India market - Trading opportunities & considerations (Part II)

By:

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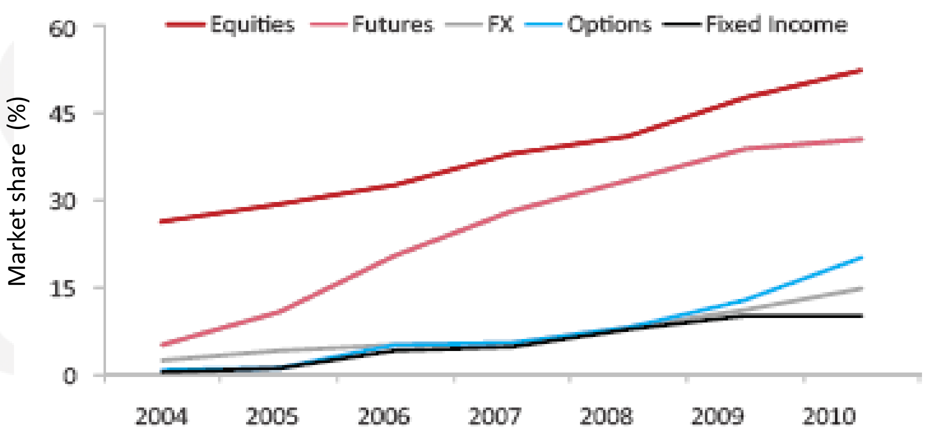
The Alternative Trading Centers

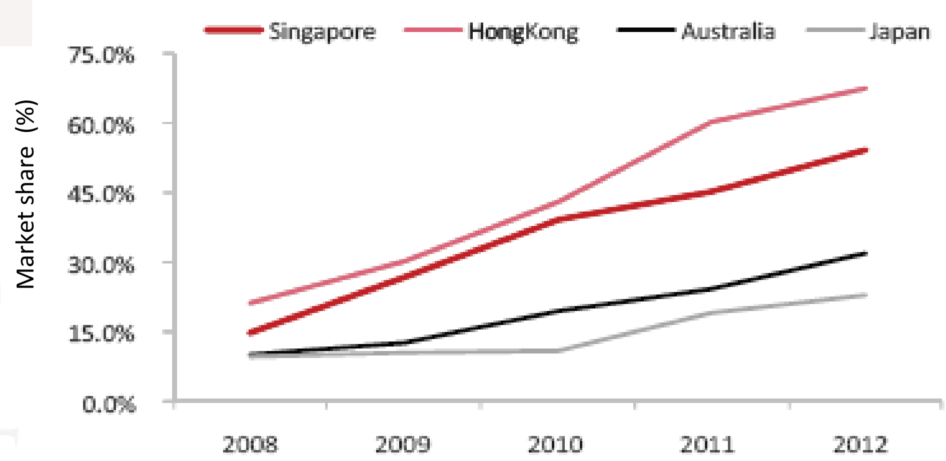
Algorithmic trading globally – giving rise to ATS

- Globally, Algo trading accounts for 50% of equity trading volume
- In the US, high frequency trading firms account for around 75% of equity trading volume
- In Asia Algo trading accounts for more than 40% of equity trading volume in select developed market
- DMA globally is moving from high touch to low touch
- Global focus now on improvements in ECN server technology, network capacity, data centre costs etc

Global Algo trading market share by type (%)



Algo trading market share in Asia (%)



Source: Edelweiss

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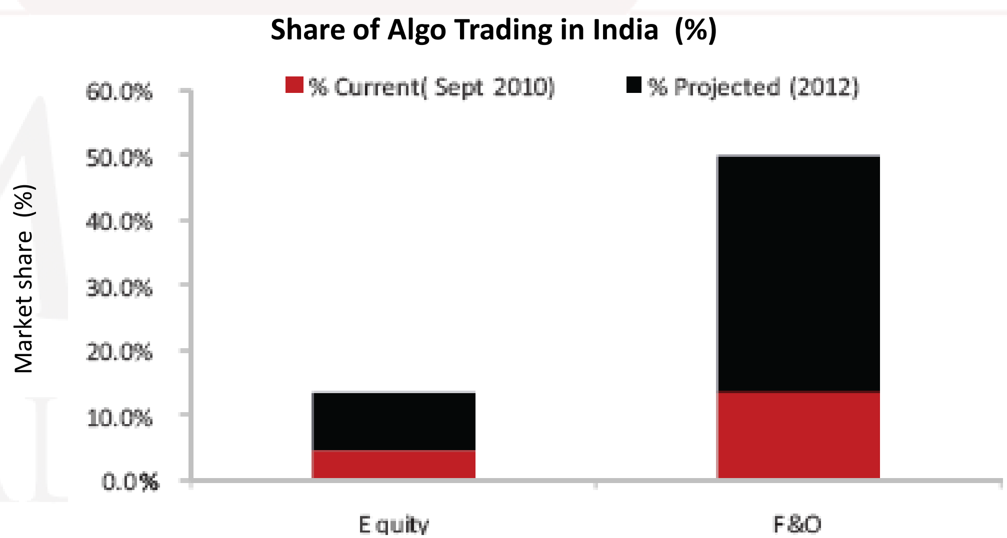
Algorithmic Trading in India - Poised for growth

- DMA/Algorithmic trading approved by SEBI in April 2008
- Co-location introduced in India in August 2009
- Smart order routing approved in August 2010 to further iron out pricing inefficiencies
- Cautious approach by regulators due to concerns on systematic risk
- Elaborate approval procedure by exchange (especially in commodities, MCX)
- Absence of tick-by-tick data have kept high frequency traders at bay
- Global platforms have had to modify features to suit the Indian context
  - Irregular VWAP structure
  - Very active stock futures market



Source: Edelweiss

Trading Centers – Inactive secondary exchanges

- Apart from NSE and BSE, there are 16 stock exchanges in India which are legally active
- Five stock exchanges which are currently not recognized by SEBI
- Only two of the 16 regional stock exchanges are active
  - Calcutta Stock Exchange
  - Uttar Pradesh Stock Exchange
- However, their combined market share is 0.013% of the cash market
- 99.987% of the cash market turnover is accounted by NSE and BSE

Source: SEBI

Dark Pools – Considered trouble element in India

- The use of dark pools in Asia is limited and that too in few regions such as Japan, Hong Kong and Singapore
  - In Japan, there are few internal crossing systems/ are considered the only forms of dark pools and they accounted for a mere 0.5% of the total trades value in 2009
  - In Hong Kong, dark pools are mainly brokers' internal crossing systems/processes, which account for about 3-4 percent of the total market turnover.
  - In Singapore, dark pools account for less than 0.3 percent of the market turnover.
- In India, Dark pools are considered to be a "trouble element" in price discovery mechanism by Indian regulators
- SEBI categorically stated that dark pools would not be permitted in India as there is no transparency in such activities
- In addition, Indian tax law discourage off market trades by imposing higher tax on non-exchange traded transactions

Source: FT Knowledge Management Company Limited, Desk Research

Alternative Trading Systems (ATS) – Non Equity Presence

- There is no separate regulations for ATS in India
- Equities are mandatorily traded on Exchanges
- Forex market, government securities market and money market are largely OTC markets
- Some of the platforms facilitate a straight through processing arrangement through links to guaranteed clearing and settlement services provided through central counterparty arrangements
- Alternative Trading Systems (ATS) and dark pools are innovations that India has consciously avoided
- 3-5 Years of time span before ATS and dark pools becomes acceptable in Indian equities

