## Non-Technical Summary of
## "An Institutional Theory of Momentum and Reversal"
## by Dimitri Vayanos[*] and Paul Woolley[**]

The classical theories of competition were applied to finance in the 1960's in the form of the Efficient Market Hypothesis. This states that competition among rational investors drives prices to reflect the consensus estimate of fair value in the light of all available information.

The Efficient Market Hypothesis, suitably extended and qualified, has remained the dominant paradigm in finance. This is in spite of the accumulating evidence on price distortions in the form of systematic mispricings, periodic price bubbles and collapses, and levels of volatility vastly greater than the underlying dividend streams. Beginning in the 1980's, behaviouralists have sought to explain some of the distortions by dropping the assumption of rationality, and introducing psychological biases on the part of investors. We believe, however, that much can be learned about price distortions within the rational expectations framework. The feature of financial markets that we view as important and wish to emphasize is that prices are often set not by private investors but by professional managers. The issues surrounding delegation and agency have been explored in corporate finance and banking, but little is known about the effect on asset prices.

In this paper we seek to explain momentum and reversal: the tendency of recent performance to continue in the near future and of a long history of performance to revert. Momentum and reversal have been observed widely by practitioners and documented extensively by academics. They pertain to a wide variety of assets, ranging from individual stocks to industry- and country-level stock portfolios, to bonds, commodities and currencies. Fama and French (1993) refer to momentum as the premier anomaly. Our paper offers a theory of momentum and reversal based on rational expectations. It does so by recognizing the role of delegated portfolio management.

The ideas that formed the basis of this paper were motivated from one of the joint author's experiences as an asset manager in the technology bubble of 1999/2000. His firm invested predominantly on the basis of a tried and tested valuation model used to determine fair value. A bubble started to develop in the price of shares in the telecom, technology and media sectors globally that pushed up the valuations of these sectors to levels that far exceeded fair value.

[*] LSE, CEPR and NBER, http://personal.lse.ac.uk/vayanos/
[**] LSE

Holding shares in these sectors at well below index weight caused extreme underperformance against the benchmark indices.  By the peak of the bubble in March 2000, the firm had been fired by clients representing almost forty percent the firm's assets under management.  The clients had mistaken the prudent avoidance of over-priced stocks for incompetence.  The terminations would have been even more savage had the firm not put in place a pre-emptive strategy of committing some part of every client portfolio to the buying of stocks simply on the basis of momentum. This helped to keep the tracking error of portfolio returns from getting completely out of hand.  The bubble collapsed, the firm's performance recovered dramatically, its investment skills were once again acknowledged and new business returned in droves.

The paper is based around a model consisting of multiple securities and riskless cash, one manager managing an active portfolio and one investor making the choice between having his money managed by the agent or placing it in an index fund. We refer to the securities as stocks, but they could be interpreted more broadly as, e.g., industrial sectors or asset classes. The mechanism driving momentum and reversal is as follows. Suppose that there is a positive shock to the value of a stock. If the manager is underweight in that stock, he will underperform the index and the investor will be faced with uncertainty about the skill of the manager.  By firing the manager and investing instead in the index fund, he causes the price of the stock that rose in the first place to rise further. Hiring and firing of managers represent the source of the amplification effects in this model. Because these effects take place with information and implementation lags, they produce delayed amplification or momentum.  Moreover, as in the real world example above, the manager in the model takes the precaution of reducing the risk of being fired by reducing the risk levels of the portfolio in relation to the index,   This represents the well known phenomenon of "commercial risk" and is an additional source of momentum.  The model also captures the effects of what is known as idiosyncratic risk. If there is an industrial sector that tends to perform very differently to all other sectors, the manager will take particular care to control his exposure to that sector (such as oil stocks) in relation to index weights.  This makes the sector more prone to momentum effects.

In the interest of building a parsimonious model and focus on the main effects, we abstract from some aspects of actual markets. For example, we consider flows between one active fund and one index fund, while one could alternatively drop the index fund and study flows between two active funds (e.g., value and growth). Assuming only one active fund simplifies the analysis because investors learn about the skill of only one manager. Additionally, we allow the manager of the active fund to co-invest in the fund with the investor, increasing his stake when mispricings worsen. Alternatively, one could ignore the wealth of the manager, and introduce "smart money" investors,

who invest in stocks directly (i.e., not through funds) and take the other side of transactions initiated by the fund investor. The alternative assumptions would add complexity, while not changing the basic mechanisms.

The manager and the investor are both acting rationally. The investor chooses his position in the active and index funds based on his perception of the manager's skill. The manager knows the fair value of stocks and therefore when they are cheap or dear.  In the first part of the paper dealing with the "symmetric information" case, the investor is fully informed about the manager's skill. This part serves as a benchmark for the second and more interesting part dealing with the "asymmetric information" case, where the investor does not know the skill level of the manager, but has to learn from experience. Momentum and mispricing occur despite manager and investor acting rationally and optimally given their state of knowledge. The analysis also demonstrates that fund flows by the investor induce comovement between stocks, above and beyond comovement induced by fundamentals, as well as cross-asset predictability (lead-lag effects).The analysis is conducted in a formal setting in continuous time and general equilibrium.

We plan to develop this basic model extensively. There are other sources of momentum, such as leverage, that can be understood along similar lines as the momentum induced by fund flows. Moreover, once the stable door is opened to the prediction of market inefficiency under rational expectations, the possibilities are endless, both for the theory and practice of finance.