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IN SEARCH OF MONEY FOR NOTHING[1]

Francisco Gomes

1. An arbitrage opportunity is an investment that requires no net outflow of cash and carries no change of losing money yet has some probability of a positive return. The concept of arbitrage relies on the notion of price convergence: the price of the expensive asset will eventually converge to the fundamental price given by the price of replicating portfolio and when this happens the arbitrageur will make money.

2. For pricing of financial options which are financial instruments with complicated cash flow structure, the theory of perfect substitute stocks and bonds was developed by Fischer Black, Robert Merton and Myron Scholes. Another method to establish their capital structure

[1] Mastering Investment Part Five 27th September 2002

irrelevance proposition: in a perfect capital markets making changes to the capital structure of the company does not change the value of the company.

3. Risk arbitrage: if a stock is overpriced it should be sold and a ‘correctly priced’ meaning a stock trading at its fundamental value should be bought. Arbitrage will be full hedged if this prefect substitute is an asset that will deliver exactly the same cash flows in the future also.

4. In reality such a perfect substitute may be difficult to find. Even when found arbitrage will face the short and long term positions risk. If it is not a perfect substitute, the two prices will diverge instead of converging resulting in losses.

   Even if a perfect substitute is found there may be restrictions on short selling thereby limiting its sale market. Also short positions are risky as they carry margins and may require collateral payments.

   These payments are from market to market and require coverage of losses on a daily basis. Their margin deposit will also increase in case the margin gap widens. Consequently, such an arbitrageur will need capital to finance his strategy or to liquidate their position at a loss. This is risk arbitrage applicable in the real world where perfect substitutes are not to be found and capital is needed before the price convergence eventually occurs.

5. Arbitrage is one of the most powerful concepts in financial economics. Under these conditions we can price complicated financial instruments indirectly, just by identifying portfolio of alternative assets that act as a perfect substitute. Prices with any information about the risk attitudes of the relevant investors can also be computed. In

perfect competition arbitrage does not exist. It exists only because the real market is imperfect and mis-pricing exists due to overpricing or under-pricing.

DERIVATIVES: THE CURIOUS CASE OF PALM AND 3COM[2]
by Owen Lamont

1. The principle of the 2 quart ketchup bottles selling twice as much as the 1 quart bottle is a classic example of market efficiency in empirical economics as stated by Lawrence Summers, former US Treasury Secretary.

2. Arbitrage defined as the simultaneous buying and selling of the same security for two different prices is the central concept of modern finance. The absence of arbitrage is the basis of modern financial theory, including option pricing and corporate capital structure.

3. In capital markets the law of one price says that identical securities must have identical prices otherwise investors could make unlimited profits by buying the cheap one and selling the expensive one. It does not require that investors be rational or sophisticated only that they be able to recognize arbitrate opportunities. The law of one price is a basic common sense condition and therefore, theorists have used it as a minimum condition, - a starting point that leads to other implications.

4. However many a times mispricing occurs in the capital market when the law of one price is seen to be violated. To understand the violation ask two questions:
   (a) why don't arbitrageurs correct the mispricing by selling the overpriced security and buying the under-priced one?

[2] Mastering Investment Part Six 4th October 2002 pages 6and 7

(b) Even is something prevents this wrong pricing why would anyone ever buy the overpriced security when they can buy the under-priced security?

5. Transaction cost is the reason for non action is question
   (a) To implement the arbitrage one needs to short sell. Transaction cost arises in two ways of finding shares to short sell and the cost to holding short position over time. To short sell a stock one must borrow it.
   (b) For institutional reasons borrowing shares can be difficult or impossible for many equities and even weeks after the IPO shorting can be difficult. In addition to borrow shares a lender needs to be located, namely a mutual fund or asset manager or a trust who lend their securities.
   (c) If most of the shares are held by retail investors rather than by institutions, borrowing becomes hard and nearly impossible. Even if short sellers are able to find the securities to be borrowed then the lenders demand a high price.
   (d) This high price takes the form of a daily cost for those who are short selling. Thus holding costs could go as high as 40 percent in certain cases.
   (e) As such due to transaction costs arbitrage opportunities are more fictional than real. Yet in cases of high pricing some are able to make substantial profits by taking advantage of the zero or negative stub rate by using a sale proceeds to immediately buy a consumer durable such as a car.