Source: CCIL

The Short Sell Mechanism and Penalties

Short selling – SLB in nascent stage

- Stock short selling is allowed to domestic retail investors and DIIs, but is not permitted to FIIs. Naked short selling is not permitted
- However, from a practical standpoint an “Easy To Borrow (ETB)” system does not yet exist, limiting traders’ ability to implement long/short strategies such as pair trading
- The regulator and exchanges are trying to foster the growth of short selling
  - SEBI increased the tenure of securities lending and borrowing (SLB) contracts to a maximum of 12 months to make short-selling more accessible to the investors
  - NSE is going to launch a dedicated platform for lending and borrowing stock which is being encouraged by SEBI

Source: SEBI, PWC, Desk Research

Short sell auction : High penalty for settlement

- Clearing agency identifies the member who are partially/fully short of securities delivery on securities pay-in day and debits their account by an amount calculated based on **valuation price** (closing price of the securities on the preceding trading day of securities pay-in day.
- A buying-in auction is conducted for the securities shortage on the day after the pay-out day through BSE/NSE trading systems i.e. on T+3 day
- An auction tender is issued to members informing them about the name of the securities short, quantity slated for auction and date and time of the auction session.
- Unlike normal trading session, where order matching is done continuously, the quotes are captured and placed in ascending order of price and matched at the end of the session.
- If the **auction price** is more than the valuation price the member who defaulted will have to pay the differing amount.
- Members, whose offers are accepted, are required to deliver the shares in clearing house on the auction pay-in day (i.e. T+4). Pay-out of auction shares and funds is done on the same day (i.e. T+4) on BSE. On NSE the auction is carried on T+3 day and the auction settlement happens on T+ 5 day.
- **For non-members, Auction price and charges & penalty levied by Broker:**
  - Auction price is the average price of security on T, T+1, T+2 and T+3 days
  - A penalty is imposed by the broker @ 5% in case of equity and 2% in case of Nifty Fifty
  - A penalty of 0.5% is imposed by the exchange

Source: BSE, NSE

Close Out – Mechanism if short sell auction fails

- Close-out is effected for cases when no offer for a particular scrip is received in an auction or when Members who offer the scrips in auction, fail to deliver the same or shortages pertaining to those groups of securities for which auctions are not conducted
- The closeout amounts are debited from accounts of those Members who failed to deliver the securities against their sale obligations and credited into accounts of those Members who bought the securities but didn't receive the same
- **Closing out in the case of failure to give delivery for Normal Market/Auction:** Close out will be at the highest price prevailing in the NSE from the day of trading till the auction day/close out or 20% above the official closing price on the auction day/close out, whichever is higher
- **Closing out in case of failure to give delivery for Inter Institutional (IL) and Block Trades (BL) Market Deals:** These deals are directly closed out on settlement at the highest price prevailing in the Exchange from the day of trading till the T+1 day or 20% above the official closing price on the T+1 day, whichever is higher
- **Closing out in case of failure to give delivery for Trade-for-trade – Surveillance (TFT-S) deals:** These deals are directly closed out on settlement at the highest price prevailing in the Exchange from the day of trading till the T+1 day or 20% above the official closing price on the T+1 day, whichever is higher

Source: BSE, NSE

The ADR-GDR and Other Arbitrages

ADR/GDR arbitrage – not popular domestically

- Non synchronous trading hours between India and US (Exchange timings are different)
- Restrictions on arbitrage
  - Lack of full fungibility
  - Restrictions of short sell in India
  - Stock investment cap's / restrictions for FII
- High Premium of ADR because of
  - Low float and high demand for ADR
  - Lack of free convertibility into ADR from local stocks
  - Wipro / Infosys premium decreased from 100% to 40% owing to increase in float
- Indian residents not allowed to invest in ADR
- Indian stocks which only were traded as ADR can be converted back

ADR/GDR: Arbitrage Opportunity

- ADRs of 15 companies and GDRs of 205 companies issued
- Provide significant arbitrage opportunity to FII. However, currency risks are involved.

Snapshot of difference in closing price (currency adjusted) for ADRs and Indian counterparts– Average for December 2010

Ticker	Short Name	ADR per share	Average difference in closing price
INFY US Equity	INFOSYS TECH-ADR	1	0.7%
WIT US Equity	WIPRO LTD-ADR	1	45.6%
IOY TH Equity	INFOSYS TECH-ADR	1	0.6%
IOY GR Equity	INFOSYS TECH-ADR	1	0.8%
WIOA TH Equity	WIPRO LTD-ADR	1	43.4%
WIOA GR Equity	WIPRO LTD-ADR	1	43.3%
IBN US Equity	ICICI BANK-ADR	2	0.9%
HDB US Equity	HDFC BANK-ADR	3	13.1%
ICBA GR Equity	ICICI BANK-ADR	2	0.9%
HDFA GR Equity	HDFC BANK-ADR	3	12.5%
TTM US Equity	TATA MOTORS-ADR	1	2.9%
SLT US Equity	STERLITE IND-ADR	4	1.2%
TATB GR Equity	TATA MOTORS-ADR	1	3.1%
TATB TH Equity	TATA MOTORS-ADR	1	3.0%
BQV1 GR Equity	STERLITE IND-ADR	4	1.5%
BQV1 TH Equity	STERLITE IND-ADR	4	1.8%
RDY US Equity	DR REDDY'S-ADR	1	1.2%
RDDA GR Equity	DR REDDY'S-ADR	1	1.3%
SAYCY US Equity	SATYAM COMP-ADR	2	2.3%
TCL US Equity	TATA COMMUNI-ADR	2	0.9%
PTI US Equity	PATNI COMPUT-ADR	2	1.9%
SAYEUR EU Equity	SATYAM COMP-ADR	2	3.5%
TA7A GR Equity	SATYAM COMP-ADR	2	3.3%
VIDB GR Equity	TATA COMMUNI-ADR	2	1.0%
C2R GR Equity	PATNI COMPUT-ADR	2	2.2%
MTE US Equity	MAHANAGAR-ADR	2	4.1%
MTN1 GR Equity	MAHANAGAR-ADR	2	3.1%

Source: Bloomberg

Other forms of arbitrage

- Special situations arbitrage
  - Share buy-back (E.g.: Piramal healthcare buy-back offer at INR 600)
  - M&A
- Differential voting rights in India
  - Stocks with DVR stands at 40% discount in some stocks (E.g.: Tata Motors)
  - Global standards 15-20%
  - Holding DVR stocks for convergence to their global peers in long term
- FII cash equity arbitrage
  - FII “limit-up” stocks
  - Government limits on certain stocks for FII (E.g.: SBI, PNB, ACC etc.)
  - Available at a huge premium on the FII desks in India
  - SBI on FII desk is at 20% premium to the price at BSE/NSE
  - FII enters block deal with existing FII’s and hold the stocks to sell at higher premium later

Options Arbitrage – Stocks options will explode

- European options on stocks starting from January expiry
- Risk of exercise decreases substantially
- Stock options liquidity will improve substantially in NSE
- Volatility arbitrage between Index and Stocks - next big move in Indian market
- Call spreads / Put Spread in Implied Volatility of Index is still very popular in India

The Key Players – Wealth Management, Agency and Prop side

Key players —asset management companies (AMCs)

