

Manager Update

November 2006 Issue 39

A quarterly summary of topical management ideas.



Faculty of Finance
and Management



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Manager Update

... is produced in parallel with the Braybrooke Press publication of the same name and published quarterly. It is compiled and edited by Roger Mills, professor of accounting and finance at Henley Management College.

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FOREWORD



by Roger Mills, professor of
accounting and finance at
Henley Management College

Management does not occur in neat silos and *Manager Update* has recognised this historically, in that the contributions under the four traditional key themes of 'Accounting and finance', 'Marketing', 'Human resources management', and 'Strategy and organisation' have often transcended strict subject boundaries.

However, more recently, it has become evident that there is a need for articles that provide a succinct and appropriate synthesis of contemporary issues and challenges to general managers that do not fall neatly within these four themes.

In recognition of this, one new theme has been added under the heading of 'Contemporary'. In this issue we have included three such contemporary pieces to launch the innovation, in addition to two of the conventional articles.

We hope that you will enjoy them. Do be aware that 'Contemporary' articles will not necessarily be a regular occurrence, but will be published as and when they are considered appropriate.

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The 'do or die' struggle for growth

Ian Turner, managing director at Duke Corporate Education (Europe & Africa) and visiting professor at Henley Management College.

Managers are always concerned with how to grow the business and also to encourage innovation, which are often seen as incompatible. 'Grow-or-go' decisions are problematic, and are affected by issues like:

- the nature of 'innovation';
- how to achieve large scale innovation; and
- how to manage risk in innovation eco-systems.

Being a keystone player appears to confer advantage, but carries risks.

ACCOUNTING AND FINANCE

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M&A – the roles of private equity and hedge funds

Roger Mills, professor of accounting and finance at Henley Management College.

Recently, there has been a substantial growth in mergers and acquisition (M&A) activity. The factors behind this include:

- favourable debt markets, the rise of mega-funds, dispersion of deals, capital structures and the growth of private equity; and
- the rapid expansion of the hedge fund industry.

Concerns about rapid growth are familiar, bound up with old fears about whether market systems can implode or are self-correcting.

CONTEMPORARY

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Challenging conventional wisdom in R&D

Giampiero Favato, a director of the Henley Centre for Value Improvement (left), and Roger Mills, professor of accounting and finance at Henley Management College.

New technologies are questioning whether conventional research and development (R&D) models are capable of driving top line growth. Taking the specific example of the pharmaceutical industry, where both R&D costs and potential rewards are high, this article looks at the changing patterns of innovation, and uses Roche and Procter & Gamble as case studies.

It assesses which company was the most successful in recognising the impact of technology discontinuity on existing innovation models.

The high-risk scenario in the global economy

Bill Weinstein, professor of international business and director, the Henley Centre for Value Improvement.

The US current account deficit and the interdependencies among national economies have led economists to consider various alarming scenarios of global financial breakdown. The relevant factors include:

- the history of US trade with the Asia-Pacific economies;
- ways in which the trade imbalance could be changed; and
- the need for proactive risk management by all those whose businesses are affected by these macroeconomic issues.

Aligning internal and external stakeholders

Nuno da Camara, research fellow, The John Madejski Centre for Reputation, Henley Management College.

The application of different reputation models and the relationship between internal and external stakeholders are key issues, involving:

- definitions of concepts such as organisational identity;
- the rise of corporate brand management; and
- measuring reputation, its causes and consequences.

A cause-effect methodological approach is recommended.



The 'do or die' struggle for growth

A key issue facing every chief executive officer (CEO) is how to achieve results and grow the business, while at the same time encouraging innovation. All too often these two can be seen to be mutually exclusive.

Ian Turner, managing director at Duke Corporate Education (Europe & Africa) and visiting professor at Henley Management College, asks why this is, and how innovation can be encouraged.

There is a strong correlation between growth and shareholder returns

We return to a topic that is on the top of every CEO's agenda, ie how to grow the business and encourage innovation. In their recent article, Sven Smit, Caroline Thompson and Patrick Viguerie make a compelling case for the 'why' of growth.¹ These authors studied 100 large American companies across a wide range of sectors over the ten years or so from 1994 to 2003. The good news is that about a third of the companies in the sample managed to both exceed the compound annual growth rate in gross domestic product (GDP) of 5%, whilst also generating above average returns to shareholders. The bad news is that about 90% of these were concentrated in just four sectors: financial services, healthcare, the high-tech industries and retailing. Companies that manage to maintain high growth rates also have a higher survival rate. The implications are that despite the emphasis in recent years on strategy execution and corporate strategy – in particular decisions about portfolio mix, ie which products and markets the company focuses – the most crucial aspect is being able to maintain high growth rates.