6. When a security is highly overpriced as at 148 per cent or more, it implies that there are a large component of short selling and more than all the available shares have been short sold. This can be done only by institutional buyers and sellers who have a lower rate of

information gathering and transaction costs for such an activity. This also indicates a situation in which the short sold shares are re-sold at short notice again and again. As demand for a certain share rises it gets overpriced setting in motion the cycle of short selling.

7. Option market also can be over priced. Exchange traded options that are introduced two weeks after the IPO. The put call parity that holds and takes in to account the transaction costs for most stocks tends to holds. This parity implies that the price of a security should be the same as the price of the synthetic security constructed using puts and calls that are the two types of options. The over priced shares are seen to violate this put call parity when the puts are very expensive and calls are very cheap. This indicates that a share is overpriced and costly to short sell.

8. True value can be inferred in three ways:
    a) the embedded value reflected in the overpriced share;
    b) the value reflected in option prices, and the actual value.
    c) The disparity in option prices and the over price generally agrees to indicate that the share is worth far less than its market price.
9. The direction of the deviation from the law of one price is also consistent with the difficulty in short selling the share. To benefit from arbitrage one needs to be able to sell short the actual and buy the synthetic long option.

    If shorting is costly then the deviation form the law of one price can be interpreted as the cost of borrowing the share.

    The actual price for a share can be compared with the option prices to calculate the implied cost of shorting. If this cost of shorting is falling the stub value will tend to rise to indicate the danger zone of overpricing. The pattern shows that the option prices adjust to eliminate profitable trading opportunities. In other words the implied cost of shorting falls only when the desirability of

shorting has fallen among the regular / institutional traders who know the market.

10. Overpriced securities also give the investor three paths to get trapped:
    (a) buy the security directly at the high price
    (b) buy it indirectly through purchase of an exchange offer security
    (c) buy calls and selling puts.

Methods (b) and (c) are cheaper than (a). Therefore, the puzzle of why anyone will use (a) gets created as a warning. Clues for the puzzle are spread in the various financial journals and information sources linking the overprices security with another lesser priced security.

11. There are two implications for the perfect or efficient market hypothesis here.
    (a) It is not easy to earn excess returns.
    (b) Prices are correct in the sense they reflect the fundamental value.

Here (b) is more important than (a). Do asset markets offer rational signals on where to invest real resources? If a company's stock is priced far from its intrinsic value it will attract either too much capital resulting in over pricing or too little capital resulting in under pricing.

This hypothesis is difficult to test as intrinsic value is unobservable to the investor. However, it does indicate that market prices are wrong when transaction costs prevent the arbitrageurs from correcting the overpricing. In the past financial economists have tended to ignore transactions costs as reflected in arbitrage in the asset markets. Yet overpricing of asset cases that keep recurring indicate that transaction costs are central and fundamental to the asset markets.

12. Derivatives trading[3]

Derivative trade is offered only by National Stock Exchange and Bombay Stock Exchange and is an instrument whose value is derived from the value of one or more underlying, which can be commodities, precious metals, currency, bonds, stocks, indices etc. Four most common forms of derivatives are Forwards, Futures, Options, and Swaps.

13.Derivative Products:

Index Futures

Index Futures are financial contracts for which the underlying is the cash market index like the Sensex which is the brand index of India. Futures Contract is an agreement to buy or sell a specified quantity of underlying index for a future date at a price agreed upon between the buyer and seller. The contracts have standardized specifications like market lat expiry day tick size and method of settlement.

Index Options: are financial contracts whereby the right is given by the option seller in consideration of a premium to the option buyer to buy or sell the under lying index at a specific price called strike price on or before expiry date.

Stock Futures: are financial contracts where the underlying asset is an individual stock. Stock Futures contract is an agreement to buy or sell a specified quantity of underlying equity share for a future date at a price agreed Similar to index derivatives the specifications are pre-specified.

Stock Options are instruments whereby the right of purchase and sale is given by the option seller in consideration of a premium to the option buyer

[3] Mastering Investment Part Seven 11th October 2002

to buy or sell the underlying stock at a specific price on or before a specific date.

14. Kinds of participants in the derivatives market:

1. Hedgers are those who want to transfer a risk component of their portfolio.

2. Speculators who intentionally take the risk from hedgers in pursuit of profit.

3. Arbitrageurs who operate in the different markets simultaneously in pursuit of profit and eliminate mis-pricing.

4. Trade Guarantee Fund has been established to unconditionally guarantee timely settlement of all trade in the derivative market.