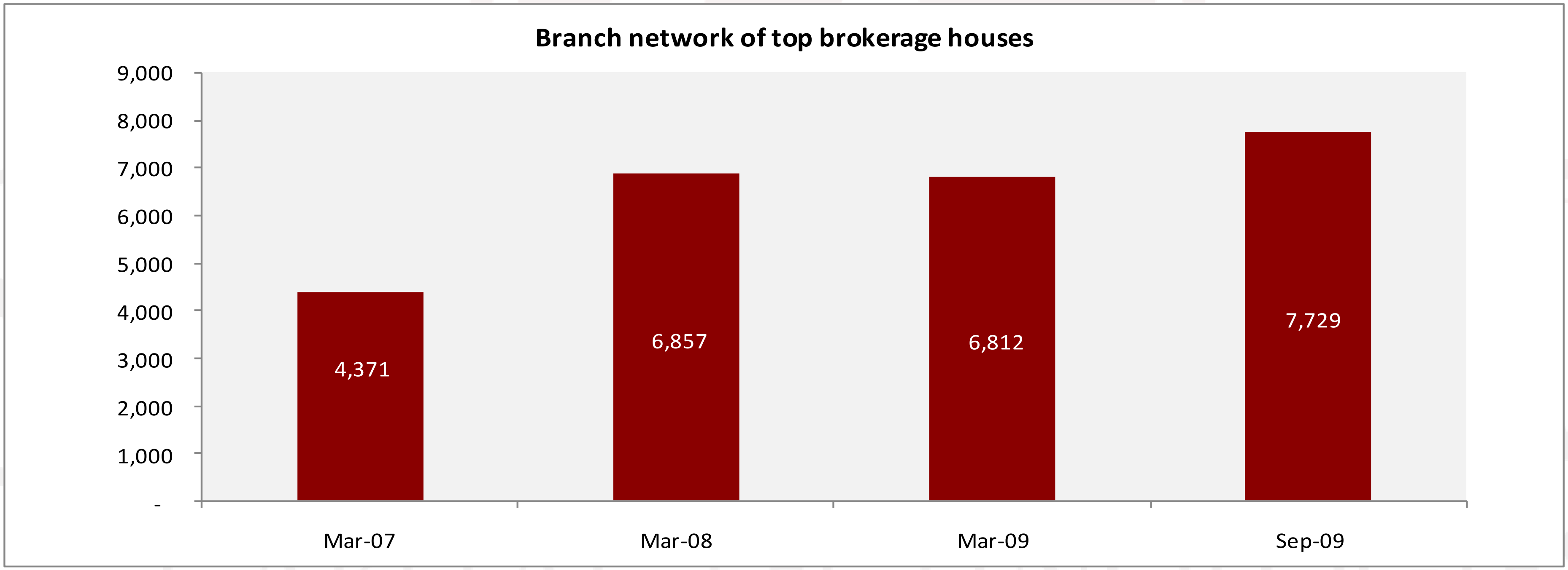
Company	Average AuM Oct-Dec '10 (INR billion)	Market Share (%)
Reliance Mutual Fund	1,021	15%
HDFC Mutual Fund	879	13%
ICICI Prudential Mutual Fund	658	10%
UTI Mutual Fund	654	10%
Birla Sun Life Mutual Fund	577	9%
SBI Mutual Fund	415	6%
Franklin Templeton Mutual Fund	394	6%
DSP BlackRock Mutual Fund	277	4%
Kotak Mahindra Mutual Fund	276	4%
Tata Mutual Fund	209	3%

- Players who have recently received approvals include Axis AMC, Motilal Oswal Financial Services and Peerless General Finance and Investment Company, among others.
- Several large banks and financial institutions are awaiting approval from SEBI to launch asset management services

Source: Association of Mutual Funds of India-AMFI website

Brokerage Network in India

- More than 8,500 brokers and 44,000 sub-brokers registered on SEBI
- Market share of top 10 brokers increased from 12% in 2001-2002 to 24% as of November 2009
- Several foreign companies are entering the retail brokerage market
- Brokers rapidly scaling their branch network - especially through franchisee route to keep costs low



Source: IBEF

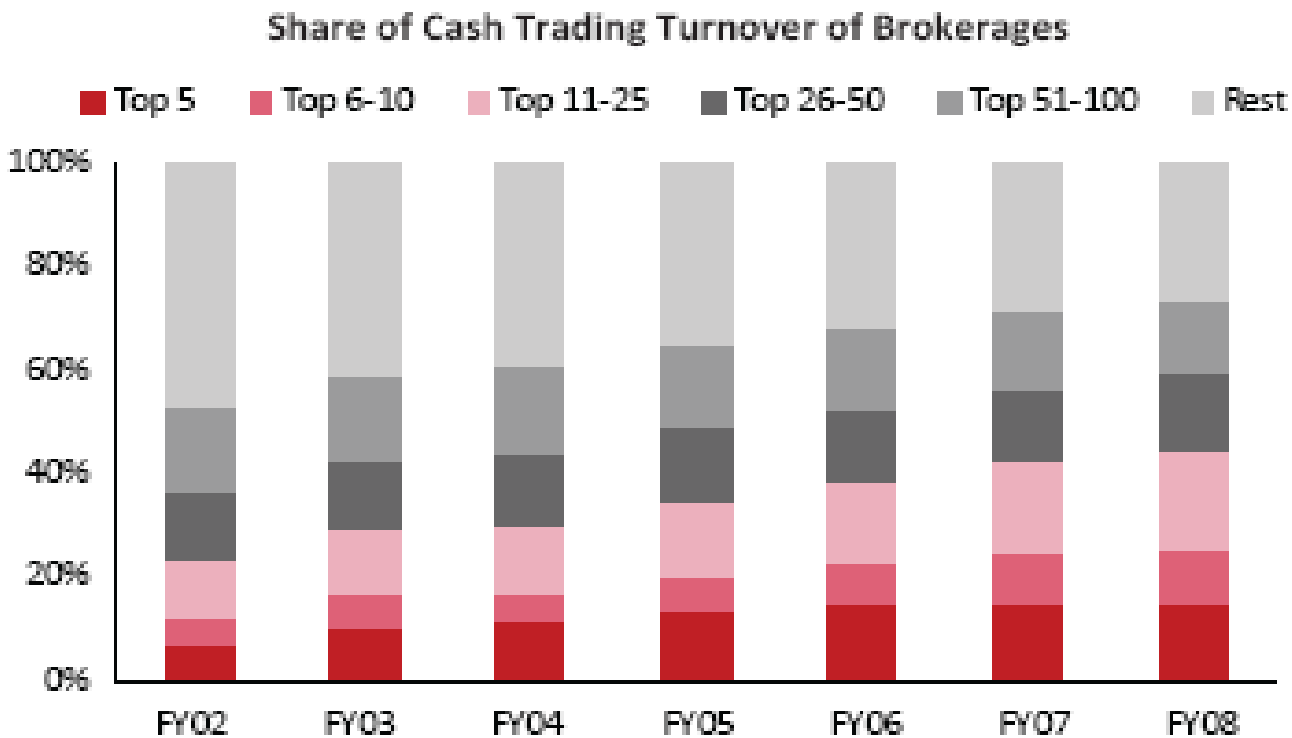
Key players — Domestic broker houses

Company	Service Offerings
India Infoline Investment Services Ltd	Online trading, equities, derivatives, commodity trading, IPO, MF distribution, personal finance, market and sector research, investment banking, wealth management
Motilal Oswal Financial Services	Equity, derivatives, portfolio management, online trading, insurance, commodity trading, mutual funds, margin funding
ICICIdirect.com	Online trading, market and research, personal finance and corporate services, equity, F&O, IPO, overseas trading, retirement solutions, life insurance
HDFC Securities	Online trading, call and trade, IPO, equity, derivatives
Religare Enterprises Ltd	Equities, commodity trading, personal finance, wealth management, asset management, portfolio management services, insurance solutions
Sharekhan.com	Equities, commodity trading, portfolio management, MF distribution, research
Emkay Global Finance Ltd	Wealth management, e-broking, research, commodity trading, equities, derivatives
Indiabulls Securities Services Ltd	Equities, research, commodities, MF distribution, derivatives
Edelweiss Capital Ltd	Equities, F&O, research, asset management services, investment banking
Geojit BNP Paribas Financial Services Ltd	Online trading, MF distribution, insurance services, PMS, IPO, property services