There would also appear to be a strong correlation between growth and shareholder returns. However (as might be expected), some companies managed growth without rewarding shareholders and there were some whose profit performance was excellent without generating any top line growth. Many of the latter operated in slow growth industries and were able to maintain their good profit performance through intense focus on cost control and the ability to divest themselves of lower margin businesses and move into higher margin ones.

When it came to survival rates, the evidence was striking – there was a strong correlation between future survival and past revenue

growth. In fact, even high growth companies with relatively low profitability had higher survival rates than those slower growing companies whose performance on shareholder returns was excellent. The authors speculate that this is because the latter competed in more mature industries, which were subject to consolidation. Unless such companies were able to acquire other competitors during this consolidation phase, they found themselves unable to reap enough rewards from reducing costs or restructuring to offset the lack of top line growth: 'Companies that don't increase the top line eventually hit a total returns to shareholders' wall and often become targets for acquisition. Even the largest companies, therefore, may find themselves grappling with the fundamental 'grow-or-go' decisions.'²

This study demonstrates the importance of what these authors refer to as the 'tailwind factor'. Being in the right business at the right time tends to provide a much better basis for growth. Nevertheless, there are certain strategic choices that seem to result in more consistent high growth patterns. Most of the high-growth companies focused on incremental product innovations and geographic extensions of existing models. Breakthrough innovations, by contrast, were relatively rare and tended to occur in high-tech industries such as IT and pharmaceuticals. None of the high growth giants, in this sample, owed their performance to an ability to reinvent their business model and even where such radical forms of innovation have underpinned successful challenges from companies like Dell, they tend not to be pursued by companies after they have become large. Any diversification usually occurred incrementally through extensions into adjacent customer or product markets, rather than through unrelated diversification.

Some firms in their sample had successfully reinvigorated their growth strategy, typically by reconfiguring their portfolios. A good example of this is IBM, whose divestiture of low-growth areas like PCs and investment in services like consultancy through acquisitions and organic growth, has been one of the most successful examples of growth during that period. Ultimately, however, if a company is not well positioned in growth markets and does not have the distinctive capabilities which it can transfer easily to other markets, or the expertise in acquiring and integrating other companies, then the obvious alternative is to sell the business. Indeed, as the sample companies in this study showed, the long-term performance to shareholders of companies that have realised this and sold, exceeds that of those companies that have retained their independence, but continue to search for a successful strategy.

Of course, the results of this research need to be looked at with several caveats. The first is that, as they say in the investment community, past performance is not necessarily a good guide for the future: it is plausible that in the forthcoming ten year cycle, other industries like the energy and extractive industries will account for a greater proportion of 'growth giants' than in the past 10 years. Equally, the focus on US companies ignores the lessons from other successful companies outside the US, like Nokia, which transformed itself from a low-growth company in the commodity sector into a high-tech global giant. Then there's Toyota, the world's most profitable car company, whose ascendancy was achieved in a classically mature industry.

Twelve different ways to innovate

So much for the 'why' of growth. If companies and chief executives are increasingly driven by the growth imperative, then the next question is, how? Innovation is often seen as the obvious way of realising growth. But what exactly is 'innovation'? Traditionally we have tended to associate innovation with new product development, the sort of activity that has historically gone on in the research labs of large companies like Rank Xerox, AT&T and the major pharmaceutical companies. But as Selden and MacMillan report, stock markets seem to have remarkably little faith in the ability of traditional R&D expenditure to generate future growth. Thus, companies like General Motors and IBM, that spend huge sums on traditional product and technology-based research and development (R&D), attract lower P/E ratios

than companies like Starbucks and Dell, that spend relatively little on traditional forms of R&D, but instead focus much more on customer insights.³

According to a group of researchers at the Kellogg School of Management, our definitions of innovation to date have been defective. Business innovation should not be seen as being about producing new things, but about creating new value for customers. Such innovation is rarely likely to occur on one dimension, but it is more likely to be systemic in nature. For example, there was the case of Apple and its iPod, which succeeded not because it was a brilliant new product but because it was a component in a total package that made downloading tunes painless for users. Based on their extensive research, Mohanbir Sawhney et al have concluded that there are at least 12 significant dimensions to business innovation and they have captured these dimensions in what they have termed "the innovation radar".⁴

To understand this model, readers should visualise a compass. At the north point of the compass are innovations around offerings, ie the 'what' of developing new products and services. At the south end of the compass are processes, ie the 'how' of achieving innovation through improvements in the efficiency and effectiveness of core processes: for example, to produce faster cycle time or higher quality. At the west point is presence, the 'where' of innovation, which covers new distribution channels or after-sales support. On the eastern point of the compass is the 'who' dimension of innovation, where innovation can occur through uncovering customer segments or discovering unmet customer needs.

