipt for the goods.

b. Commercial invoice: A commercial invoice contains an authoritative description of the merchandise shipped, which includes all the details of quality, grades, price per unit and total value. It also contains the details of the exporter and importer, number of packages, payment terms and other expenses such as transportation and insurance charges etc.

c. **Insurance:** The exporter has to take the insurance on the goods shipped. This eliminates the risk losing the goods because of any uncertainty. The exporter has to provide the documents of insurance especially in case of letter of credit.

7. **Write a note on the following:**
   a. **Foreign bond and Euro bond**
   b. **Global bond**
   c. **Floating rate notes**
   d. **American depository receipts**
   e. **Zero coupon bonds**

Foreign Bonds:

c. **Yankee Bonds:** These are US dollar denominated issues by foreign borrowers (Non US borrowers) in US Bonds markets. Usually foreign government or entities, supernationals and highly rated corporate borrowers issue yankee bonds.

d. **Samurai Bonds:** These are bonds issued by Non-japanese borrowers in domestic Japanese markets with a maturity varying over 3 to 20 years. The borrowers are supernationals and have at least a minimum investment grade rating (A Rated)

e. **Bull dog Bonds:** These are sterling denominated foreign bonds which are raised in the UK domestic securities market. The maturity of these bonds vary from 5 to 25 years. These bonds are subscribed by the long term institutional investors like pension funds and life insurance companies. These bonds are redeemed on bullet basis (one time lump sum payment on maturity.)

f. **Shibosai Bonds:** These are privately placed bonds issued in the Japanese markets. The qualifying criteria is less stringent as compared to Samurai or Euro Yen bonds. Shibosai bonds are offered to a different set of investors such as institutional investors and banks.

Euro Bonds:

Euro bond is issued outside the country of the currency in which it is denominated. It is like any other Euro instrument and through international syndication and underwriting, the paper can be sold without any limit of geographical area.

A global bond is a bond which is issued in several countries at the same time. It is typically issued by large Multinational Corporation or sovereign entity with a high credit rating. By offering the bond to a large number of investors, a global issuance can reduce borrowing cost.

Floating rate notes (FRNs): These are the bonds issued with a maturity period varying from 5 – 7 years having varying coupon rates. The interest rate payable for the next 6 months is set with reference to market reference such as LIBOR (London Inter Bank Offer Rate).

An American Depositary Receipt (ADR) represents the ownership in the shares of a foreign company trading on US financial markets. The stock of many non-US companies trades on US exchanges through the use of ADRs. ADRs enable US investors to buy shares in foreign companies without undertaking cross-border transactions. ADRs carry prices in US dollars, pay dividends in US dollars, and can be traded like the shares of US-based companies.
Each ADR is issued by a US depository bank and can represent a fraction of a share, a single share, or multiple shares of foreign stock.

A zero-coupon bond (also called a discount bond or deep discount bond) is a bond bought at a price lower than its face value, with the face value repaid at the time of maturity. IT does not make periodic interest payments, and do not have coupons. Hence, they are called as zero coupon bond. Investors earn return from the compounded interest all paid at maturity plus the difference between the discounted price of the bond and its par or redemption value. Examples of zero coupon bonds are US treasury bills, Us savings bonds, long term zero coupon bonds etc.

8. What is convertibility? Discuss in brief current account and capital account convertibility.

The following is the report from the Committee on Capital Account Convertibility. Some of the important measures are:

1. Direct investment in ventures abroad by Indian corporate should be allowed uoti US$ 50 million at the level of authorized dealers in terms of transparent guidelines by RBI and beyond US$ 50 million through special committee.

2. Corporate should be allowed to freely open offices abroad for promoting their businesses

3. ECB ceiling should not be applicable for loans with average maturity of 10 years and above which in Phase II could be reduced to 7 years and above.

4. RBI approval for various purposes while executing projects should be dispensed with subject to guidelines and reporting.
5. Banks may be allowed to borrow from overseas markets and deploy their funds outside India.
6. SEBI registered Indian investors may be allowed to set up funds for investments overseas subject to overall limit of US$ 500million in Phase I , US$ 1 billion in phase II and US$ 2 billion in phase III.
7. Residents may be allowed to obtain loans from non residents US$250000 on repatriation basis at LIBOR with no restriction on use of funds
8. Residents may be allowed to have foreign currency denominated deposits with corporate and banks (only rupee settlement).
9. All participants in spot market should be allowed participation in forward markets. FIIs, non residents and non resident banks may be allowed forward cover to the extent of their assets in India.
10. Currency futures may be introduced with screen based trading and efficient settlement system.

9. Examine the objectives and functions of the IMF.

Bretton Woods agreement created U S Dollar based international monetary system and also resulted in the creation of two International Institutions viz., International Monetary Fund and World Bank (International Bank for Reconstruction and Development).

IMF was established with the objective of providing assistance to the member countries to protect their currencies against cyclical, seasonal, random barriers. It also helps the member countries in defending their trade barriers. It has assisted the countries facing financial crisis. It helps its member countries to maintain proper Balance of payment position.

International Monetary Fund (IMF) is an international institution. This fund was created to supervise, stabilize and promote the International Monetary System and to resolve the problem of balance of payment.

Organization Structure:

The Organizational structure of IMF was set in it Articles of Association which was enforced in December, 1945. The Organizational Structure of IMF consists of Board of Governors, An Executive Board, a managing director and a staff of international civil servants.

Board of Governors: This consists of One governor and one alternate for each member country. It is the highest decision making authority. The governor appointed by member country is usually the minister of finance or the central bank governor. The board normally meets once in a year.

The Executive Board: This consists of 24 directors, who are appointed or elected by the member countries and are responsible for conducting various activities and functions of IMF. The board meets several times a week for discussions on policies, operational and administrative matters, exchange rate policies, financial assistance etc.

The Managing Director: Managing director serves as the chairman and serves of the head of the organization's staff. The MD is responsible to do the business of IMF as per the direction of the Board.

The International Monetary and Financial Committee of Board of Governors: This is an advisory committee composed of 24 IMF governors, ministers and other officials of comparable grade. They meet twice in a year .

The Development Committee: This is also an advisory committee consisting of 24 members who are finance ministers and other officials of comparable grade. It advises and reports to the Board of Governors of IMF and World bank on various developmental issues.

The functions of IMF are:

9. Providing financial assistance to member countries
10. Act as a consultative Body
11. Regulation the financial relation of member countries
12. Development of International Trade
13. Assisting member countries suffering from deficit balance of trade.
14. Promoting International Monetary System
15. Promote Exchange rate stability
16. Increase International Monetary Cooperation

The purposes of setting up of IMF under Bretton Wood System are:

7. To support smooth flow of international trade, balanced growth and expansion.
8. To provide financial assistance and stability to member countries
9. To provide assistance to avoid adverse balance of payments issues
10. To promote cooperation and common practices in international monetary system
11. To provide exchange stability and liquidity

12. To strengthen financial confidence in member countries

10. Describe some potential benefits to MNC as a result of Direct foreign investments. Elaborate on each type of benefits.

Foreign direct investment (FDI) is a measure of foreign ownership of productive assets, such as factories, mines and land. Increasing foreign investment can be used as one measure of growing economic globalization. FDIs require a business relationship between a parent company and its foreign subsidiary.

FDI is any form of investment that earns interest in enterprises which function outside of the domestic territory of the investor. In order to qualify as FDI there should be parent enterprise's control over its foreign affiliate by making some investment. The IMF defines control in this case as owning 10% or more of the ordinary shares or voting power of an incorporated firm or its equivalent for an unincorporated firm. And lower investment shares are known as portfolio investment.

Determinants of FDI:

8. **Size and growth prospects of the country:** It is normally assumed that if the country has a big market, it can grow quickly from an economic point of view and it is concluded that the investors would be able to make the most of their investments in that country.

9. **Availability and quality of human resources:** The status of the human resources in a country is also instrumental in attracting direct investment from overseas. There are certain countries like China that have taken an active interest in increasing the quality of their workers.

10. **Availability of natural resources:**If a particular country has plenty of natural resources it always finds investors willing to put their money in them. A good example would be Saudi Arabia and other oil rich countries that have had overseas companies investing in them in order to tap the unlimited oil resources at their disposal.

11. **Availability of cheap labour:**Inexpensive labor force is also an important determinant of attracting foreign direct investment. The BPO revolution, as well as the boom of the Information Technology companies in countries like India has been a proof of the fact that inexpensive labor force has played an important part in attracting overseas direct investment.

12. **Economies of Scale:** MNCs enter the new markets with the objective to realize the full benefits of economies of scale.

13. **International Diversification:** The advantage of diversification is reduction of risk. When investors cannot effectively diversify their portfolio holdings internationally because of barriers to cross border capital flows, firm may help its share holders with indirect diversification services by making direct investment in foreign countries.

14. **New sources of demand:** When there is a limited growth in home country, the companies which aspires for additional growth, can invest in the form of FDI

Importance of FDI:

1. **Comparative advantage:** Any company wishes to have subsidiary or to expand the business or to have branches at other locations (countries) because of comparative advantages such as availability of skilled labour, raw materials technology etc.

2. **Economies of Scale:** It refers to the optimum utilization of factors of production. Capital also is one of the important factor of production. If the company is left with excess cash reserves and is aspiring for growth, makes investment in the form of FDI.

3. **Diversification:**Diverfication is one of the important tool for reducing the risk. Companies instead of concentrating their investment, invest in the form of FDI to diversify their portfolio.

4. **Entering new markets:** Countries which want toS enter into the new market fear to enter directly by making heavy investment. So they prefer to enter through FDI by acquiring ownership in existing domestic countries.

5. **Increase the profitability:** Profit maximization and wealth maximization is the major objective of any organization. Hence firms try to maximize the worth of the share holders by enabling capital appreciation and better returns. FDI is one way through this objective can be achieved.

6. **Find new demand:** When there is no growth prospects in the home country, to grow further and to find new demand, companies invest in the form of FDI.

Money... is like a beautiful thoroughbred horse - very powerful & always in action, but unless this horse is trained when very young, it will be an out-of-control & dangerous animal when it grows to maturity.- Dave Ramse

FORMAT OF BOP STATEMENT

A. Current account

Trade Account

Exports (+)

Imports(-)

Balance of Trade = A(i)

Services Account

Reciepts as interest and dividents , tourism reciepts for travel and financial charges (+)

payment as interest and dividents, tourism payments for travel and financial charges (-)

Balance on service account = A(ii)

Unilateral Transfers

Gifts, Donations, Subsides, received from foreigners (+)

Gifts, Donations, subsides made to foreigners (-)

Balance on Unilateral Transfers Account = A(iii)

Current Account Balance: A(i) + A(ii) + A(iii)

B. Long term capital accont

Foreign Direct Investment (FDI)

Direct investment by foreigners (+)

Direct investmen abroad (-)

Balance on Direct Foreign Investment =B(i)

Portfolio Investment

Foreigners investment in the secirities of the country (+)

Investments in securities abroad (-)

Balance on Portfolio Invstment = B(ii)

Balnce on Long term Capital Account = B(i) + B(ii)

Private short term Capital Flows

Foreigners claim on the country (+)

Short term claim on foreigners (-)

Balance on short term Private Capital Account = B(iii)

Overall Balance : [a(i) + a(ii) + a(iii) + [B(i) + B(ii) + B(iii)]

C. Official Reserves Account

Decrease or increase in foreign exchange reserves .

PROBLEM 1:-

You are required to find out the overall balance. Showing clearly all the sub-balances from the following data:

1. A Germany Company invest in India Rs.3,00,000 to modernize Indian subsidiary.

2. A tourist from Europe buys souvenirs worth Rs.3000 to carry with him. He also pays hotel and travel bills of Rs.5000 to Delhi tourist agency.

3. The Indian subsidiary of Germany Company remits Rs.5000 as dividend to its parent company in the Germany.

4. The Germany company sells a part of its production which it is produced in India in other countries for Rs.1,00,000.

5. The Indian subsidiary borrows a sum of Rs.2,00,000 [to be paid back in a year's time] from the American money market to resolve its urgent liquidity problem.

6. An Indian company buys a machine for Rs.1,00,000 from UK an 60% payment is made immediately; remaining amount is to be paid after 3years.

7. An Indian subsidiary of a Germany company borrows Rs.50,000 from the INDIAN public to invest in its modernization programme .

PROBLEM 2:-

Prepare a BOP statement for France from the following data:

a. France exports goods worth FFrs 5000.
b. France imports goods worth FFrs 4000.
c. Expenditure of foreign tourists in France: FFrs 2500.
d. France makes interest and dividend payments to foreigners: FFrs 2000.
e. A French working in USA sends a cheque to his wife in Paris worth FFrs 500.
f. A Bangladeshi immigrant working in France remits money to his account in Dacca: FFrs 1000.
g. France Telecom invests in India: FFrs 4500.
h. IBM invests in France: FFrs 2000.
i. A French resident buys a German Treasury bond: FFrs 300.
j. A Swiss resident buys a French Treasury bond: FFrs 5000.
k. A short-term loan advanced by BNP to a British resident: FFrs 4000.
l. France borrows FFrs 3800 for short-term.

PROBLEM 3:-

The following data are given:

a. An exporter sells watches to Russia for Rs 5,00,000. The exporter accepts Rs 50,000 in cash and the remaining as a one year bill of exchange.

b. Mohan , an Indian, goes to srilanka on vacation with Rs 2,000. He spent Rs 1,000 on services received and bought souvenirs for Rs 900 to bring with him.
c. An Indian Company imports cloth worth Rs 5,000 from Nepal.
d. Karim of Bangladesh immigrates to India with 1000.
e. Karim finds a job and sends Rs 1500 to his family in Bangladesh.
f. ABC Company of India decides to invest Rs 600000 in Mauritius to establish a business unit. Half of this investment is made in cash; remaining half is arranged by selling bonds in France.
g. Profit made by Mauritius subsidiary of the ABC Company is Rs 20,000, of which 25% is remitted to the parent company in India.
h. The government of Srilanka issues bonds for Rs 50,000 with an intrest rate of 5%. Indians 20% of these bonds.
i. An exporter, Madan , sells spare parts worth Rs 25,000 to Colombia and receives payment on delivery.
j. A US exporter sells to India process equipment for 150,000.
k. The government of Srilanka paid interest of 5% on its bonds.
l. Indian importer paid Rs 2500 to an English shipping company as charges.
m. Karim sold some of his property in Bangladesh for Rs 5000. His family members paid Rs 1000 to Air India for travel and remaining amount, they brought in cash.

From the above data, you are required to :

a) Prepare a table of sources and uses of funds in foreign operations for India;
b) Write down various sub-balances in BOP statement.

PROBLEM1.
Identify whether the following are direct quote or indirect quote(as provided by SBI Chennai) also provide the corresponding indirect quote and direct quote.

a. HK$1=Rs 5.50
b. Re1=¥ 0.19
c. GBP1=Rs83.50
d. Re1=€0.0175
e. MYR1=Rs12.50
f. ¥1=Rs0.35

PROBLEM2.
Following are the quotes available at an Indian bank as on 1st April2009.

a. Rs41.50-41.80US$
b. Rs57.50-58/€

Convert the above quote into Indirect quote.

PROBLEM 3
Convert the following rates into outright rates and indicate their spread.

Spot rate Rs/$ 43.6300-25
1 month forward 20/25
3 month forward 25/35
6 month forward 30/45

PROBLEM4

The following quotes are given for spot,1 month, 3 month,6 month forward FFr / US$. Convert them into outright rates and corresponding spread.
Spot FFr /$ 5.2321-40
1 month forward 25/20
3 month forward 40 / 32
6 month forward 20/26

Cross Rate
PROBLEM 5
Following are the quotes available at a Indian bank as on 1/4/09.

a. Rs 41.50- 41.80 per US$
b. Rs 57.50- 58 per €$

Determine the quote for US$/€

PROBLEM 6
Suppose the exchange rate between US$ and FFr was 1$ = FFr 5.9 and exchange rate between US$ and British £ was 1£= $1.50.Calculate the exchange rate between FFr and £.

PROBLEM 7
Calculate cross rates for the following situation

a. $/£ = 1.5240 b. €/£ = 2.5150
¥/£ = 235.20 €/T = 205.80
¥/$ = ? T/£ = ?

c. $/£ = 1.5537-59 d. $/£ = 2.0015-30
€/$ = 0.1982-92 $/SFR =0.6965-70
€/£ = ? £/SFR = ?

Spread
PROBLEM 8.
You have called your foreign exchange trader and asked for quotation on the spot, one month, three month, and six month the trader has responded with the following **$ 0.2479-81, 3/5, 8/7, 13/10.**

- **a.** What does this mean in terms of **$/€?**
- **b.** If you wish to buy spot **€,** how much would you pay in **$.**
  - **a.** If you wish to purchase spot **US$**, how much would you pay in **€.**
- **c.** What is the premium or discount for 1,3,6 month forward rate in annualized percentage(assume you are buying **€**)
- **d.** Calculate the forward premium/discount assuming you are selling **€**

Arbitrage probability (CIA)
PROBLEM 9
Given the following data spot rate Rs 35.0020 = 1$,six month forward forRs 35.9010 = 1$. Annualized interest rate 6 month on Rs is 12%.
Annualized interest rate at 7% on $ for 6month. Assume a borrowing of Rs 1000 at 12% pa for 6 month. Workout the arbitrage probability.

PROBLEM 10
Given the following data
Spot rate 1$=Rs 42.0010 6month forward rate, 1$=Rs42.8020. Annualized interest rate on 6 month Rs is 12%. Annualized interest rate on 6 month $ is 8%.Calculate the arbitrage probability.

PROBLEM 11
Given the following data spot rate 1$=Rs 44.0030
6month forward rate, 1$=Rs45.0010.
Annualized interest rate on 6 month Rs is 12% p.a.
Annualized interest rate on 6 month $ is 8% p.a.
Calculate the arbitrage possibility.

PROBLEM 12
From the following data calculate the possibility of Gain/loss in arbitrage.
Spot rate is FFr 6 = 1$, six month forward rate is 1$= FFr 6.0020.
Annualized interest rate on 6month US $ is 5%
Annualized interest rate on 6month FFr is 8%

PROBLEM 13
From the following data calculate the possibility of Gain/loss in arbitrage.
Spot rate is 1 FFr = Rs 6.60, six month forward rate is 1FFr =Rs6.85
Annualized interest rate on 6month FFr is 8.3%
Annualized interest rate on 6month Rs is 10.5%

PROBLEM 14
Determine whether Arbitrage opportunity exists this situation.Spot rate is1DM = Rs 22.5000. One year forward rate, 1DM = Rs 23.25.
Annualized interest rate on 6month DM is 9.5%
Annualized interest rate on 6month Rs is 10.2%

PROBLEM 15.
The 6month interest rate for C$ is 9%,while the 6month interest rate forUS$ is 6.75% pa. At the same time the spot C$ quotation in New York is US $ 0.9025.

a) Is Interest rate parity holding
b) If not how could advantage be taken of the situation
c) If a large number of operators decide to do the arbitrage suggested under (b), what will be the effect on the spot rate and quotation and upon interest rate for the two currencies?

PROBLEM 16
An American firm purchases $4000 worth perfume (FFr 20,000) from A French firm. The American distribution must make payment in 90 days in FFr. The following quotations and expectations exists for the FFr.

Present spot rate is 1FFr = $0.2000
90 days forward rate is 1FFr = $0.2200
US interest rate is 15% pa.
French interest rate is 10% pa
Your expectation of spot rate 90 days hence is $0.2400.

a) What is the premium or discount on the forward FFr?
b) What is the interest rate differential between US and France?
   Is there any incentive for covered interest arbitrage (CIA)?
   If there is CIA, how can an arbitrageur take the advantage of situation?
   Assume the arbitrageurs is willing to borrow $4000 or FFr 20,000 and there are no transaction cost.
c) If transaction costs are $50, would there be opportunity still exist for CIA.

PROBLEM 17
The US inflation rate is expected to average about 4% annually while Indian interest rate is expected to average about 12% annually. If the current spot rate for Rupee is $0.0285, what is the expected spot rate in two years. **(Jan'09 VTU)**

PROBLEM 18
Exchange rate C$1.317/US$
Annualized 6month forward rate C$ 1.2950/US$
Annualized 6month interest rate for US$ is 10%
6month interest rate for C$ is 6%.
Workout the possibility of arbitrage gain. (Assume 10,000 unit of currency)

PROBLEM 19
Exchange rate C$0.665/DM
3month forward rate C$ 0.670/DM
Annualized 3month interest rate for DM is 7%
Annualized 3month interest rate for C$ is 9%.
Workout the possibility of arbitrage gain ?

PROBLEM 20
The spot exchange rate for Swiss franc from SFr 1.50/$ to SFr 1.20/$ has the SFr depreciated against US$? If the spot exchange rate from € declines from $1.18/€ to $1.03/€, has the US$ depreciated against €?**(June'08)**

PROBLEM 21
If the $: ¥ spot rate is 1$ = ¥110 and interest rate in Tokyo & New York are 3% and 4% respectively. What is the expected $: ¥ exchange rate one year hence? (June'08)

PROBLEM 22
The $:DM exchange rate is 1DM= 0.35 and DM: FFr exchange rate is 1FFr=DM0.31.What is the FFr:$ exchange rate?

PROBLEM 23
What is the essence of interest rate parity? The interest rate in US is 10% and in Japan the comparable rate is 7%.The spot rate for the ¥ is $0.003800. If the Interest rate parity holds ,what is 90 days forward rate.

PROBLEM 24
Suppose the Sterling is quoted at $1.7019-36/£, while DM quoted at $0.6250-67/DM. What is the direct quote for £ in Frank Furt ?
PROBLEM 25
Suppose in July, the 1year interest rate is 12% on British pound and 9% on US $. If the current exchange rate is $1.63/£. What is expected future exchange rate in one year. Suppose a exchange

in expectation regarding future US inflation causes the expected future spot rate to decline to $1.52 to $1. What should happen to US interest rate?

PROBLEM 26
The following rates were been quoted SF/$ 1.4854-1.4900 spot rate.3 month forward rate SF 1.4825 – 1.4915. 3 month interest rates were as follows $ 5.80-5.90 and SF 1.90-2. Explain how a trade could take advantage.

PROBLEM 27
Assume the following information spot rate 1£ = $1.60.
180 days forward rate is 1£ = $ 1.56
180 days British interest rate is 4%
180 days US interest rate is 3%
Based on the above information, CIA by US investor feasible? Explain?

PROBLEM 29
An importer has purchased from FFr goods worth Rs 50,000. There is no quote available for Rs /FFr. The quotes available are US$1 = Rs 35.0000 – 80 and US$1 = FFr5.1050 – 25. What is the value of this transaction in Rupee terms?

PROBLEM 30
Assume that the buying rate for DM spot rate in New York is $0.40 / DM.

a) What should you expect the price of US $ to be in Germany?
b) If $ were quoted in Germany at Dm 2.60, how is the market suppose to react?

PROBLEM 31
In India, $1 = Rs50,1£ = Rs100 in US, actual rate for £ is 1£ = $2.1 does there exist theoretical cross rate.

PROBLEM 32
Calculate the nominal interest rates using Fisher Effect from the following data given below.
Real interest rate = 8%
Inflation rate = 3.5%

Problems on Hedge

1. In March multinational industry incorporation assesses the September spot rate for Sterling at the following rates
   $ 1.30/£ with probability 0.15
   $ 1.35/£ with probability 0.20
   $ 1.40/£ with probability 0.25
   $ 1.45/£ with probability 0.20
   $ 1.50/£ with probability 0.20

a) What is the expected spot rate for September?

b) If 6-month forward rate is $1.40 should the firm sell forward its pound 500000 receivable
c) During receivable what factors are likely to affect multinational industry hedging decision

2. Pepsi Company would like to hedge its CAN $ 40 million payable to 'A' limited, a Canadian aluminum producer which is due in 90 days suppose it faces the following exchange and interest rates.

Spot rate	$ 0.7307/12 per CAN $
Forward rate (90 days)	$ 0.7320/41 per CAN $
CAN $ 90 day interest rate (annualized)	4.71 % - 4.64 %
US $ 90 day interest rate (annualized)	5.50 % - 5.35 %

Which hedging alternative would you recommend? The first rate is the borrowing rated and second rated is the lending rate.

3. DC corporation is a US based software consultant specialized in financial software for several fortune 500 it has an office in India, UK, Europe and Australia. In 2002 DC corporation required £ 100000 in 180 days and had 4 options before it

⇒ Forward Market Hedge
⇒ Money Market Hedge
⇒ Option Hedge
⇒ No Hedge

Its analyst developed the following information which was used to asses the alternative solution

Current spot rate of £ is $ 1.50 and 180-day forward rate of £ is $ 1.48

Interest rates were as follows:

Particulars	UK	US
180 day deposit rate	4.5 %	4.5 %
180 day borrowing rate	5.1 %	5.1 %

The company also had the following information available to it

A call option on £ that expires in 180 days has an exercise price of 1.5 and a premium of $ 0.02. The future spot rate in 180 days are forecasted as follows

Possible outcome	Probability
$ 1.44	20 %
$ 1.46	60 %
$ 1.53	20 %

An analysis of hedging technique should be made and advice DC corporation on the best alternative for hedging.