Source: IBEF

Market Share: Cash Trading Turnover of Brokerages

- Share of bigger players have been increasing in the past.
  - Top 10 players account for more than 20% of the cash trading turnover
  - Top 25 players market share increased from about 20% in 2002 to more than 40% in 2008



Source: Om Advisory

Key players —NBFCs

Company	Service Offerings
Sundaram Finance	Commercial vehicle finance, equipment finance, tyre finance, car and home finance
ShriramTransport Finance	Commercial vehicle finance, construction equipment finance, working capital loan, engine replacement loan, freight bill discounting
Bajaj Finance	Consumer durable loans, loan against shares, personal loan, loan against property, two-wheeler loan, IT product loan
Tata Finance	Commercial vehicle finance,car finance, used vehicle finance
Magma Fincorp	Commercial vehicle finance, construction equipment finance, car finance
HDFC	Housing finance services —home loan portfolio and home loan counseling, loans for home extension, improvement and land purchase loan
Mahindra Finance	Two-and four-wheeler loans, utility vehicle loans, tractor loans, commercial vehicle loans

Source: IBEF

Key Players – Prop Trading

Players	Current Strategy	Planning Next
Edelweiss	• Pure index arbitrage • Very large book (USD~40 Mn) in Index-arb • Pure cash arbitrage • Pure volatility arbitrage	• Synthetic index arbitrage • Statistical arbitrage • Expansion to Asia-Pac
Quant Capital	• Options strategies (vol arb, outright) • 10-12% of market vol in options • Prop and Brokerage in options	• Options pricing desks for institutional clients • Stat-arb in baskets and pairs • Vol arb between stocks and index options across strikes
Religare	• Active in most of the strategies • Very liquid owing to Ranbaxy stake sell • Short term liquidity helping in cash-future arb • Ready to fund good strategies • Started with brokerage and wealth management	• Open to all forms of strategies • More inclination on the institutional business • Venturing into I-Banking
Pantheon Capital	• High frequency basket stat-arb • Runs close to 30 Mn. In stock futures • Proactive in momentum and options strategies • Funded by Middle-East Asia investors • Started PMS for BSE 200 called CapVeda	• Expansion to other developing countries for stat-arb • Options strategies – mainly vol arb (Index, Stock to Index)
Kotak Securities	• Very high short term liquidity for cash future arbitrage and index arbitrage • Options strategies	• Continue on the prop business • More focus on prime brokerage and institutional clients

Source: Through contacts & phone calls

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Key Players – Prop Trading

Players	Current Strategy	Planning Next
Jaypee Capital	• Commodities arbitrage between Nymex and MCX • Outright positions in options and futures • BSE-NSE arbitrage	• Solely prop focused businesses • SGX-NSE-CME nifty futures arbitrage • Options arbitrage
Crossseas Capital	• Jobbing and high frequency manual trading • Cash future arbitrage (Runs > USD 10 Mn.) • Options (Runs a big book on writing options)	• Statistical arbitrage • Co-location for cash-future arbitrage
Dolat Capital	• Jobbing and high frequency manual trading • Very big book on manual options trading (outrights) • Manual pair trading and cash futures	• Semi automated software systems • Systematic trading in F&O • Commodities arbitrage
Estee Advisors	• Hedge fund structure for running Index arbitrage • High Frequency intra-day stat-arb • Good infrastructure and low trade turnaround capability	• Options systematic trading • Outsourcing the infrastructure to other prop firms like Tower Research. Religare etc.
JM Financials	• Significant presence in co-located cash future arbitrage • Commodities trend following in medium to low frequencies	• Systematic trading in stat-arb and volatility arbitrage
BLB - Gurgaon	• Very big book on pure cash future arbitrage • Commodity arbitrage between spot and futures • Commodity arbitrage Nymex and MCX	• Options arbitrage • Expansion to developing markets

Source: Through contacts & phone calls

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Other prop trading houses in India

- **Other major domestic players**
  - Kredent Trading
  - India Advantage Securities Ltd.
  - Open Online Securities (P) Ltd
  - Ariston Capital Services Pvt Ltd
  - Capstone Securities Analysis Pvt Ltd
  - Focus Comtrade
  - Fountain Securities Analysis Pvt Ltd
  - IKM Investor services Ltd.
- **Foreign Players**
  - All major US, European and Asian Banks have significance presence in India
  - Most Prop trading in India of foreign banks occur from HK (Under FII regulation)
  - Little to “NO” domestic prop presence
  - Most strategies are on “cash-and-carry” (Index arbitrage) and cash future arbitrage
  - Options arbitrage and statistical arbitrage – Now getting dominant

Source: Through contacts & phone calls

Successful trading strategies – what players are currently doing?

- Cash-Futures arbitrage with co-location and low latency (Return ~ 12-15%)
- Index arbitrage with co-location and low latency (Return ~ 12-18%)
- BSE-NSE cash arbitrage with co-location and low latency (Return ~ 20%)
- Statistical arbitrage on single stocks and baskets
  - 2008, 2009 was phenomenal (Return of more then 50% per year)
  - 2010 was flat
- Volatility arbitrage using vertical spreads and calendar spreads (Return varies across desks)
- High frequency options directional, mostly intraday (Return varies across desks)
- Nifty futures arbitrage between NSE and SGX using auto spreader etc. (Return ~ 14%)
- ADR GDR arbitrage – Not very poplar
- Trend following and lead-lag play on MCX commodities

Source: Through contacts & phone calls

Clients

- **Prop Side**
  - PMS licensing for managing client’s money on a 2/20 model (popular in factor model)
  - Managed accounts of HNI’s and Family offices (popular in commodities and stat-arb)
  - Selected retail clients to whom high probability trades are recommended
  - Wealth management division for corporate, pension funds , HNI’s, selected FII’s
  - Hedge fund structure from Mauritius to manage capital from Europe and Middle East
  - Hedge fund structure from Cayman Island to manage capital from US
- **Agency side**
  - Retail investors and traders
  - HNI’s
  - Family offices
  - FII’s
  - Institutional players like MF, Insurance and brokers

Factor Model on BSE 200

Summary

- Quantitative factor model based on price actions to outperform BSE 200 Index with monthly re-balance
- Rank from 1 to 200 stocks in BSE200 which has
  - Outperformance in medium term
  - Underperformance in short term
  - Low beta wrt to the Index
- Strategy Long Only: Long top 30 stocks as per ranking (To outperform BSE 200 Index)
- Strategy Long-Short: Long top 30 stocks and Short the Index futures (BSE 200 / Nifty 50)

Key numbers	Long Only Model	Long Short Model
Annualized Return	46.23%	17.58%
Annualized Std. Dev. In Return	61.09%	18.47%
Annualized Sharpe	0.76	0.95
Max peak to trough drawdown (month-to-month basis)	-28.86%	NA
Max flat period (Days)	150	NA
Gross return per trade (average, %, after 25 BP slippage)	2.96%	NA
Net return per trade (average, %, after STT costs)	2.71%	NA
Average Holding Period (in days)	20.74	NA
Hit Ratio (% of winning trades)	56.84%	NA
Backtest period	Jan'2001-Nov'2010	NA
Number of stocks to be picked every month	30	30
Average deployment per trade (USD)	500,000	500,000
Average monthly deployment of capital (USD)	15,000,000	15,000,000
Approx annualized P&L (USD)	6,934,873	2,636,754

