Risk Management Tools

&

India’s External Position

Risk Management Tools

Hedging?

- Life in Hedging
  - Difficult to accept undesirable outcomes
  - Obsessed with hedging future
  - Certainty
  - Plan B

Hedging Tools

Volatility

Nature Of Market	Economic Factors	Local Factors ($/INR)
Size, Market Place, Regulatory Control	Data, Events, Fundamentals	Demand & Supply; Capital Flows
Technical Analysis Models	Interest Rates; Carry Trades	RBI, Political Climate

Risk Calendars

USD	Overdue	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	Next 6 months	Grand Total
EEFC bal	0.05								0.05
EXPORT Exposure	3.47	5.24	4.27	3.93	3.62	3.38	3.44		27.35
IMPORT BL Exposure	0.00	-0.65	-0.65	-0.65	-0.65	-0.65	-0.65	0.00	-3.91
Cross Currency Derivatives	0.00	0.00	0.51	-0.52	-0.52	0.00	0.99	1.03	1.49
FC-USDINR-Buy									
FC-USDINR-Sell		-2.03	-4.50	-5.00	-4.00	-2.90	-1.58	-1.20	-21.21
Grand Total	**3.52**	**2.56**	**-0.37**	**-2.24**	**-1.55**	**-0.18**	**2.19**	**-0.18**	**3.77**

Risk Management Tools

Risk Management Tools

Common Derivative Products
Forwards -USD/INR, Cross,
Options -Put, Call & Combinations
Swaps -Principal, Interest & Both
Futures -Currency, Equity

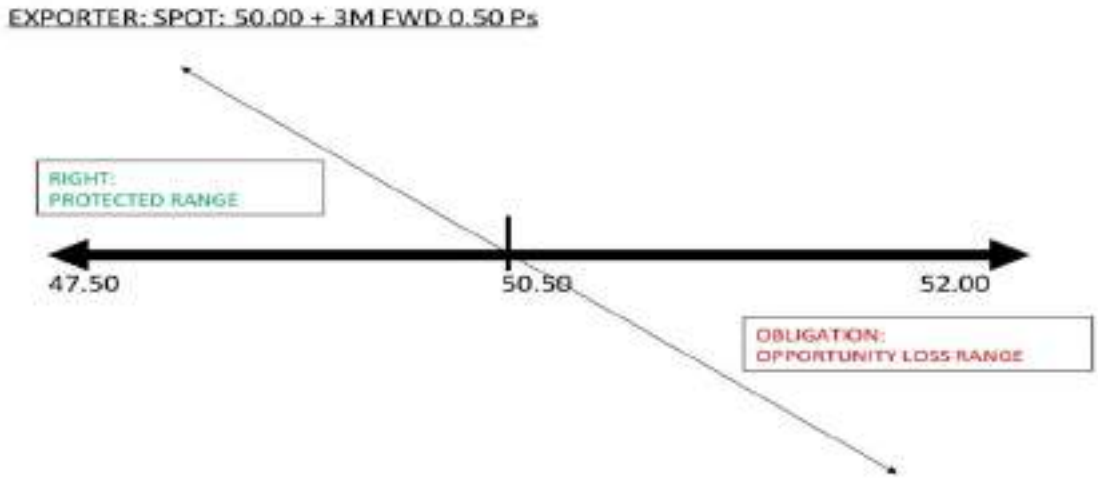
Common Underlying Assets
Commodities, Equity Shares
Foreign Exchange Revenue Flows (Imports, Exports)
Assets & Liabilities (Foreign Currency Loans & Deposits)
Interest Rate Exposures (Foreign Currency Loans & Deposits)

Forwards & Futures

Forward Contract: A foreign exchange contract that matures on a date later than the spot value date is known as a forward contract

The main use of forward contracts is to hedge actual and forecast currency exposures that will crystallize at a future date

Future Contract: Buy/sell a standard quantity of a specific financial instrument at a specified future date and at a price agreed between parties at the time of contract



Forwards – Premium & Discounts

Currency with lower interest rate will be at premium

Currency with higher interest rate will be at a discount

Forward premiums are a function of interest rate differential between the two currencies of the pair

Period	Export Premium	Import Premium	Export Forward	Import Forward
Spot			81.80	81.81
Fwd 1M	0.12	0.13	81.92	81.94
Fwd 3M	0.37	0.38	82.17	82.19
Fwd 6M	0.81	0.82	82.61	82.63
Fwd 9M	1.31	1.32	83.11	83.13
Fwd 1Y	1.87	1.88	83.67	83.69

Hedging Example

- An company in the auto components industry has a monthly forex exposure of $100,000 on account of imports

Without Hedging		
Transaction Date	**USDINR Spot**	**Value in INR**
28-Apr	**81.80**	**81,80,000**
31-Oct	**83.00**	**83,00,000**
Exchange Profit/(-Loss)	**-1.20**	**-1,20,000**

With Hedging		
Transaction Date	**USDINR Spot**	**Value in INR**
28-Apr	**81.80**	**81,80,000**
Forward Rate: 31st Oct	**82.60**	**82,60,000**
31-Oct	**83.00**	**83,00,000**
Exchange Profit/(-Loss)	**0.40**	**40,000**

Forwards vs Futures

Sr no.	Currency forwards	Currency futures
1	Forwards are traded in Bank.	Currency futures are traded in exchange i.e. NSE.
2	Transacting via Bank takes time - Like calling the Bank, negotiating with them and then finalizing the rate.	Dealing in currency futures is quick. It will not take more than 10 seconds.
3	The difference between Bid and Ask is usually 1 to 2 paisa.	The difference between Bid and Ask is not more than 0.5 paisa.
4	Booking a forward involves taking spot rate initially and then fixing at the required maturity. The forward premium between spot and the said maturity again has the spread of 2-3 paisa.	Currency futures contract has one single rate of that particular contract. For e.g. October 2022 contract. So the extra spread of 2-3 paise can be saved on each side of the transaction
5	Underlying documents are required before or after doing a transaction.	No documents are required for doing any number of transactions.
6	Amount is customized	It is traded in lots of 1,000 units (USD, EUR)
7	No fixed maturity. Forwards can be parked to any date.	It has fixed maturity. 2 days prior to Last working day of every month, even weekly expiries available now

Note	Fonts colored in blue has an advantage over fonts colored in red.

Forwards vs Futures

Sr no.	Currency forwards	Currency futures
8	No margin is required while transacting with bank	Upfront margin is required before entering the currency futures contract
9	No mark-to-market settlement is done on daily basis for outstanding contracts	Here after entering into the transaction, mark-to-market is done regularly
10	No funding is required if the position goes against the desired direction	Funding has to be done if the transaction is against the desired direction
11	Liquidity is available for all 12 months	Liquidity is available only for the first 3 months
12	The cost of one single transaction (booking andcancellation) is higher in most cases (considering margins and spreads)	The cost of one single transaction (booking and cancellation) is lower comparatively
13	Options through banks are comparatively expensive and less transparent	Can also protect desired rate by buying the option - paying some nominal premium for any particular future date. This helps in volatile markets. Unlike futures, buying option doesn't have unlimited downside if the marketgoes against position. The maximum loss isthe premium paid while buying the option. However if the market moves in favour one gets full benefit

Options

Options

- Provides the buyer of options the **right** but not the obligation to buy/sell foreign currency at an agreed price at a future maturity date for a premium
  a. Buying Options is akin to buying insurance to manage risk, wherein premium is paid to protect exposure.
- Provides the seller of options the obligation but not the right to buy/sell foreign currency at an agreed price at a future maturity date in exchange for a premium
  - Selling options can be a consistent way to generate excess income – but extremely risky in case we don't have the exposure.

• CALL OPTION • PUT OPTION • OPTION BUYER • OPTION SELLER • EXPIRATION • STRIKE RATE	• IN THE MONEY • OUT OF MONEY • AT THE MONEY • AMERICAN OPTION • EUROPEAN OPTION • PREMIUM

Advantages of Options

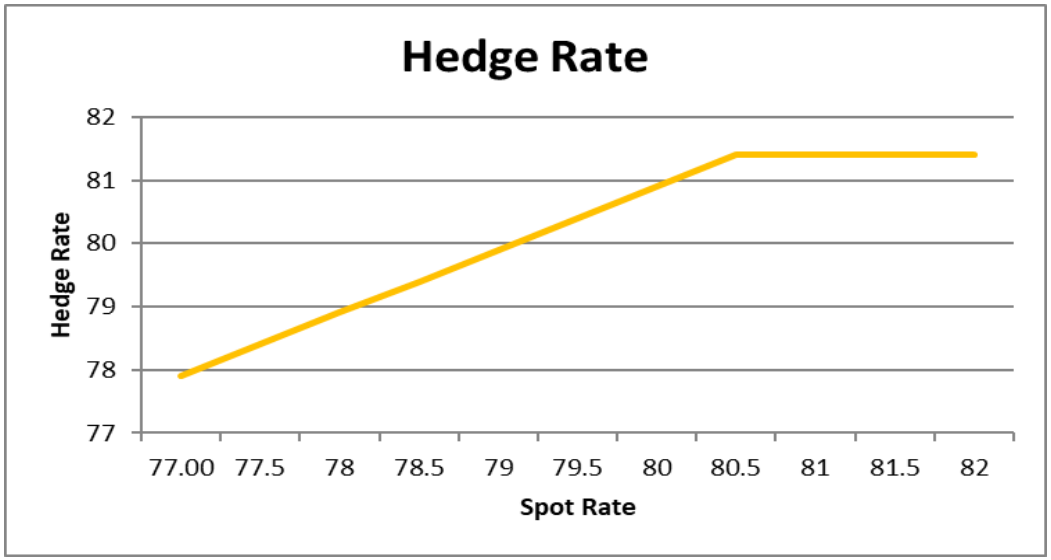
- For option buyers, the primary advantage is risk coverage with fixed cost
- In case of heightened volatility, uncertain times options are the best to ensure desired conversion rates
- Exercised only when contingent risk materializes
- Upside fully open – when currency moves in our favour we can get the full benefit (when long on options)
- Option structures are available for managing exposure at reduced cost with some open risk
- Cost can be reduced by slight restructuring
- Options can be also traded and terminated in case view changes