4. P Company is a US based multinational Pharmaceutical company is evaluating an export sale of its extremely effective cholesterol reduction drug. The purchase would be for 750 million Indonesian Rupaiah, which current spot rate of R_P 8800/$ translates into a little more than $ 85000 although not a big sale, the policy of P Company dictates that sale must be settled at least for a minimum gross margin which results at $ 78000 on the above sale

   The current 90-day forward rate is 9800 R_P/$. Although this appears to be unattractive, P Company has to contact several major banks before even finding the forward quote on the R_P the consequences of currency forecasters at the movement however is that the Rupaiah is holding out relative study. The possible rate of R_P is R_P 9400 over the coming 90 days analyze the prospective sale and make the hedging recommendation.
5. Hindustan Lever Uniliver's Subsidiary in India, procures much of its toiletries product line form Japanese Company. Due to shortage of working capital in India payment terms by Indian importers are typically 180 days or longer. Hindustan Lever wishes to hedge 8.5 million Japanese Yen payable.

   Although options are not available on the Indian Rupee, forward rates are available against Yen. Additionally a common practice in India is for companies like Hindustan Lever to work with a currency agent who will in this case lock in current spot exchange rate in exchange for 4.85 % fee.

   Using the following exchange rate and interest rate data, recommend a hedging strategy

   Spot rate ¥/$ = ¥ 120.60/$
   Spot rate Rs/$ = Rs 47.75/$
   180-day forward rate ¥/Rs = ¥ 2.4000/Rs
   Expected spot rate in 180 days = ¥ 2.6000/Rs
   180-day Yen investment rate = 1.5 %pa
   180-day Rupee investment rate = 8.0 %pa
   Hindustan Lever's cost of capital =12 %pa

6. Dayton Company has concluded the target sale deal with a UK Company by name Crown. The total payment due from crown for 90-days is £ 30 lakhs the borrowing rate in UK is 14 % pa given the following exchange rate and interest rate what transaction exposure hedge is now in Dayton's best interest?

   Spot rate = $1.7620/£
   Expected spot rate in 90 days = $1.7850/£
   90-days forward rate = $ 1.7550/£
   90-days dollar deposit rate = 6 % pa
   90-days dollar borrowing rate = 8 % pa
   90-days pound deposit rate = 8 % pa
   90-days pound borrowing rate = 14 % pa
   Dayton's weighted average cost of capital = 12 %

   Dayton has also collected data on 2 specific options as well:
   90days put option on £ with strike price $1.75/£, premium 1.5%
   90days put option on £ with strike price $1.71/£, premium 1.0%

7. Nike International needs to order supplies 2 months ahead of delivery date. It is considering an order from Japanese that requires a payment of ¥ 12.5 million payable as of the delivery date. Nike has two option or choice
   a. Purchase 2 call option contracts each option contract size is ¥ 6250000
   b. Purchase one future contract representing ¥ 12.5 million
   c. The future price of yen has historically exhibited a slight discount form the existing spot rate however the firm likes to use currency option to hedge in Japanese Yen for transaction 2 months in advance. Nike would prefer hedging since it is uncomfortable to leave position open giving historical volatility of Yen.

   The current Yen spot rate is $ 0.0072 there are 2 call options available, call A with an excise price of 5 % above spot price with premium of 2 % the price to be paid per Yen if the option is exercised. Call B with an excise price of 10 % above spot price with premium of 1.5 % the price to be paid per Yen if the option is exercised.

   The 2-month future price of Yen is $ 0.006912 as an analyst you have been asked to answer insight of how to hedge assume the spot rate remain unchanged after 2 months.
   a) Calculate option exercise price and premium for both the call options
   b) If Nike decides to use call option to hedge Yen which call option should it use.
   c) If Nike decides to allow Yen to be un-hedged, will it benefit? If so calculate trade-off.
   d) Which is the optimal choice for the company, call A or call B or future contract if the spot price on expiry becomes $ 0.00781?

8. P international has sold Australian put option at a price of $ 0.01/unit with strike price of $ 0.76/unit. If the following rates prevail, determine net profit or net loss
   $ 0.72, $ 0.74, $ 0.76, $ 0.78, $0.79

9. An Indian importer is required to pay US $ 10 lakh on June 30, 2000. The import of goods took place on April 1, 2000. Following further details are furnished
   Spot rate on April 1, 2000 = Rs 44.25/37
   3-month forward rate = Rs 44.54/73
   Strike price of option (3 months) = Rs 44.50
   Option premium = 0.25
   What will happen to importer if he takes the following?
   a) Forward cover
   b) Option cover
   The spot prices on June 30, 2000 are
   1) 45.0/1
   2) 44.00/12

10. City Corporation sell a call option in DM (contract size is DM 600000) at a premium of $ 0.04 per DM. If the exercise price is $ 0.71 and spot price on the day of expiration is $ 0.73 what is profit/loss on above call option sold by City Corporation?

QUESTION PAPER PROBLEMS

	Module 2	
1	b. Prepare a statement of sources and uses of funds from the following information: 1. A German company invests in India Rs.3,00,000 to modernize its Indian subsidiary. 2. A tourist from Europe buys souvenirs worth Rs.3,000 to carry with him. He also pays travel bills of Rs.5,000 to Delhi tourist agency. 3. The Indian subsidiary of German company remits, Rs.5,000 as dividends to its parent company in Germany. 4. The German company sells a part of its production which is produced in India in other countries for Rs.1,00,000. 5. The Indian subsidiary of American company borrows Rs.2,00,000 (to be repaid in a years time) from American market to resolve its liquidity problem. 6. An Indian company buys a machine for Rs.1,00,000 from U.K. and 60% payment is made immediately; the remaining amount is to be paid after 3 years. **(07 Marks)**	Dec 08/ Jan 09
2	c. You are required to find out the overall balance, showing clearly all the sub – balances from the following data : i) AB corporation of the USA invests in India Rs 3,00,000 to modernize its Indian subsidiary. ii) A tourist from Egypt buys souvenirs worth Rs 3000 to carry with him. He also pays hotel and travel bills of Rs 5,000 to a Delhi tourist agency. iii) The Indian subsidiary of AB corporation remits, as usual, Rs 5,000 as dividends to its parent company in the USA. iv) This Indian subsidiary of AB corporation sells a part of its production in other Asian countries for Rs 1,00,000. v) The Indian subsidiary borrows a sum of Rs 2,00,000 (to be paid back in a year's time) from the German money market, to resolve its urgent liquidity problem. vi) An Indian company buys a machine for Rs 1,00,000 from Japan and 60 percent payment is made immediately. The remaining amount is to be paid after 3 years. vii) An Indian subsidiary of a French company borrows Rs 50,000 from the Indian public to invest in its modernization programme. **(10 Marks)**	Dec 2011

3	c. You are required to find out the overall balance in the BOP statement by recording the following information : i) A US corporation invests in India Rs. 3,00,000/- to modernize its Indian subsidiary. ii) A tourist from Egypt purchases articles worth Rs. 3000 to carry with him. He also pays hotel bill of Rs. 5000 to the Delhi tourist agency. iii) Indian subsidiary of a US corporation remits Rs. 5000 as dividend to its parent company. iv) Indian subsidiary of a UK corporation sells part of its produce to African countries for Rs. 1,00,000. v) Indian subsidiary borrows a sum of Rs. 2,00,000 (repayable within a year) from the German money markets. vi) Indian subsidiary of a French company borrows Rs. 50,000 from the Indian public repayable after 2 years to invest in its modernization program. vii) Indian company buys a machine costing Rs. 1,00,000 from Japan, 60% payment immediate and remaining amount of Rs. 40,000 payable after 3 years. **(10 Marks)**	July 2007
4	c. A series of transactions between the Unites States and the rest of the world are given below : i) An American company exports goods to a British company for $ 2,000. The British company signs a bill of exchange for its imports. ii) An Italian American ships $ 3,000 worth of goods to his relatives in Italy. iii) An American company imports $ 500 worth of goods from Canada. The American company pays for the merchandise with a loan in Canadian currency. iv) An American citizen goes on vacation to Mexico. He spends $ 5000 before he returns to the US. v) An American auto company decides to build on assembly plant in Hongkong. The American auto company ships $ 4000 worth of material for this purpose to Hongkong. vi) The American auto company finds it necessary to increase its investment by $ 2,500 for the completion of the plant. It sells $ 2,500 worth of its bonds to the citizens of Hongkong. vii) An American citizen buys Korean Government bonds for $ 3,000 in cash. viii) A South African gold producer sells $ 1,200 worth of gold to the Federal Reserve System of the United States. With the help of the above transactions i) Record each transaction as debit or credit ii) Prepare the Balance of payment for the United States. **(10 Marks)**	July 2011

5	c. From the following statements, prepare the balance of payments statement : i) A US firm exports $1000 worth of goods to be paid in 6 months ii) A US resident visits London and spends $400 on hotels meals and so on. iii) US government gives US bank balance of $200 to the government of a developing nation as part of the US aid programme. iv) A US resident purchases foreign stock for $800 and pays for it by increasing the foreign bank balances in US. v) A foreign investor purchases $600 of United States treasury bills and pays by drawing down his bank balances in the US by an equal amount. **(10 Marks)**	June 2012
6	c. From the following details given, prepare a statement of sources and funds: i) ABC Company of India decides to invest Rs.600000 to establish a business unit abroad half of the investment is made in cash and the remaining half is arranged by selling bonds in Russia. ii) Profit made by the subsidiary of ABC Company Rs.2,00,000 of which 25% is remitted to India. iii) A US exporter sells to India a process equipment for Rs.150000. iv) Shravan an Indian goes to Srilanka on vaccation with 2000/- and spends 1000/- on services and bought goods of Rs.900. v) An Indian company imports cloths worth 10000/- from Nepal. vi) An Indian importer paid Rs.2500 to an English shipping company as charges. vii) An exporter sells spares parts worth 25000/- to Columbia and receives payment. **(07 Marks)**	June 2012
7	d. The following transactions (expressed in US $ billions) take place during a year. Calculate the US merchandise trade, current account, capital account and official reserves balances. i) The US exports $ 300 of goods and receives payment in the form of foreign demand deposits abroad. ii) The US imports $ 225 of goods and pays for them by drawing down its foreign demand deposits. iii) The US pays $ 15 to foreigners in dividends drawn on US demand deposits here. iv) American tourists spend $ 30 overseas using travelers cheques drawn on US banks here. v) Americans buy foreign stock with $ 60 using foreign demand deposits held abroad. vi) The US government sells $ 45 in gold for foreign demand deposits abroad. vii) In a currency support operation, the US government uses its foreign demand deposits to purchase $ 8 from private foreigners in the US. **(10 Marks)**	
	Module 3 & 5	
1	a. The US inflation rate is expected to average about 4% annually, while the Indian rate of inflation is expected to average about 12% annually. If the current spot rate for the rupee is $0.0285, what is the expected spot rate in two years? **(03 Marks)**	Dec 08/ Jan 09

2	b. Exchange rate: Can $1.317 per US $ (Spot); Can $1.2950 per Us $ (6 months forward) 6 months interest rate: US $ 10%; Can $ 6% Work out the possibilities of arbitrage gain. **(07 Marks)**	Dec 08/ Jan 09
3	c. Calculate: (i) Convert following rates into outright rates. (ii) Indicate their spreads. (iii)Calculate the annualized bid and ask premium or discount over spot rate. Rs/Dollar: Spot 35.6300/25; 1 month 20/25; 3 months 25/35; 6 months 30/40 Rs/Pound: Spot 55.2200/35; 1 month 40/30; 3 months 50/35; 6 months 55/42 **(10 Marks)**	Dec 08/ Jan 09
4	b. An Indian exporting firm, R & B, would like to cover itself against a likely depreciation of pound sterling. The following data are given: Receivables of R & B: £ 5,00,000 Spot rate: Rs.56.00/£ Payment date: 3 – months 3 months interest rate: India :12% p.a. ; U.K. : 5% p.a. What should the exporter do? **(07 Marks)**	Dec 08/ Jan 09
5	c. Given the following data , Show how arbitrage possibility exists for 1000 units of currency. Spot rate F.Fr 6.00 = $ 1.6 6 month forward rate F Fr 6.002 = $ 1 Interest rate F Fr = 8% p.a US $ = 5 %. **(10 Marks)**	Dec 2010
6	b. If the direct quote for dollar is Rs 35 in Delhi and transaction costs are 0.5%, what are the minimum and maximum possible direct quotes for the rupee in New York? **(07 Marks)**	Dec 2010
7	c. From the following, show how opportunity of triangular arbitrage exists, if you have $ 10,000. [MYR = Ringit of Mynmar] **(10 Marks)** Quote / Bid rate / Ask rate Value of £ in USD / $ 1.600 / $ 1.610 Value of MYR in USD / $ 0.200 / $ 0.201 Value of £ in MYR / MYR 8.10 / MYR 8.20	Dec 2010

8	b. An American firm purchases $ 4000 worth of perfume (FF20,000) from a French firm. The American distributor must make the payment in 90 days in French Francs. The following quotation and expectations exist for the FF. Present spot rate $ 0.2000 ; US interest rate – 15% ; 90 day forward rate $ 0.2200 French interest rate – 10%. Your expectation of the 90 day spot hence would be $ 0.2400. i) What is the premium or discount on the forward French Francs? What is the interest differential between US and France? Is there an incentive for covered interest arbitrage (CIA)? ii) If there is a CIA, how can arbitrages take advantage of the situation? Assume that the arbitrageur is willing to borrow $4000 or FF20,000 and there is no transaction cost. iii) If transaction costs are $50, would an opportunity still exist for CIA? **(07 Marks)**	Dec 2011
9	c. A foreign exchange dealer has assumed the following information for a particular bank. The quoted price. Value of Canadian dollar in USD $ 0.90 ; Value of NewZealand dollar in USD $ 0.30 ; Value of Canadian dollar in New Zealand dollars NZ $ 3.02. i) On the basis of the above information, is triangular arbitrage possible? If yes, explain the steps and calculate the profit from this strategy, if you had $ 1,500,000. ii) What market forces would occur to eliminate any further possibilities if triangular arbitrage? **(10 Marks)**	Dec 2011
10	c. A foreign exchange trader gives the following quotes for the Euro spot, one month, three months and six months to a US based treasurer. $ 0.02368/70, 4/5 , 8/7 , 14/12. Calculate the outright quotes for one, three and six months forward and the spread. **(10 Marks)**	Dec 2011
11	a. Given FF4.5/$ and FF180/DM, what is expected $/DM rate? **(03 Marks)**	July 2006
12	Two banks have quoted the following on $ / £ quotation. Bank A $ / £ : 1.4550 / 1.4560 Bank B $ / £ : 1.4538 / 1.4548 What do you read from this quotation? Is there any arbitrage opportunity. **(03 Marks)**	July 2006

13	b. i) The Spanish peseta – US dollar rates in London are: Spot : 110.50 / 111.11. 2 months swap : 2.50 / 3.25 The INR / USD rates in Mumbai are: Spot 35.50 / 35.60. 2 months swap : 20 / 25. Compute how much to quote INR for 100 paseta. **(04 Marks)** ii) A firm has imported chemical from Germany. It wants its bank to settle the bill drawn on itself by the supplier for DEM 1,00,000. It wants its bank exchange margin of 0.125% for T.T- getting and 0.15% for bill selling. If the interbank rate is 24.30, how much the customer has to pay? **(03 Marks)**	July 2006
14	a. Suppose that sterling is quoted at \$1.7019-36, while the Deutsche Mark is quoted at \$0.6250-67. What is the direct quote for the pound in Frankfurt? **(03 Marks)**	July 2006
15	b. Convert the following rates into outright rates and indicate their spread? Spot / 1 month / 3 month / 6 month Rs/\$ 43.6300 / 25 / 20 / 25 / 25 / 35 / 30 / 40 **(07 Marks)**	July 2006
16	c. i) Suppose that the forward ask price for March 20 on DM is \$0.7127. At the same time the price of IMM mark futures for delivery on March 20 is \$0.7145. How could an arbitrageur profit from this situation? What will be the arbitrageur and profit per futures contract size (size is DM 125,000). **(05 Marks)**	July 2006
17	a. Suppose in July, the one year interest rate is 12% on British pounds and 9% on US dollar i) If the current exchange rate is \$1.63:1£, what is the expected future exchange rate in one year? ii) Suppose a change in expectations regarding the future US inflation causes the expected future spot rate to decline to \$1.52:1£, what should happen to the US interest rate? **(03 Marks)**	July 2006
18	c. In London, a dealer quotes : GBP / CHF spot : 3.5250 / 55 GBP / JPY spot : 180.80 / 181.30 Suppose that in Geneva you get a quote CHF / JPY spot : 51.1530 / 51.2550 Is there an arbitrage opportunity? **(10 Marks)**	July 2007

19	c. Money and foreign exchange markets in London and New York are very efficient. You have the following information : London: Spot exchange rate \$1.6000/£; One year treasury bill rate 5.00%; Expected inflation rate 2.00% New York: Spot exchange rate £0.6250/\$; One year treasury bill rate 6.00%; Expected inflation rate ? Assuming parity conditions hold, estimate inflation in the US next year. **(10 Marks)**	July 2007
20	a. A French trader imports goods from London. The following market rates prevail : € / \$ = 1.18 / 1.19 ; £ / \$ = 0.69 / 0.70. Find the € / £ exchange rate. **(03 Marks)**	July 2011
21	c. Spot rate of Mexican Peso is US \$ 0.100 . 180 day forward rate of Mexican Peso is US \$ 0.098 . 180 day Mexican interest rate = 6% ; 180 day US interest rate = 9%. Given this information, is covered interest arbitrage possible? **(10 Marks)**	July 2011
22	a. From the following information, calculate the possibilities of arbitrage gain : USD / AUD = \$ 0.554 ; JPY / USD = Yen 120 ; JPY / AUD = Yen 65. **(03 Marks)**	July 2011
23	a. The current exchange rate is ¥ 122 / \$. If inflation in Japan is 2% and that in USA 3%, calculate the expected exchange rate after one year. **(03 Marks)**	July 2011
24	c. An Indian exporting firm Kiran and Co., would like to cover itself against a likely depreciation of pound sterling. The following data is given Receivables of Kiran and Co., £ 5,00,000 ; Spot rate : Rs 72.05 / £ ; Payment date : 3 months ; 3 months interest rate India : 12% p.a ; U.K. : 5% p.a. What should the exporter do? **(10 Marks)**	July 2011
25	b. From the data given below, calculate forward premium or discount as the case may be of the \$ in relation to the rupee for both bid price and ASK price. Spot: \$/Re \$0.2479/81; 1 month forward: \$0.2482/86; 3 months forward: \$0.2471/74; 6 months forward: \$0.2466/71 **(07 Marks)**	June 2012
26	c. From the following data, Is there an arbitrage possibility? **(10 Marks)** Spot rate = Rs.44.0030 = \$1 6 month FR = Rs.45.0010 = \$ 1 Annualized interest rate on 6 month rupee = 12% Annualized interest rate on 6 month dollar = 8%	June 2012

27	a. If the exchange rate at the end of 2010-11 is Rs.43.91/US$ and if the rate of inflation in India and USA during 2010-11 is respectively 7% and 4%. Find: i) Inflation rate differential between the two countries. ii) The exchange rate at the end of 2010-11. **(03 Marks)**	June 2012
28	b. Your company has to make USD 2 million payment in 3 months time, the dollars are available now. You decide to invest them for 3 months and you are given the following information: US deposit rate = 8% pa Sterling deposit rate = 9% pa Spot rate = $ 1.81/tr 3 months forward rate is $ 1.78/tr i) Where should your company invest for better return? ii) Assume that the US rate and spot expected return remain as above, what forward rate would yield an equilibrium situation? iii) Assuming the US interest rate, spot and forward rate remain as in the original question, where would you invest if the sterling deposit rate is 14% pa? iv) With the originally stated spot and forward rate and the same dollar deposit rate, what is the equilibrium sterling deposit rate? **(07 Marks)**	June 2012
29	c. A Foreign exchange trader quotes for Belgium Franc spot, 1 month, 3 month and 6 month forward rate to US based treasurer. $ 0.02478/80, 4/6, 9/8, 14/11 i) Calculate the outright quote for 1, 3, 6 month forward. ii) If treasurer wished to buy Belgium Franc 3 months forward, how much would you pay in dollars? iii) If you wanted to purchase USD 1 month forward, how would you have to pay in Belgium franc? iv) Assuming Belgium Franc was bought what is the premium or discount in the 1, 3, 6 month forward rate in annual percentage. v) What do the above quotations imply in respect of term structure of interest in USA and Belgium? **(10 Marks)**	June 2012
30	c. Pepsi Company would like to hedge in CAN $40 million payable to 'A' Ltd a Canadian aluminium producer which is due in 90 days. Suppose it faces the following exchange and interest rate. Spot — $ 0.7307/12 per can $ Forward rate 90 days — $ 0.7320/41 per can $ CAN $ 90 day interest rate (annualized) — 4.71% – 4.64% US $ 90 days interest rate (annualized) — 5.50% – 5.35% Which hedging alternative would you recommend? The first rate is the borrowing rate and the second rate is lending rate. **(10 Marks)**	June 2012

31	b. Nike International needs to order supplies 2 months ahead of delivery date. It is considering an order from Japanese that requires a payment of ¥ 12.5 millions payable as of delivery date. Nike has two options: i) Purchase two call option contract each option contract is ¥ 6250000. ii) Purchase one future contract representing ¥ 12.5 millions. The future price of yen has historically exhibited a slight discount from the existing spot rate. However the firm likes to use currency option to hedge in Japanese yen for transaction 2 month in advance. Nike would prefer hedging since it is uncomfortable to leave position open giving historical volatility of yen. The current yen spot rate is $ 0.0072. There are 2 can options available, can A with an excise price of 5% above spot price with premium of 2% the price to be paid/yen if option is exercised. Can B with an excise price of 10% above spot price with premium of 1.5% the price to be paid per yen if the option is exercised. The 2 month future price of yen is $0.006912 as an analyst you have been asked to answer insight of how to hedge assuming the spot rate remain unchanged after 2 months. i) Calculate option exercise price and premium for both the can option. ii) If Nike decided to allow yen un-hedged, will it benefit? If so calculate trade-off. iii) What is the optimal choice for the company, can A, can B or future contract if the spot price on expiry becomes $ 0.00781? **(10 Marks)**	June 2012
32	c. i) Dutch mark spot was quoted at $0.4/DM in New York, the price of Pound sterling was quoted at $1.8/£. What would you expect the price of pound to be in Germany and if the pound were quoted in Frankfort at D.M 4.40/£, what would you do to profit from the above situation? ii) An Indian Company imports machinery worth of £ 2 millions and is to make payment after 6 months. The current rate are spot rate = Rs.66.96/£, 6 months forward rate = 67.50/£. What should AB Ltd. do if they expected that in 6 months time the pound will settle at Rs.67.15/£ and what are options available to the company in case of depreciation or appreciation? **(10 Marks)**	June 2012
33	c. Exchange rates : Can $ 0.665 per DM (spot) Can $ 0.670 per DM (3 months) Interest rates : DM 7 percent p.a. Can $ 9 percent p.a. Calculate the arbitrage gain possible from the above data. **(10 Marks)**	June 2008
34	b. If the spot exchange rate for the Swiss franc declines from SFr 1.50/$ to SFr 1.20/$, has the Swiss franc depreciated against the US dollar? If the spot foreign exchange rate for the euro declines from $ 1.18 /€ to $ 1.03/€, has the US dollar depreciated against the euro?	June 2008
35	a. If the $: Yen spot rate is $ 1 = Yen 110 and the interest rates in Tokyo and New York are 3 and 4 percent respectively, what is the expected dollar Yen exchange rate one year hence? **(03 Marks)**	July 2009

36	a. The $: DM exchange rate is DM 1 = $ 0.35 and DM : FF exchange rate is FF1 = DM0.31. What is the FF : $ exchange rate? **(03 Marks)**	July 2009
37	c. A French importer has bought an equipment from a US firm for US $ 1 million on 1st March in the current year to be paid for in 3 months. The importer fears an appreciation of the US dollar. He decides to cover himself in the option market. The data are : Exchange rate : FFr : 5.00/US $ or US $ 0.20/FFr. He is considering call option for the purpose as he will be required to buy foreign exchange (i.e. US dollars). The characteristics of call option are : Strike price : FFr 5.05/US $; Maturity date : 1st June ; Premium : 3 percent. Discuss the action the importer takes given the three scenarios : i) The US currency has appreciated and the spot rate is FFr 5.5/US $ ii) The US currency has undergone a depreciation and on 1st June, it is at FFr 4.75/US $. iii) The US dollar is at FFr 5.05/US $. **(10 Marks)**	July 2009
38	b. What is the essence of interest rate parity theory? The interest rate in the United States is 10%, in Japan the comparable rate is 7%. The spot rate for the Yen is $ 0.003800. If the interest rate parity holds, what is the 90 day forward rate? **(07 Marks)**	July 2009
39	a. What is cross exchange rate? State the value of peso in Canadian dollars if the peso is worth $.07 and the Canadian dollar is worth $.70. **(03 Marks)**	July 2009
40	b. An euro was worth $1.05 on 1-1-2003 and $ 1.26 as on 1-1-2004. Assume that a hotel in Europe charged 100 euros for a room on these dates. i) How much does it actually cost a u.s. tourist visiting Europe on these days? ii) How much his cost in $ was more during 2004? iii) How much Europeans who visited u.s. on these days would have paid for a hotel in u.s? iv) What is the status of euro vis-à-vis dollar in terms of value? **(07 Marks)**	July 2009
41	c. Chicago Bank expects the exchange rate of the New Zealand dollar (NZ$) to appreciate from its present level of $ .50 to $ .52 in 30 days. The following inter bank lending and borrowing rates (annualized) exist. Currency / Lending Rate / Borrowing Rate u.s. $ / 6.72% / 7.20% New Zealand $ (NZ $) / 6.48% / 6.96% Chicago Bank is able to borrow $ 20 million on a short – term basis from other banks. How could Chicago Bank attempt to capitalize on its expectations without using deposited funds? Estimate the profits that could be generated from this strategy. **(10 Marks)**	July 2009