15. Operational Mechanism

1. First the trader should find a proper broker who is duly registered as a member in SEBI and possesses the registration certificate.
2. Thereafter, all the registration formalities should be completed with the broker before commencing trade in the derivative market.
3. A Client Agreement should also be signed with the broker as it contains provisions specified by SEBI and the Derivative Segment.
4. After this the trader will be given a Unique Client Identification Number (UID). In return the broker is required to give his SEBI registration number, the name of employee who would handle the trader's account and the precise nature of liability and the risks involved in derivative trade.
5. These details are to be given in the Risk Disclosure Document to be issued by the broker and to be signed by both.

6. After placing the trading order the trade confirmation slip should be obtained from the broker along with a contract note for executing the trade with in 24 hours.

7. The contract note should be time and price stamped. The order may be changed before its execution on the Exchange.

8. Margin money is deposited to minimize the risk of default by either counter party. T he margin money ensures that the risk is limited to the previous day's price movement on each outstanding position.

9. All daily losses must be met by with deposit of more amount in variation margin account on the following day. Profits are credited to client's variation market account.

10. An Investor Protection Fund independent of cash segment is also established to protect the investor interest. All disputes are to be resolved through arbitration.

Hedge Fund Performance : Getting an edge from flexibility[4]

Majed Muhtaseb

1. Hedge funds are difficult to define because their different forms are not distinguished by investments in traditional class of assets. Their distinguishing mark is the strategies their managers use in investment styles and other activities they undertake on behalf of their investors. They have more freedom than mutual fund managers and can adopt the following strategies:

a) they can short sell allowing for taking advantage of bearish expectations

[4] Mastering Investment Part Seven

b) they use gearing that allow them to make more aggressive bets on undervalued securities and capture small returns from fixed income arbitrage opportunities.

c) Derivatives can make funds more efficient allowing managers to hedge systemic risk

d) they can be more flexible in market timing

3. The pay of hedge fund managers is a combination of a size based management fee and fund performance. This includes a high water mark to ensure a fund manager is paid performance fee only if a fund's value exceeds the investors' initial value and the hurdle fee of 5 to 10% or equal to some short term rate, to qualify the manager for performance fee.

4. How can hedge funds be judges against each other? No because they are unlike one another and are secretive about their strategies. They also do not report negative results. This creates a supervise-ship bias as only the better performing or surviving hedge funds appear in the performance results. Based on five year net compound annual return Q1 1995 to Q4 1999, the best and worst performing hedge funds and mutual funds are:

	Hedge Funds %	Mutual Funds %
Top 10	62.2	51.5
Top 10%	46.3	27.2
Top 25%	36.3	20.3
Bottom 25%	6.4	5.6
Bottom 10 %	0.7	4.0
Bottom 20	-4.4	-16.1

5. Research shows that even the most active traditional portfolio managers do not out perform major benchmarks. Typically the average mutual fund under performed an appropriate benchmark. In a quarter when Standard and Poor 500 fell on average, it was found that sum of returns for mutual funds was minus 43.8 per cent compared to -0.2 per cent for hedge funds. This was partly because active mutual fund managers can create many portfolio but they are limited to 'going long', that is betting on a rise in prices on the future of a market, sector or style. Therefore, it is difficult for them to out perform a falling market, because they cannot allocate significant parts of the fund to cash as it is contrary to the fund's strategy or mandate.

6. Individual investors can construct more efficient portfolio by investing both in hedge funds and other asset classes as these two have a low correlation. The five major hedge fund categories are Relative value, Event driven, Long or short equities, Global Asset Allocation, Short sellers. Of these only Long /short equities has a high correlation of 0.58 with Standard & Poor 500's of 0.54. The investor in the US does not have to invest outside the USA to reap the benefits of international diversification.

7. Hedge Funds perform better in markets with no predominant overall trend. In 2001 they gave 9 per cent returns in contrast to S&P 500 down by 10.5 per cent and Nasdaq Composite indices down by 36.2 per cent. Also it is found that the long-short hedge funds / strategies do not demonstrate greater levels of risk than long only strategies.

8. Many hedge funds deliver absolute returns independent of market indices fluctuations. The volatility of many hedge funds are negatively correlated to the market indices and /or benchmarks. In fact market indices indicate performances of

long positions only. Hedge funds' use of gearing, short, and derivatives limit the use of these indices as benchmarks.