Plain Vanilla CALL Option

- Mainly used for protecting import exposure
- It is an alternate to forward/future contract

- Example, Buy Call @ 80.5, Premium: 0.90 p
  - Above price is calculated at spot ref. of 79.90
  - The tenor for the above option is 3 months
  - The above cost protects if market goes above 80.5, but with additional payment of 0.90 Rs/USD (PS: Vega - volatility greek – is very high)
  - Effectively our imports will be paid off at 81.40 (in case prices are above 80.50)
  - Effectively our imports will be paid off at Spot + 0.90 (in case prices are below 80.50)
  - The forward booking for 3 months at spot of 79.90 gives us 80.50
  - If the market remains below 80.50, we pay our import at whatever the ruling spot rate.
  - If the spot rate is below 79.60 on the date of payment of import, the option premium cost would be fully recovered and will give us better rate than the forward booking

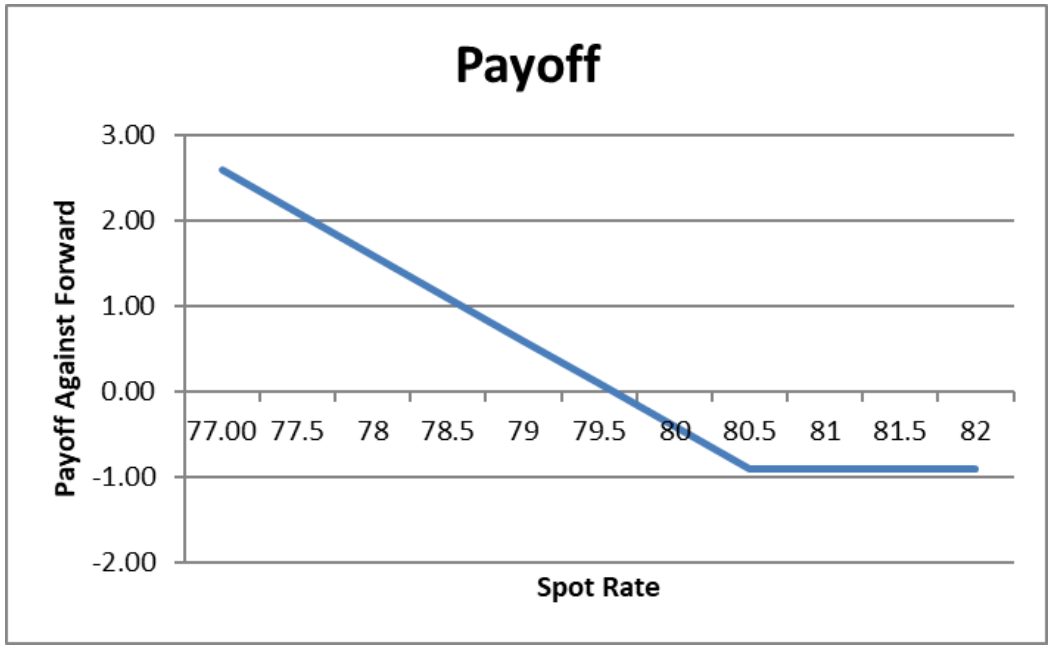
Plain Vanilla CALL Option



Buy Call: Strike 80.5

CMP: 79.90
Tenor: 3 Months
Net Premium Paid: 0.90

Forward Rate: 80.50

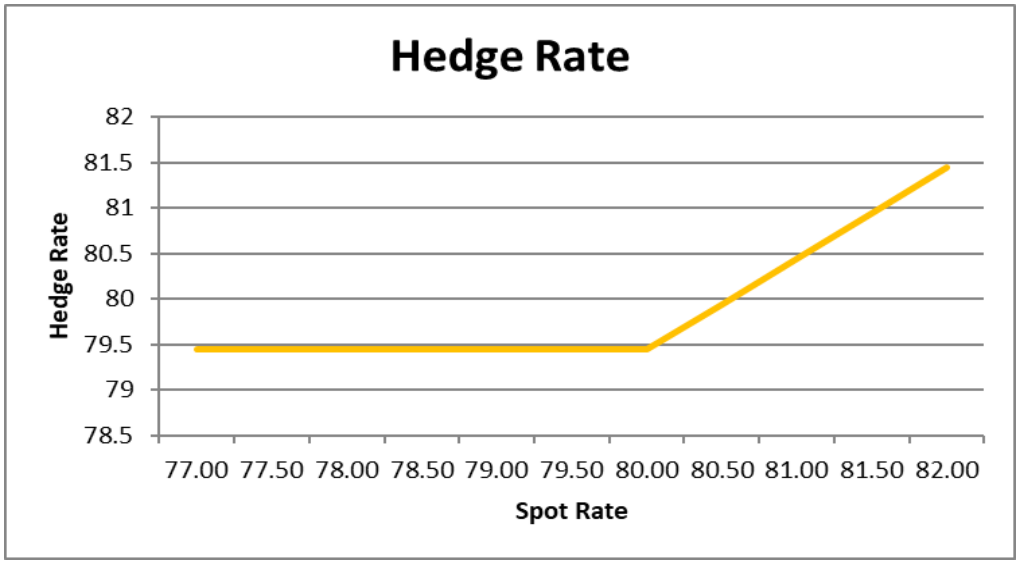


Plain Vanilla PUT Option

- Mainly used for protecting export exposures.
- It can also be used for managing Import hedges.

- For example, Buy Put at 80.00; Premium INR 0.56
  - If the market trades below 80.00, we have right to sell at 80.00
  - If the spot rate is above 80.00 we can sell at ruling market rate
  - Forward cover for the same tenor at spot of 79.90 comes to 80.50
  - While protected below 80.00, we get entire upside if rupee depreciates