42	b. The following information is supplied to you. 		Blue Bank	Yellow Bank
Bid price of NZ $	$. 401	$. 398
Ask price of NZ $	$. 404	$. 400	 Given this information, is locational arbitrage possible? If so, compute the profit from this arbitrage if you had $ 1,000,000 to use. What market forces would occur to eliminate any further possibilities of locational arbitrage? **(07 Marks)**	July 2009
43	c. The following information is available for the united states and Europe. 		u.s.	Europe
Nominal interest rates	4%	6%
Expected inflation	2%	5%
Spot rate	-	$ 1.13
One year forward rate	-	$ 1.10	 i) Does the Interest Rate parity hold? ii) According to purchasing power parity, what is expected spot rate of the euro in one year? iii) According to International Fisher equation, what is the expected spot rate of the euro in one year? iv) Reconcile your answers to parts (i) and (iii). **(10 Marks**	July 2009
44	c. The following information is supplied to you. |	
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Spot rate of Canadian dollar	$. 80
90 – day forward rate of Canadian dollar	$. 79
90 – day Canadian interest rate	4%
90 – day u.s. interest rate	2.5% | Given this information, what would be the yield (percentage return) to a u.s. investor who used covered interest arbitrage, who invested $ 1000,000. What market forces would occur to eliminate any further possibilities of covered interest arbitrage? **(10 Marks)**	July 2009
	Module 6	
1	c. ABC Inc, the French subsidiary of a US company, has the following balance sheet. | Liabilities	(Euro thousands)	Assets	(Euro thousands)
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Accounts payable	12,000	Cash marketable securities	17,000
Short – Term debt	19,000	Accounts receivable	20,000
Long – Term debt	68,000	Inventory	35,000
Equity	56,000	Net fixed assets	83,000
Total	1,55,000	Total	1,55,000 | Assuming that the current spot rate is $ 1.58/Euro, calculate translation exposure under the four translation methods. **(10 Marks)**	Dec 2011

2	b. Total translation exposure of a company is Rs. 1.5 million. This exposure is in French Frances. Interest rates are 8 and 11 percent for the frame and rupee respectively. How is hedging to be done? Spot rate is Rs. 6 per FFr. The rupee is likely to depreciate by 6%. (07 Marks)	July 2006
3	c. An Indian exporter has an ongoing order from USA for 2,000 pieces per month at a price of $ 100. To execute the order the exporter has to import ¥ 6000 worth of material per piece. Labour costs are Rs 350 per piece while other variable overheads add up to Rs 700 per piece. The exchange rates are currently Rs 46.47/$ and ¥ 108.12/$. Assuming that the order will be executed after three months and payment is obtained immediately on shipment of goods, calculate the loss/gain due to transaction exposure if the exchange rates change to Rs 46.63 and ¥ 107.51. **(10 Marks)**	July 2011
4	c. An MNC has accounts receivable of $ 1.8 billion and accounts payable of $ 940 million. It also has borrowed $ 700 million. The current spot rate is $1.8138/£. i) What is the MNC's dollar transaction exposure in dollar terms and in pound terms? ii) Suppose the pound appreciates to $ 2.1122/£, what is the MNC's gain or loss, in pound terms, on its dollar transaction exposure? **(10 Marks)**	June 2012
5	c. Assuming that a foreign subsidiary of US multinational has the following : Particulars / Amount Cash / FC 100 Accounts receivable / FC 150 Inventory / FC 200 Fixed Assets / FC 250 Current liabilities / FC 100 Long term debt / FC 300 Networth / FC 300 Assume the historical rate is $ 2 = FC 1, current exchange rate is $1 = FC 1 and inventory is carried at market price. Calculate the gain or loss under different translation methods. **(10 Marks)**	June / July 2008
	Module 7	
1	b. Two companies have the following borrowing rates applicable to them: Company / Euro-bond market (Fixed rate) / Euro-money market(Variable rate) X / T / LIBOR + 0.2 Y / T + 1.5 / LIBOR + 0.75 The company X wants to borrow at variable rate while company Y at fixed rate. However, through a bank as intermediary, the two companies reverse their choice. The bank signs two swaps contracts stipulating that company X will pay to the Bank LIBOR+0.25 while company Y will pay to it T+0.70. The bank wants to have 0.30% profit. What are the costs of debt to the two companies respectively, if the bank's profit is contributed:(i) equally by the two; (ii) In ratio of 2:1 from X and Y respectively? (07 Marks)	Dec 08/ Jan 09

2	c. The company ABC has its receivables of DM 1.0 million due in 3 months. The rupee has tendency to appreciate. The current rate is Rs.24.2020/DM. The company would like to hedge in the options market. The data are as follows: Strike price : Rs.23.50/DM; Premium : 2% Which type of option is involved? How is this option to be used? **(10 Marks)**	Dec 08/ Jan 09
3	c. Two companies have following borrowing rate applicable to them. Company X: Fixed market T; Floating market LIBOR + 0.2 Company Y: Fixed market T + 1.5; Floating market LIBOR + 0.75 Company X plans to borrow floating rate and Y at fixed rate. Bank acts as intermediatory, and two companies sign a contract. X will pay to bank LIBOR + 0.25 and Y will pay to it T + 0.70. Bank has 0.30% profit. Design swap and show. **(10 Marks)**	Dec 2010
4	c. An Indian importer has to pay £ 2 million to an U.K firm in 4 months time. To guard against possible rise of pound, he buys an option by paying 2% premium on current price. Spot rate is Rs 77.50 per pound. Strike price is Rs 78.20/pound. What will be his action if the pound rises to Rs 80 and if it falls to Rs 76? **(10 Marks)**	Dec 2010
5	c. An Indian importer imports goods worth $ 1000 from USA and has to make the payment after 90 days. Spot exchange rate is Rs 40 / $ and 90 day forward rate is Rs 39.50 / $. Interest rate on borrowing in India and US is 6% p.a, and on the deposit the rate is 5% p.a. Spot rate on 90th day is Rs 39.80 / $. Evaluate following alternatives i) No hedge ii) Hedge using forward market iii) Hedge in money market iv) 90 day call option with strike price of Rs 39.60 and premium of Rs 0.05 per dollar. **(10 Marks)**	Dec 2010
6	c. Company A, a British manufacturer, wishes to borrow US Dollars at a fixed rate of interest. Company B, a US MNC, wishes to borrow sterling at a fixed rate of interest. They have been quoted the following rate p.a. adjusted for differential tax effects. Company A: Sterling 11.6%; US Dollars 8.0% Company B: Sterling 12.0%; US Dollars 7.2% Design a swap that will net a bank, acting as intermediary, 10 basis points p.a. and that will produce gain for each of the two companies. **(10 Marks)**	Dec 2011
7	ii) Citicorp sells a call option on Dm (contract size is DM 500,000) at a premium of $0.04 per DM. If the exercise price is $0.71 and the spot price of the mark at the data of expiration is $0.73. What is Citicorp profit (loss) on the call option? **(05 Marks)**	July 2006

8	c. Two companies have the following borrowing rate applicable to them : Company 1 — Eurobond market — Euro money market X — T — LIBOR+0.20 Y — T+1.5 — LIBOR+0.75 The company X wants to borrow at variable rate whole company Y at a fixed rate. However through a bank as intermediary, the two companies reverse their choices. The bank signs two swap contracts stipulating that company X will pay to the bank LIBOR+0.25 while company Y will pay to it T+0.70. The bank wants to have 0.30 percent profit. Find the cost for the two companies? **(10 Marks)**	July 2006
9	c. Consider the following data : Firm X — Firm Y Desired funding — Fixed rate 5 years — Floating rate 5 years $25 million — $25 million Cost of fixed rate funding — 6.5% — 5% Cost of floating rate funding — 6 month LIBOR + 75bp — 6 month LIBOR Show how both parties can save on funding cost by entering into a coupon swap. **(10 Marks)**	July 2007
10	c. You have a payable of EUR 5,00,000 three months from now. EUR/USD spot is 0.8700, three months forward is 0.8825. You decide to purchase a put option on USD versus EUR at a strike price of EUR 1.1235 per USD. You have to pay a total premium of $ 7500. i) Is the option in-the-money, out-of-the-money or at-the-money with reference to spot rate and forward rate for the same expiry? ii) At expiry EUR/USD spot is 0.8950. Do you exercise the option? iii) Including the cost of premium, have you done better than or worse than forward? **(10 Marks)**	July 2007
11	c. Companies A and B have been offered the following rates per annum on a $10 million five-year loan : Company — Fixed rate — Floating rate A — 10% — Libor + 0.4% B — 12% — Libor + 1.6% Company A requires a floating rate loan : B requires a fixed rate loan. Design a swap that will net a bank, acting as intermediary, 0.2% P.a and that will appear equally attractive to both parties. **(10 Marks)**	June 2012

12	b. Suppose an Australian parent owes $ 9.5 million to its English affiliate. The timing of this payment can be changed by up to 90 days in either direction. Assume the following effective annualized after tax dollar borrowing and lending rates in England and united states. |	Lending (%)	Borrowing (%)
Australian	7.6	8.3
England	6.6	7.1 | i) If the Australian parent is borrowing funds while the English affiliate has excess funds, should the parent speed up or slow down its payment to England? ii) What is the net effect of the optimal payment activities on terms of changing the units borrowing costs and interest income? **(07 Marks)**	June 2012
	Module 8	
1	c. A MNC is faced with a problem to choose between the following two options: i) Continue to export every year 2,00,000 units of a product at a unit price of US $ 80; its variable cost per unit is $45. ii) Install a manufacturing unit to produce 5,00,000 units in the country X, the destination for export. Setting up of the manufacturing plant will involve an investment outlay of $50 million. The plant is expected to have a useful life of 5 years with $10 million salvage value. The MNC follows the straight line method of depreciation. To support additional level of activity, investment will require additional working capital of Rs.5 million. Since the costs of production are lower in the country X, the variable cost of production and sales would be lower, i.e., $ 20 per unit. Additional fixed costs per anum are estimated at $2 million. Further the forecasted selling price is lower, i.e., $70 per unit to sell 5,00,000 units. The MNC is subjected to 40% tax rate and its cost of capital is 15%. Assuming that there will be no variation in the exchange rate between the two countries and all profits can be repatriated, advise the MNC regarding financial viability of the proposal **(10 Marks)**	Dec 08/ Jan 09
2	c. Buffet corporation presently has no existing business in France, but is considering the establishment of a subsidiary. i) The initial investment required is FF60mn. The existing spot rate is $0.20, the initial investment in dollars is $12mn. In addition to FF60mn, initial investment on plant and equipment, FF10 mn is needed for working capital and will be borrowed by the subsidiary from a French bank. The interest payable is 10% p.a. The loan principal is to be paid in 10 years.	Dec 2011

ii) The project will be terminated at the end of year 3. The price, demand and variable cost in France are as follows :

Year	Price	Demand	Variable cost
1	FF 600	40,000 units	FF 25
2	FF 650	50,000 units	FF 30
3	FF 700	60,000 units	FF 40

- Fixed costs are estimated to be FF 5mn p.a.
- The exchange rate of FF is expected to be 0.22 at the end of year 1, $0.25 at the end of year 2 and $ 0.28 at the end of year 3.
- The French govt. will impose tax of 10% on earnings, remitted by the subsidiary. US govt. will allow tax credit on remitted earnings and will not impose additional tax.
- All cash flows are sent to the parent company.
- Plant is depreciated over 10 yrs, using SLM. Since plant is initially valued at FF60mn, the annual depreciation will be FF6mn.
- The required rate of return on this project is 15%.

i) Determine the (NPV) net present value of this project. Should Buffet corporation accept this project? **(08 Marks)**

ii) Would the NPV of this project from the parent's perspective be more sensitive to exchange rate movements if the subsidiary used FF financing, to cover the working capital? **(02 Marks)**

3 c. IAC Inc. is considering a new plant in Netherlands which will cost 26 million euros. Incremental cash flows are expected to be 3 million euros per year for the first three years, 4 million euros the next three, 5 million euros in year 7 through 9 and 6 million euros in years 10 through 19 after which the project will terminate with no residual value. The present exchange rate is € 0.69/$. The required rate of return on repatriated dollars is 16%. Calculate the NPV of the project. **(10 Marks)** — July 2011

4 c. Indian Pharma Ltd, an Indian based foreign MNC is evaluating an overseas investment proposal. Indian Pharma Ltd. exporter of pharmaceutical products is considering to build a plant in US. The project will entail an initial outlay of $ 100 million, and it is expected to give the following cash flow over its life of 4 years: — June 2012

Year	1	2	3	4
Cash flow (in million $)	30	40	50	60

The current spot exchange rate is 45/$, the risk free rate in India is 11% and in US it is 6%. India Pharma requires a rupee return of 15% on the above project. Calculate the NPV under foreign currency approach. **(10 Marks)**

5	b. Two managers of Marshall, Inc, assessed a proposed project in Jamaica. Each manager used exactly the same estimates of the earnings to be generated by the project as these estimates were provided by other employees. The managers agree on proportion of funds to be remitted each year, the life of the project and the discount rate to be applied. Both manager also assessed the project from the u.s. parent's perspective Neverthless, one manager determined that this project had a large N.P.V., while the other manager determined that the project had a negative N.P.V. Explain the possible reasons for such difference. **(07 Marks)**	
	CASE STUDY	
1	**CASE STUDY** **(20 Marks)** An American firm purchases $4,000 worth of perfume (FF 20,000) from a French firm. The American distributor must make the payment in 90 days in French Francs. The following quotations and expectations exists for the French Franc: Present spot rate $0.2000; 90 days forward rate $ 0.2200; US interest rate 15%; French interest rate 10%; Your expectation of the spot rate 90 days, hence, is 0.2400. i) What is the premium on discount on the forward French Francs? ii) What is the interest differential between US and France? iii) Is there an incentive for covered interest arbitrage? iv) If there is a covered interest arbitrage, how can an arbitrageur take advantage of the situation? Assume the arbitrageur is willing to borrow $4,000 or FF 20,000 and there is no transaction cost. v) If transaction costs were $ 50, would an opportunity still exist for covered interest arbitrage?	Dec 08/ Jan 09
2	**CASE STUDY** : A US MNC is planning to set up a subsidiary in India (where hitherto it was exporting) in view of the rising demand for its products and competition from others. The initial cost of the project is estimated to be $ 400 million. Working capital requirement is estimated to be $ 50 million. If follows straight line method depreciation. At present it is exporting 2 million units every year at a unit price of $ 80. Variable cost per unit is $ 40. The finance manager of the firm has following estimates for the project: i) Variable cost of production → $ 20 per unit. ii) Additional fixed cost per annum → $ 30 million. iii) Capacity of plant in India to produce and sell → 4 million units. iv) Life of the plant with no salvage value → 5 years. v) Firm's existing working capital investment in the production and sale of 2 million units → $ 10 million The manager mentions that the exports will fall to 1.5 million units, in case the firm does not setup subsidiary in India. Tax rate is 35%, Required rate of return is 12%. Assume no change in exchange rate and no with holding tax. Advise the MNC. **(20 Marks)**	Dec 2010

3	**CASE STUDY :** Set below is the table of cross rates. |	DEUTSCH-MARK	DOLLAR	FRENCH FRANC	POUND STERLING | |---|---|---|---|---| | FRANKFURT | - | 2.2800 | 0.4810 | 4.0205 | | NEW YORK | 0.4400 | - | 0.2100 | 2.8000 | | PARIS | 2.0900 | 4.8300 | - | 8.3400 | | LONDON | 4.0100 | 1.8700 | 7.4200 | - | Note that for Frankfurt, Newyork and Paris, all quotes are direct ; for London, all quotes are indirect. If all the above quotes are available at a time and assuming no transaction costs, how can a trader take advantage? **(20 Marks)**	Dec 2011
4	Case study – compulsory Nissan produces a car that sells in Japan for ¥1.8 million on September 1st, the beginning of the model year, the exchange rate is ¥150:1$. Consequently, Nissan sets the US stricker price at $12000. By October ρ, the exchange rate has dropped to ¥125.1 : $1. Nissan is upset because it now receives only $12000×125=¥1.5 million per sale. a. What scenarios are consistent with the US dollars depreciation? b. What alternatives are open to Nissan to improve its situation? c. How should Nissan respond in this situation? d. Suppose that for Nov 1, the US Fed Reserve intervenes to rescue the dollar and the exchange rate adjusts to ¥220:$1 by the following July. What problems and /or opportunities does this situation present for Nissan and for general motors? **(20 Marks)**	July 2006
5	**8** An American firm has a EUR 70 million 180 days payable. Market rates are : EUR / USD spot : 0.8733 / 41 180 days swap : 167 / 175 EUR interest rate : 3.90 / 4.10 USD interest rate : 7.95 / 8.05 a. How much will it have to pay if it covers the payable forward? **(05 Marks)** b. How much will the outflow be if it covers via money market? **(05 Marks)** c. If it decides to lead the payment, how much would it cost? **(05 Marks)** d. Can it lead the payment and use a forward cover? How? Will it be equivalent to a forward cover? **(05 Marks)**	July 2007

6

CASE STUDY :

Acer Ltd., has bought Swiss auto parts two months ago. Acer Ltd will need SFr 1,00,000 in 180 days. The company wants to hedge its currency risk. Acer Ltd., considers

a. Forward hedge b. Money market hedge c. Option hedge d. No. Hedge.

Its analysts develop the following information which can be used to assess the alternative solutions. Spot rate $ 0.68 / SFr ; 180 day forward rate $ 0.70 / SFr. Interest rates are as follows : Deposit rates : Switzerland – 9% ; US – 13% ; Borrowing rates : Switzerland - 10% ; US – 14%. A call option on SFr that expires in 180 days has an exercise price of 0.70$ / SFr and a premium of $ 0.02.

A put option on SFr that expires in 180 days has an exercise price of 0.7 $/SFr and a premium of $ 0.03.

The future spot rates in 180 days were forecasted as follows :

Possible Outcomes	Probability
$ 0.67	0.30
$ 0.70	0.50
$ 0.75	0.20

Advise the company. **(20 Marks)**

July 2011

7

8 CASE STUDY – Compulsory

Barret corporation presently has no existing business in France but it is considering the establishment of a subsidiary there. The following information is given to assess this project. The initial investment required is FF60 million. The existing spot rate is $0.20. The initial investment in dollars is $1.2 million in addition to the FF60m on plant and machinery. FF10m is needed for working capital and borrowed from the bank by the subsidiary at the ratio of 10%, which is to be paid in 10 years.

The project will be terminated at the end of 3 years. The price demand and variable cost is as follows :

Year	Price	Demand	Variable cost
1	FF600	40,000 units	FF25
2	FF650	50,000 units	FF30
3	FF700	60,000 units	FF40

Fixed cost FF5 million. Exchange rate at the FF is expected to be 0.22 after 1 year, 0.25 2nd year and 0.28 in 3rd year. French government imposes a tax (withholding) of 10%. IN three years, the subsidiary is to be sold. The rate of return on the project is 15%.

a. Determine the PV of project. Should Barret accept this project? **(10 Marks)**

b. Assume the Barret company provides the additional funds for working capital, so that the loan from French government is not necessary. Would the NPV of this project be more sensitive to exchange rate movements? **(10 Marks)**

June 2012

8	**8** a. Companies A and B have been offered the following rates per annum on a $20 million five year loan. | Company	Rate	Floating rate | |---|---|---| | A | 12.0% | LIBOR + 0.1% | | B | 13.4% | LIBOR + 0.6% | A requires a floating rate loan and B requires fixed rate. Design a swap that will net a bank acting as intermediary, 0.1% p.a. and equally attractive to both companies. Clearly explain the cash flow of both companies and the bank. **(15 Marks)** b. Given the following information. Calculate any arbitrage possibility is available. Spot rate Rs.42.0010 = $1 6 month forward rate Rs.42.8020 = $1 Annualized interest rate on 6 month dollar = 8% Annualized interest rate on 6 month rupees = 12%. **(05 Marks)**	June 2012
9	**8 CASE STUDY :** The Inter Continental Hotel Company is considering investing in a new chalet hotel at Verbier in Switzerland. The initial investment required is for $ 2 million or SFr 4 million at the current exchange rate of $ 1 = SFr 2. Profits for the first ten years will be reinvested, at which time Inter continental expects to sell out. Inter continental estimates that its interest in the hotel will realize SFr 6.5 million in the six years time. a. Indicate what factors you would regard as relevant in evaluating this investment. b. How will changes in the value of the Swiss Franc affect the investment? c. Indicate possible ways of forecasting the $ / SFr exchange rate ten years ahead. **(20 Marks)**	June / July 2008

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DERIVATIVES

1 **Options**

The Infosys stock is selling at. 5000. Mr.X has a negative view about the stock. He decides to go through the option route to take advantage of the situation. He buys an option from Mr. A which will entitle him to sell 100 shares on or before 30th December at Rs.4500 per share for which he has to pay Rs.20 per share today. Identify:

a. Type of option
b. Exercise price
c. Expiry date.
d. Option premium.
e. Buyer of the option.
f. Writer of the option.
g. Underlying asset.
h. Current market price.

2 State whether each one of the following is in the money or out of the money:

Option	Exercise	stock	
Call	60	55	
Call	50	50	
Call	110	115	
Call	40	35	
Put	110	100	
Put	105	115	
Put	12	15	
put	25	25	

3 An investor buys a calls option with an exercise price of Rs 100 for Rs 10 .What is the maximum loss that he could incur? What is the maximum profit, which could accrue to

<table>
<tr><td></td><td>him? Determine the break –even price, what is maximum position for the call writer?</td></tr>
<tr><td>4</td><td>An investor buys a put option with an exercises price of Rs ,200 for Rs 15 .What is the maximum loss that he should incur? What is the maximum profit ,which could accrue to him? Also determine the break –even stock price ?What is the position for the put writer?</td></tr>
<tr><td>5</td><td>The share price of XYZ Ltd,is selling for RS 104 ABC buys a 3-months calls option at a premium of RS .5.The exercises price is RS.105 .What is ABC pay-off if the share prices is RS 100 or RS.105.or RS 110 or Rs.115 or Rs.120 at the time the option is exercised ? What is the pay off of the seller of the call option? Kindly draw the pay off diagram.
<table>
<tr><td>Spot price (Rs)</td><td>100</td><td>105</td><td>110</td><td>115</td><td>120</td></tr>
<tr><td>Pay –off (Rs)</td><td>5</td><td>5</td><td>0</td><td>5</td><td>10</td></tr>
</table></td></tr>
<tr><td>6</td><td>The September Option of RK Ltd., stock at a strike price of Rs. 130 is available at a call option price of Rs. 10. The contract size is 100 shares. The price of stock today is Rs. 140. A range of prices beginning from 110 and ending with 160 with intervals of 10 is possible as at the expiry date.
a. What is the pat-off for the call holder on expiration?
b. Draw the pay-off graph.
c. What is the call writer’s pay off on expiration?
d. Draw the pay-off table and the pay-off graph.
<table>
<tr><td>Spot Price(Rs)</td><td>110</td><td>120</td><td>130</td><td>140</td><td>150</td><td>160</td></tr>
<tr><td>Pay-Off(Rs)</td><td>10</td><td>0</td><td>(10)</td><td>(10)</td><td>(10)</td><td>(10)</td></tr>
</table></td></tr>
<tr><td>7</td><td>Meera hopes that the [rice of AB Ltd. Will fail after three months. Therefore, She purchases a put option on share with maturity of three months at a premium of Rs. 5. The exercise price is Rs. 30. The current market price of AB Ltd. Share is Rs. 28. How much is profit or loss for Meera and the Put seller if the price of share at the time of maturity of the option turns out to be Rs 18 or Rs 25 or Rs 28 or Rs 30 or Rs 40? What is the Pay-off of the seller of put option? Draw the pay-off diagram.</td></tr>
</table>

	Spot Price(Rs.)	18	25	28	30	40
	Pay-off(Rs)	7	0	(3)	(5)	(5)
8	The equity shares of Arathi Ltd., are begin sold at Rs. 210. A 3-month call option is available for premium of Rs. 6 per share and a 3 month put option is available for a premium of Rs. 5 per share. Find out the net pay off option holder of the call option and put option given that (i) the strike price in both cases is Rs. 220, and (ii) the share price on the exercise day is Rs. 200 or Rs. 220 or Rs. 230 or Rs. 240. (Ans: Rs. 9, Rs. (-)1, Rs. (-)11, Rs. (-)1 and Rs. 9)					
9	Equity shares of Asha Ltd., are begin currently sold for Rs. 90 per share. Both the call option and the put option for a 3 month period are available for a strike price of Rs. 97 at a premium of Rs. 3 per share and Rs. 2 per share respectively. An investor wants to create a straddle position in this share. Find out his net Pay-off at the expiration of option period, if the share prices on that day happens to be Rs. 90 or Rs. 105. (Ans: Rs. 2 and Rs. 3)					
10	You have set up a straddle position on a company's share. You have bought one 6 month call with an experience price of Rs. 75 for a premium of Rs. 3 and 6 month put with same exercise price for a premium of Rs. 2. Assume that after six months price goes up to Rs. 78 or it comes down to Rs. 70. What is your pay off at expiration of the option? (Rs. (-)2 and Rs. Zero)					
11	A call option with an experience price Rs. 40 is available at premium of Rs. 3, A put with same maturity and exercise price can be purchased at premium of Rs. 2, If u create a straddle, show the pay-off from it . When the straddle result in loss (Ans : When the spot price is between Rs. 35 and Rs. 45)					
12	Shyla has bought a 3 month call option on NarendraLtd's share with an exercise price of Rs. 50 at a premium of Rs. 3. She has also bought a put option on the same share at an exercise price of Rs. 40 at a premium of Rs 1.5. Narendra's share is currently selling for Rs. 45. What will be the Shyla's position after three months if the share price turns out to					

be Rs 50 or Rs. 30?