Between these four points of the compass are other equally important dimensions of innovation. Thus, 'platform innovations' involve the use of shared parts and components to create offerings more quickly and at a lower price point, whilst 'solutions' are about integrated offerings, typically combining elements of service and product to solve end-to-end customer problems. 'Innovations in customer experience' are about rethinking interactions with customers throughout a company's touch points, to increase customer loyalty.

'Value capture' looks at how a company exploits its assets through new revenue streams or pricing models. 'Organisational innovation' deals with how the organisation changes structures or activities to create value, for example, by moving from a product to a customer-

Traditionally we have associated innovation with new product development

focused structure. 'Supply chain innovations' create new logistical channels or change relationships in existing supply chains in order to deliver value to customers. 'Networking innovation' is about using the networks that connect a company and its products to customers in innovative ways, while 'brand innovation' is about how companies like Virgin leverage their brands into new areas.

This innovation radar can be a useful diagnostic tool and a benchmarking framework

The authors of this study believe that this innovation radar can be a useful diagnostic tool, as well as a benchmarking framework to analyse and compare competitors in the same sector. The authors also believe that the tool should help companies to identify untapped sources of innovation where they can achieve a more distinctive positioning that competitors would find difficult to emulate, at least in the short term. More work needs to be done on this and the authors speculate that successful innovation will result in focusing on a few dimensions and achieving a high impact, rather than trying to perform well on all at the same time.

Creating new platforms

Becoming a high growth company would appear to be easier in many cases than remaining one. Donald Laurie et al point to evidence on the US that shows that companies entering the Fortune 50 List of Corporations that had exhibited double-digit growth rates in the five years previously were never able to achieve subsequent growth levels in revenue above 2%. Such performances were then punished by the stock market, with share prices falling on average by 61%. Yet, as we saw earlier in this issue, if firms are not operating in a market where demand is growing significantly above average, the task of achieving high growth rates is particularly daunting. Thus, the CEO of United Parcel Services (UPS) identified in the mid-1990s that his company would face a growth gap of \$1 billion worth of revenue that would have to be filled by taking initiatives and innovating in ways above and beyond incremental improvements.⁵ The key to such large step changes in growth would appear to be the creation of new growth platforms, in which companies build families of products and services through which they can extend the corporation's capabilities into a range of new areas.

In other words, these are not isolated product innovations, but the development of, in some cases, whole new business areas, often based upon a profound examination of the company's existing core capabilities and resulting in a

series of successful new products and service innovations. The article gives a good example of this – the creation of a new service parts logistic business at UPS. This business was originally initiated by a client from the IT industry who turned to UPS for assistance in meeting demanding delivery schedules from its customers. The result was eventually a new business unit, based on the management of spare parts inventory for the client which was subsequently broadened to address other industries and businesses – a market in which the company now has a leading position worldwide.

To secure this scale of innovation requires, in the authors' view, a number of organisational measures to be put in place. The units need to be headed up by credible senior executives, often candidates for the CEO position. They will typically have experience of working at a high level within the organisation and ideally will also have the entrepreneurial skills needed to launch new business ventures. These so-called new growth platform units should be independent of existing business units and yet sufficiently integrated with the company as to be able to identify and exploit knowledge, know-how and intellectual property.

To defend these fledgling units from the powerful business unit barons, they should have access to a discretionary growth fund, typically run out of the CEO's office, to ensure their financial independence. For such units to survive, the chief executive has to devote a large amount of time to encouraging, understanding and protecting them. For this to happen, the chief executive needs to have a right hand man or woman to act as chief operating officer (COO) to oversee existing operations more thoroughly. As the authors point out, the pitfalls of such an approach are many and varied; existing business units may prove resistant to the idea of separating out innovation activities in this way, for instance.