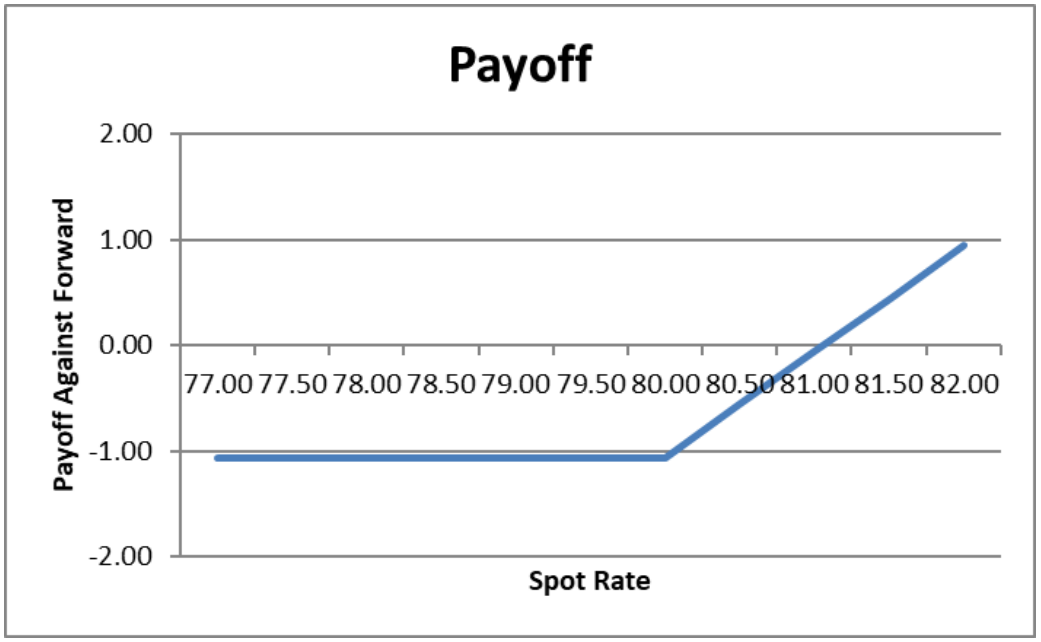
Plain Vanilla PUT Option



Sell Put: Strike 80

CMP: 79.90
Tenor: 3 Months
Net Premium Paid: 0.56

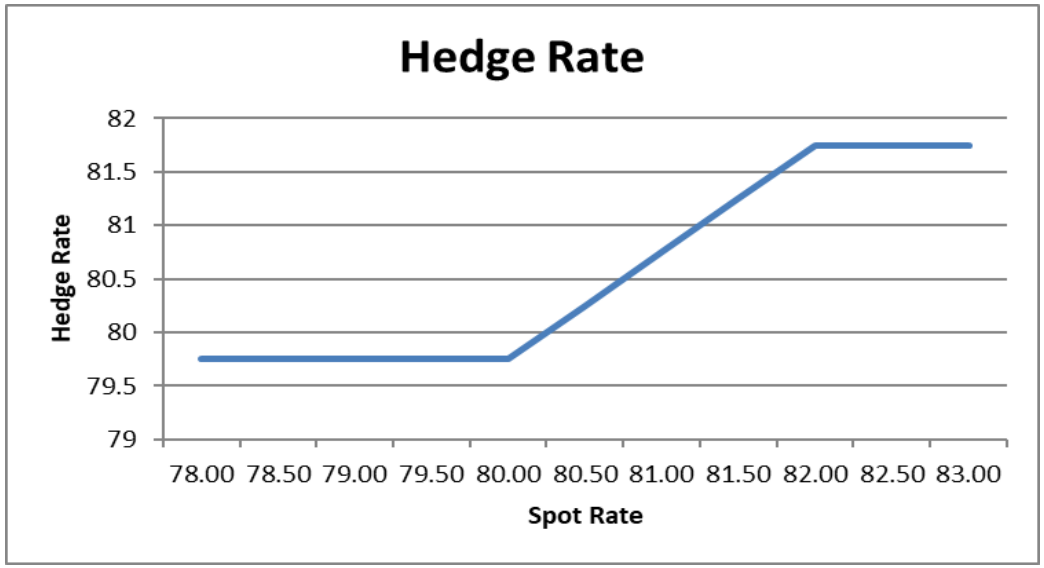
Forward Rate: 80.50



Range Forward Structure - Export

- Range forward is a combination of buying PUT and selling CALL
- We pay premium for buying a PUT option at strike 80.00, but the same is partially made up by the premium we receive selling CALL option at strike 82.00
- Higher the PUT strike we desire, lower the CALL strike we have to sell to make up for the premium cost
- While we get protection at BUY PUT strike for 3 months, if the market moves above the SELL CALL strike, we have an obligation to sell Dollars at that rate at sell call strike (i.e. 82.00)
- In this case effective hedge rate would be sell call strike - premium paid i.e. 81.75 (82 - 0.25)
- If market rates are below 80 at maturity, we have right to sell export at 79.75 (80.00 - 0.25)
- This is recommended when we expect market in uptrend but with limited scope & would forego something for protection in case markets move otherwise

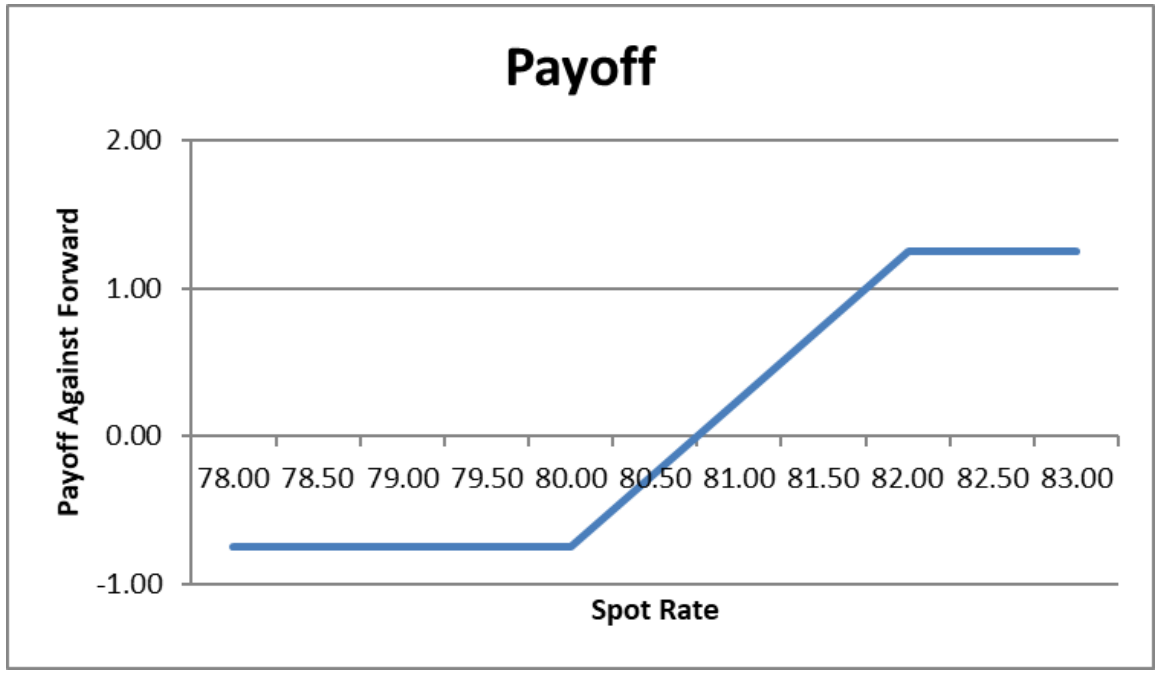
Range Forward Structure - Export



Buy Put: Strike 80.00
Sell Call: Strike 82.00

CMP: 79.90
Tenor: 3 Months
Forward Rate: 80.50

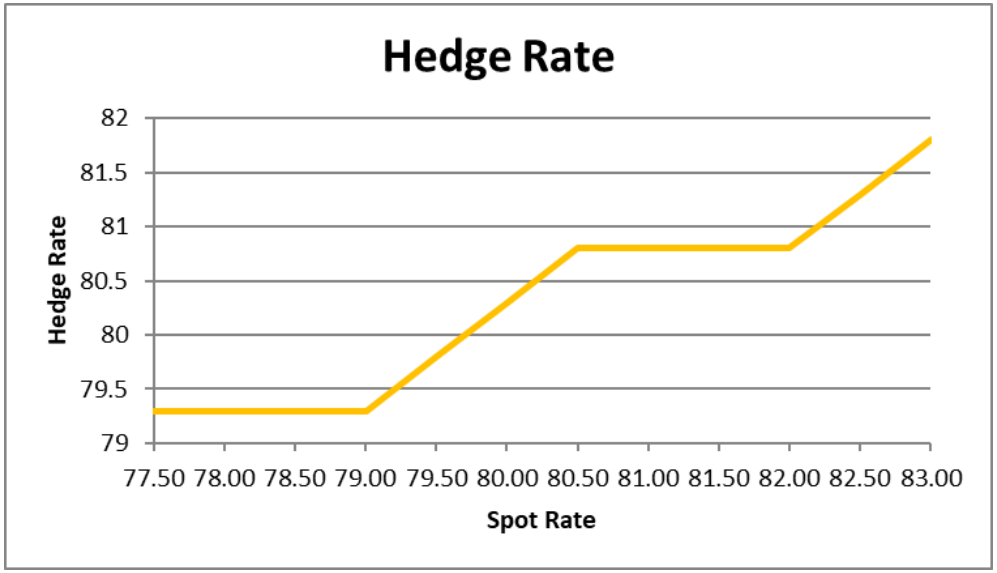
Net Premium Paid: 0.25



SEAGULL STRUCTURES – Import

- A cost reduction structure
- Premium payable on CALL OPTION BUYING is reduced by SELLING A CALL OPTION apart from SELLING A PUT OPTION
- What we are foregoing is two things-
  - Protection beyond 82.00; if spot is above 82.00 on maturity, we have no insurance beyond 82.00
  - If the market drops below 79.00, we are locked at 79.00; so even if market goes to 75 we have obligation to buy Dollars at 79.00
  - If the market stays between 79.00 and 80.50, we can book imports at market prevailing rate bring the hedge at Spot + 0.30
  - If the market rate is between 80.50 and 82.00, our hedge is fixed at 80.50 bringing the hedge rate at 80.80 (80.50 + 0.30)
- If we improve our BUY CALL rate, either we have to SELL CALL at lower strike or SELL PUT at higher strike
- It is best recommended when market is perceived to be in an uptrend for the tenor of the import liability, but in our estimate not likely to move beyond some level
- To be effective, we have to choose SELL CALL at a strike that has lower probability of being seen