(Ans : Rs(-)4.50 and Rs. 5.50)

13 A call option with an exercise price of Rs. 100 can be bought at a premium of Rs. 3. A put option with an exercise price of Rs. 95 is available at a premium of Rs. 5. How can you combine these options to from a portfolio? What will be your pay-off at expiration?

SpotPrice(Rs)	80	85	90	95	100	105	110	115
NetPay-off(Rs)	7	2	(3)	(8)	(8)	(3)	2	7

(Ans

14 A one year call option with an exercise option of Rs. 60 is available at premium of Rs. 6. You can also buy a one-year put with an exercise price of Rs. 55 at a premium of Rs. 3. If you set up a portfolio of a put and a call, what will be your pay-off if the share price after one year is (a) Rs. 58, (b) Rs. 45 (c) Rs. 75?

(Ans: (a) Rs (-)9, Rs. 1 and Rs. 6)

15 In respect of a particular share , a call option with a strike price of Rs. 50 is available for Rs. 2. On the same share, a put option with a strike price of Rs. 45 is available for Rs. 3. Explain how a strangle can be created and what is the pay-off profile of that strategy?

SpotPrice(Rs)	30	35	40	45	50	55	60	65
Net pay-off(Rs)	10	5	0	(5)	(5)	0	5	10

16 For each of the following cases, calculate the profit/loss of different price ranges of the stock. Also compute the break-even price. Draw the Pay-off tables ad the pay-off graph.

Type of option	Exercise Price Of option Bought	Exercise Price Of option sold	Premium on Option bought	Premium on option sold
Call	60	70	9	4
Call	80	75	2	6

	Put	70	65	9	5
	Put	50	60	4	11
17	The current spot price of ABC Ltd., Rs. 121 with strike price Rs. 125 and Rs. 130 are trading at a premium of Rs. 3.30 and Rs 1.80 respectively. Mr. X, a speculator is bullish About the share price over next 6 months, However, he is also of belief that share price could go down. He approaches you for advice. You are required to: (a) Suggest a strategy that Mr. X can adopt which puts limits o his gain/loss. (b) How much is the maximum possible profit? (c) Draw out a rough diagram of the strategy adopted. (d) What will be the BEP of the share? You are given three call options on stock at exercise price of Rs. 40, Rs. 45 and Rs. 50 with expiration date in three months and premium of Rs. 4, Rs. 2 and Re. 1 respectively. Show how the option can be used to create a butterfly spread. Construct a table with different Market prices and show how profit changes with stock prices ranging from Rs. 30 to Rs. 60 for the butterfly spread. (Ans: Pay-off : For spot prices of up to Rs. 39 and from Rs. 51 - Rs. 1 for spot price of Rs. 42 and Rs. 48 – Rs. (-)1 and for spot price of Rs. 45 – Rs.(-)4)				
18	You are given three option on a stock at exercise price of Rs.30,Rs.35 and Rs.40 with expiration date in three months and the premium of Rs.1,Rs.2 and Rs.4 respectively. Show how the options can be used to create a butterfly spread. Construct a table with different market prices and show how profit changes with stock prices ranging from Rs.20 to Rs .50 for the butterfly spread. (Ans: Pay-off : For spot prices of up to Rs. 29 and from Rs. 41 - Rs. (-)1, at spot price of Rs. 32 and Rs. 38 – Rs. 1at spot price of Rs. 35 – Rs.(-)4)				
19	A put and a call option each have an expiration date 6 months hence and an exercise price of Rs. 10. The interest rate for the 6 month period is 3 per cent p.a. (a) If the put has a market price of Rs. 2 and share is worth Rs. 9 per share, what is the				

	value of the call? (b) If the put has a market price of Rs. 1 and the call Rs. 4, what is the value of the share per share? (c) If the call has market value of Rs. 5 and market price of share is Rs. 12 per share, what is the value of the put? (Ans: (a)Rs. 1.15, (b)Rs. 12.85 and (c)Rs. 2.85)
20	In January 2015 a six month call on PR Ltd's stock with an exercise price of Rs. 25 sold for Rs. 2. The stock price was Rs. 20. The risk free interest rate was 5% per annum How much would you be willing to pay for a put on PR Ltd's stock with the same maturity and exercise price? What happens if the actual price is different from what you are willing to pay? (Ans: Rs. 6.38)
21	A share is currently selling at Rs. 120. There are two possible prices of the share after one year: Rs. 132 or Rs. 105. Assume that the risk-free rate of return is 9 per cent per annum. What is the value of one year call option (European) with an exercise price of Rs. 125? (Ans: Rs. 6.23)
22	A share price is Rs. 40. It is known that at end of one month it will be either Rs. 38 or Rs. 42. The risk-free interest rate is 8 per cent per annum with continuous compounding. Find the value of a one-month European call option with a strike price of Rs. 39 with the help of binomial model? (Ans: Rs. 1.69)

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Before you can really start setting financial goals, you need to determine where you stand financially. - David Bach

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A Study on Analysis of Bop Trends with Reference to India

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Abstract: ***Globalization is severely impact the country's foreign exchange reserves. Leadership changes and Macro Economic factors are going to affect the countries trade balances. The balance of payments (BOP) is the method countries use to monitor all international monetary transactions at a specific period of time. Usually, the BOP is calculated every quarter and every calendar year. This paper examines the trend pattern of balance of payment during the period2011-12 to 2015-16 and the factors which have effected during that period and the impact on balance of payment. And latest developments in current as well capital account, which factors in economy as well as contemporary issues leads to developments since2011-2012 .There are some reasons which causes Disequilibrium in balance of payments like population growth, Demonstration effect, cyclic fluctuations etc. It also tells about in Bop statement how changes happen in current account and capital account from 2011 t0 2016. The trend graph is explaining the India's current situation and how the future growth will be.***

Keywords: Balance of Payments, contemporary issues, economy, current account, capital account

1. Introduction

In the modern world, there is hardly any country which is self-sufficient in the sense that it produces all the goods and services it needs. Every country imports from other countries the goods that cannot be produced at all in the country or can be produced only at an unduly high cost as compared to the foreign supplies.

2. Objectives of the Study

1) To estimate trend and pattern of current account, capital account and balance of payment.
2) To elaborate the recent BOP developments.
3) To analyze future trends and correlate the latest trends with the contemporary factors.

3. Balance of Payment (BOP)

The balance of payments (BOP) is the method countries use to monitor all international monetary transactions at a specific period of time. Usually, the BOP is calculated every quarter and every calendar year. All trades conducted by both the private and public sectors are accounted for in the BOP in order to determine how much money is going in and out of a country. If a country exports goods and services more than the imports of goods and services from other countries then we called country has surplus balance. In the same way if a country imports goods and services during a period more than the exports made by that country then we called that country has deficit balance. The BOP is divided into three main categories: the current account, the capital account and the financial account. Within these three categories are sub-divisions, each of which accounts for a different type of international monetary transaction.

The Current Account: The current account is used to record the inflow and outflow of goods and services into a country. Earnings on investments, both public and private, are also put into the current account. In current account we should maintain both debit and credit columns but a small change have to be made (i.e., take Dr at right hand side and cr at left hand side), This includes goods such as raw materials and manufactured goods that are bought, sold or given away (possibly in the form of aid). Services refer to receipts from tourism, transportation, engineering, business service fees (from lawyers or management consulting, for example), and royalties from patents and copyrights. When combined, goods and services together make up a country's balance of trade (BOT). The BOT is typically the biggest bulk of a country's balance of payments as it makes up total imports and exports. If a country has a balance of trade deficit, it imports more than it exports, and if it has a balance of trade surplus, it exports more than it imports. Receipts from income-generating assets such as stocks (in the form of dividends) are also recorded in the current account. The last component of the current account is unilateral transfers. These are credits that are mostly worker's remittances, which are salaries sent back into the home country of a national working abroad, as well as foreign aid that is directly received.

Current account transactions:
The current account records the receipts and payments of foreign exchange in the following ways. They are

Current account receipts
1) Export of goods
2) Invisibles
3) Services
4) Unilateral transfers
5) Investment income
6) Non-monetary movement of gold

Current account payments
1) Import of goods
2) Invisibles
3) services
4) Unilateral transfers
5) Investment income

6) Non-monetary movement of gold

The Capital Account

The capital account is where all international capital transfers are recorded. This refers to the acquisition or disposal of non-financial assets (for example, a physical asset such as land) and non-produced assets, which are needed for production but have not been produced, like a mine used for the extraction of diamonds.

The capital account is broken down into the monetary flows branching from debt forgiveness, the transfer of goods, and financial assets by migrants leaving or entering a country, the transfer of ownership on fixed assets (assets such as equipment used in the production process to generate income), the transfer of funds received to the sale or acquisition of fixed assets, gift and inheritance taxes, death levies, and, finally, uninsured damage to fixed assets.

Capital account transactions:

Similarly, capital account transaction takes place in following ways

Capital account receipts

1) Long term inflow of funds
2) Short term inflow of funds

Capital account payments

1) Long term out flow of funds
2) Short term out flow of funds

4. Distinction between Current Account and Capital Account:

1) The distinction between the current account and capital account of the balance of payment may be noted. The current account deals with payment for currently produced goods and services. It includes also interest earned or paid on claims and also gifts and donations.
2) The capital account, on the other hand, deals with capital receipts and payments of debts and claims. The current account of the balance of payments affects the level of national income directly. For instance, when India sells its currently produced goods and services to foreign countries, the producers of those goods get income from abroad.
3) In other words, current account receipts have the effect of increasing the flow of income in the country. On the other hand, when India imports goods and services from foreign countries and pays them money which would have been used to demand goods and services within the country money flows out to foreign countries.
4) Thus, current account payments to foreigners involve reduction of the flow of income within the country and constitute a leakage. Thus, the current account of the balance of payments has a direct effect on the level of income in a country. The capital account, however, does not have such a direct effect on the level of income; it influences the volume of assets which a country holds.

Balance of Trade and Balance of Payments*:*

Balance of trade and balance of payments are two related terms but they should be carefully distinguished from each other because they do not have exactly the same meaning. Balance of trade refers to the difference in values of imports and exports of commodities only, i.e., visible items only. Movement of goods between countries is known as visible trade because the movement of goods is open and visible and can be verified by the custom officials.

During a given period of time, the exports and imports may be exactly equal, in which case the balance of trade is said to be in balance. But this is not necessary because those who export and import are not necessarily the same persons. If the value of exports exceeds the value of imports, the country is said to have an export surplus. On the other hand, if the value of its imports exceeds the value of its exports, the country is said to have a deficit balance of trade.

Dis Equilibrium

Though the credit and debit are written balanced in the balance of payment account, it may not remain balanced always. Very often, debit exceeds credit or the credit exceeds debit causing an imbalance in the balance of payment account. Such an imbalance is called the disequilibrium. Disequilibrium may take place either in the form of deficit or in the form of surplus

Disequilibrium of **Deficit** arises when our receipts from the foreigners fall below our payment to foreigners. It arises when the effective demand for foreign exchange of the country exceeds its supply at a given rate of exchange. This is called an 'unfavorable balance'.

Disequilibrium of **Surplus** arises when the receipts of the country exceed its payments. Such a situation arises when the effective demand for foreign exchange is less than its supply. Such a surplus disequilibrium is termed as 'favorable balance'.

5. Causes of Disequilibrium in Balance of Payment

1) Development Programmes

Developing countries which have embarked upon planned development programmes require to import capital goods, some raw materials which are not available at home and highly skilled and specialized manpower. Since development is a continuous process, imports of these items continue for the long time landing these countries in a balance of payment deficit.

2) Demonstration Effect

When the people in the less developed countries imitate the consumption pattern of the people in the developed countries, their import will increase. Their export may remain constant or decline causing disequilibrium in the balance of payments.

3) Natural Factors

Natural calamities such as the failure of rains or the coming floods may easily cause disequilibrium in the balance of payments by adversely affecting agriculture and industrial production in the country. The exports may decline while the

imports may go up causing a discrepancy in the country's balance of payments.

4) Cyclical Fluctuations

Business fluctuations introduced by the operations of the **trade** cycles may also cause disequilibrium in the country's balance of payments. For example, if there occurs a business recession in foreign countries, it may easily cause a fall in the exports and exchange earning of the country concerned, resulting in a disequilibrium in the balance of payments.

5) Inflation

An increase in income and price level owing to rapid **economic development** in developing countries, will increase imports and reduce exports causing a deficit in balance of payments.ased their surplus. The poor marketing facilities of the developing countries have pushed them into huge deficits.

6) Flight of Capital

Due to speculative reasons, countries may lose foreign exchange or gold stocks People in developing countries may also shift their capital to developed countries to safeguard against political uncertainties. These capital movements adversely affect the balance of payments position.

7) Globalization

Due to globalization there has been more liberal and open atmosphere for international movement of goods, services and capital. Competition has beer increased due to the globalization of international economic relations. The emerging new global economic order has brought in certain problems for some countries which have resulted in the balance of payments disequilibrium.

8) Population Growth`

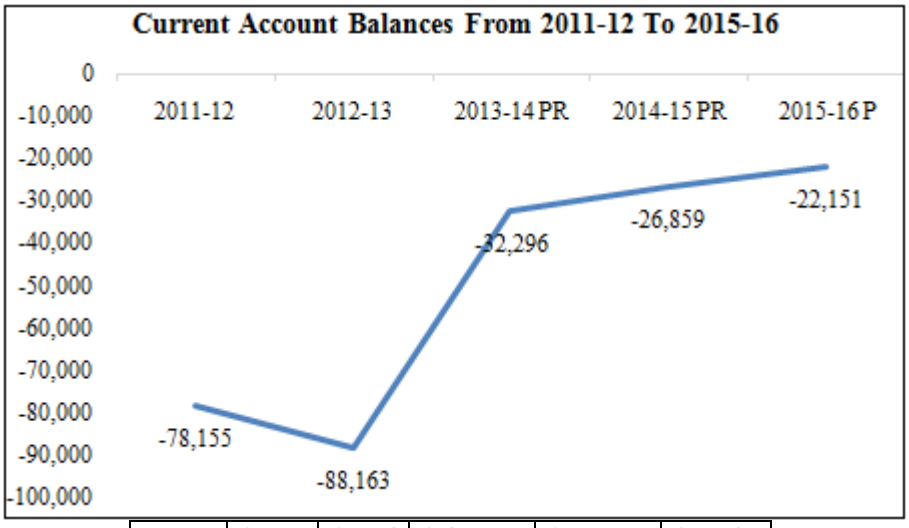
Most countries experience an increase in the population and in some like **India** and **China** the population is not only large but increases at a faster rate. To meet their needs, imports become essential and the quantity of imports may increase as population increases.

The following table represents BOP statement of Indian Economy since 2011

India's BOP statement for last five years					
(US $ million)					
	2011-12	2012-13	2013-14 PR	2014-15 PR	2015-16 P
1	2	3	4	5	6
A. CURRENT ACCOUNT					
1 Exports, (f.o.b).	309,775	306,583	318,606	316,544	266,366
2 Imports, c.i.f.	499,534	502,238	466,217	396,445	396,445
3 Trade Balance	-189,760	-195,657	-147,610	-144,930	-130,080
4 Invisibles, Net.	111,605	107,494	115,312	118,082	107,929
a) 'Non-Factor' Services of which :	64,098	64,916	73,067	76,528	69,677
Software Services	60,957	63,504	67,002	70,400	71,454
b) Income.	-15,988	-21,455	-23,028	-24,140	-24,375
c) Private Transfers	63,469	64,342	65,481	66,264	63,139
5 Current Account Balance	-78,155	-88,163	-32,296	-26,859	-22,151
B. CAPITAL ACCOUNT					
1 Foreign Investment, Net {a+b}	39,232	46,712	26,387	73,456	31,892
a) Direct Investment	22,061	19,819	21,564	31,251	36,021
b) Portfolio Investment	17,171	26,892	4,823	42,204	-4,131
2 External Assistance, Net	2,297	983	1,031	1,724	1,504
3 Commercial Borrowings, Net	10,344	8,485	11,777	1,570	-4,529
4 Short Term Credit, Net	6,669	21,658	-5,043	-112	-1,611
5 Banking Capital of which :	16,226	16,570	25,449	11,618	10,630
NRI Deposits, Net	11,919	14,841	38,891	14,055	16,053
6 Rupee Debt Service	-78	-57	-51	-80	-72
7 Other Capital, Net*	-6,928	-5,042	-10,762	1,108	3,314
8 Total Capital Account	67,754	89,300	48,786	89,286	41,129
C. Errors & Omissions	-2,431	2,688	-984	-1,022	-1,074
D. Overall Balance [A(5)+B(8)+C]	-12,832	3,822	15,509	61,405	17,906
E. Monetary Movements (F+G)	12,831	-3,826	-15,508	-61,406	-17,905
F. IMF, Net					
G. Reserves and Monetary Gold (Increase -, Decrease +) of which : SDR allocation	12,831	-3,826	-15,508	-61,406	-17,905
Memo: As a ratio to GDP					
1 Trade Balance	-10.4	-10.7	-7.9	-7.1	-6.3
2 Net Services	3.5	3.5	3.9	3.7	3.4
3 Net Income	-0.9	-1.2	-1.2	-1.2	-1.2
4 Current Account Balance	-4.2	-4.8	-1.7	-1.3	-1.1
5 Capital Net (Excld. changes in reserves)	3.7	4.9	2.6	4.4	2.0
6 Foreign Investment, Net	2.2	2.6	1.4	3.6	1.5

PR: Partially Revised. P: Provisional.

Current account developments:

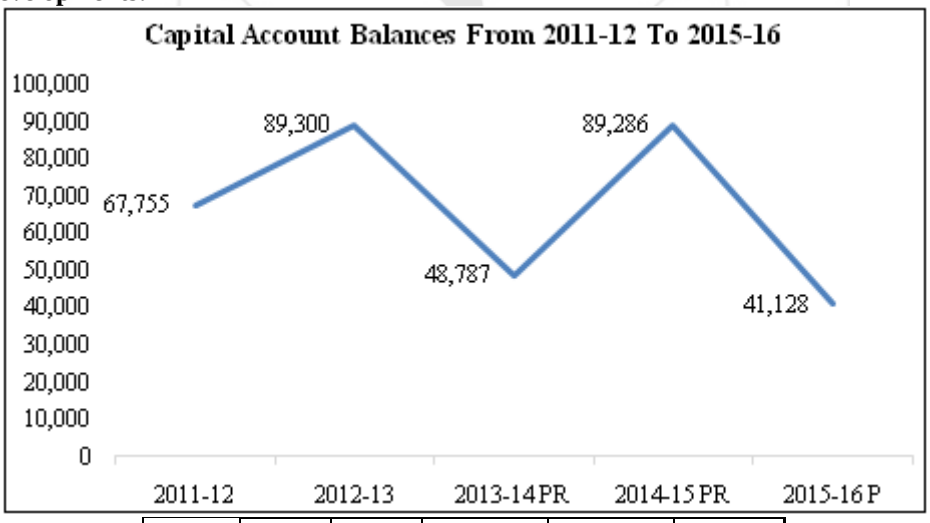


Year	2011-12	2012-13	2013-14 PR	2014-15 PR	2015-16 P
Balances	-78,155	-88,163	-32,296	-26,859	-22,151

Interpretation:
Current account balances are showing a decline trend from the year 2014-15 to 2015-2016 by $4.78 millions. which is a positive sign for the Indian economy. Although current account balances are showing 22.15million deficit balance it will be a positive sign to Indian economy because when compared the deficit balance of FY 2014-15-26.85million the deficit balance came down by 4.78 million. Because of drastical fall in imports leads this change. During 2015-16 the imports was 396,444 million against 396,444 millions in the FY 2014-15.It could happened because of government policies and make in India campaign.

If Indian could follow the same trend definitely the amount spent on foreign goods will get down soon.

Capital Account Developments:



Year	2011-12	2012-13	2013-14 PR	2014-15 PR	2015-16 P
Balances	67,755	89,300	48,787	89,286	41,128

Interpretation
Capital account balances are showing a decline trend from the year 2014-15 to 2015-2016 by $48.15 millions. which is a positive sign for the Indian economy. Although capital account balances are showing 23.46 million deficit balance it will be a positive sign to Indian economy because when compared the deficit balance of FY 2014-15 50.41million the deficit balance came down by 48.15 million. Because of drastic fall in Exports leads this change. During 2015-16 the imports was 316,544 million against 266,366 millions in the FY 2014-15.

6. Conclusion

In capital account , Exports decreases in the year 2011-2016 and imports increases initially and after that decreases in the year 2011-2016. In current account, foreign investment (which includes Portfolio investment and Direct investment) also decreases in the year 2011-2016. Population growth, Demonstration effect, cyclic fluctuations, Natural factors, Globalization and inflation are the factors which causes disequilibrium in balance of payments.

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Effects of Exchange Rate Volatility on the Stock Market: A Case Study of South Africa

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Abstract

This study assessed the effects of currency volatility on the Johannesburg Stock Exchange. An evaluation of literature on exchange rate volatility and stock markets was conducted resulting into specification of an empirical model. The Generalised Autoregressive Conditional Heteroskedascity (1.1) (GARCH) model was used in establishing the relationship between exchange rate volatility and stock market performance. The study employed monthly South African data for the period 2000 – 2010. The data frequency selected ensured an adequate number of observations. A very weak relationship between currency volatility and the stock market was confirmed. The research finding is supported by previous studies. Prime overdraft rate and total mining production were found to have a negative impact on Market capitalisation. Surprisingly, US interest rates were found to have a positive impact on Market capitalisation. The study recommended that, since the South African stock market is not really exposed to the negative effects of currency volatility, government can use exchange rate as a policy tool to attract foreign portfolio investment. The weak relationship between currency volatility and the stock market suggests that the JSE can be marketed as a safe market for foreign investors. However, investors, bankers and portfolio managers still need to be vigilant in regard to the spillovers from the foreign exchange rate into the stock market. Although there is a weak relationship between rand volatility and the stock market in South Africa, this does not necessarily mean that investors and portfolio managers need not monitor the developments between these two variables.

Keywords: *rand volatiltity, exchange rate fluction, flexible exchange rate, stock market, GARCH.*

1. Introduction

The volatility of exchange rates is at the center of the debate on the performance of exchange rate regimes. This concern was reinforced by the fluctuations in exchange rates since the move to flexible exchange rate systems in 1973 (Omojimite and Akpokodje 2010). A major concern has the consequence of exchange rate volatility which is a prominent feature of flexible exchange rate systems. Exchange rate volatility has been a source of concern in many economies including South Africa. The rand has been the most volatile among emerging currencies over the past few years. South Africa's recent measures to reduce the rand's volatility haven't had a desired impact as the currency's fluctuation is fueled by global economic instability and capital inflows from developed countries (Davies, 2010). Over the past decade South Africa has experienced significant volatility. Pretorius and de Beer (2002) note that the “worrying volatility of the rand resulted in the appointment of the Myburgh Commission of inquiry into the depreciation of the rand. From January 1, 1996 to May 29, 2002, the value of the rand depreciated from R3.64 per US$ to R9.85, reaching an all-time low of R13.002 on December 20, 2001”.