9. Direct and indirect indexing by pension funds and mutual funds, and unwarranted sell side research bias buy recommendations create new pricing inefficiencies and reinforce the old ones. Hedge Funds alone exploit such market deformations and there by contribute to market efficiency. Mutual Funds do not have the flexibility to exploit these inefficiencies. This leave the hedge fund managers with an open field. The Economist has defined hedge funds as "spectacularly wealthy, secretive and prone to dramatic losses". To this may be added that they are spectacularly wealthy because they exploit investment opportunities for huge gains and have the freedom to make good investment decisions in all market situations whether rising or falling.

'FACING THE CHALLENGE OF VENTURE CAPITAL'[5]

By Andrew Metrick

1. Investing in public equity is easy as professional investors and analysts inform about squeezing profits from share trading. Investing in private equity however has no safety nets and investments in private capital seems dangerous. It needs to be examined why they are private?

2. Their forms are (a) Venture Capital : investing in young companies before they get traded on public exchanges (b) Leveraged buyouts buying companies financed largely with debt. Here after investing the investor cannot sell out to anyone. In addition individual private equity can include every thing from research for a new medicine to multi-billion pound leveraged buyouts.

[5] Mastering Investment Friday 18th October 2002 Part Eight pages 5 and 6

3. The ‘organized’ private equity market is much narrower than the public equity market where ‘funds’ are pooled to invest. In principle mutual funds exist in perpetuity as a single legal entity, as new investors take over after older ones leave.

4. Partnerships: Private equity funds are limited partnerships with private equity company as ‘general partners’ and institutional investors as ‘limited partners’. These partnerships are set up for a fixed time usually ten years and all capital is committed at the beginning. A successful private equity company will raise multiple private equity partnerships, sequentially numbering them by the year of their inception. Their success depends on the prevailing market conditions for growing companies.

5. Private equity is seldom open to ordinary investors. They are open generally to ‘accredited investors’ having income limits prescribed legally, who can assure contributions to future partnerships. However, now several products have been developed to bring private equity to investors. These include close ended mutual funds such as VC Draper Fischer Jurvetson Fund I constituted in March 2000. It is a retail fund open to any investor and makes venture investments in private companies.

6. Changing views: Asset Alternatives is a company that tracks private equity industry. Its study reveals that private equity partnerships rose steadily from $ 8 billion in 1991 to $ 97 billion in 1999 to $153 billion in 2000. Large US pension funds are believed to have increased their allocations to private equity from 1.8 % in 1996 to 2.9 % in 2000. Private Equity Market elsewhere outside USA has not risen even in Europe. Private equity investors rely on exits and the most profitable exits are through public offerings. European markets are liquid for mature companies but lack a deep market such as Nasdaq to take initial public offerings for young technology companies.

7. The modern private equity market began in 1946 when George Doriot set up the American Research and Development Corporation as the modern venture capital company. It was organized as a corporation and was itself publicly traded and the company earned returns of 15.8 per cent over 25 years. It also set the standard of generating returns through 'one big score' as $70,000 were invested in its biggest success Digital Equipment Corporation. Yahoo!, Amazon, and eBay are other examples of investments by modern venture capital companies.

8. In the 1960s limited partnerships became the dominant structure. In this the partners would put up the capital, with expenditure limit of 1 to 2 percent. The general partners invest the capital in private companies. The fund exits successful investments either through a private sale or a public offering before the partnership expires. The profit sharing was 80/20 after returning the original investment to the limited partners. The general partner kept 20 percent of the rest. The profit sharing known as "carried interest" made private investment so enticing to investment professionals. In present times most of the general partners have taken 30 percent as carried interest.

9. In the 1980s the junk bond allowed large takeovers financed by relatively small amounts of equity. This brought in the 'leveraged buyouts' as the new area for private equity.

10. For individual portfolio what portion should go to private equity and how should manager be chosen? Information on returns is needed as private equity also carries cost as general partners retain at least 20 percent of profit. So a forecast of net returns after fee should be made.