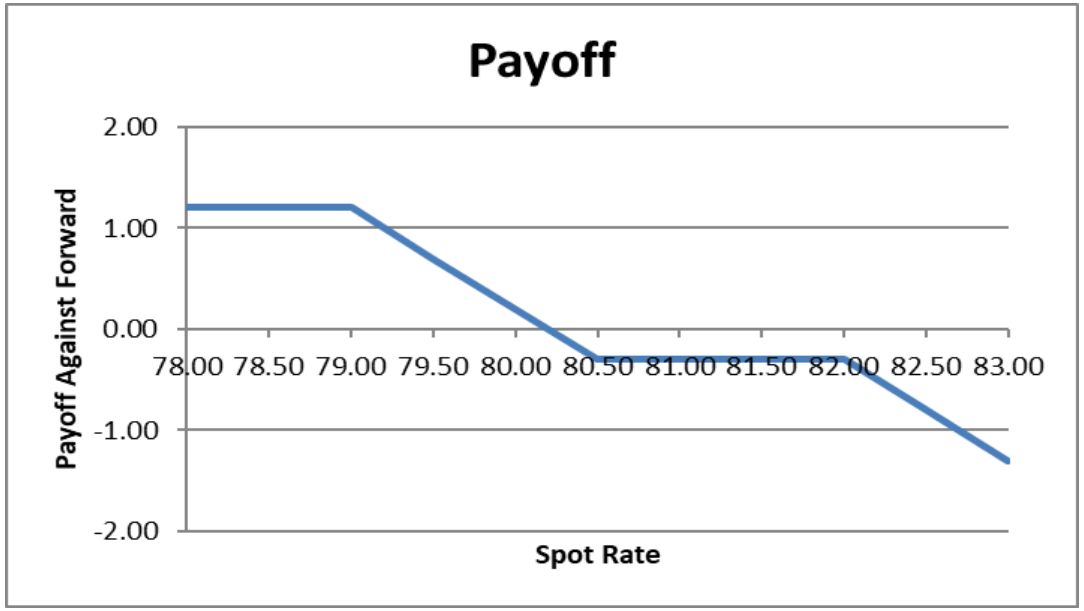
SEAGULL STRUCTURES – Import



Buy Call: Strike 80.50
Sell Put : Strike 79.00
Sell Call: Strike 82.00

CMP: 79.90
Tenor: 3 months
Net Premium Paid: 0.30

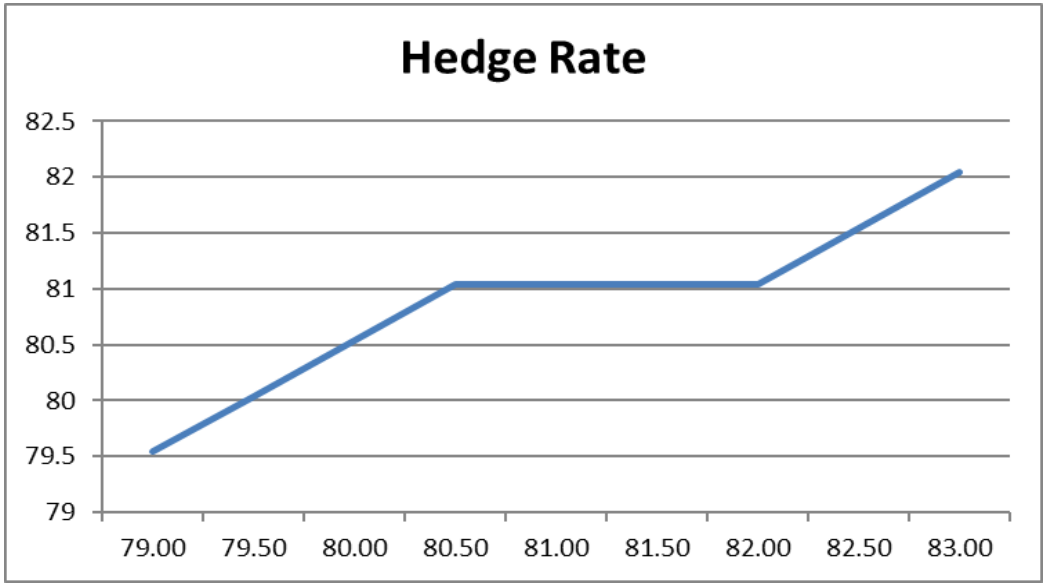
Forward Rate: 80.50



Call Spread – Import

- Call Spread is known as a cost reduction structure, as it subsidizes the cost of buying options through the sell leg of option
- Premium payable on CALL OPTION BUYING is reduced by SELLING A CALL OPTION
- It can be observed we are able to get protection at 75.5 with a possibility of booking even lower while the forward rate is fixed at 75.44
- With this structure we have our upside improvement on the hedge rate limited if spot moves higher i.e. till 77
- But no limits on gains in case exchange rate moves downwards

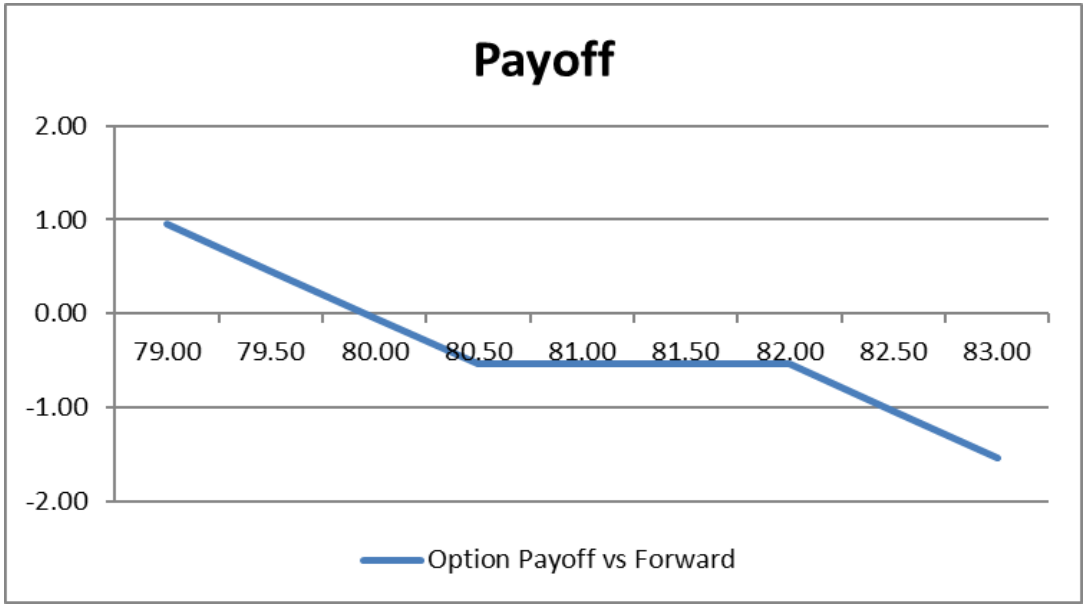
Call Spread Structure - Import



Buy Call: Strike 80.50
Sell Call: Strike 82.00

CMP: 79.90
Forward Rate: 80.50

Net Premium Paid: 0.54



Summary

Particular	Forward Contracts	Call (Buy)	Put (Sell)	Range Forward	Call Spread	Seagull
Structure	Buy outright USD for the future date	Right to buy USD at strike rate on future date	Obligated to buy USD if prices below strike (premium gain)	Combination of Buy Call & Sell Put	Combination of Buy Call & Sell Call	Combination of Buy Call, Sell Call and Sell Put
Views	Firm view for USD appreciation	Lesser certainty of USD appreciation	Limited/ranged move for USDINR or expectation of USD depreciation	Expectations of a range movement for USDINR with slight chances of USD appreciation - also provides participation in USD depreciation	Expectations of a range movement for USDINR with slight chances of USD appreciation - also provides participation in USD depreciation	Ranged moved for USDINR with less expectations for any sharp appreciation for USD - also participation in the USD depreciation
Hedge	Full Hedge - no participation in price movement after booking - cashflows fixed	Partial Hedge - protection above strike rate and full participation in USD depreciation	No hedge - no protection against exposure, premium gains to offet some moves on the upside	Partial Hedge - Protection above call strike,participation in USD depreciation till put strike, no protection below put strike	Partial Hedge - Protection above buy call strike but only till sell call strike,participation in USD depreciation, no protection beyond sell call strike	Partial Hedge - Protection above buy call strike but only till sell call strike,participation in USD depreciation till sell put strike, no protection beyond sell call and sell put strike
Cost	High - equivalent to ongoing premium	Higher than forwards	Earnings in the form of premium	Lower than buy call - subsidised due to selling option	Lower than buy call - subsidised due to selling option	Lowest of the all structures mentioned
Risk	Ascertains cashflow - no participation in favourable price movement	Max loss of premium paid	Very high risk - unlimited loss potential, limited profit	Opportunity loss on USD depreciation beyond put strike - no to very low risk	Higher risk on sharp appreciation of USD beyond sell call strike levels	Higher risk on sharp appreciation of USD beyond sell call strike levels

Exotic Options

- Exotic options have non-standard features that enable them to be tailored to individual risk management needs
- Exotic option structures incorporating written options can provide businesses with effective low-cost hedges
- Compared to vanilla options, difference is with regard to the payment structures, expiration dates and strike prices
- Payoff structure, unlike the traditional Option’s payoff structure, is based on not only the value of the underlying currency at maturity but also on its value several times during the course of the contract's life
- Initially banned by RBI for lack of transparency, later to be reintroduced again but with very low acceptance/liquidity

Barrier (Knock In/Out) – Exotic Options

- Triggered when the underlying asset or instrument reaches the predetermined price, rest similar to vanilla options
- If the currency remains below knock in level, the Option will become worthless and it will not exist, vice versa for knock out
- If the currency hits knock in level, the option is triggered and can be exercised according to the strike on maturity
- Can exercise an Exotic Option at a lower premium (cost of investing in Option) as compared with traditional Option
- Other types of Barrier Options:
  - Up-and-Out - Price of the currency goes up and Knocks-out the Option
  - Down-and-Out - The Price goes down and Knocks-out the Option
  - Up-and-In - Price goes to the specific level and Option gets initiated
  - Down-and-In - Price falls down to the required level and Option gets Knocked-in

Forward Extra

- Structure consists of Buying a Put Option along with selling a Call Option (Call option gets active with a trigger)
- **In case of forward extra – Put & Call option are generally of same strike but only Put option is exercisable on maturity if the barrier prices levels are not traded in the tenor**
- **If the barrier levels are traded during the tenor, the sell call option is active bringing the net effective hedge at same strike as of put**
- **Structure is same as booking a forward option but with conditional participation in the currencies movement in the desirable direction**
- Forward as hedging instruments fixes the rate for conversion of receivables of certain date in the future which ought to be obliged
- Characteristics of USDINR:
  - INR depreciates in bouts and then consolidate for long periods
  - Past 20 years, average depreciations(avg. 20% in quantum) cycles have been of 7 months while consolidation runs for more than 20 months

Forward Extra

- Forward extra provides the hedge at same levels as that of a forward - but doesn't fix/obligate company to convert the receivables of future date on that rate
- The structure provides opportunity to participate in INR depreciation - convert on exchange rate(if higher than forward rate) as on maturity date - so long the trigger level is not hit
- Negative MTM - certain in such scenario with forwards – will turn into better cashflow gains with forward extra (subject to trigger)
- If trigger levels are hit even once during tenor – conversion is fixed at forward rate
- Forward extras – come at certain cost – comparatively lower than plain vanilla options

Structure booking – 14th March 2023

- Spot Rate: Rs 82.43 **Forward Rate: 83.42**
- Buy a Put @ 83.00 [Minimum realization rate]
- Sell a Call @ 83.00 [Realization rate if Triggered], **trigger level at 88**
- Tenor: 6 Month (15th Sept 2023) Option Premium: Net 33 paise/USD to pay