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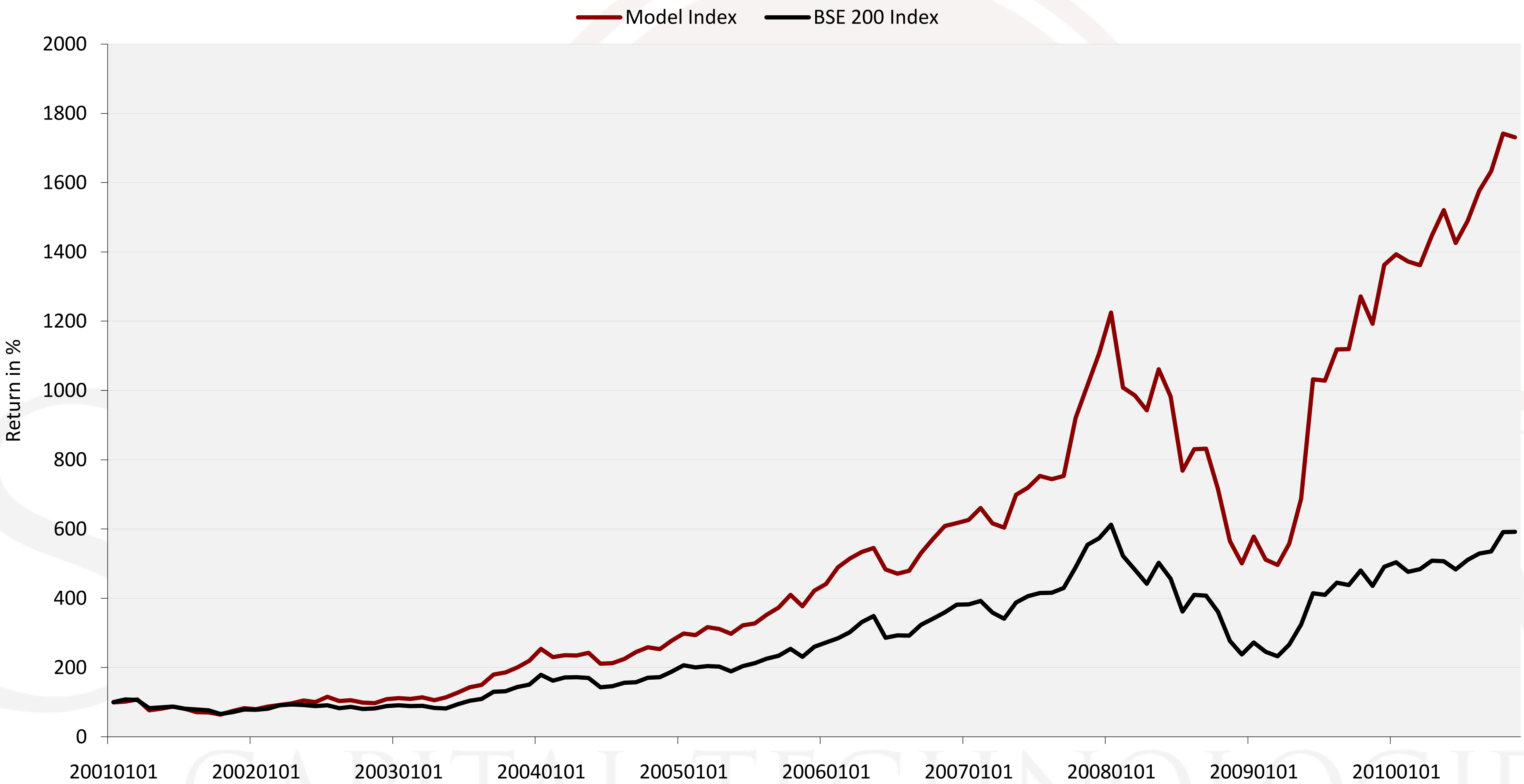
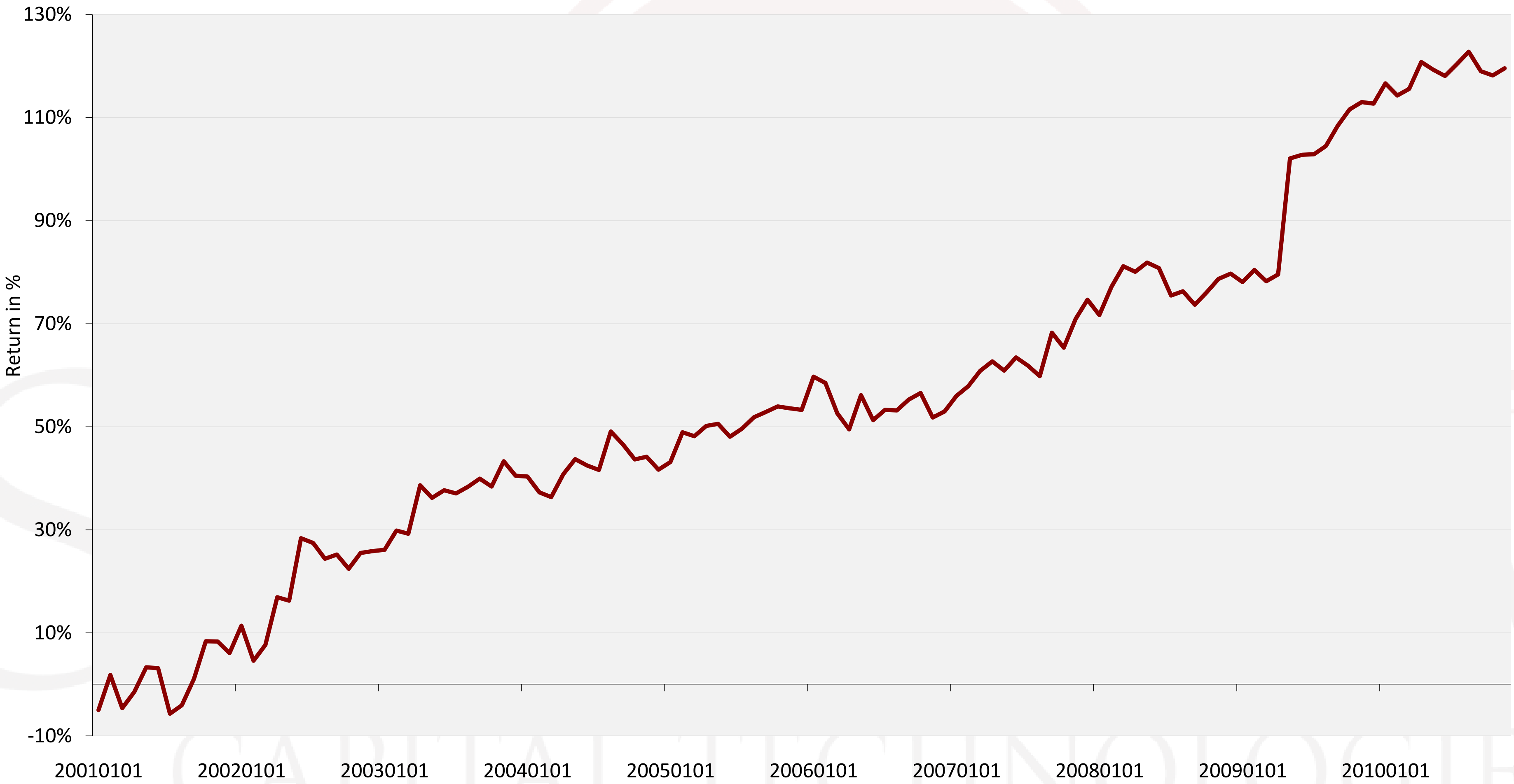
Factor Model : return on long only model