Over the years, the rand exchange rate has continued to display a relatively high degree of volatility in response to erratic changes in global risk aversion. The currency plunged to a two-year low of R8.49 in late September (2011) from around R6.80 at the start of August and has since rebounded to R7.89 (Mail and Guardian, 2011). Nedbank (2012)

further maintains that the rand rose by 0, 4% against the US dollar in May and June 2012 and later firmed against the US dollar by 0.7% in August and September 2012. All these statistics showed that the rand has been volatile and vulnerable to both local and international developments.

In the financial sector, South Africa is seen as having one of the best run emerging economies in the world, with efficiently managed world class companies. According to the United Nation Economic Commission for Africa (UNECA, 2008), the Johannesburg Stock Exchange (JSE) stands as an attractive vehicle for the infusion of foreign investments in Africa. The JSE (established in 1886) is the oldest stock exchange market in Africa. The UNECA (2008) maintains that the JSE, in its 120 years of existence, has developed into one of the biggest stock exchange in the world. African markets are usually characterized by low capitalization and are still regarded as infants in the world stock exchange. In contrast to this, the JSE has emerged as one of the best in the world. By March 2011, the JSE was ranked 20th in the world and the value of market capitalization was 6,785.6 billion dollars up from 6,143.2 dollars the previous year (JSE, 2011).

However, the JSE has been affected by exchange rate movements in recent years. "In the early 2000s, the South African Reserve Bank (SARB) tightened its monetary policy in a bid to keep inflation within the target band of 3-6%. Consequently, the SA rand appreciated significantly. However the strength of the rand led to a 10% decline in the JSE index in local currency terms and 24% increase in US dollar terms" (UNECA, 2008). High currency volatility makes it difficult for businesses to plan and budget. Currency risk presents a curious problem. On the one hand, currency movements will have a large impact on the rand value of cash flows from foreign projects. Further, to the extent that the project involves a mixture of local and international costs or revenues, currency changes will also alter the local currency cash flows (Stern and Chew, 2003). Benita and Lauterbach (2004) argue that currency volatility have costs that have negative effect on price stability and consequently on firm profitability. Currency volatility has implications for the financial system especially the stock market. Stock market plays a very crucial role in assessing economic conditions of any country through improved stock returns usually signified by higher profit to firms. Stock markets serve as channels through which funds can be exchanged between savers and spenders (investors) who will be in need of funds (Mishkin 2001). Fluctuations in the exchange rate can, therefore, affect the performance of the stock market as well as the financial sector.

2. Literature Review

This section uncovers whether or not existing theories and studies suggest that currency volatility has an impact on the stock market. There is no agreement on the existence of a relationship between stock prices and exchange rates.

2.1 Theoretical literature

This part explores the theoretical literature applicable to this study, with considerations being made to the Flow oriented model, Stock oriented model and the Arbitrage Pricing Theory.

2.1.1 Flow oriented model

The model maintains that a causal relationship runs from the exchange rate to the stock prices. In other words, exchange rate movements affect the stock prices. Exchange rate changes affect the competitiveness of firms through their impact on input and output prices (Joseph, 2002). When the exchange rate appreciates, exporters will be negatively affected. An appreciation of the currency will cause their goods and services to be dearer on the international market. This will cause their exports to decline, as they will be seen as expensive by buyers on the international market. This will result in them losing competitiveness internationally. Consequently, their profits will decline and if profits decrease the firms will lose competitiveness on the domestic stock market. Their attractiveness on the domestic stock market will decrease and this will result in their stock prices decreasing in value. Resultantly, a negative relation between domestic currency and stock price can be confirmed.

2.1.2 Stock oriented model

Pilbeam (1992:159) points out an obvious problem with the flow oriented model as being that they have nothing to say about international capital movements, although it is known that international capital movements are very large and

dominate the foreign currency market. Stock oriented models put much stress on the role of the financial (formerly capital) account in the exchange rates determination. Adjasi and Biekpe (2007) held that in the "stock oriented model, the exchange rate equates demand and supply for assets (bonds and stocks)". Therefore, expectations of relative currency movements have a significant impact on price movements of financially held assets. In other words, currency fluctuations may influence stock price movements.

2.1.3 Arbitrage Pricing Theory (APT)

Chen *et al.* (1986) in Iqbal and Haider (2005) argue that risk factors (in the APT) arise from changes in some fundamental economic and financial variables such as interest rates, inflation, real business activity, exchange rate among other variables. Rashid and Karachi (2007) held that according to the Arbitrage theory, a rise in real interest rate reduces the present value of a firm's future cash flows and causes stock prices to fall. But at the same time, a higher interest rate stimulates the capital inflow, and therefore exchange rate falls. So the real interest rate disturbance may be a factor of a positive relationship between the average level of stock prices and exchange rates. In this regard, the model assumes that macroeconomic variables such as exchange rate can have an effect on the stock market.

2.2 Empirical literature

The behavior of volatility of stock market has been extensively studied using the ARCH-GARCH framework pioneered by Engel (1982) and further developed by Bollerslev (1986), and others. However, the results of some of these studies are inconclusive. Adjasi and Biekpe (2005) investigated the relationship between stock prices and exchange rate movement in Ghana, South Africa, Egypt, Kenya, Mauritius and Nigeria. A VAR model was used to examine the relationship between exchange rates and stock prices. Findings from their study indicated that there was no long-run stable relationship between stock market prices and exchange rates for Egypt, Ghana, Kenya, Mauritius, Nigeria and South Africa. In another study, Pilinkus and Boguslauskas (2009) used the impulse response function to test the existence of the short-run relationship between stock market prices and macroeconomic variables. Their study concluded that unemployment rate, exchange rate, and short-term interest rates negatively influence stock market prices.

Muhammad and Rasheed (2011) conducted a study on the relationship between stock prices and exchange rates in four South Asian countries; Pakistan, India, Bangladesh and Sri- Lanka, for the period January 1994 to December 2000. The study employed cointegration, vector error correction modeling technique and standard Granger causality tests to examine the long-run and short-run association between stock prices and exchange rates. Results of the study showed no short-run association between the variables for all four countries. There was no long-run relationship between stock prices and exchange rates for Pakistan and India as well. However, for Bangladesh and Sri- Lanka, there appeared to be a bi-directional causality between these two financial variables.

Sekmen (2011) examined the effects of exchange rate volatility, using the squared residuals from the autoregressive moving average (ARMA) models, on stock returns for the U.S. for the period 1980 to 2008. The study found that exchange rate volatility negatively affected U.S. stock returns since the availability of hedging instruments could not lessen the negative effect of exchange rate volatility on trade volume. In another study, Olugbenga (2012) examined the long-run and short-run effects of exchange rate on stock market development in Nigeria over 1985:1–2009:4 using the Johansen cointegration tests. Results showed a significant positive stock market performance to exchange rate in the short-run and a significant negative stock market performance to exchange rate in the long-run.

Empirical literature investigated by the study showed that that there are mixed views on the link between the two variables. Interesting to note is that some studies like that of Alam and Tafiques (2007) admit that there is need for continuous research in the area of exchange rates and stock markets. Moreover, studies in other countries also provided room for further research. Morales (2008) admitted that further research along these lines[1] is required in order to establish more comprehensively the true nature of spillovers from exchange rates to equity markets.

3. An Overview of Currency Volatility and Developments on the JSE

The aim of this chapter is to present an overview of the exchange rate movements and developments on the JSE over the period 2000 to 2010. An analysis of the volatility of the rand shall be done first followed by an analysis of the

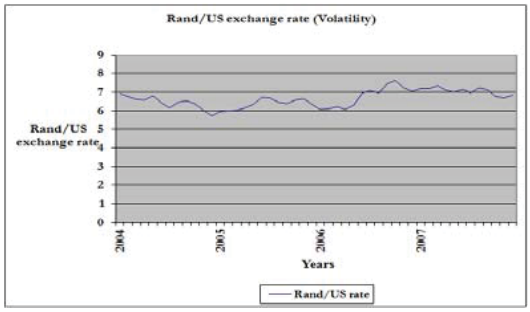
[1] *Exchange rate and stock market*

developments on the JSE.

3.1 An overview of the volatility of the rand

Currency volatility was identified by the South African authorities as one of the constraints on growth in Accelerated and Shared Growth Initiative for South Africa (ASGISA) in 2006 (OECD, 2010). The sources of rand instability or volatility are exogenous. In effect, fundamental shifts in the dynamics of the global capital market, together with marginally high domestic interest rates, lead to sustained strength and volatility of the currency (Hale and Hughes, 2011:136). The instability or volatility of the rand has, also, been caused by large fluctuations in financial flows and this has made the achievement of the stability of the rand to be nearly impossible. Since the adoption of a floating exchange rate regime together with the inflation-targeting monetary policy framework, substantial swings have occurred in the exchange rate of the rand. From the year 2000 when the inflation targeting-flexible exchange regime was adopted, the rand has undergone an era of excessive volatility. This is reflected in Figure 1.

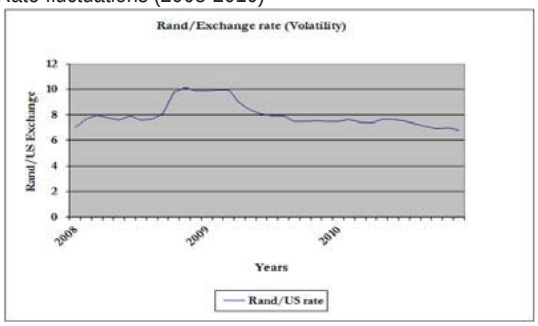
Figure 1: Rand/US Exchange Rate fluctuations



Source: Data compiled from SARB, (2012)

From figure 1 it can be observed that although the rand could not depreciate and appreciate with high margins between 2004 and 2007, it was not stable hence we can conclude that it was volatile. The rand fluctuated considerably and it was never stable enough for volatility to be ruled out. The fact that it fluctuated in these years makes the rand to be deemed volatile between the 2004 and 2007 period. The volatility continued in the following years that are 2008, 2009 and 2010. This is shown in figure 2.

Figure 2: Rand/US Exchange Rate fluctuations (2008-2010)



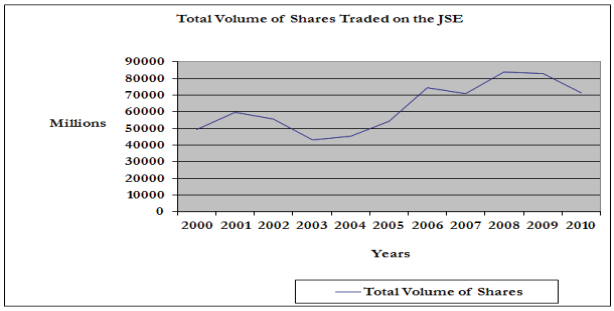
Source: Data compiled from SARB, (2012)

Figure 2 shows that the period between 2008 and 2010 was marked by rand exchange rate volatility. Significant levels of volatility can be observed especially in the first two years - that is in the years 2008 and 2009. The rand fluctuated significantly in these years and it can be deemed volatile. However, although the rand was relatively stable in 2010, on a month to month basis, the rand was too volatile. In other words the rate with which it fluctuated from one month to the next was too much and this deems it volatile

3.2 An overview of the developments on the JSE

The Johannesburg Stock Exchange is the oldest stock exchange market in Africa. Structural, regulatory and technological changes over the past decade have made the JSE to have many positive changes. Many positive developments have been noticed and as a result of this "the JSE is on the radar screen of many international investors today" (Oxford Business Group, 2008:59). Positive developments have been characterized by significant changes in the economic indicators mainly composed of, among other things, total volume and value of shares traded on the JSE. Figure 3 below shows the trends of the volume of shares traded on the JSE between 2000 to 2010.

Figure 3: JSE stock market transactions: Total volume of shares traded on the JSE



Source: Data compiled from SARB, (2012)

Figure 3 shows that the volume of shares rose in 2000 but fell sharply in 2001 and 2002 respectively. The volume of shares rose slightly in 2003 and trend continued till 2007. The volume of shares began to decline in the year 2008. Here, the global financial crisis played a huge role in the fall of the total value of shares traded on the JSE. The total value and volume of shares traded on the JSE has been developing from the year 2000 onward. Although they have been falling in some years, they speedily rose again in the following year and the increasing trend continued.

4. Methodology

Data for the study was obtained from the Johannesburg Stock Exchange and the South African Reserve Bank. The study used nominal figures and it employed monthly South African data for the period 2000 – 2010. The data frequency selected shall be monthly so as to ensure an adequate number of observations.

4.1 Model specification

In order to measure the impact of currency volatility on the stock market in South Africa, this study followed Subair's (2009) model. Subair (2009) used the GARCH model to investigate the impact of exchange rate volatility on the stock market performance in Nigeria. The explanatory variables that are included in this study's model are: the prime overdraft interest rate, total mining production, exports, and US interest rates. The model, therefore, takes the form:

$$LSMC = \beta_0 + \beta_1 LRANDVOL_t + \beta_2 LTMP_t + \beta_3 LINT_t + \beta_4 LM3_t + \beta_5 LUSINT_t + \varepsilon_t \quad \text{.....(1)}$$

Where LSMC is stock market capitalisation, RANDVOL is the volatility of the rand, TMP is total mining production, INT is interest rates, M3 is money supply and USINT is United States interest rates, ε_t is a white noise error term and the L in the above model stands for natural logs

4.2 Data analysis

Several tests such as descriptive statistics, ARCH test and unit root test were performed to examine the data characteristics. This was done to make sure that the estimation technique (GARCH) chosen is appropriate for the data.

4.2.1 Descriptive statistics of monthly changes of stock market capitalisation and exchange rate.

Descriptive statistics were performed to examine if the Randvol and MC exhibit time varying volatility and leptokurtosis

characteristics. The two main variables of the study are examined because these variables determine the estimation technique for the study. The statistics of the Randvol and MC series are displayed in Table 1 below.

Table 1: Descriptive statistics

Variable	Randvol	MC
Mean	1.04	267176.3
Standard Deviation	6.21	193372.5
Skewness	8.2	4.26
Kurtosis	69.63	28.2
J.B	39.83	14.57
p-value	0.000	0.000684

Statistics from Table 1 show that the J-B value of 39.83 deviated from normal distribution. Similarly, skewness and kurtosis represent the nature of departure from normality. The randvol value for skewness is 8.2 and it reflects positive skewness and the value for kurtosis is 69.63 and this suggests that there is peakedness in the randvol. From this it can be observed that the randvol variable exhibits significant deviations from normality. The coefficient of kurtosis is 69.63 and it is larger than three. This demonstrates significant lerptokurtosis. A distribution with a coefficient larger than 3 is said to be leptokurtic and one with a coefficient smaller than 3 is platykurtic. The MC variable reflects positive skewness with a value of 4.26 and this shows that there is asymmetry in the MC variable.

4.2.2 Testing for ARCH effects

Brooks (2008) argues that it is worthwhile first to compute the ARCH test to make sure that this class of models (GARCH) is appropriate for the data. In this regard, the ARCH test was used to test for ARCH effects on the residuals. The results are presented by table 2 below.

Table 2: ARCH test

Heteroscedasticity Test: ARCH
F-statistic 7.447 Prob.F (5, 121) 0.00000
Obs*R-squared 29.885 Prob. Chi-Square(5) 0.00000

Table 2 shows that the statistic labelled "Obs*R-squared" is the ARCH test of autocorrelation in the squared residuals. The p-value (0.0000) indicates that we can reject our null hypothesis of no heteroscedasticity in the residuals. In other words, the zero probability value strongly shows the presence of heteroscedasticity in the residuals.

4.2.3 Testing for stationarity

If the mean and variance are constant over time, then the series is stationary. Stationarity is essential for standard econometric theory. Two unit root tests were performed; the Augmented Dickey Fuller and the Phillip Perron test. Both of them showed that that all variables were not stationary in levels but became stationary after first differencing. The results from the Phillip Perron test are given in Table 3 below.

Table 3: Unit Root/ Stationarity Tests: Phillips Peron Test

	Phillips Perron (Intercept)		Phillips Perron (Trend and intercept)	
Variables	**Level**	**1st Difference**	**Level**	**1stDifference**
M3	1.194002	-10.49386	-2.122939	-10.59217
(P value)	0.9980	0.0000	0.5279	0.0000
MC	10.51483		-11.11609	
(P value)	0.0000		0.0000	
POR	1.417308	-10.72564	1.898069	-10.73697
(P value)	0.5720	0.0000	0.6499	0.0000
RANDVOL	-2.143811	-8.037357	-2.245581	-8.046197
(p value)	0.2281	0.0000	0.4602	0.0000
TMP	4.730044		-4.708536	
(P value)	0.0000		0.0000	
USINT	1.357667	-4.581038	-1.467586	4.527591

(P value)		0.6011	0.0002	0.8358	0.0020
Critical Values	1%	3.480818	3.480818	4.029595	3.481217
	5%	2.883579	2.883553	-3.444487	2.883753
** and * denotes rejection of the null hypothesis at 1% and 5% respectively					

Table 3 shows that all variables were not stationary in levels. At levels, the p- values of the variables all being greater than 0.05 indicate that we could not reject the null hypothesis of the existence of unit root in levels for all variables. However, the variables are stationary are stationary after first differencing them. The magnitude of the p –values (less than 0.05) are significant, indicating that the variables are stationary at first difference.

4.3 Presentation and Interpretation of results

The hypothesis of interest is the extent to which changes in the conditional mean of the variables are associated with changes in the MC. Table 4 presents the results from the estimated normal GARCH (1.1) model.

Table 4: Results from the GARCH (1.1) model

Dependent Variable: LMC Method: ML-ARCH (Normal distribution) Observations: 132			
Variable	Co-efficient	z-statistic	P-value
Randvol	0.169477	4.321909	0.0000
LPOR	-0.317900	-4.28871	0.0000
LM3	0.975359	36.39507	0.0000
LTMP	-1.463509	-6.469388	0.0000
LUSINT	0.657993	15.51345	0.0000
Variance equation			
C	-0.077229	2.871595	0.0041
RESID(-1)^2	0.607141	2.068333	0.0386
GARCH (-1)	0.463958	5.332054	0.0000
LRANDVOL	0.004077	3.536377	0.0004
LM3	-0.001286	-38.13757	0.0000

R-Squared 0.623359, Adjusted R-Squared 0.608413

4.3.1 Mean equation

The sign of the interest rates is negative; a one percentage point increase of interest rates (POR) decreases market capitalisation (MC) by 0.32 percentage points. Results indicated that there is a negative relationship between interest rates and market capitalisation. has been observed by several studies such as those of Adjasi and Biekpe (2005) and Büyükşalvarcı (2010).

The coefficient of TMP is negative and statistically significant indicating that increases in TMP dampens stock market activities. In other words, an increase in TMP volatility will lead to a fall in market capitalisation. Mayowa (2011) in his analysis of the long run co-movements between financial system development and mining production in South Africa also came with a similar result. The coefficient of M3 is positive and statistically significant indicating that increases in money supply increases stock market activities. Increase in money supply leads to increase in liquidity that ultimately results in upward movement of nominal equity prices. Li (2012) found a similar result in a study that investigated the relationship between money supply and stock market in Europe.

A one percentage point increase of US interest rates (USINT) increase market capitalisation by 0.65 percentage points. The value of the US interest rates is positive; meaning that an increase in US interest rates will lead to a rise in market capitalisation. The US interest rates sign was expected to be negative but results have shown the positive. It is expected that, when US interest rates rise, there would be a shift of investment from economies with low interest rates towards those with high interest rates (US).

4.3.2 Variance equation

The variance equation represents the GARCH model and it is in this equation that the volatility of the rand volatility and

M3 were captured. The interpretation is as follows;

Results showed that a one percentage point increase of rand volatility increases market capitalisation by 0.004 percentage points. This shows that currency volatility has a very weak but positive impact on stock market activities. An increase in currency volatility will cause a very small increase in market capitalisation. The outcome of a positive sign of the rand volatility goes hand in hand with results from other studies that investigated the relationship between these two variables. The result of this study goes hand in hand with that of Karoui (2006) and that of Adjasi and Biekpe (2005).

The coefficient of M3 is negative and statistically significant indicating that fluctuations in money supply decreases stock market activities. A one percentage point increase of money supply (M3) decreases market capitalisation by 0.001 percentage points. This result is consistent with the findings of Flannery and Protopapadakis (2002).

4.4 Diagnostic Tests

Gujarati (2004:516) argues that diagnostic tests should be performed so that the model finally chosen is a good model in the sense that all the estimated coefficients have the right signs, they are statistically significant on the basis of the *t* and *F* tests. In this regard, this study employs the Histogram and Normality test, Correlogram of Squared Residual Test, and the Heteroscedasticity[2] test as its diagnostic tests.

4.4.1 Normality test

Normality test was conducted to test the residuals' normality. Economic theory expects the residuals to be normally distributed. Table 5 presents the Normality test.

Table 5: Normality Test

OLS Normal GARCH GARCH (student t distribution)
Skewness 5.89 1.3 6.87
Kurtosis 43.677 7.42 54.68
J.B 9863 90.78 1573 (Probability) 0.000 0.000 0.000

Results from the Normality test show that the normal GARCH model best reduced the problems of fat tails and volatility clustering. The kurtosis and skewness are smaller under the normal GARCH model (7.42 and 1.3 respectively). In this regard, it can be concluded that the residuals are not normally distributed. However, it must be noted that the residuals have been drawn towards normality. The non-normality of residuals in volatile time series data has been observed in various studies. Arouri, Jaqdi, and Nguyen (2010) also came up with a similar result in a research on "the dynamics of emerging stock markets".

4.4.2 Heteroscedasticity test

The ARCH test was conducted to check the presence of heteroscedasticity in the residuals. Table 6 shows the ARCH test after using the GARCH model.

Table 6: ARCH test

Heteroscedasticity Test: ARCH
F-statistic 0.187667 Prob.F (5, 121) 0.6656
Obs*R-squared 0.190300 Prob. Chi-Square(5) 0.6627

Table 6 presents results for the ARCH test. Engle's LM test indicates that there are no more ARCH effects. The p value of the Obs*R-squared in not significant; it is greater than 0.05 and this indicates that there is no ARCH present. The p-value is 0.6627 and this shows that there is no heteroscedasticity in the residual.

4.4.3 Testing for autocorrelation: Q-statistic Test

[2] *This is important to see if the normal GARCH model has eliminated heteroscedasticity well.*

The Q-statistic test was carried out and results showed that the *Q-statistics* were all significant at all lags under the normal GARCH model, indicating that there is no significant serial correlation in the residuals. Table 7 presents results from the Q-statistic Test.

Table 7: Correlogram squared residuals

	AC	PAC	Q-Stat	Prob
1	-0.038	-0.038	0.1960	0.658
2	-0.066	-0.068	0.7904	0.674
3	-0.017	-0.023	0.8323	0.842
4	0.265	0.260	10.506	0.033
5	-0.022	-0.005	10.575	0.060
6	-0.011	0.020	10.592	0.102
7	-0.047	-0.043	10.898	0.143
8	-0.083	-0.168	11.887	0.156
9	-0.025	-0.035	11.974	0.215
10	0.030	0.013	12.106	0.278
11	-0.036	-0.014	12.292	0.342
12	-0.037	0.035	12.497	0.407
13	-0.005	0.006	12.500	0.487
14	0.049	0.035	12.858	0.538
15	-0.033	-0.029	13.018	0.601
16	-0.016	-0.034	13.058	0.669
17	-0.021	-0.034	13.126	0.728
18	-0.032	-0.065	13.286	0.774
19	-0.020	-0.016	13.349	0.820
20	-0.018	-0.017	13.399	0.860

From table 7 it can be observed that all p-values are above 0.05 and as a result of this the null hypothesis of no serial correlation is not rejected. This shows that there is no correlation in the residuals. This shows that the mean equation was correctly specified. Uh (2005) held that if the mean equation (conditional variance equation) is correctly specified, all Q-statistics of standardised residuals should be insignificant with no observable autocorrelation.

5. Conclusion and Recommendations

The main objective driving this study has been to examine the impact of currency volatility on the stock market in South Africa. The analysis of this study reported a very weak relationship between exchange rate volatility and the stock market. This result is not supportive of the presumption that the uncertainty surrounding exchange rate market distorts efficient investment allocation. However, the stock market was seen to be affected by other macroeconomic variables namely: interest rates, total mining production, money supply and the United States interest rates. Interest rates were seen to have a negative impact on the stock market. This is supported both by economic theory and a number of studies.

The findings from this study have a number of policy implications. Firstly, the weak volatility transmission from the rand to stock market may be indicative of increased use of hedging instruments by firms on the JSE. More hedging instruments needs to be put in place to ensure the elimination of negative effects of rand volatility. These hedging instruments should be efficient and they should not distort the normal functioning of the JSE. Secondly, since the South African stock market is not really exposed to the negative effects of currency volatility. Relevant policy-makers in government can use exchange rate as a policy tool to attract foreign portfolio investment. Thirdly, the JSE needs to maintain its co-operation with world class stock markets such as the LSE. This might be one of the reasons the JSE is able to cushion negative effects of currency volatility. Macroeconomic spillovers from developed countries are usually hard to deal with but if there is some integration between the JSE and developed countries, news about any possible developments in these markets will reach the JSE fast and measures to deal with any possible effects of these macroeconomic developments will be put in place way before the markets are affected.