USD INR at Expiry	80	81	82	83	84	85	86	87	88	89	90
Forward Rate	83.42										
Net Realization Rate less premium	82.67	82.67	82.67	82.67	83.67	84.67	85.67	86.67	82.67	82.67	82.67

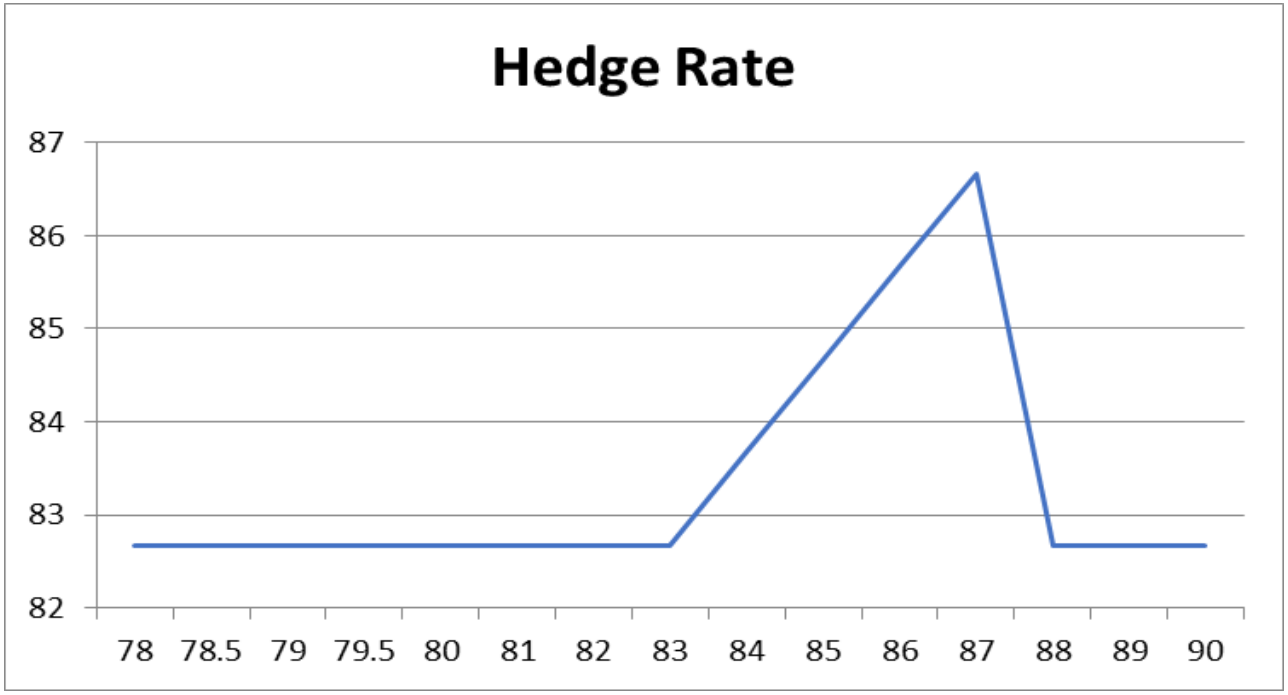
Forward Extra

Pros

- Comparatively low cost
- Create a customized hedge
- Limiting losses for the writer
- **Protects same rates as forward with participation capability**

Cons

- Risk of higher loss in event of large move but same as forward
- Unwind costs higher/dependency on Banks
- Lack of transparency & Liquidity



Treasury Approaches

CONSERVATIVE / COST CENTRE APPROACH • Hedge the exposure as it arises • Yields and costs of transactions are known • Less risk of cash flow destabilization • Less of management time and effort • Unlikely to yield optimum results • Any opportunity arising in the market cannot be encashed	**AGGRESSIVE / PROFIT CENTRE APPROACH** • Active trading in currency • Continuous cancellation and rebooking • Aim is to treat treasury as a separate profit center • Active treasury and management efforts must • High Risk :High Reward scenario • Proper evaluation of risk extremely important bearing in mind risk-taking appetite of the company.
MODERATE / VALUE ADDED APPROACH • Partial/Selective hedging • Scope for taking advantage of opportunity gains • Helps in averaging out total cost • Management time and effort required	**INDIFFERENT / NO HEDGING APPROACH** • No conscious decision to manage exposure • No hedging - everything left to chance • Risk of destabilization of cash flows very high • Merit — ZERO investment of time and effort • Worst approach — Highly speculative

India’s External Position


EXPRESS
explained.