Factor Model : Return of a Long Short Model



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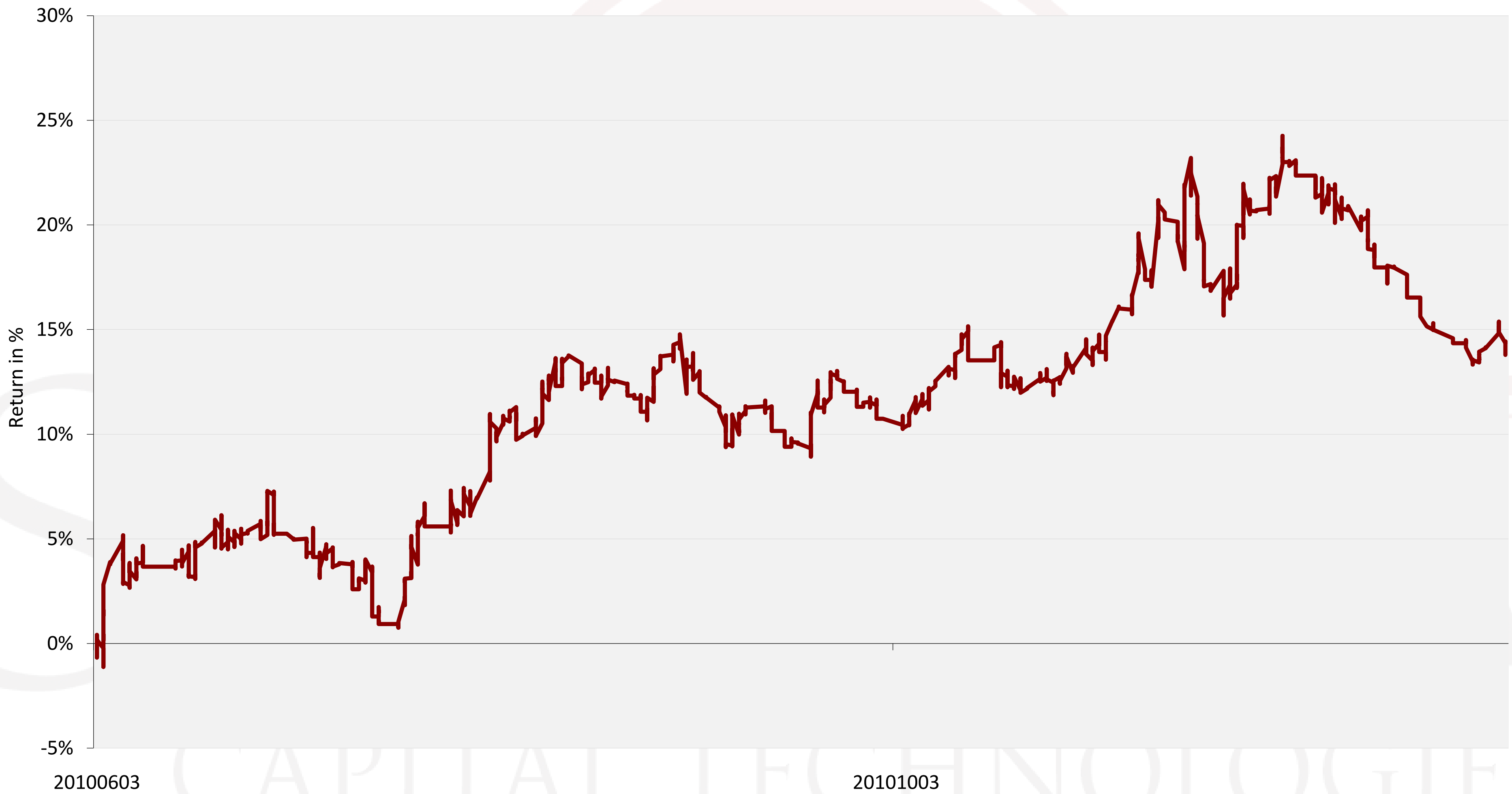
Trend following on commodities

Summary

- Most commodities are un-correlated (E.g.: Gold and Crude Oil)
- Trend following on commodities in India are more popular then stat-arb (Number of commodities are limited)
- Trend following based on time series of 30 min and 60 min. to capture short/medium term trends
- Use of technical analysis (Like Moving Averages, Bollinger break-out etc) and statistical factors

Key numbers	Values
Annualized Return	16.64%
Annualized Std. Dev. In Return	16.22%
Annualized Sharpe	1.03
Max peak to trough drawdown (day-to-day basis)	-3.37%
Max flat period (Days)	65
Gross return per trade (average, %, after 5 BP slippage)	0.14%
Net return per trade (average, %, after STT costs)	0.13%
Average Holding Period (in hours)	11.20
Hit Ratio (% of winning trades)	39.22%
Backtest period	Jul'2010 - Jan'2011
Number of MCX commodities to be traded	8
Average deployment per trade (USD)	100,000
Average daily notional on trades (USD)	4,000,000
Approx annualized P&L (USD)	665,727

Return on gross exposure on hourly basis



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Return on gross exposure on daily basis

The Market Regulations

Important Regulatory Bodies

- Securities and Exchange Board of India is the main capital market regulator
- Overlap of its domain with
  - Insurance regulator, IRDA (e.g., unit linked insurance plans)
  - Central bank, RBI (e.g., FII limits, currency and interest rate futures, investment banks)
  - Provident fund regulator, PFRDA (e.g., NSDL)
  - FMC (commodity markets)
- High Level Coordination Committee (HLCC) on capital markets not deemed successful
- Financial Stability and Development Council (FSDC)

Source: Celent

FII regulations – stringent and at times unfavorable

- FIIs may register with SEBI and RBI and are allowed to operate in Indian stock exchanges subject to the guidelines issued by SEBI
- Foreign brokers registered with SEBI are allowed to route the business of registered FIIs
- FIIs may invest only in
  - Shares, debentures and warrants of companies listed or to be listed on a recognized stock exchange
  - Units of scheme floated by domestic mutual funds
  - Dated government securities
  - Derivatives traded on a recognized stock exchange
- FIIs can use DMA facility through investment managers nominated by them; Also there is no need of separate DMA license/ connectivity for sub-accounts of an FII using DMA facility
- DMA facility in India are used by Macquarie, Nomura, CLSA, Credit Suisse and Deutsche Bank
- The total investments in equity and equity related instruments made by FII (on own account or sub-accounts) should not be less than 70% of the aggregate total investments by the FII
- Registered FIIs are allowed to buy or sell for delivery and not allowed to offset a deal. In addition, short selling is not permitted for FIIs. However, derivatives transactions are exempt from this rule
- The purchase of share on FIIs own account or each sub-account should not increase 10% of the total issued capital of that company
- Foreign participation in asset management companies and merchant banking companies is allowed

Source: Willard John Thomas Associates, PWC

Hedge Fund Regulations – Closely monitored

- Hedge funds are required to be registered with the statutory regulatory authority in their place of incorporation
- Hedge funds may come directly through "front-door "and invest directly by registering themselves with SEBI as FIIs
- Hedge funds can also invest indirectly through offshore derivative instruments (ODIs) issued by other registered FIIs
- ODI route in the Indian markets provide more liberal framework compared to the strengthening regimes in markets such as the European Union
- Most international venture capital groups (hedge funds) register their corporation in Mauritius or Singapore for the favorable tax treatment they receive
- Mauritius entities are exempt from capital gains tax in India has already made them a popular vehicle for FDI in the subcontinent