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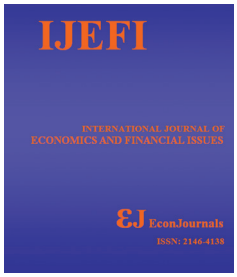

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Impact of Exchange Rate on Stock Market

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ABSTRACT

The exchange rate and stock market are the two fundamental financial markets in the world. These two markets are playing key role in an international business all over the world. It is necessary to understand the relationship between the both markets so that the investors may be able to invest in a better way by taking the minimum risk. This paper investigates the relationship between the stock market and exchange market of Pakistan. KSE-100 index is used as a substitute of Stock Prices while currency rate of Pak Rupee against US Dollar (Rs/US$) is taken for exchange rate exposure. The data is on monthly basis and the time period is from January 2004 to December 2009. The findings of the study indicate that there is no relationship exists between exchange rate and stock price and both the variables are independent of each other.

Keywords: Fundamental Financial Markets, Exchange Rates, Stock Market
JEL Classifications: F31, O16

1. INTRODUCTION

The market value of firms and the stock prices can be significantly affected by multiple factors out of which exchange rate fluctuations is an important one. There is still no consensus on the relationship between stock market and exchange rate although the topic has been widely discussed. Financial theory explains that the value of firm should be influenced by exchange rates and interest rates. The upward and downward exchange rate movements may determine the stock prices of the firms. In Pakistan, foreign direct investment (FDI) is an important element of stock prices and the trend of FDI may considerably be affected by changes in exchange rate either depreciating or appreciating. Similarly, the exchange rates are affected by the movements in stock prices.

Domestic investors invest more in domestic market when there is an increase in prices of assets which in turn increase the demand for local currency and also increase the behavior of selling the foreign assets. The increase in demand of local currency will force the interest rates to become higher which will ultimately attract the foreign investors to invest and gain maximum benefit. The exchange rate of local currency will appreciate against that of foreign currency and shows negative relationship as also suggested by Portfolio Balance approach. While, Traditional approach advocates that there is a positive relationship between stock market and exchange market and the causality runs from exchange rate to stock market. It suggested that a positive relationship between stock prices and exchange rates exists when local currency depreciates and local firms become more competitive which leads to an increase in their exports. This will result in an ultimate increase in stock prices. In addition to above two approaches, there exists another approach i.e., Asset Market approach which propose that there is no interaction or very weak association between the exchange rate and stock market. This is due to the reason that both the variables may be driven by different factors. The current international financial system and its ever increasing importance with the passage of time have brought many researchers to study the relationship between stock market and exchange rate. Mishra (2004) studied that the Asian financial crisis, advent of floating exchange rate in early 1970's and financial market reforms in early 1990's have brought the researchers to determine the relationship between the both variables.

Karachi stock exchange (KSE), founded in 1947, is the biggest

and leading liquid exchange in Pakistan. It was declared the best performing stock market of the World for the year 2002. 654 companies were listed as on 8th December, 2009 with a market capitalization of Rs. 2.561 trillion (US$ 30.5 billion) having listed capital of Rs. 705.873 billion (US$ 10.615 billion). KSE began with a 50 shares index. As the market grew a representative index was needed. On November 1, 1991 the KSE-100 was introduced and remains to this day the most generally accepted measure of the exchange. Since 1991, KSE has provided an equal opportunity to foreign investors together with local investors to operate in the secondary capital market. The establishment of the new policy for foreign investors and initiated privatization in Pakistan has accelerated the development of the KSE.

The purpose of the study is to further investigate the relationship between stock prices and exchange rate in Pakistan as the issue still has no consensus. In this paper, the current scenario is tried to analyze by using the latest data available. The awareness about the relationship between the both markets would facilitate to take precautionary measures before the spread of a crisis. Next the related literature is reviewed while in Section III data and methodology is discussed. Findings and results are analyzed in Section IV of this paper. Section V consists of summary and conclusion.

2. LITERATURE REVIEW

According to the study of Franck and Young (1972), there is no significant interaction between the stock market and exchange rate. An association was examined by Bhattacharya and Mukherjee (2003) between the stock prices and financial sector of currency exchange in India and found no significant integration. Nonlinear Least Square method used by Ong and Izan (1999) to find the relationship between stock prices and exchange rates. They found a very weak association between the US stock market and exchange rates. While, Soenen and Henniger (1988) found a significantly negative relationship between the value of US dollar and stock prices by using monthly data on stock prices and effective exchange rates for the period 1980-1986. Jorion (1990) determines significant differences across industries by considering the impact of exchange rate on US multinational firms. The developed countries have experienced less exposure of exchange rate movements as compared to developing or emerging countries.

A bidirectional relationship exists between the two variables. Both variables have little or more impact on each other. Yu (1997) conducted the study by using daily data for the period 1983-1994 on three Asian countries Hong Kong, Tokyo and Singapore. He brought the facts that a bidirectional relationship exists in Tokyo while Singapore market has unidirectional relationship i.e., changes in exchange rate to changes in stock prices. Abdalla and Murinde (1997) investigated the relationship between the two variables in four Asian countries for the period 1985-1994 by using co integration approach in the long run and come up with the conclusion that no causality exists in Pakistan and Korea while supported its presence in India and Philippines. Ajayi et al. (1998) found a unidirectional relationship from stock market to foreign exchange market on developed economies and no consistent relationship in developing economies. Pan et al. (2001) examined that exchange rates are significantly correlated with stock markets in seven Asian countries by using the data for the period 1988-98.

Nydahl (1999) presented the evidences from Sweden that industries in small open economies face significant exchange rate exposure. This study was also supported by Kiymaz (2003) from the evidences of Turkey. Griffin and Stulz (2001) examined that the stock market of developed countries have less impact of changes in weekly exchange rates. Kiymaz (2003) find out that Turkish firms are highly affected by exchange rate fluctuations. Daniel Stavarek (2004) investigate the relationship between stock prices and exchange rates by using the monthly data of four old and four new EU member countries in both long and short run. He found on the basis of evidences that more powerful long run as well as short run relationship exist in the period 1993-2003 than during 1970-1992. Giovannini and Jorion found the same behavior between the both variables in USA with the help of the empirical study. Phylaktis and Ravazzolo (2000) study the long and short term dynamics and conduct the research on Pacific Basin countries over the period 1980-1988 with the conclusion that exchange rate and stock markets are positively correlated.

The relationship between exchange rate and stock market may vary. It may be different depend upon the geographical area, economic conditions, relations with international world, domestic conditions etc. The inconsistency in the results between the different countries might be due to the trade volume, equity, economic relations, risk assessment etc. The direction of the impact of both variables may not be estimated as it may be unidirectional, bidirectional or multidirectional. Rittenberg (1993) investigated the relationship between stock price and exchange rate in Turkey by applying Granger causality tests and found that there is a unidirectional relationship that runs from price level changes to exchange rate changes but there is no reverse relation exists. Bahmani-Oskooee and Sohrabian (1992) also apply Granger causality tests to find the relationship between stock market and exchange rate for the period 1973-1988. They investigated that a dual and bidirectional relationship exists between stock prices and exchange rates in the short run without further examining it in the long run. Granger et al., (2000) found that there is a strong relation between the two variables and in some case, it was unidirectional with negative interaction while bidirectional in the others.

Ali Kemal and Haider (2005) conduct the study on Pakistani data in short run to find the movements of exchange rate with the changes in prices, interest rates, foreign reserves and trade balances. They find the facts that changes in real exchange rate and nominal exchange rates are highly correlated and no significant correlation exist between relative prices and nominal exchange rate. Co-integration and Granger Causality test was performed by Muhammad and Rasheed in 2002 to find out the causality between the stock price and the exchange rate in four Asian countries for the period from 1994 to 2000. His study showed that the both

variables are independent of each other in Asia. Bhattacharya and Mukherjee (2003) also support the findings that there is no interaction between stock price and exchange rate.

3. DATA AND METHODOLOGY

3.1. Data

The data on stock prices are collected from KSE-100 index on monthly basis for the period from January 2004 to December 2009 while data on exchange rate of Pak rupee against US dollar is obtained from State Bank of Pakistan and Forex. The returns of the variables are used to test the viability of the data.

RER = Return of exchange rate Pak rupee/US dollar
RSP = Return of stock price of KSE-100 index

3.2. Methodology

In order to check the interaction between stock price and exchange rate, firstly it is essential to determine whether the data collected is stationary or not. A time series data can be either stationary or non stationary. Augmented Dickey Fuller (ADF) test is applied to check the unit roots/stationarity of the data at level. The ADF test is based on the following equation:

$\varepsilon = \alpha + \beta (1 \text{ x } -\varepsilon)$

If the series is non-stationary then co integration test will be applied to check the causality and the integration between the variables but in this study the series is stationary, so Granger Causality test will be applied to check whether these financial variables affect each other or not. The Granger Causality test depends upon the following two equations at first difference:

$$\Delta X_t = \alpha_1 + \sum_{i=1}^{m} \beta_i \Delta X_{t-i} + \sum_{j=1}^{n} \delta_i \Delta Y_{t-j} + \varepsilon 1t$$

$$\Delta Y_t = \alpha_2 + \sum_{i=1}^{m} \gamma_i \Delta X_{t-i} + \sum_{j=1}^{n} \phi_i \Delta Y_{t-j} + \varepsilon 1t$$

Further, regression analysis test is also performed to confirm the results of Granger Causality test. The method used for this test is least square method while taking the stock price as dependent variable Y and exchange rate as an independent variable X. The regression model used for the study is as follows:

$Y = \alpha + \beta X + \text{error}$

4. RESULTS AND ANALYSIS

In this study, ADF test is performed to check the unit roots and stationarity of the time series data. The results of the ADF test are shown in Table 1 which indicates that null hypothesis is rejected at level and the data is stationary. So, instead of applying the test at first difference I have continued the study at level.

As the data is stationary, instead of using co integration I have applied Granger Causality test to determine whether the both variables are independent or affect each other. The results of Granger Causality test is shown in Table 2 i.e., both financial variables RSP and RER does not Granger Cause each other. We can say that there is no relationship exists between the both variables. They do not affect each other and there is no interaction in between them. The research of Muhammad and Rasheed (2002) also has the same findings on four South Asian Countries. Bhattacharya and Mukherjee (2003) also support the findings of the study that there is no integration in stock price and exchange rate by conducting the research in India.

Furthermore, regression analysis test is applied to check the authenticity of the results of Granger Causality test. In regression analysis, stock price is taken as a dependent variable while exchange rate is independent variables. Least square method is used to perform the regression analysis. The results of the regression analysis are mentioned in Table 3 which also support the findings of Granger causality test that there is no interaction or relationship between the exchange rate and the stock price.

4.1. Discussion of Results

The findings that there is no relationship between the exchange rate and stock price in Pakistan during January 2004 to December 2009 may be due to multiple reasons. In Pakistan, the brokers have the monopoly on stock prices and they run the stock market according to their own utility. They speculate the market and get the maximum benefits while the investors gain ultimate loss. The phenomena of determining the price is demand and supply. The movements/fluctuations in demand and supply determine the price so exchange rate may not be able to impact the price strongly.

5. SUMMARY AND CONCLUSION

This study investigates the relationship between the stock market and the exchange market in Pakistan by taking the data for the

Table 1: Unit root test (ADF test)

Variable	Level	R^2	Adjusted R^2
RER	−3.18982	0.336283	0.305172
RSP	−7.84432	0.781441	0.771196

ADF: Augmented dickey fuller, RSP: Return of stock price, RER: Return of exchange rate

Table 2: Granger causality tests results of exchange rate (Rs/US$) and stock prices (at first difference)

Null hypothesis	Lags	F-statistics	Probability
DRSP does not granger cause DRER	2	0.15146	0.85976
DRER does not granger cause DRSP	2	0.06226	0.93969

Table 3: Regression analysis test (least square method)

Variable	Coefficient	SE	t-statistic	Probability
RER	−1.46481	4.842447	0.30249	0.7632

R^2: 0.001035, Adjusted R^2: 0.001035, SE: Standard error, RER: Return of exchange rate

period from January 2004 to December 2009. KSE-100 index is used as means of stock prices and exchange rate of Pak rupee against US dollar is taken for manipulation. ADF test is used to check the unit roots and to reach at the conclusion whether the data is stationary or not. Further, Granger Causality test is applied to determine the relationship between the both variables, whether they affect each other or not and reach at the conclusion that they are independent of each other without having any interaction. Regression Analysis test is also performed to check the authenticity of the results of Granger Causality which also supports that there is no relationship exist between exchange rate and stock price.

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PART C

UNIVERSITY SYLLABUS

4.2.2 INTERNATIONAL FINANCIAL MANAGEMENT

1. GENERAL INFORMATION

No. of Credits per week 4

No. of Hours per week 4

2. PERSPECTIVE OF THE COURSE

A business enterprise having international transactions is exposed to various risks. While understanding the global environment, the economic impact of the transactions, the procedures and formalities to be adhered to are on one side, the impact of transactions on cash flow of the entity on account of fluctuations in foreign exchange rate is another aspect that must be addressed. This course titled "International Financial Management" aims to orient all the aspects a professional need to know in carrying out international transactions.

3. COURSE OBJECTIVES AND OUTCOMES OBJECTIVES

- To orient the students on global business environment and international markets.
- To make students understand the various risks an enterprise is exposed to on account of international transactions.
- To provide knowledge and skills for hedging foreign currency risks.

OUTCOMES

By the end of this course, a student would learn

- The global financial environment, currency system, relationship between economies and impact of international transactions on the economy.
- Functioning of international financial markets.
- Fixing of exchange rate.
- Foreign currency risks and hedging strategies.
- Interest rate risks and hedging strategies

4. COURSE CONTENT AND STRUCTURE

MODULE 1: GLOBAL FINANCIAL MANAGEMENT **10 HOURS**

Evolution of International Monetary System, Bimetallism, Classical Gold Standard, Interwar Period, Bretton Woods System, Flexible Exchange Rate Regime, The current Exchange Rate Agreements, European Monetary System, Fixed vs. Flexible Exchange Rate Regime

MODULE 2: BALANCE OF PAYMENTS 5 HOURS

Introduction, Accounting Principles in Balance of Payments, Valuation and Timing, Components of the Balance of Payments, 'Surplus' and 'Deficit' in Balance of Payments, Importance and limitations of BOP Statistics, Relationship of BOP with other economic variables.

MODULE 3: INTERNATIONAL FINANCIAL MARKETS 5 HOURS

Motives for using International Financial Markets. Foreign Exchange Market – History and Transactions, interpreting Foreign Exchange Quotations, International Money Markets, International Credit Markets and International Bond Markets. Comparison of International Financial Markets.

MODULE 4: EXCHANGE RATE DETERMINATION 8 HOURS

Purchasing Power Parity Theory, Interest Rate Parity Theory, International Fischer's Effect, Pure Expectations Theory

MODULE 5: FOREIGN EXCHANGE RISK AND RISK HEDGING STRATEGIES 18 HOURS

Transaction Risk, Translation Risk, Economic Risk. Risk Hedging Strategies: Internal – Netting, Leads and Lags. External – Forwards, Futures, Options, Money-market Hedging, Currency Swaps

MODULE 6: INTEREST RATE RISK AND RISK HEDGING STRATEGIES 10 HOURS

Interest Rate Swaps, Forward Rate Agreements, Interest Rate Futures, Interest Rate Options, Caps, Floors and Collars, Swaption.

5. PEDAGOGY

a) Lectures.

b) Demonstrations using Excel

c) Practical Exercises – Individual and Group

d) Case Studies.

6. TEACHING/LEARNING RESOURCES

ESSENTIAL READINGS

1. Alan Shapiro: Multinational Financial Management , Prentice Hall, New Delhi.

2. Apte, Prakash, "International Finance – A Business Perspective", Tata McGraw Hill.

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Measurement of Foreign Exchange Exposure for Selected Indian Firms

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Exchange rate fluctuation is the major concern for the firms globally, therefore it is essential for firms to know how much they are exposed to these fluctuations. The study aims to measure the foreign exchange exposure and its determinants for selected non-financial Indian firms. The period of analysis is concentrated from 2000-2015. This study has used a panel data methodology with fixed effects model to measure the firm's exposure by establishing the relationship with the exchange rate changes and the stock returns for the sample of 85 non-financial Indian firms. Furthermore, the firm-sensitive determinants like, export earning, import payments, net capital flows and size of the firm were used to estimate their effect on the foreign exchange exposure. The findings of the study showed that 55% variation in the stock returns was explained by the variation in the exchange rates. With respect to the determinants, it is found that market capitalization, which is a proxy for the size of the firm, is relatively most significant determinant for the exchange rate exposure. This is followed by net capital flows and trade.

Keywords: Foreign Exchange Exposure, Non-Financial Indian Firms, Econometric Modelling, Trade and Capital Flows

JEL Classification: F31, F23, F30

Paper Classification: Research Paper

Introduction

Foreign exchange fluctuation is the major source of macroeconomic uncertainty affecting firms in an open economy. Countries with floating exchange rate regime are more exposed to this fluctuation; which would in turn affect their firm's cash flows. The volatility of the firm's cash flow due to fluctuation in the foreign exchange is known as Foreign Exchange Exposure. These exposures are usually categorized into three types: first is the transaction exposure, which is defined as the likelihood of incurring exchange gains or losses on transactions already entered into and denominated in a foreign currency. Second, economic exposure, defined as the change in the present value of the firm resulting from any change in the future cash flow of the firm caused by the unexpected change in the exchange rate. The extent to which economic exposure affects

the company depends on the specific characteristics of the company and its industry. Third, translation exposure arises from converting the financial statements in foreign currency into home currency. These exposures are paper exchange gain\loss, retrospective in nature and short term in nature. All these exposures affect the present and the potential cash flows of the firms and thereby damaging the value of the firm. Thus in order to operationalize this theoretical relation, that the value of the firm is the present value of future cash flows; many empirical studies have used stock returns as the value of the firm.

The advantage of low cost-factor of production induces the firms to become multinational and thus become more and more competitive. In this process, they are exposed by the volatility of the foreign exchange. Volatility of foreign exchange refers to dispersal of returns, which expose firm to exchange rate related risks. Therefore, it is evident that the issues of measurement of foreign exchange have been the prime area of study for many researchers.

With the breakdown of Bretton Woods system and the beginning of the era of flexible exchange rate regime, foreign exchange market had seen sea change not only in the terms of turnover, but only in terms of its sporadic nature. Furthermore, the dawn of globalization and liberalization led to increased trade in the developing countries. The incentives for the firm to become more competitive and search for cheaper source of cost of production fueled the foreign exchange market and attached greater exchange exposure to the firm. Hence to grow competitively, firms need to understand their exposure level, thus measurement of exchange rate exposure and its determinants became all the more relevant and gained greater importance amongst researchers.

Most studies in the post liberalization era were concentrated to the developed countries. (Bartov, Gordon & KauV, 1994; Amihud, 1994; Glaum, Brunner & Himmel, 2000). The studies on the emerging market at firm level were few and concentrated around East Asian countries (Linda & Dominguez, 2006). This is because the aggregate data at business cycle frequency for these developing countries are limited in quality and quantity.

India being the second largest economy amongst Asian countries has seen the greater foreign exchange trades over the years. The trade flows amongst Indian firms have increased exponentially mainly due to integration of international financial markets, increasing cross border trades and huge capital flows. These changing dynamics have made foreign exchange market more volatile, which in turn, have detrimental effects. Thus, the need for proper determination of currency exposure at firm level is essential. Furthermore, the huge loss suffered during crises by the Indian firms makes it evident about the need to have appropriate measurement of the currency exposure and its management. The study has become pertinent mainly in the current context due to the present turmoil in the Indian financial markets. The fears of Fed interest rate tapering has grown more; in addition to this, in India, there is an added volatility as the market has become concerned about the policy rates and worried about oil marketing company demand for dollars.

Thus in the light of current significance, the paper conducts firm level study of foreign exchange exposure for non- financial Indian firms for the timeframe 2000-2015. For this analysis, firstly, the study has calculated the impact of changes in the exchange rate on the stock returns. Further on, the impact of firm specific determinant like export earning, import payments, net capital flows and the size of the firm were used to estimate their effect on the firm's foreign exchange exposure.

Literature Review

The seminal work done by Adler and Dumas (1980) and Hodder (1982) can be interpreted by defining exchange rate to currency risk using the regression coefficient concept of exposure. Later, the addition of value- weighted market index as proposed by Jorion (1990) was used to control for the market movements. Jorion (1990), showed that only 5 percent of the firms having substantial exchange rate exposure. Familiar research done (Bodnar & Gebhardt, 1999); Amihud, 1994; Bartov, Gordon & KauV, 1994) indicated that US firms are not significantly exposed to foreign exchange rate exposure. Study done by Loderer & Pichler (2000) showed that less than 40% of the Swiss firms are able to measure the operational cash flow sensibility to currency fluctuation, only 30% are protected against the vagaries in currency rates, and most of them only protect the direct risk and not the indirect risk. Amongst the various foreign exchange exposure experienced by firms, a study by Batten, Mellor and Wan (1993) revealed that 61.1% of the Australian firms are able to manage their transaction exposure, only 8.3% both transaction and translation and 16.6% manages all three exposure. Study done by Marshall (2000) indicated that transaction risk is perceived by U.S, U.K as the most important risk to manage. Froot, Scharfstein, & Stein (1993) argues that there is no general basis for managing the economic exposure, since measuring the economic exposure appears difficult and thus firms do not manage this risk. Srinivasulu (1983) recommends that translation exposure has no financial implication on the firm's future cash flow that is why; firms do not hedge their translation exposure. However, Rodriguez & Rita (1978) in empirical research confirm that US companies manages the translation exposure.

Studies done on the emerging markets are limited. The most conversant studies are Chue & Cook, (2008) who analyse exchange exposure at firm level for 15 emerging countries and concluded that 4.9% of the firms are significantly exposed to foreign exchange exposure for the time frame 1999-2002 at 5% level of significance. The study done by Lin (2011) examines the exchange rate exposure at market and firm level for six Asian countries including India and concluded that 1% depreciation of the Indian rupee would cause no change in Indian market return, whereas 1% appreciation of the currency would cause on an average, 0-6.99% decline in Indian market returns. Furthermore, the study reports that during the global financial crises of 2008, the firms that were exposed to foreign exchange were 8.61% only. Hence, these empirical studies suggest that few firms are exposed to foreign exchange exposure in the emerging market during their period of study.

The evidence against the foreign exchange determinants is conclusive. Research done by Jorion (1990) emphasized that exposure is positively correlated with the total sales made overseas and thus concluded that degree of foreign involvement increases the foreign exchange exposure. This is consistent by the works of (Jay & Prasad, 1995; Allayanis & Ofek, 2001; He. & L, 1998; Chue & Cook, 2008; Linda & Dominguez, 2006) who observed exchange rate exposure in eight countries, both developed and developing countries. The result showed the linkage amongst the exposure and other variable such as size of the firm, its position in the international market, foreign trade and transaction, global assets, and ability to contest as per industry. Some variables are used by Géczy, Minton, and Schrand (1997) to recognize the risks involved in foreign currency exposure, such as, research and development expenditure, firm's size, export and import ratio, amount of profit and firm's debt. According to the study done, the firms with high R&D expenses are prone to high exchange fluctuations, competition and financial distress and thus hedge more. Aggarwal and Harper (2010) conducted an important study that showed that firm with increased financial debt and financial risk face additional risk and indicated a positive connection to exposure of foreign exchange. Empirical studies done by Jay and Prasad (1995) and Allayanis and Ofek (2001) examined the marginal exchange-rate exposure of firms from eight countries, two of which are

emerging; Chile and Thailand. For the two countries, neither the firm size nor foreign sales is significant determinant of exchange rate exposure. Similar results were seen by Rossi (2002), who conducted the study on Brazilian companies. The paper gives the evidence that developing countries are less exposed to the exchange rate fluctuation than developed country. Thus, it is concluded that drivers for foreign exchange exposure differ from country to country and should be analyzed independently at firm level.

Research Gap and Contribution of the study

In light of above literature there are few existing studies done on the developing countries including India; the most familiar studies are Chue and Cook (2008) for 15 emerging markets; Muller and Verschoor (2007) for East Asian countries and Lin, (2011). But they do not cover the determinants of the exchange rate exposure in particular. Thus the above mentioned gaps in the literature make the present study unique. The purpose of the current study is to conduct the firm level analysis of the foreign exchange exposure; the study understands the impact of changes in the exchange rate on the stock returns of the Indian firms and analysis the impact of firm specific determinant. One novelty of this paper is the consideration of net-capital flows as a determinant for Indian firm in contrast to other studies.

Research Methodology

This study has been primarily focused on the non-financial companies as financial companies are more complex in their risk management techniques and foreign exchange exposure. This argument is consistent with the seminal work done by Adler and Dumas (1980), who reasoned "Exposure is not restricted to non-traded financial assets or liabilities with fixed, nominal, foreign-currency payoffs on the maturity date of the hedge. The exposure of such assets is easy to determine. They are 100% exposed from the sense that exposure is exactly equal to foreign currency face value as on that date."