BOP - Components

Balance of Payment

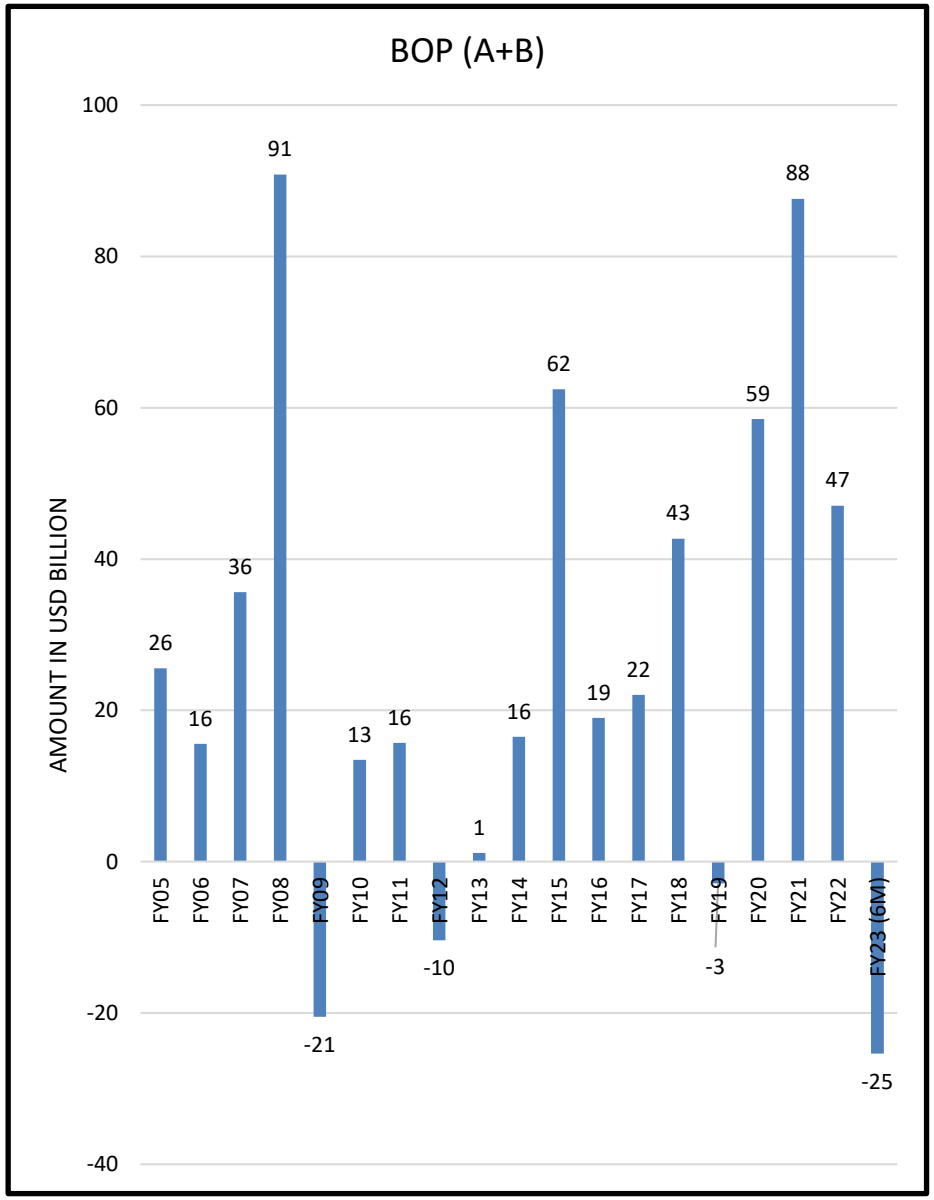
Current Account

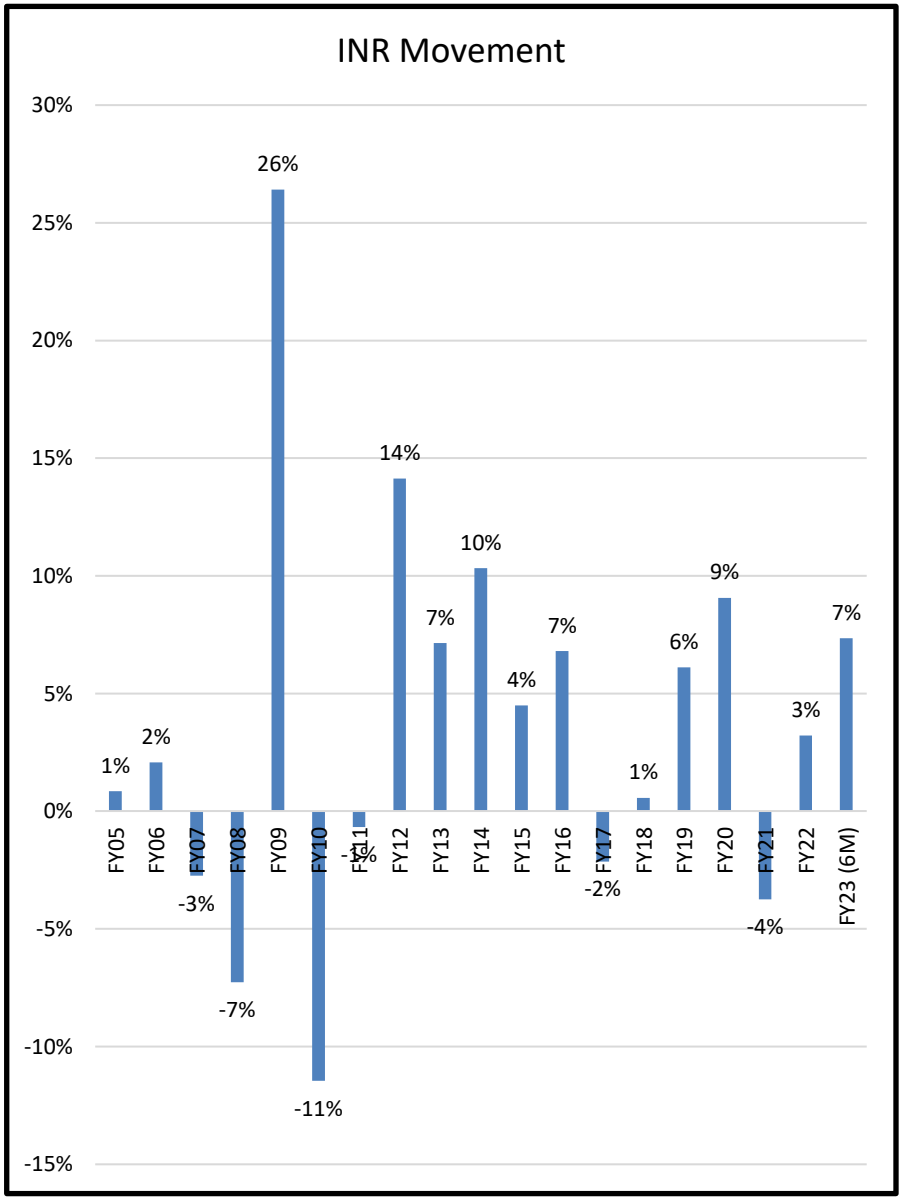
- All Flows of Goods, Services, Primary income & Secondary Income
- Merchandise: Export & Import of goods
- Invisibles:
  - Transportation
  - Travel
  - Insurance
  - MISC:
    - Software Services
    - Business Services
    - Financial Services
- Current Transfers:
  - Grants/Gifts/Remittances who do not have any quid pro quo
  - Salaries

Capital Account

- Foreign Investment:
  - FDI
  - Portfolio Investment
- Loans
  - External assistance- Bilateral/Multilateral loans under govt. arrangement
  - Commercial Borrowings
  - Short Term Loans
- Banking Capital- Assets/Liabilities & Deposits
- Errors and Omissions: Since BOP data is received from various sources, it is practically impossible to tally

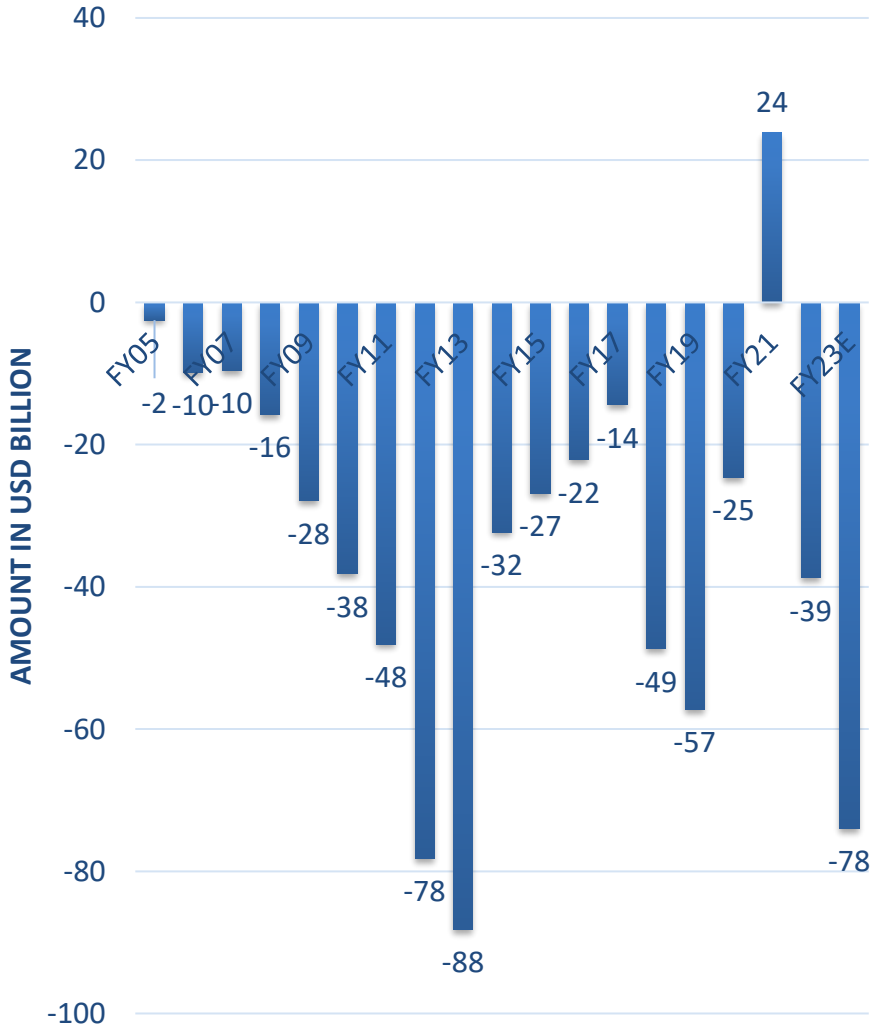
Historic BOP Numbers



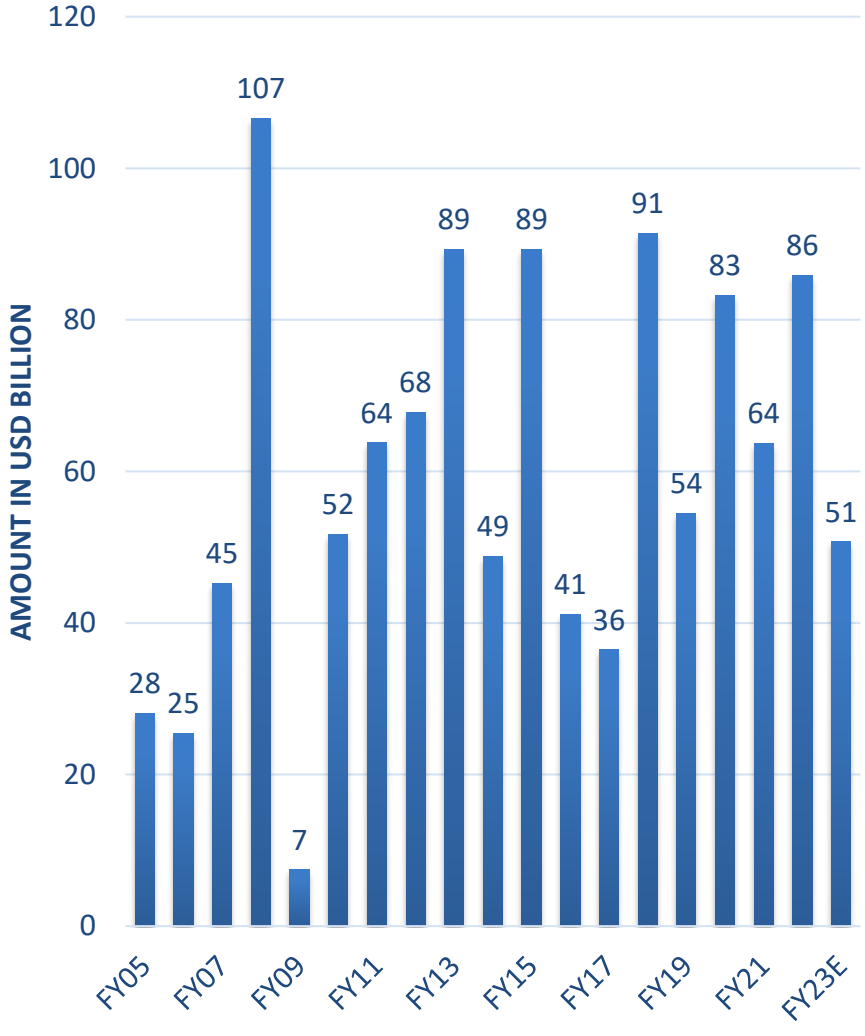


Historic BOP Numbers

Net Current Account (A)



Net Capital Account (B)