Source: Willard John Thomas Associates, PWC

Onshore and offshore entity

Corporate Tax Structure: Singapore is a way ahead

- Singapore has lower corporate tax rate and simpler tax structure than India. Singapore has continuously reduced its corporate tax to foster the business and investments in the country.
- Since January 2003, Singapore has adopted "single-tier corporate income tax which means no double taxation for stakeholders . The implication being, there is no dividend distribution tax on the tax-paid income of a corporation.
- Corporate houses based in Singapore, having investment activities in India, also benefits from the double tax agreement (DTA) between India and Singapore. For instance,
  - Singapore resident company is not subjected to Indian taxes on capital gains derived from the sale of shares in an Indian company but is liable to the tax regime of Singapore
  - Singapore does not levy taxes on capital gains, therefore Singapore based companies investing and generating income from disposing of shares in Indian companies can immensely benefit from the DTA

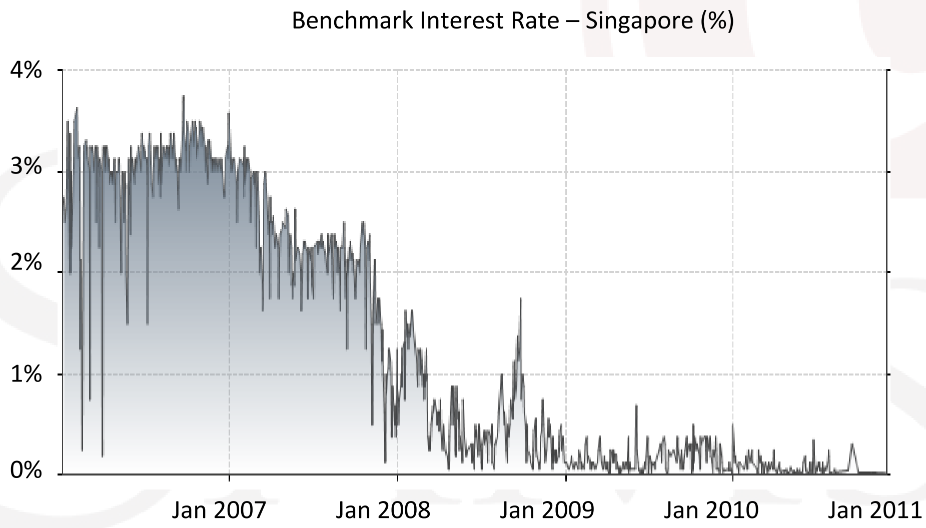
Tax Item	**Singapore**	**India**
Corporate Tax	• Headline tax rate of 17% from 2010 onwards • 8.5% on taxable income upto S$300K • 17% on taxable income > S$300K	• Corporate tax rate of 30% • Surcharge (as applicable) and Cess (3% as on tax and surcharge)
Capital Gain Tax	• Nil	**Transaction chargeable to STT** • Long term capital gain: Nil • Short term capital gain: 10% + surcharge &cess **Transaction not chargeable to STT** • Long term capital gain: 20% with indexation/ 10% without indexation (for units/zero coupled bonds) + surcharge & cess Short term capital gain: 30% + surcharge & cess
Dividend Distribution Tax	• Nil	• Nil by the beneficiary • 16.995% by the company

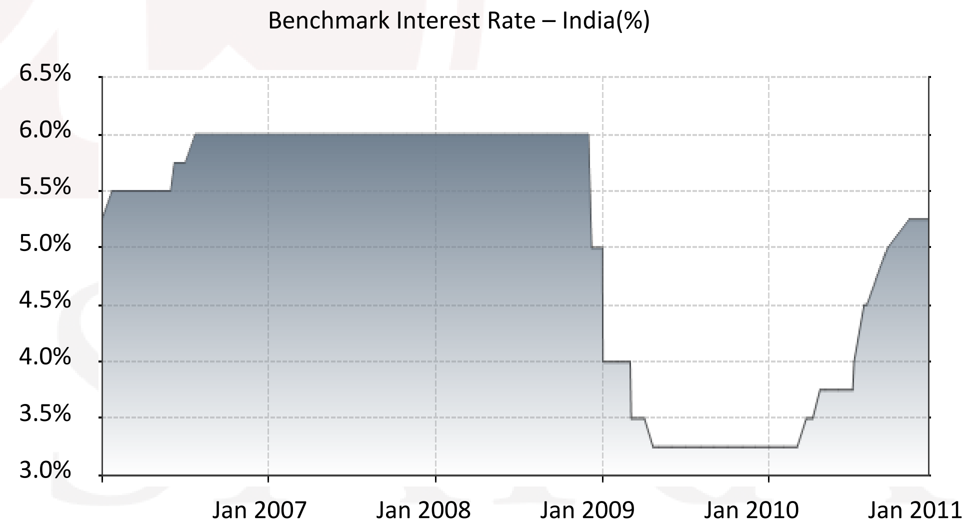
Source: Government of India, Government of Singapore, Desk Research

Source: Willard John Thomas Associates, PWC

Capital Cost: Singapore has an edge over India

- Singapore has lower capital cost as compared to India
- Currently the benchmark interest rate in Singapore (SIBOR) is at 0.2% while that in India (reverse repo) is 5.25%
- From a long-term perspective, average benchmark interest rate in India during 2000-2010 was 5.82% while that is Singapore was 1.71% during 1988-2010.