Period of Study

The period of the study is concentrated from 2000-2015. This is so, because most of major reforms taken in 1990s were fructified from the year 2000. This is again clear from the fact that Indian GDP growth grew drastically after 2000. The contribution of external trade to the GDP over past 15 years (1985-200) has doubled. Furthermore, most of the macroeconomic variable started performing well from 2000 onwards.

Sample and Method of Data Collection

The sample of firms for the study are sourced from S&P BSE 200 for 40 industries based on the factors such as nature of industry, percentage of trade outside the domestic country and size of the company. The major focus of the study was on non-financial firms, 150 firms were initially identified from Capitaline database under this category, out of which 85 firms were selected. The reason for taking only the firms which are having significant exchange rate exposure could be justified from the argument given by Jay and Prasad (1995), that if the exposure is trivial, it cannot be used to derive any reliable conclusion.

The data was culled out and managed using tools such as SQL and Microsoft Office. Few firms were omitted due to non-availability of data for some variables across the time period. In order to calculate the stock returns opening and closing monthly stock prices were taken from BSE databases. Besides, nominal exchange rate (rupee per dollar) (NER) published in RBI database was

used for the purpose calculating the exchange returns. The data for the variables such as exports, imports, market capitalisation and net capital flows are sourced from Capitaline database. Both the stock return and exchange returns are taken in the log form.

In line with the previous studies (Bartov, Gordon, & KauV, 1994; and Amihud, 1994) a market index is added, to reduce noise in the model. For this purpose monthly index, returns of S&P BSE SENSEX from BSE database are used. Data for determinant factors i.e. trade (includes total export and total import), net capital flows, market capitalization has been collected from Capitaline database

The study has used nominal exchange rate rather than effective exchange rate. The nominal exchange rate variable is U.S. dollar, the number of units of domestic currency (INR) that can be purchase a unit of given foreign exchange (U.S. dollars). A decrease in this variable is termed as appreciation of the currency and vice versa of depreciation of the currency.

Most literatures measure exchange rate exposure using trade-weighted exchange rate. These trade-weighted baskets of currencies lack power if the nature of exchange rate does not correspond to the exchange rate included in the basket, which poses major problem. One way to overcome this is to use firm or industry specific exchange rate but hereto the difficulty is on what basis the exchange rates are considered. Usually firm may hedge their position to the most obvious currencies that is the countries where they export or import, but remained exposed to the currencies of countries with whom they compete on the world market. Since neither of the theory satisfies us we have used bilateral exchange rate, this is so because most of the trade done by Indian companies are exposed in US Dollars therefore, it makes sense to use bilateral exchange rate since exposure of the firm can explained more explicitly.

Variable Used: Determinants of Foreign Exchange Exposure

Exposure = f (Size (Market capitalization), Exports earnings, Imports payments, Net capital flows, Hedging)

Size (Ln SIZE). Market capitalisation is taken as the proxy for the size of the firm. Firm size is not a direct source of exchange rate exposure. Usually bigger firms are more internationally oriented thereby more exposed as compare to the smaller firm. A positive relation of market capitalisation with the exposure is seen in other words, as the stock price of the firm increases, the exposure also increases as the firm is able to benefit from the low cost of production from various countries. Many studies had taken the total assets as the proxy for size, but the study chose market capitalisation, since it defines the value of the firm and its size. Linda & Dominguez (2006); Allayanis and Ofek (2001); and (Jay & Prasad (1995), also found a significant positive effect of size on exposure.

Exports Earnings (Ln EXPO). They are an important source of exchange rate exposure formed by firm's foreign activities. The relation between the exports and the exposure is positive, which is a prior to the theory. This clearly means that as the exports rises firm's exposure to the foreign exchange fluctuation also increases.

Imports Payments (Ln IMPO). Many firms import the necessary equipment, raw material and other resources from abroad, for the production of their products. Thus in the process they are exposed to the sudden and sporadic fluctuations of the foreign exchange. Here to, a positive relationship of imports with the exposure is seen.

Net capital flows (Ln NCF). The reason for including the net capital flows is many firms prefer to raise cheaper source of funds in abroad as the rate of interest is low and more over studies on the emerging economies has stated that most developing countries firms have large capital outflows. This is one such reason why the firms are more exposed to the foreign exchange exposure. Previous literature (Allayanis & Ofek, 2001), states that firms can use foreign debt to protect themselves from exposure to exchange rate movements. Since a firm can issue foreign debt with revenues denominated in foreign currencies (cash inflows) as this would create a stream of cash outflows in a foreign currency. Thus it is appropriate to use the net capital flows. We see a positive relationship between the net capital flows and exposure to the firms.

Hedging Activity (HE). A negative relation of hedging with the exposure is predicted, that means, more the firm hedges, lesser the foreign exchange exposure. Firms hedge themselves from the uncertainty in the cash flows arise due to the foreign exchange fluctuation. This HEDGE is the dummy variable taken with the assumption that the firm is hedging to protect from uncertainty and not for the speculation purposes. If the firm is involved in hedging activity than the dummy variable have value 1, if it's otherwise than the value 0. In order to determine that the firm is involved in the hedging activities, the difference between Exports revenue and Import costs was calculated. If this difference is zero or negligible, it was assumed that export revenue and import cost are offsetting each other and hence exposure to exchange rate risk might be lower and firm is not involved in hedging activity. If this difference exists, then the firm would have hedged their positions. The inverse relation of the hedging with the exposure is consistent with the previous study by Allayanis & Ofek (2001).

Statistical Tools Used

This study has used a panel data methodology with fixed effects model to measure the firm's exposure by establishing the relationship with the exchange rate changes and the stock returns for the sample of 85 non-financial Indian firms. Panel data (also known as longitudinal or cross- sectional time-series data) is a dataset in which the behavior of the entities (companies) observed across time. This dataset allows to control for variables that cannot observe or measure like differences in the risk management techniques or business practices used across companies, or variables that changes overtime but not across entities. Thus, it accounts for the individual heterogeneity. With panel data, variables at different levels of analysis are suitable for multilevel or hierarchical modelling. The main advantages of the panel data is that they are more informative in terms more variability in the data , less co linearity, more degrees of freedom and therefore the estimates are more efficient. The panel data can be analyzed into two ways: fixed and random effects.

The present study uses the fixed effect method rather than random effect method, since this method works better under certain assumption. To see what this method involves, consider a model with single explanatory variable: for each of i

$Y_{it} = \beta 1\, X_{it} + ai + u\, i\, t, \quad t=1,2\ldots T$….Eq. 1

Now average the equation over time,

$\bar{y}_{it} = \beta 1 \overline{X_{it}} + ai + \bar{u}\, i,$…Eq. 2

Where $\bar{y}_{it}$ $= T^{-1} \sum_{t=1}^{T} \bar{y}_{it}$ it and so on. Because ai is fixed over time, it appears in both eq.1 and eq.2. If, both equations are subtracted,

$Y_{it} - \bar{y}_i = \beta 1\, (X_{it} - \overline{X_{it}}) + u\, i\, t - \bar{u}, \qquad t = 1,2 \ldots T.$

Thus it is that the fixed effect is appropriate for the present study as it takes the i period and the ai company for the analysis, which is fitting the objectives of the study.

Empirical Analysis

This section deals with the empirical results which have been measured for the foreign exchange rate exposure and also identifies the determinants for the selected non-financial Indian firm for the period of 2000-2015. Following are the list of variables used in the analysis. All the variables are taken in the log form in order to measure the coefficient of elasticity.

LnNER - *log Nominal Exchange Rate*
LnSR - *log Stock Returns*
LnEXREXP - *log Exchange rate exposure*
LnSIZE - *log Market capitalisation*
LnEXPO - *log Export Earnings*
LnIMPO - *log Import Payments*
LnTRADE - *log Trade*
LnNCF - *log Net Capital Flows*
HE - *Hedging Activity*

Measurement of the Foreign Exchange Exposure

The study has used the standard two-factor model to determine the foreign exchange exposure of firms, proposed by Adler & Dumas (1980) and Jorion (1990). In two factor model foreign exchange economic exposure can be determined by calculating the coefficient β_xi in time series regression of returns on a given asset,R_it, with respect to the market returns,R_mt,yearly fluctuation of foreign exchange rate,R_xt

In other words:

$$R_{it} = \beta_{oi} + \beta_{mi} R_{mt} + \beta_{xi} R_{xt} + \varepsilon_{it} \qquad (1)$$

Where, i=1,…..85, t=1,…13 where the coefficients β_{mi} and β_{xi} represent a measure of sensitivity of the stock returns, i to market risk and exchange risk, ε_{it} is a disturbance term. The introduction of market returns, R_{mt} as a second independent variable, explicitly control market movement, thereby reducing any correlation between disturbances. The total exposure of a firm comprises two effects. One effect is the average change in the present value of the cash flows caused by a unit exchange rate movement, which is explained by the stock returns of the firm. Another is the phenomena related to non-exchange rate qualitative factors explained in the stock return of the firm. Most empirical studies include a return to a market portfolio in the empirical model. This market portfolio not only controls for the macroeconomic factors but also dramatically reduces the residual variances of the regression. This improves accuracy of the exposure estimates as it takes into consideration both the macro and micro factors. The study has analysed the above regression and found that even though the R^2 is quite good, the coefficient of the nominal exchange rate, which defines the exposure is insignificant and positively related to the dependent variable, which is not consistent with the theory.

So the study estimated the equation only with the nominal exchange or explanatory variable and taken log form of nominal exchange rate, with one period lag. Such lags suggest that it takes

time before the impact of exchange rate effect the stock prices and suggest market inefficiency. (Bartov, Gordon, & KauV, 1994; Amihud, 1994). Following is the results of the first equation, where the stock price is depending upon the nominal exchange rate.

Table 1: Determinants of stock returns

Dependent Variable : LnSR			
Explanatory Variables:	**Coefficient (C)**	**LnNER (-1)**	**DUM**
	3.72	(11.78)	0.71
	- 0.22	(-2.90)	
R2= 0.55	Adjusted R2 = 0.51	D-W stat = 1.95	F-stat = 14.48

The above Table 1 tells us that there is a significant relationship between the explanatory variable and explained variable. About 55% of variation in the dependent variable is explained by the explanatory variable. The relationship between the dependent variable and independent variable estimated in the equation is appropriate to the theory i.e. when currency depreciates, stock price would fall since, investor's returns would diminish and demand for such stock reduces. Durbin- Watson stat of 1.95 shows that there is no problem of autocorrelation and the F-stat of 14.49 shows that overall model is good. A dummy variable (DUM) is taken to control the abnormal movement of the stock returns. Dummy was used for the period 2008 since most of the firms had abnormal movements during this period. Capital market had performed well and FIIs had increased since, India was considered the safe place to invest compare to other countries.

Determinants of Exchange Rate Exposure

The goal of the previously estimated regression was to calculate the foreign exchange exposure but since the variation in the exposure varies from firm to firm. It is important to identify the determinants of the exchange rate exposure. This would allow us to understand, which factor would increase or decrease the exposure.

Effect of the Firm's Size. In the below equation, the study has taken market capitalization as the proxy for the size of the firm. Typically, larger firms are more internationally oriented and therefore have more exposed than smaller firm. Following is the estimated equation:

Table 2: Effect of size on the exposure

Dependent Variable : LnEXREXP			
Explanatory Variables:	**Coefficient (C)**	**LnSIZE**	**DUMEXP**
	2.85	0.0034	
	(140.62)	(1.36)	0.53
R^2= 0.65	Adjusted R2 = 0.62	D-W stat = 2.16	F-stat = 23.78

The result has shown a significant relationship between the firm's size and the exposure. Nearly 65% variation in the exchange rate exposure is explained by the size of the firm. From these result it is inferred that there is positive relation of the firm's size with the exposure, that explains the simple logic that large firm are more exposed to foreign exchange exposure compare to smaller firms. The result of the equation is in consistent with the other studies by (Allayanis & Ofek, 2001; Jay & Prasad, 1995), who also found a significant positive effect of size on exposure. The Durbin-Watson Stat is 2.16, which shows that there is no problem of auto correlation. F-statistic of 23.78 shows that the overall model is good.

Effect of Export earnings. Export's earning forms a crucial role in firms total earning. Therefore, firms must understand its foreign exchange exposure. To measure this significance, the study has regressed exports earning of the firm with the foreign exchange exposure.

Table 3: Effect of export earnings on the exposure

Dependent Variable : LnEXREXP			
Explanatory Variables:	**Coefficient (C)**	**LnEXPO (-1)**	**DUMEXP**
	2.85	0.006	
	(177.33)	(1.81)	0.5
R^2= 0.67	Adjusted R^2 = 0.64	D-W stat = 2.19	F-stat = 24.10

It is clear from the above results that 67% of variation in the dependent variable is explained by the explanatory variables. The relationship between the export earnings and the firm's exposure is according to the theory i.e. when exports increase, firm's exposure to foreign exchange exposure also increases. The logic behind considering using a lag effect for exports (LNEXPOR) is that the payment of the receipts by the firm's customer is not done immediately for most of the firms, since a credit period is provided for say 6 months or less usually and so the effect of exposure is not immediate on the exports of the firms. The overall model is good as the F-stat is 24.10. The D-W statistic of 2.19 shows that there is no auto correlation problem.

Effect of Import payments. Many firms import the necessary equipment, raw material and other resources from abroad, for the production of their products. Thus, in the process they are exposed to the sudden and sporadic fluctuations of the foreign exchange. In the below regression, the study has regressed the imports payments and the exposure, this helped us to get a picture regarding the significance of this variable. Following results are depicted in table below.

Table 4: Effect of Import payment on the exposure

Dependent Variable: LnEXREXP			
Explanatory Variables:	**Coefficient (C)**	**Ln IMPO(-1)**	**DUMEXP**
	2.85	0.003	
	(189.36)	(1.70)	0.52
R^2= 0.66	Adjusted R^2 = 0.64	D-W stat = 2.19	F-stat = 24.06

It is clear from the t-stat that the imports payments are significant factor for the firm's exposure. The study observes that 66% variation in the dependent variable, explained by the explanatory variables. The relationship between the import earning and exposure is according to the theory that is import positively related to the exposure. The study has taken the lag of imports (Ln IMPO) because the payment of the receipts by the firm is not done immediately and so the effect of exposure is not immediate on the imports of the firms. The Durbin-Watson statistic of 2.654, shows that there is no problem autocorrelation. The F-Stat of 24.06 explains that the model is good.

Effect of Trade. Trade is another variable, which is the combination of import and exports of the firms. The study has taken this variable to see the macro picture of the trade of the firm on the dependent variable.

Table 5: Effect of Trade on the exposure

Dependent Variable: LnEXREXP			
Explanatory Variables:	**Coefficient (C)**	**Ln TRADE (-1)**	**DUMEXP**
	2.84	0.005	
	(144.38)	(1.54)	0.54
R^2= 0.68	Adjusted R^2 = 0.65	D-W stat = 2.19	F-stat = 24.09

The above results shows, there is significant relationship between the explanatory variable and explained variable. About 68% variations in the dependent variable is explained by the explanatory variable. The study observes the positive relationship between the firm's trade and the exposure, which is consistent with the theory and other studies. The rationality behind taking the lag of trade is that usually, firms buy or sell their products on the contract basis, the payment or the receipt of it would not be immediate and thus there is time gap between fluctuation of exchange rate and the exposures of exchange rate with the firm. The Durbin-Watson statistic of 2.19, shows that there is no problem of autocorrelation. F-stat also signifies that the model is good.

Effect of Net capital flows. Table 6 shows the relationship between the net capital flows and the exposure. The reason for including the net capital flows is many firms prefer to raise cheaper source of funds in abroad as the rate of interest is low, this is largely preferable amongst firm in the emerging economies. Following are the results:

Table 6: Effect of Net capital flows on the exposure

Dependent Variable: LnEXREXP			
Explanatory Variables:	**Coefficient (C)**	**LnNCF**	**DUMEXP**
	2.86	0.004	
	(370.48)	(1.36)	0.53
R^2= 0.65	Adjusted R^2 = 0.62	D-W stat = 2.16	F-stat = 23.7742

It is clear from the results that net capital flows is significant and positively related to the exposure. About 65% variation in the dependent variable is explained by the independent variable, which is significant. The D-W statistic of 2.16, shows that there is no problem of autocorrelation. The F-stat of 23.77 shows that the overall model is good.

Effect of Hedging Activity. This equation takes into consideration the hedging factor of the firms. Firms hedge themselves from the uncertainty in the cash flows that arises due to the foreign exchange fluctuation. Before taking the variable we assume that the firm is hedging to protect from uncertainty and not for the speculation purposes. Following are the results of the equation:

Table 7: Effect of Hedging Activity on the exposure

Dependent Variable : LnEXREXP		
Explanatory Variables:	**Coefficient (C)**	**HE (-1)**
	2.86	- 0.009
	(398.25)	(-0.68)
R^2= 0.11	Adjusted R^2 = 0.046	D-W stat = 2.65

The results shows, there is no significant relationship between the explanatory variable and explained variable. Only 12% variation in the dependent variable is explained by the explanatory variables. The relationship between the dependent variable and independent variable is according

to the theory i.e. more the firm hedge lesser the foreign exchange exposure. The inverse relation of the hedging with the exposure is consistent with the previous study by Allayanis & Ofek (2001). The rational of taking the lag of hedging is that the effect of hedging is not immediate. Usually a firm which enters into forward contract, buys it on the anticipation of the fluctuation on the future date and so going by the logic the affect is not immediate for the firm. The Durbin-Watson statistic of 2.650, shows that there may be problem of mild negative autocorrelation.

After understanding the impact of each variable on the exchange rate exposure, the study now tries to appreciate how variables of a group affect foreign exchange exposure. In the first equation, the study has taken: Exports earnings Ln EXPOR (-1), Imports payments Ln IMPO (-1), Size Ln Size (-1), Net capital flows Ln NCF (-1) and Hedging activity HE (-1).

Table 8: Effect of export earning, imports payment, size, net capital flows and Hedging activity

Dependent Variable : LnEXREXP						
Expla natory Variables:	**Coefficient (C)**	**Ln EXPO R (-1)**	**Ln IMPO (-1)**	**Ln Size (-1)**	**Ln NCF (-1)**	**HE (-1)**
	2.78 (74.19)	0.007 (0.69)	- 0.015 (-0.18)	0.009 (0.90)	0.0032 (0.54)	-0.0078 (-0.36)
R2= 0.12	Adjusted R2 = 0.048		D-W stat =2.46			

In the above Table 8, the study has found that import is insignificant and negatively related to the exposure which is not consistent with the theory. Also, the study finds that the explanatory variable explains only 12% variation in the dependent variable. Furthermore, looking at various other statistics, which are not significant; the study is considering this equation for the analysis.

Hence, the study re-estimates the above equation with some changes. The study has now regressed another equation, which incorporates the trade factor that is the sum of the total exports and imports of the firm. The study found the following results for the regression:

Table 9: Effect of Trade, size of the firm, Net- capital flows and Hedging activities

Dependent Variable: LnEXREXP					
Explanatory Variables:	**Coefficient (C)**	**Ln TRADE (-1)**	**Ln SIZE (-1)**	**Ln NCF (-1)**	**HE (-1)**
	2.78 (70.73)	0.004 (0.63)	0.005 (0.81)	0.003 (0.54)	- 0.012 (-0.56)
R2= 0.18	Adjusted R2 = 0.04		D-W stat =2.56		

The above Table 9 showed that variable size of the firm has a lag affect, which is theoretically not congruent. Among variables mentioned the less significant is hedging, this argument is consistent with the previous equation. Previous study done by Jain, Yadav and Rastogi, (2009) points out that Indian firms does not wants to actively participate in the derivative market due to the complexities involved. One reason why the firm's hedging is insignificant in India can be explained by the argument of Allayanis and Ofek (2001), that most of the firms use foreign debt as a hedging tool to protect themselves from the exposure.

Due to the above mentioned reason, the study has re-estimated another equation by not considering hedging activity as an explanatory variable. Furthermore, the study has taken a dummy term in order to explain the foreign exchange exposure of the firms, caused due to unexplained effects. These effects can be due to the macroeconomic problem, weak fundamentals of the company or abnormal movements in the stock price. Following is the final regressed equation:

Table 10: Effect of Trade, size of the firm, Net capital flows

Dependent Variable : LnEXREXP					
Explanatory Variables:	**Coefficient (C)**	**Ln TRADE (-1)**	**Ln SIZE**	**Ln NCF (-1)**	**DUMEXP (-1)**
	2.83 (119.0)	0.001 (0.32)	0.003 (0.98)	0.001 (0.36)	0.537
R2= 0.69	Adjusted R2 = 0.65		D-W stat =2.29		

From the above mentioned results, it is found that 67% variation in the exchange rate exposure variable is explained by the explanatory variables. The explanatory variables used in the model are trade, size of the firm, net capital flows. Among all the variables, the study found that relatively the size of the firm is an important determinant of exchange rate exposure. The results are in congruent with the previous equation. Next significant variable is net capital flows followed by the significant determinant that is trade activities of the firm. All the three explanatory variables are positively related to the exchange rate exposure, which is again as consistent by the previous equation. The results of 2.19 D-W static concludes that there is no problem of autocorrelation in the regression.

Summary and Conclusions

India has emerged as the second largest economy amongst Asian countries in terms of world trade, GDP growth, private consumption and private investment. In such an emerging economy where firms are expanding globally and the global players are making their foray to Indian markets for trade; stability of currency fluctuation is the most pertinent concern amongst firms. There is rising need among the firms to hedge their risks from this sporadic nature of the foreign exchange exposure. Thus, there is a need amongst firms for proper determination of this foreign exchange exposure before they think of how much to hedge. The objective of the study is to measure the foreign exchange exposure of selected non-financial firms and to identify the firm related variable, which determines the foreign exchange exposure. The period of the study is concentrated from 2000-2015. This is so, because most major reforms taken in 1990s were fructified from the year 2000 onwards.

The firm's cash flows are exposed to various exchange rate exposures, namely transaction exposure, economic exposure and translation exposure. These exposures are managed by the firm using internal or external hedging techniques. The internal techniques are prepayment, leading and lagging, netting. The external hedging techniques are forwards, future, options and swaps.

The focus of this empirical analysis was to obtain an estimate of firm-level exposure that can be interpreted as a measure of the sensitivity of the firm's cash flow to exchange rate changes. Such a measure is the primary in understanding the corporate decision of the firm. First the study demonstrated the importance of control for macroeconomic factors in the exposure regression. Exchange rate exposure derived from a simple model, where the firm returns are regressed against an exchange rate. Both the stock returns and exchange rate are taken in the log form in order to measure the coefficient of the elasticities. The study has taken one period lag for nominal exchange rate. Such lags suggest that it takes time before the impact of exchange rate effects the stock prices. The nominal exchange rate is negatively related to the stock returns that means, when the exchange rate increases (depreciates) the stock price reduces. From the analysis, it is found the exchange rate coefficient to be 0.22 that shows that 1 unit change in exchange rate would lead to 0.22% variation in the stock returns of the firms. Furthermore, the results showed the R2 of 55% signifying that 55% variation in the stock returns is caused by the variation in the exchange

rate. Further to check the robustness and the usefulness of model we have used the technique of in sample forecasting. The results exhibited the Root Mean Square Error (RMSE) of 0.156, which shows that the model has better forecast ability. Generally RMSE should be less than 3. The Theil inequality coefficient, which studies the predictive performance of the model is 0.027, generally this value should be less than 1.

To study the significant factors which lead to the firm exposure, the study has regressed the foreign exchange exposure of the firms with the firm specific variables. The determinants for the firms selected for the study were market capitalization which is a proxy for the size of the firm, others are exports earnings, and import payments, trade of the firm, net capital flows and the hedging activities. Usually large firms are more exposed to foreign exchange exposure than the smaller firms and so the study has taken size as one of the determinants for the foreign exchange exposure for the study. It is observable that more the foreign related activities of the firm, the more the exposure. Exports, imports and the net capital flows contribute to these foreign related activities. The study measured the exchange rate exposure of the firm with each of the determinants to examine their relationship and the significance level. After this, the group variables were taken and examined the relationship with the exchange rate exposure of the firms. The study found that the firm's size is a significant factor of the exposure. This is followed by other variables; net capital flows and trade activities. Hedging activity is insignificant for the Indian non-financial firms; this is in congruence with the study and the previous literatures. It is further concluded that the firm specific variable that is size of the firm, trading activities and net capital flows are positively related to the exposure, as consistent with the theory and the previous studies. Moreover, the final results too are in congruence with the previous study stating the fact that exposure is not significant amongst Indian firms.

It is also found that market capitalization which is a proxy for the size of the firm is the most significant factor for the exchange rate exposure for the Indian firms. Furthermore, the study examined the impact of net capital flows on the firm exposure and found that the net capital flows are significantly and positively affecting the exposure of the Indian firm.

The finding indicates that the foreign exchange exposure is highly firm specific and may differ from industries and firm's internal strategy. It suggests that there is further scope of improvement in the study by taking into consideration more specific characteristics of the firm. This can be done by grouping the homogeneous nature of firms. Size of the firm, which is the significant factor of foreign exchange exposure, must be taken into consideration, while categorizing the firms. Furthermore, inclusion of more specific proxy variable for hedging activities may be helpful to improve the findings, which could be the limitation of this study.