Characteristics of Current Account

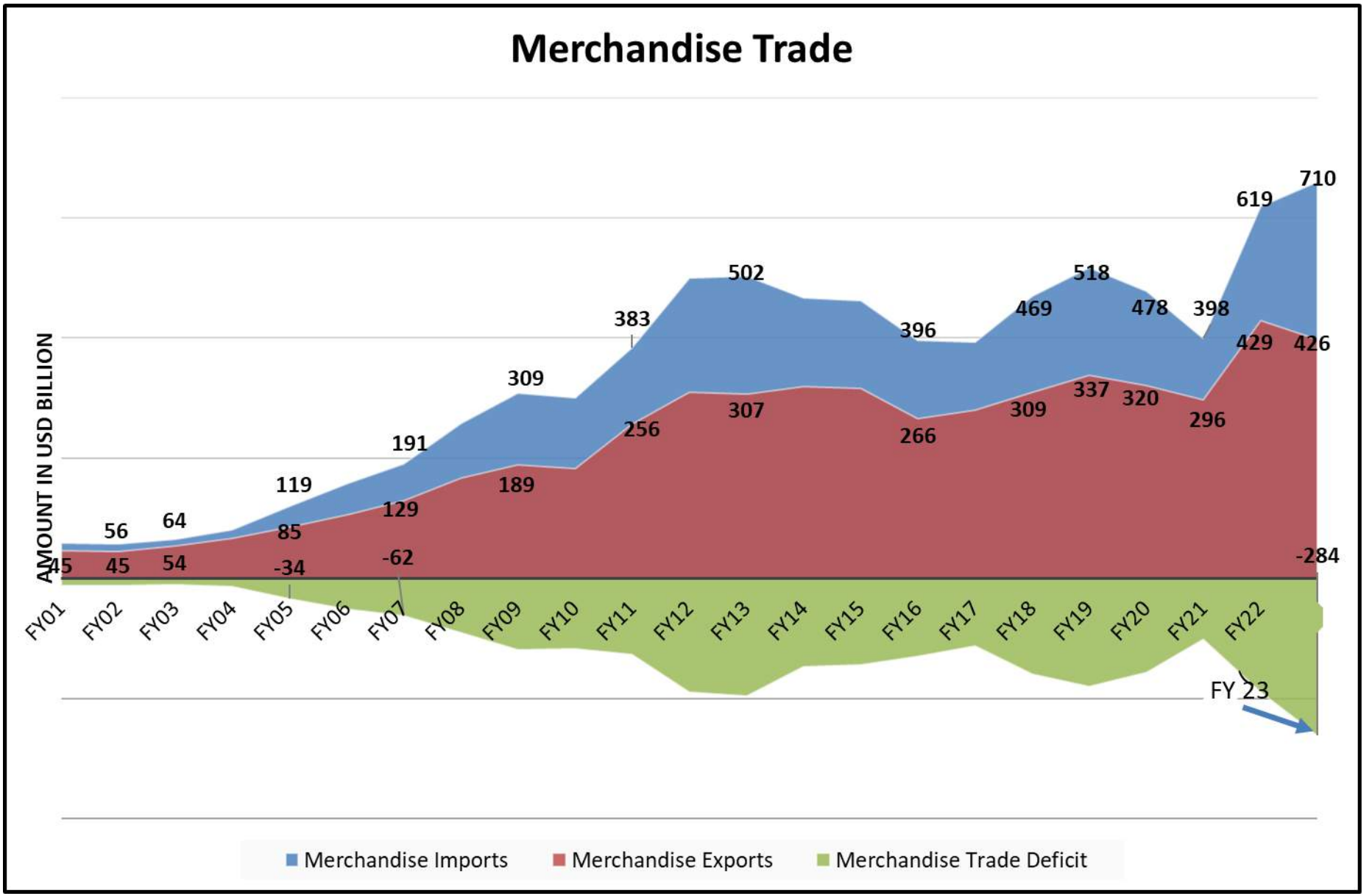
Period	Merchandise Trade Surplus/(Deficit) [A]	Invisibles Surplus/(Deficit) [B]	Net Current Account [A+B]	% of Merchandise met by Invisibles
FY10	-118.2	80.0	-38.2	**68%**
FY11	-127.3	79.3	-48.1	**62%**
FY12	-189.8	111.6	-78.2	**59%**
FY13	-195.7	107.5	-88.2	**55%**
FY14	-147.6	115.3	-32.3	**78%**
FY15	-144.9	118.1	-26.9	**81%**
FY16	-130.1	107.9	-22.2	**83%**
FY17	-112.4	98.0	-14.4	**87%**
FY18	-160.0	111.3	-48.7	**70%**
FY19	-180.3	123.0	-57.3	**68%**
FY20	-157.5	132.8	-24.7	**84%**
FY21	-102.2	126.1	23.9	123%
FY22	-189.5	150.7	-38.8	**80%**
FY23	-284.0	206.0 (E)	-78.0	**73%**

Net Current Account is Merchandise Trade+ Invisibles Trade

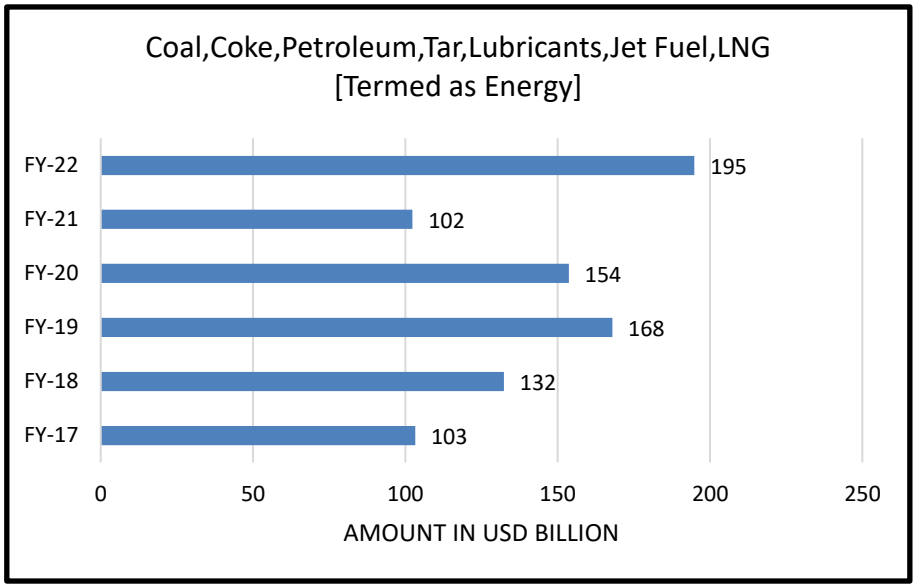
Invisibles contains the following head:
-> Services
-> Transfers
-> Income

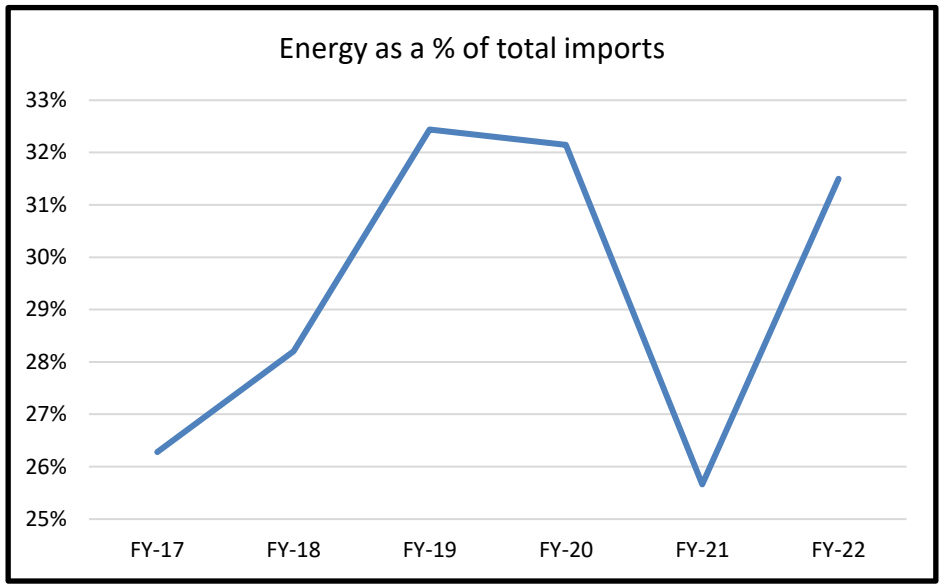
Median value of Invisibles Surplus meeting Merchandise deficit: 74%