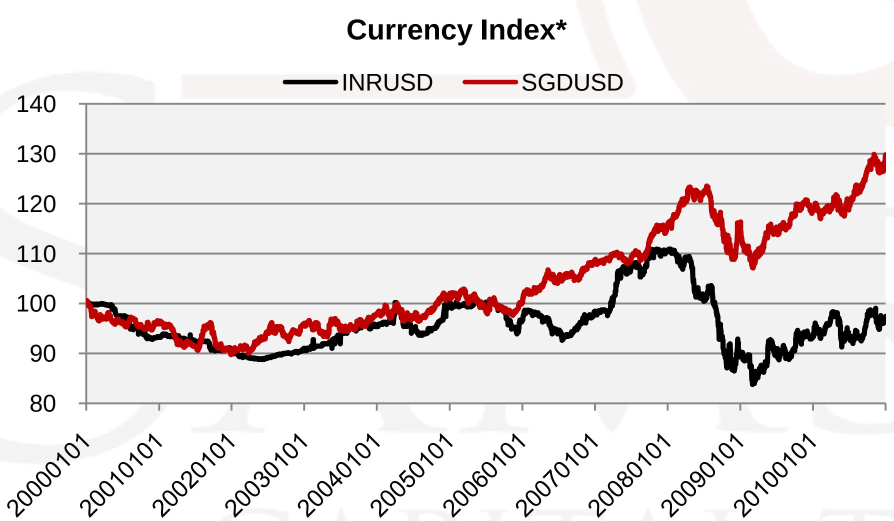


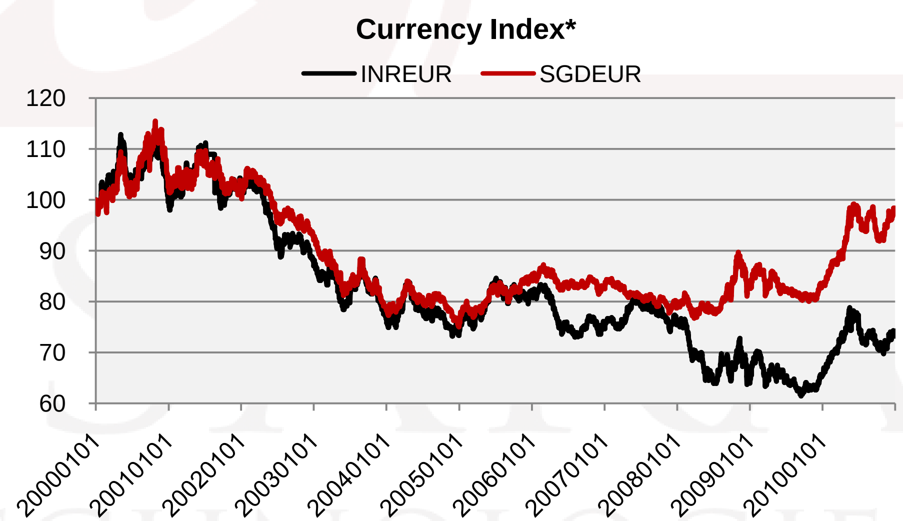
Source: Trading Economics

Source: Willard John Thomas Associates, PWC

Currency Risk: INR less risky for USD based investments

- USD/INR exchange rate has been "relatively stable" over the last 10 years, varying between 40 to 50 INR per USD
- INR has weakened relative to the EUR over the same period, but this reflects the strengthening of the EUR relative to USD than specific weakness of INR
- While India doesn't have official policy of pegging INR to USD, India's central bank practices a managed float regime that uses open market operations to reduce exchange rate volatility., primarily versus the greenback
- USD/INR outlook remain mixed
  - Strong economic growth, and high interest rate are expected to drive foreign investments in India
  - Concerns over deteriorating fiscal conditions and rising inflation could negatively impact the foreign investor
- INRUSD exchange rate is less volatile than SGDUSD while INREUR rate is more volatile than SGDEUR rate





*Indexed at 100 on Jan 01, 2000

Source: Bloomberg, New York Society of Security Analysts

Source: Willard John Thomas Associates, PWC

Cost of Operations: India has large talent pool at cheaper rate

- India has lower HR costs as compared to Singapore. The average salary level in Singapore is 3-5 times higher than that in India.
  - Average salary of an employee in India in a company is about USD 10,000 while that in Singapore is USD 42,000
  - Average salary of an Financial Services Industry employee in India is about USD 11,000 while that is Singapore is USD 54,000
  - Average salary of an IT Services employee in India is about $11,000 while that is Singapore is USD 42,000

Source: PayScale.com

Source: Willard John Thomas Associates, PWC

The Road Ahead

- The presentations has provided a comprehensive report on opportunities, bottle necks and potential of trading the Indian market
- The presentations has covered a comprehensive study and back-test on 8 non-correlated strategy in the Indian market
- Most of the strategies have been designed using statistical factors and parameters which goes beyond the traditional methodology of correlation and co-integration
- All the back-test presented have also been front tested in the live market – taking into account the slippages and real life transactions costs
- Areas of work where Samssara Capital can add value
  - Provide similar study and identify trading opportunities in global markets
  - Guide and work on development of comprehensive framework for tick data analytics and storage which can comprehend the strategy development for the global desk
  - Work on back-testing, strategy design and development in the Indian market which can lead to deployment of successful and profitable strategies
  - Work in detail on any of the presented strategy (In Phase 1 and 2) to implement and execute it profitably in the Indian market to start with and later extend to Asia-Pac markets
  - Improvisation and working on the existing strategies, back-testing and identifying further alpha generating factors

Source: Willard John Thomas Associates, PWC

Conclusion on strategy

- The prop opportunity in India is more lucrative then their Asian counter-parts. E.g.: A typical statistical arbitrage strategy in a good year yields an ROI in
  - Japan: 6-8%
  - AU and HK: 10-14%
  - India: 25-35% *
- The F&O segment in India is very liquid and provide healthy long and short instruments to traders
- With European expiry in stocks – the stocks options volume will explode in India over next 1 year
- The pure arbitrage opportunity in India has become the "game of speed" using co-location
- Commodities and Currencies futures are increasingly becoming popular to diversify the risk in trading
- Recommendations
  - High Frequency, Cash Future, Index Arbitrage, BSE-NSE, Nifty-Futures arbitrage: Implement using automated techniques / software and get co-located with NSE and BSE
  - High Frequency strategies: Implement in commodities due to lower transaction costs. In equity futures keep a minimum holding of 30 min. to cover the per trade return on the execution costs.
  - Stat-Arb, Basket trading, Volatility arbitrage, Factor models: Identify alpha beyond normal co-integration techniques – as most players are already working on co-integration and correlation
  - Trend following, Momentum strategy: Fairly diversified techniques but require strong statistical filters to get rid of choppy markets, which most players in India are still not aware of and hence an edge can be developed. Ideal for commodities and Nifty index momentum trend following

*** Source: Based on historical back-test conducted in JP, AU, HK and India on Stat-Arb strategy**

Source: Willard John Thomas Associates, PWC

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Conclusion on competition and regulation

- Not all the key global players and hedge funds are tracking the Indian equity markets – hence more alpha as compared to the Asian peers. E.g.: Breadth of noise exists longer in India (in a typical stat-arb strategy) than their Asian peer market
- The players are becoming more acceptable to algorithmic trading , DMA and DSA as compared to anytime in the past
- The competition amongst the key players are now moving away from traditional “bread-and-butter” strategy (Cash-future, Index arbitrage, BSE-NSE) to more alpha generating strategies across the asset class
- The competition in stat arbitrage, volatility arbitrage and high frequency trading is in nascent stage and poised for good growth owing to “extra-alpha” as compared to Asian peers
- Indian players are still behind in the curve as compared to their global competitors in terms of exploring “alpha-generating” strategies. The bottleneck comes due to:
  - Lack of awareness on algorithmic trading
  - Lack of quant skill-sets in back-test and implementation of automated strategy
- The strength of the players is the resource pool of software programmers who can be hired at nominal cost as compared to developed countries
- The regulations in India is
  - More favorable to domestic players in terms of instrument and breadth of asset class available (stocks, F&O, commodities etc.)
  - More favorable to FII and institutional players on execution side like algorithmic trading and automated trading

About Samssara Capital Techologies LLP

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COMPANY BACKGROUND

- Samssara Capital Technologies LLP ("Samssara") is an investment solutions firm focused solely on developing automated algorithmic and quantitative trading and investment strategies
- It was launched in 2010 by a team of IIM Ahmedabad and IIT Bombay graduates - Rajesh Baheti, Manish Jalan and Kashyap Bhargava
- Samssara caters to its clients' needs of providing an alternative asset management vehicle, with the focus on 100% automated and quantitative trading strategies
- The team at Samssara works on mathematical models and statistics that identify repetitive patterns in equity, commodity and currency markets
- The addressable market for Samssara is global - as the firm can develop and build models which can function in both developing markets with limited competition and developed markets with strong competition
- Samssara's client base includes the leading international and domestic banks, international and domestic stock brokers, family offices, corporate treasuries and HNIs

PRODUCTS OFFERED

- Samssara's products vary from pair trading (statistical arbitrage), factor models, Nifty Index beating products to very high frequency trading strategies
- samCAP, a key product offered by Samssara, is a factor model, where the model identifies a basket of stocks in Nifty that tend to outperform the index and takes a long position in these stocks. Alongside, the product also hedges the investor's portfolio using Nifty futures – whenever the market turns bearish
- Other products offered include samTREND - a trend following strategy in equities, commodities & currencies and samWILLS – a long-short strategy based on statistical arbitrage
- Samssara also develops in-house products which are used by investors like HNI's, corporate treasuries, Prop houses of brokers and investors who wants an alternative vehicle for investment apart from equities and fixed income.
- The products are designed to generate consistent returns and ride the volatility of the markets with systematic approach
- Additionally, Samssara works on providing high end services and strategy development consultancy to hedge funds and International Banks globally

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