11. Most private equity partnerships are unregulated limited partnerships are they are not obliged to report to anyone except the investors. Associations and gatekeeper consultants who manage relationships between large institutional investors and private equity funds. In the USA Cambridge Associates provides quarterly

snapshots of portfolio value and dividends known as 'distributions' for the venture capital and leveraged buyout funds. These snapshots can be used to compute after cost returns. Historical data to calculate beta measure of a venture capital portfolio does not exist and correlation between investment and market has not yet emerged for such investments. But the research sector and the impact of the new venture in the sector can be assessed. It can therefore be included in a well diversified portfolio.

12. For choice of fund manager the reply is not easy. Fund-of-funds managers can be looked up, but they will also carry an interest above the 20 percent retained by the general partners. An industry previously dominated by personalities has begun to create brands and is moving towards democratization. Short term conditions for the private equity market are grim as IPO market has currently dried out and high yield debt market critical for leveraged buyout investors is in doldrums. Ongoing structural changes mean that after recovery the market will look much different with brands outliving their founders.

V. Ethical investing: The bottom line to a social conscience[6]

By Geoffrey Heal

1. Socially responsible investing originated in the campaign to divest from South Africa for its anti apartheid campaign which became the first movement to enlist investors ideologically. Current targets of an Socially Responsible Fund typically go beyond a single issue. Most SRI funds do not invest in companies that make or sell armaments, alcoholic drinks or tobacco products. They also avoid companies with poor environmental record or those thought to be exploiting labour or animal rights. Thus each ethical

[6] Mastering Investment Part Eight October 18,2002 pages 2 and 4

issue championed by an NGO has a fund to support its aim. This is a new and growing source of business and competitive advantage as increasingly a management company with out a SRI fund is at a disadvantage.

2. SRI funds use consumer buying power to attain social goals particularly in human rights and environmental goals. High end customers tend to link choices with their political and social beliefs and actions. SRI funds offer returns as good as any other.

   For example, Dow Jones Sustainability index outperformed the S&P 500 over the 1990s by about 15 percent. Morning star a company that rates mutual funds shows SRI funds on average have earned higher returns than others partly because there are no costs but gains for SRI funds. Therefore, its better and above average performance is a puzzle. They have a significant presence in the capital market. What returns are they actually achieving? What impact have they had? SRI behaviour proxies for general managerial competence and is re-enforced by interacting with similar consumer behaviour. It is part of the process of consumer thinking about all dimensions of their choices. However the effect SRI is having is not yet clear.

6. VENTURE CAPITAL BUSINESS AS USUAL AFTER BOOM AND BUST[7] by Amar Bhide

1. What are the advantages and limitations of the venture capital model? They have an important niche as investors. High

[7] Mastering Investment Part Nine 25th October 2002

technology business has particularly gained through venture capitalists. They are highly selective in their funding and as a result most companies start with their owner's funds.

2. Attributes of companies in which venture capitalists tend to invest: Entrepreneurs pursue companies with high subjective uncertainty and low resource requirements. Only after maturity do they take up projects requiring substantial capital and manpower resources for which risk and returns can be assessed. Venture capitalists use criteria that demand investments with medium resource requirements and uncertainty. They do not fund start-ups, have declining uncertainty and rising resource requirements. They are the medium term bridge before the company can access public financing through equity.

3. They conduct more due diligence than investors in public companies. An individual investor's risks are diversified through the portfolio, but venture capitalists need to exercise discrimination among opportunities that may or may not materialize.

4. Considerable monitoring and oversight is involved in each investment. Professional venture capitalists develop evaluation and monitoring tools as they mediate between the new starters and the investors. They receive an annual fee of 1 to 2 percent of assets managed and a 'carried interest' of 20 percent on the profits generated at the end of 10 years. The carried interest gives them a share in the profits but not in the losses.

5. The terms of their deals with clients encourage venture capitalists to formalize investment processes. Leakage of information and delays are prevented due to

the limited partnership structure. They also require the clients to cede control over investment decisions for an extended period.

6. They have about 10 companies and visit them 19 times a year and spend 100 hours on site or on phone. They help establish tactics and strategies and recruit and compensate key personnel, play a major role in raising capital, and help structure transactions such as mergers and acquisitions.

7. Sometimes they assume direct control of management and take over day to day operations. Thus they concentrate on a few opportunities and ensure that they get established in the limited time horizon.

8. Ventura Economics reported 60 per cent profits on 7 per cent investments. They avoid small opportunities and try to identify big winners as most entrepreneurs do not have experience. Markets provide the exist for venture capitalists and they help create products that will be accepted by the capital markets.