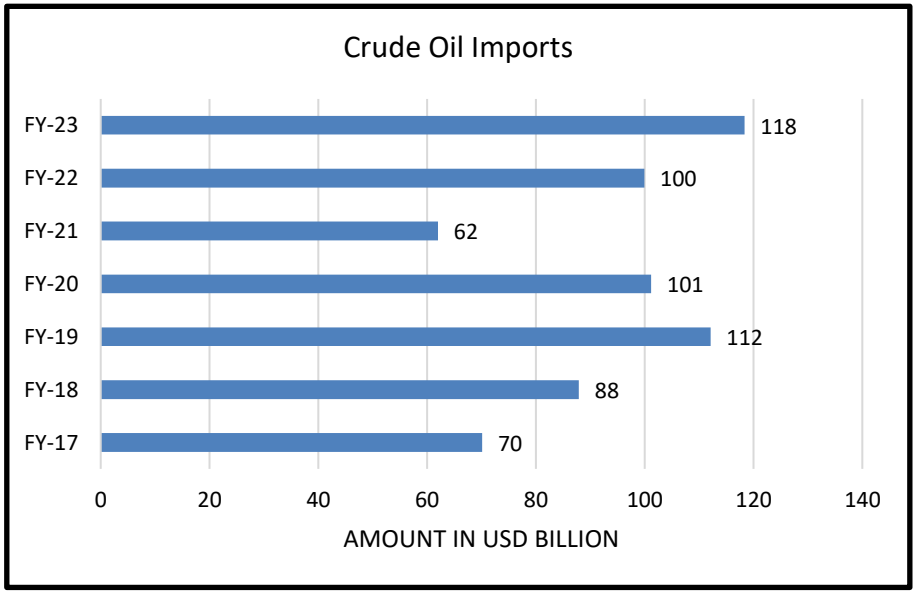
Merchandise Trade Composition

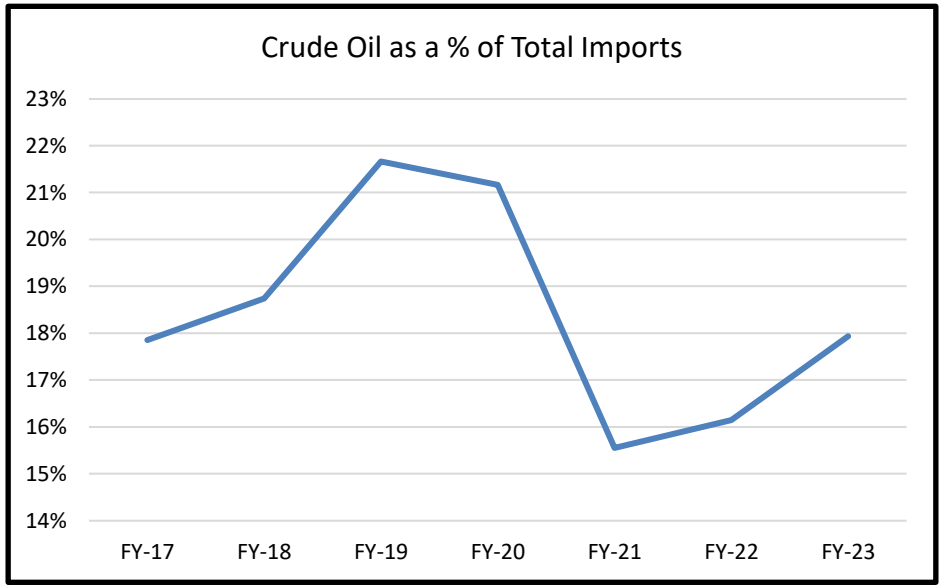


Energy Dependence

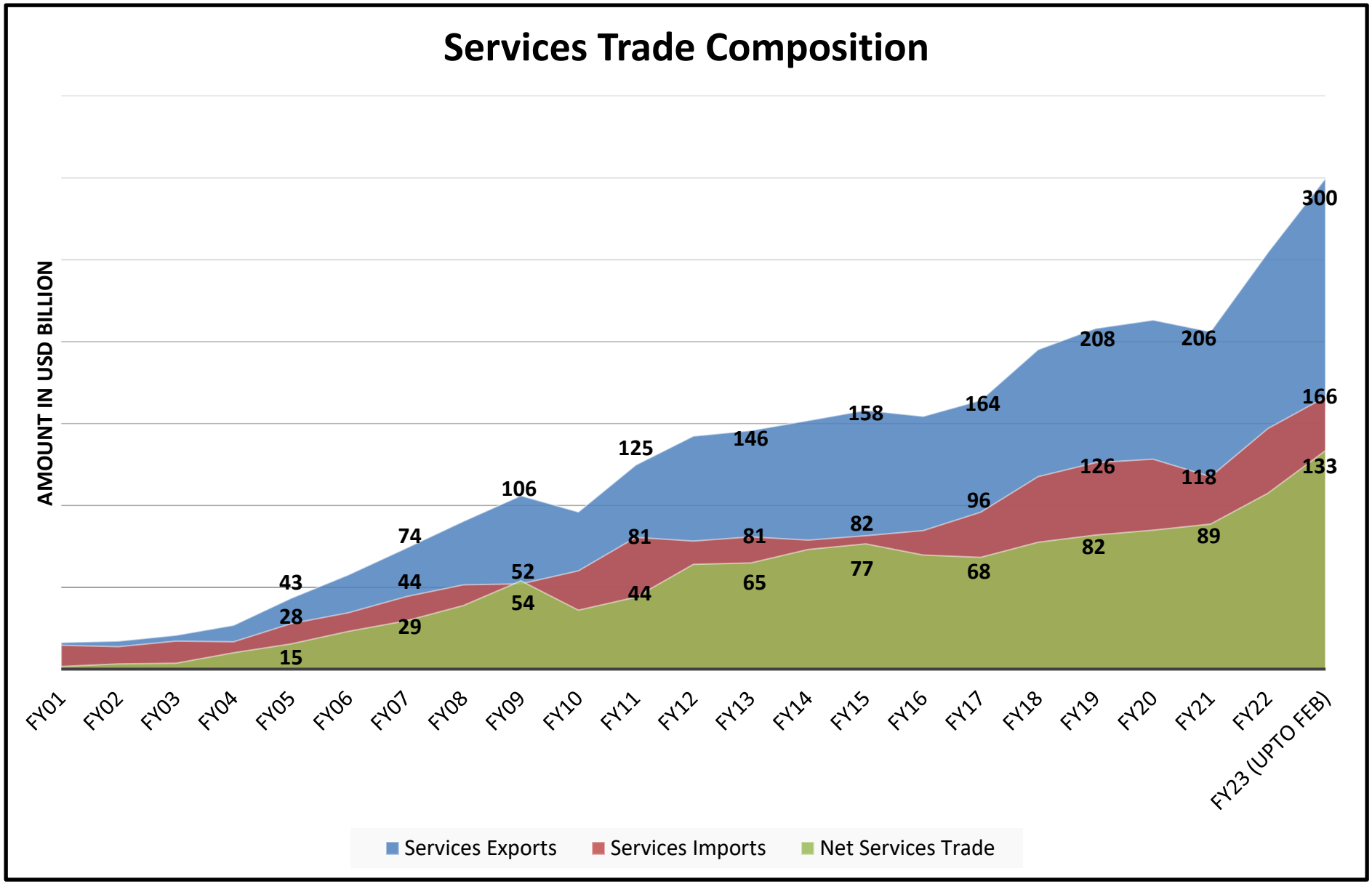




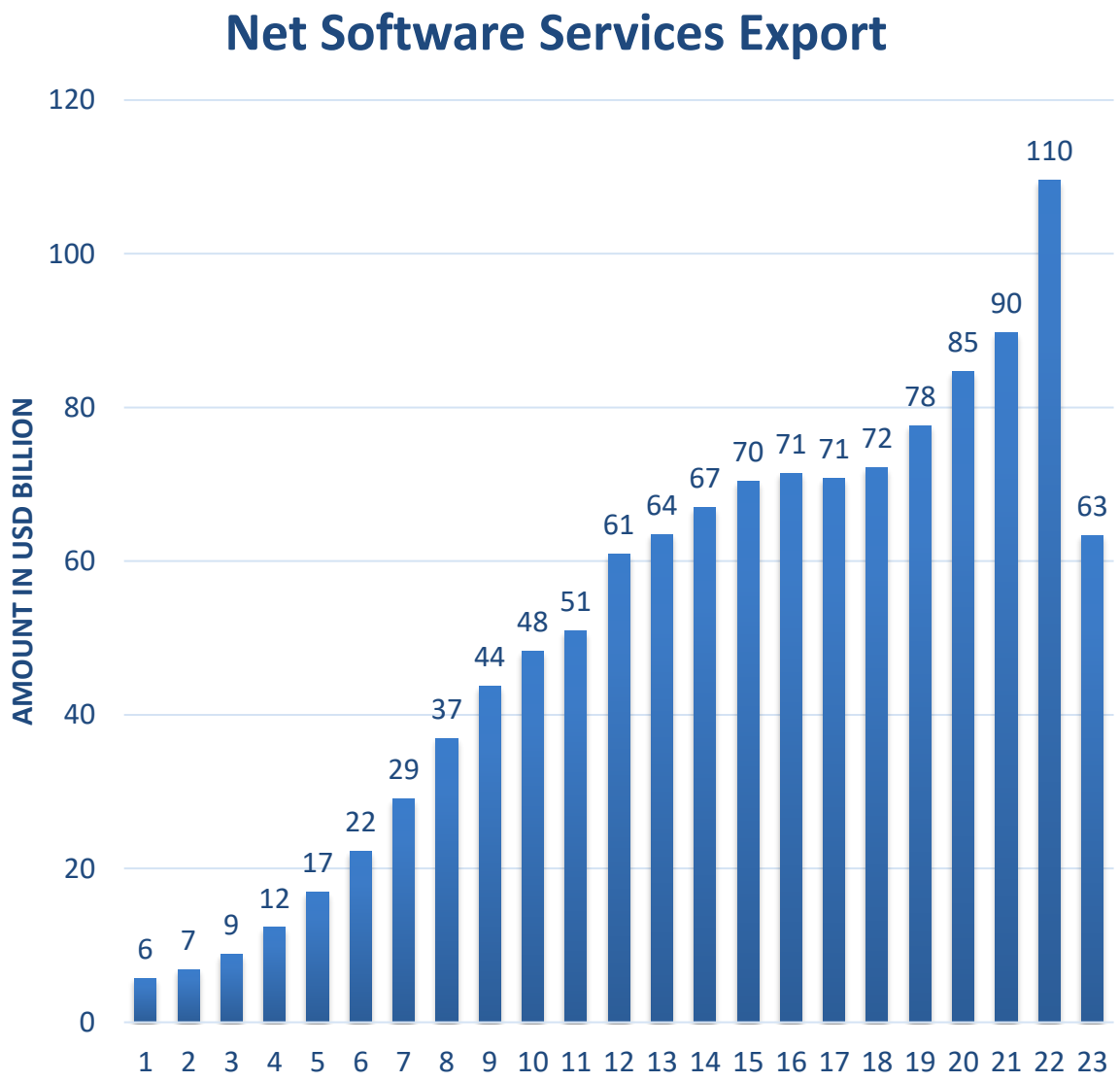




Services Trade Composition



Software Services



Software Services Exports has contributed on an average 43% of total net credit received from services

FY22-48%
FY21-48.5%

Assuming the average figures Software Services figure should be approximately USD 130 billion in FY23

Components of Software Exports	% of Software Exports
IT Services	62.70%
Business Process Outsourcing	27.50%
Software Product Development	3.13%
Engineering Services	6.67%