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Authors' Profile

Anvesh Dhagat is a finance enthusiast, who is fascinated by the amazing world of valuation, financial & statistical modeling. His core area of interest and specialization lies in corporate finance, mergers acquisition, project finance and analytics. His broad understanding on varied issues inspired him for his unique work on foreign exchange exposure for Indian firms. Currently, he is an investment banker working with HSBC looking onto UK markets for its global banking and markets division dealing with trades for various financial products like fixed income, derivatives and equities.

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Management

A STUDY OF EXCHANGE RATES MOVEMENT AND STOCK MARKET VOLATILITY

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ABSTRACT

In this paper we have analyzed the relationship between Indian rupess-USdollar exchange rate and Nifty returns. This research is based on dynamic behavior between stock markets movement and volatility of stock market for this purpose; we have applied several statistical tests. .we have taken the data from period of October 2008, to march, 2010.It study has proved that exchange rate and Nifty returns are non-normally disturbed. Unit root tests have proved that Nifty returns and exchange rate are stationary and they are stationary at level form. There is negative relationship between exchange rate and Nifty returns exchange rate. For testing the causal relationship between these variables we have used Granger causality test.This test has shown that there is unidirectional relationship between exchange rate and Nifty returns. This study is trying to attempt that stock market is crucial for the economy. Different researchers have proved from their research that exchange rate is the main determinates of business profitability. This study has provided such type of information, which would favorable for the gaudiness of management decision about the risk and investment. This information will beneficial for government policies. The maintained of foreign exchange would motive the foreign investors.

Keywords:
Unit root, Granger causality, Nifty returns, unidirectional.

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1. INTRODUCTION

Stock market has a crucial role for the development of country. This thing is seen that stock market has main role in the improvement of economy; we can say stock market is channel between surplus funds and lender. Many economists have been proving that volatility has also impact on the economy of any country. Now a day to understand the origin of volatility of stock market is very interesting topic for financial analysts. Policy makers are doing working about the determining factor of stock volatility. Stock market volatility is a tool to assess the risk. The

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financial position of any developing and under developing country can assess from its foreign exchange volatility. Accoring to Benita and Lauterbach (2004) have shown that real economy of country is affected by exchange rate volatility. However, they have been conducted different surveys related to stock market efficiency; according to that survey it has seen that volatility has impact on stock exchange. However, different empirical evidence related to impact of stock exchange volatility on stock market performance has shown that stock market is inconsistence condition. Therefore, it is interesting to study that Indian exchange rate volatility on her stock exchange. According to (kurihara, 2008:p.378) different factors like exchange rate, interest rate, domestic product, have impact of daily stock exchange prices. The relationship between stock exchange and stock returns are huge issues now a days, this issues has preoccupied the minds of the researchers .Different researchers have proved from their research that exchange rate is the main determinates of business profitability .According to (Joseph, 2002)there is influence of exchange rate volatility on the firm competitiveness. In the case of appreciates the exchange rate ,the exporters lose their competitiveness in all over the international market .on the second side , in the domestic markets there is chances to increase competitiveness .Different studies have proved the deprecation of exchange rate have adverse impact on importers and exporters of any country .According to nieh,2006 currency appreciation have both negative and positive impact on domestic stock market .it have also studied that changes in economic value of firm then also changes the foreign operations.

VALUE OF THE STUDY

This study has provided such type of information for the gaudiness of management decision about the risk and investment. This information will beneficial for government policies. According to this study stable exchange rate promotes a strong economy.

2. LITERATURE REVIEW

According to Mishra et al., 2007 it is seen that devaluation of currency have influenced on both importers and exporters. These results are also supportive for prediction of future trends.
Globalization has vital role for the development of any country s economy. In the present of contemporary scenario there is a significant relationship between financial market and real sector.

In 1990 s various reform measures have come into existence for the development of economy 1991,floating exchange rate developed .There is significant relationship between stock returns and exchanger rate.in 1997,financialcrisis is caused of fall stock prices.

According to Joseph, changes in exchange rate related to expect stock returns.

The basic purpose of this study is to endeavor the relationship between stock prices volatility and exchange rate. The results are showing that stock market is more sensitive segment. This study explored that how stock market and stock prices are related to each other.

Stock market is acting a financial intermediation for both developed and underdeveloped country. Under Developing country need a more resources then developing country.. According

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to Alile(1984) large capital resources can pool through issuing shares. However, all over the world development is depend on the robust stock market. Empirical evidence has proved that stock market is backbone of any developing country. Arbitrage pricing theory has been based on logic that impact of exchange rate on stock market is different from different countries.

Aggarwal,R.(2003) have investigated about the stock exchange and stock market performance .He has viewed interaction of these variables in the economy of Bangladesh .He has taken the monthly data of different currencies. His empirical results has shown that exchange rate and stock prices series are found non-stationary and integrated at order 1.the used Johansen procedure for checking that possibility of the integration relationship .After applying the test he concluded that there is no co-integration relationship between the variables. Finally granger causality test has shown stock price granger has reason of exchange rate of US dollar and Japanese yen and there is no any relationship between exchange rate of euro and pond.

Babu,M.S and Prabheesh,k.(2007) causal relationship between foreign institutional investment and stock returns in India. In this study they have viewed the dynamic relationship between FLLs and Indian stock market returns. For this purpose they have used cross correlation function, granger causality test and VAR .The CCF test has given the results that there is bi directional causality between FLLs and Nifty returns, on other side Granger causality and VAR analysis shown that there is un-directional causality between Nifty returns and Flls.

Ajayi,R.A Frideman ,J.(1989)they have investigated the interaction between three emerging countries.For checking the co-integration they have applied the Johansen procedure. Their results have shown that there is not integration between stock prices and exchange rate. For checking the causal relationship between variables we have used the Granger causality, outcomes has shown that there is no causal relationship between exchange rate and stock prices.

Joseph,N.(2002) has examined that exchange rate volatility on the stock market of south Africa. For this purpose GARCH model was used to check the relationship between exchange rate and stock market performance. Their results have shown that there is very puny relationship between both variables.

Doong,s-c,yang(2005) examined that causal relationship of exchange rate and stock returns of Colombo stock exchange .ADF was used to find out the stationary of the data series and for checking the causality a regression was used. The regression results have shown that there is significant relationship between exchange rate and stock prices. There are contradictory results between regression and granger causality.

YAH,H,Y and Niehc(2006) investigated about the relationship of the stock prices and exchange rate in Kenya. The economic theory has determined that stock prices and exchange rate have no proper direction. They have used Pearson product moment correlation co efficient method. They used this method for this purpose of determine the degree of correlation between them. This method shows the results that there is positive relationship between exchange rate and stock prices.

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Wu,y.(2000) in this paper he used the error correction model to analysis the impact of the stock exchange on the four countries.

Takeshi,I.(2008) he examined the relationship between macroeconomic parameters and stock returns in India. For this purpose he has used Engle Granger co-integration test. According to his results there is no longer equilibrium between stock returns and exchange rate and there is no causality relationship between stock returns and exchange rate.

Parkinson,J>M(1987) in his paper he showed that stock market of the south Arian is feeble. For this analyzed he has used the unit root test ,which have proved that stock market has both negative and positive relationship with the stock exchange.

Naeem,m,aabdul(2002) explained in his paper that after financial crisis the exchange rate has affeted. Due to this reason the impact of exchange rate on the stock market is different. For this purpose he has used the unit root test and examined that exchange rate and stock market are integrated at level (1).

C.M.Ma and Kao,G.W.T(1990) in their paper they examined the exchange rate on the stock prices in Iran. For this purpose they have used the GARCH and this model has given the superior results. GARCH model has shown the positive relationship between exchange rate and stock prices.

Chakrabarti,R.(2001) in his paper he viewed the dynamic behavior between stock market and exchange rate of India .he has used VAR model. He concluded the results that stock market and exchange rate have negative relationship.

Chouy,Y.C(1996) in his paper he examined the relationship between time varying macroeconomic conditions and stock prices in India. For this purpose he used GARCH model and taken the results that time varying has been affected the conditional volatiles of the macroeconomic factors.

Najang and Seifert (1992) analyzed that dynamic relationship between stock returns and exchange rate volatility of Pakistan and china. For this purpose they have used the GARCH model. The Johnson co-integration and Granger causality is also used to investigate the relationship between them. The granger causality test has also confirmed that there is no relationship between them.

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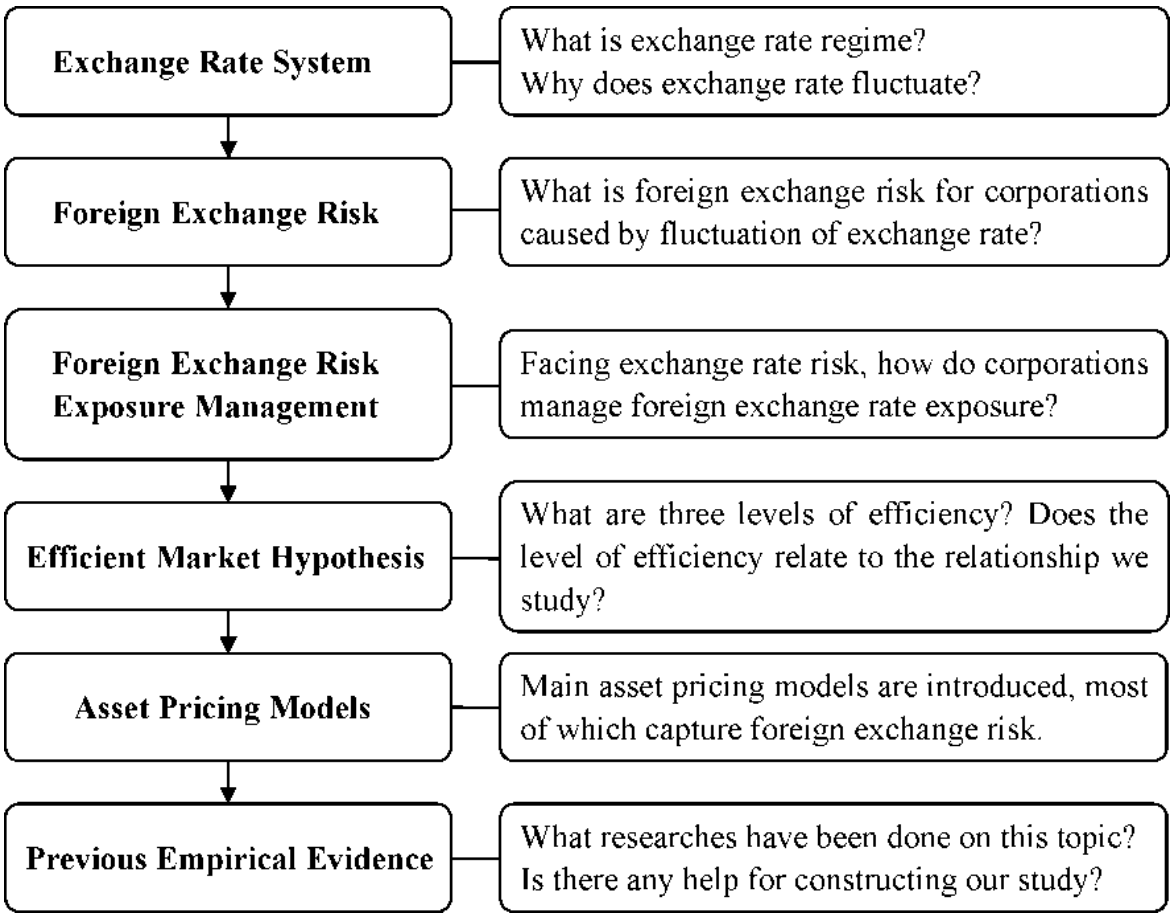
Theoretical framework:



3. DATA AND METHODOLOGY

The basic purpose of this study is to see the relationship between stock rate movements and stock returns volatility. We study is focusing towards Indian rupees dollar and exchange rate movement. The daily data is more useful to find out the relationship between exchange rate and Nifty index. We have also lined plots of two series 1) nifty returns 2) exchange rate.

We have calculated daily returns by the using of natural logarithm of the daily closing price relatives, i.e.

$r = \ln P(t)/P(t-1)$

HYPOTHESIS

After viewing the different study we have obtained some hypothesis

- Hypothesis 1: there is no normally disturbing between exchange rate and stock returns.
- Hypothesis2: unit root exists between both series.
- Hypothesis3: there is correlation between two variables.
- Hypothesis4: there is no causality between stock exchange and stock returns.

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NORMALITY TEST

In Gujarati (2003) the JB test used to stock returns and exchange rate individually. The JB test is known as large sample test. This is used to captures the Sleekness and Kurtosis.
JB = n [S2 /6 + (K-3)2 /24]

UNIT ROOT TEST

According to Guajarati (2003) Unit root test is used to review that data is stationary or not. Stationary condition is tested by using the Augmented Dickey fuller test. ADF is the well-known test which is used for large sample. According to empirical study a data series is consider time series if it's mean and variance are constant over time .when the data is non-stationary then we used the autoregressive model.

Table 1: Results of Augmented Dickey Fuller Test

	Stock Returns	Exchange Rates
Observations	347	347
Mean	-0.002167	0.000826
Median	-0.000717	0.000217
Maximum	0.067575	0.037869
Minimum	-0.130133	-0.031867
Std. Deviation	0.026267	0.007347
Skewness	-0.295288	0.297428
Kurtosis	4.712688	9.096538
Jarque-Bera	47.31657	540.9371
Probability	0.000000	0.000000
Sum	-0.749534	0.285488
Sum Sq Dev.	0.238026	0.018618
Result	Not Normal	Not Normal

ADF Test Statistic -9.522365 1% Critical Value* -3.9888
5% Critical Value -3.4247
10% Critical Value -3.1352

*MacKinnon critical values for rejection of hypothesis of a unit root.
Augmented Dickey-Fuller Test Equation Dependent Variable: D(RETURN)
Method: Least Squares Date: 09/01/09 Time: 13:298
Sample(adjusted): 6 347

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Table 2: ADF On NIFTY Return series

	Coefficient	Std. Error	t-Statistic	Prob.
RETURN(-1)	-1.151235	0.120898	-9.522363	0.0000
D(RETURN(-1))	0.203933	0.104897	1.944132	0.0527
D(RETURN(-2))	0.187599	0.090458	2.073898	0.0389
D(RETURN(-3))	0.158127	0.074294	2.128408	0.0340
D(RETURN(-4))	0.040234	0.054396	0.739638	0.4600
C	0.000114	0.002891	0.039038	0.9689
@TREND(1)	-1.45E-06	1.44E-06	-1.003109	0.3165
R-squared	0.479672	Mean dependent var		5.87E-06
Adjusted R-	0.470325	S.D. dependent var		0.035938
S.E. of regression	0.026157	Akaike info criterion		4.442917
Sum squared resid	0.228498	Schwarz criterion		4.350511
Log likelihood	762.1738	F-statistic		51.31694
5Durbin-Watson	2.009119	Prob(F-statistic)		0.000000

	Nifty Returns	Exchange Rates
Nifty Returns	1.000000	-0.087787
Exchange Rates	-0.087787	1.000000

EMPIRICAL ANALYSIS

In methodology data was collected from four different stages. In the first step the normality test was applied to find out the nature of data. For this purpose we have used Jarque-Bera statistics test for the purpose of view the disturbing in table 4 with two series. Sweweness and Kurtosis value have shown that variables are normally disturbed. The low and high kurtosis value indicates the extreme platykurtic. After this test it has shown that both variables are non-normally distributed. Skewness values of variables are as fellow -0.295288 and 0.297429 respectively and kurtosis values are as fellow 4.7126888 and 9.096538 respectively. Second stage is to check that data is stationary or not, for this purpose the simple way to plot time series graph and observe the trend in mean, variance and autocorrelation. A series are time series if it mean and variance constant over time. And results have shown that data are in series in their level form. We have also used ADF for checking the stationary of the data. The results of ADF are -9.522363 and -8.078592 respectively, which are showing that both at stationary at level form. If variable are stationary at level form then we applied Johansencoi integration test for checking that long run relationship between them or not.

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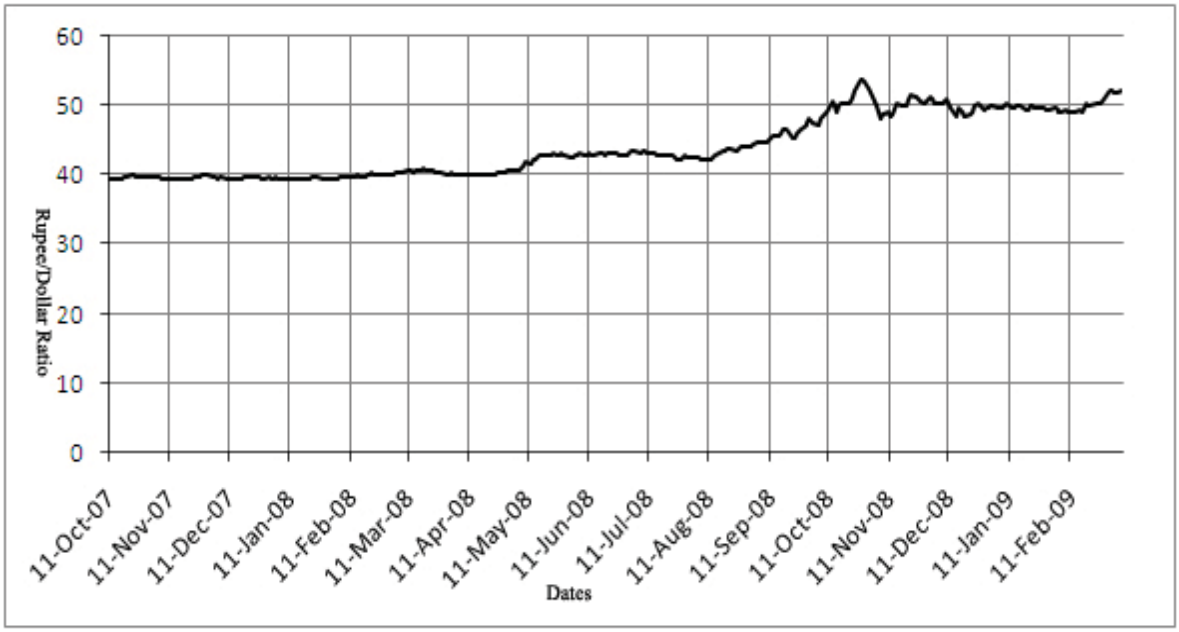

Figure 1: Line Plot of Nifty Indices Data

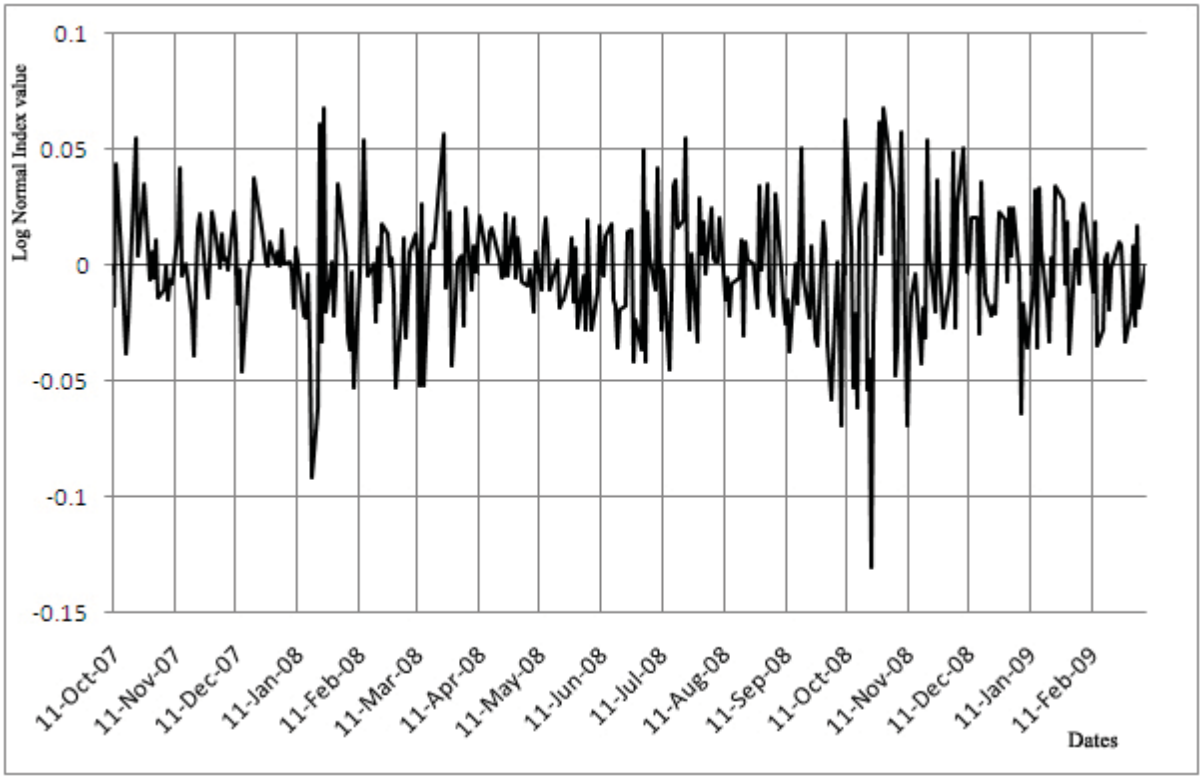

Figure 2: Line Plot of Exchange Rates Data

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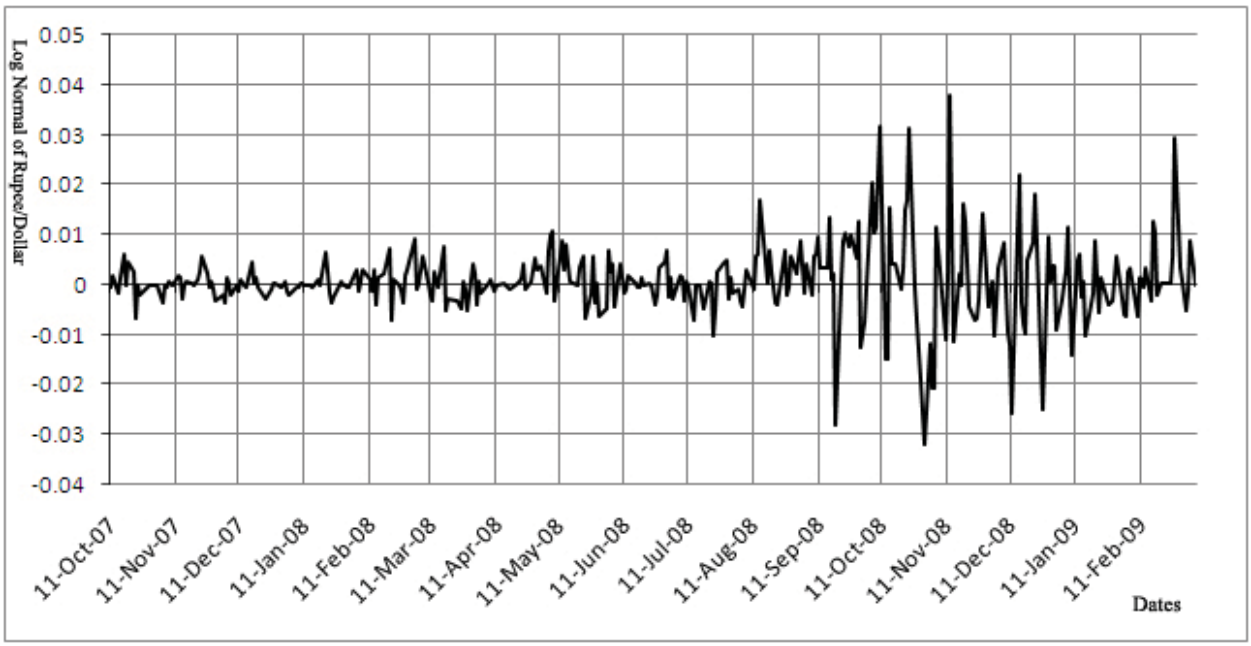

Figure 3: Line Plot of Nifty Returns

4. CONCLUSION

This research is based on dynamic relationship between stock markets movement and volatility of stock market .we have started from absolute value of data for checking the normality which was converted to log. Statistics was yielded the application of Jarque-Bera test, and our next step was stationary of both series for this purpose we have used ADF test and results have shown that stationary is at level form in both data series. Then, we observed the coefficient of correlation between these variables and taken the results that there is negative correlation. This is the way to make direction of influence between these variables. Hence, Granger causality test was used which has proved that there is unidirectional causality between stock returns and exchange rate. If there we increase the returns of Nifty then there will decline the exchange rate.

5. POLICY RECOMMENDATION

1) First of all policy makers should make policy related to the effect of stock market movement and its impact on the performance of economy
2) The monetary committee should maintain the foreign exchange. The maintained of foreign exchange rate would motive the foreign investors.

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