The right balance of professional skills and innovative new thinking will also be challenging, since such units will only survive if they are permitted to challenge existing conventional wisdom, whilst at the same time also being subject to clear processes and management disciplines. There is a danger that these units succumb to a failure to sustain commitment on the part of management, which in turn generates cynicism and a lack of commitment by key executives to participate in the unit, because they perceive it as a dead end in career terms. Conversely, there is a risk of suffering from unwitting overconfidence,

The right balance of professional skills and innovative new thinking will also be challenging

where executives who are skilled in managing large organisations are unable to make the transition to a new, relatively young business unit.

Creation nets: getting the most from open innovation

We have considered before some alternative approaches to innovation practiced by companies like Procter & Gamble that explicitly seek to reach out beyond the boundaries of the organisation to network with other individuals and organisations in order to accelerate the process of innovation. The acme of this type of innovation is the probably the open model of innovation management, perhaps most clearly exemplified by the case of Linux, the open source operating system which is challenging the dominance of Microsoft Windows.

As John Seely Brown and John Hagel point out⁶, such networks of innovation are not new. Indeed, examples of innovation through networking go back at least as far as the Middle Ages. Early cases of open innovation can be found amongst the clothing trade in Renaissance Italy. However, what has changed is that the modern global economy has meant that organisations can work together effectively despite the bounds of time and space. On the downside, this more competitive environment also means that lifetime value of knowledge diminishes rapidly. To compete effectively, therefore, organisations need to innovate more quickly and acquire new forms of knowledge, rather than seeking to protect existing stocks of knowledge.

Although elements of open innovation management can be found in the writings on joint ventures, partnering and collaboration, there are still differences of scale and degree, as the authors point out that, “creation nets work by mobilising hundreds or thousands of independent entities in the pursuit of distributive, collaborative and accumulative innovation.”⁷

At the hub of these creation nets is a network organiser, who has the role of the gatekeeper. Thus, for example, so-called original design manufacturers (ODMs) in Taiwan often co-ordinate the inputs of scores of sub-component and module designers and producers. Typically, such ODMs will set down the performance criteria and the milestones and will leave the actual creation of designs to the creation net participants to work out amongst themselves. Designs are typically broken down into modules, which makes it easier to manage the large

number of participants and allow them the freedom to innovate through delegation, whilst being able to manage the interface between the different modules effectively.

The key to effective management of such networks is to get the right balance between loose and tight management. Some elements of the organisational design principles underpinning these nets would be familiar to regular readers who recall some of the basic tenets of complexity theory, whereby individual participants self-organise to fulfil tasks around a few simple rules. Of course, there are obvious dangers in collaborating through networks that are susceptible to opportunism and free riding. However, anti-social behaviour of this type is discouraged because participants realise that their long term interests rely upon successful collaboration. In such creation nets, most of the actual innovation process is devolved to the participants. The organisers, however, play a key role when it comes to the integration stage. They will specify the timing and performance requirements that each participant has to adhere to. They create the mechanisms by which any disputes amongst the participants can be resolved, although the actual process of resolving tensions between participants with responsibility for adjacent parts of the design is also devolved and each participant knows that they have to make tradeoffs between optimising the performance of their own module and producing the most effective end product.

Lest readers gain the mistaken impression that this form of organisation is relaxed and unstructured, there are powerful incentives built into it through performance feedback loops and peer group pressure to deliver to time and product specifications. Indeed, creation nets thrive and perform to high levels in some of the most demanding markets in the world. However, they may not be appropriate for every corporate situation. But they can work well where demand for products or services is uncertain and participation of a large range of specialist capabilities is required to guarantee a successful outcome and performance requirements are likely to change rapidly.

Managing risk in innovation eco-systems

Of course when it comes to managing innovation through creation nets, or innovation eco-systems, to use Ron Adner's term⁸, all is not sweetness and light. When relying upon a network or eco-system of partners for the success of a new product like

Examples of innovation through networking go back at least as far as the Middle Ages

Creation nets may not be appropriate for every corporate situation

high definition TV, or third generation mobile phones, the critical element is often the last piece of the jigsaw that completes the system. Paradoxically, when innovating in this way, being first to market may be largely irrelevant if the rest of the system is not in place.

For example, new run-flat tyres produced by Michelin at great expense failed to generate the market breakthrough their inventors hoped for, because of delays by car manufacturers in adopting suitable electronically equipped wheels. Adner's critical insight is that in externalising the process of innovation management to other key participants, a new set of risks and dependencies is created, which, at worst, can derail a company's best efforts at innovation and negate huge investments.

Adner identified three different types of risks in such eco-systems. The first type of risk he terms 'initiative risks', which essentially revolve around the challenges of delivering a product on time and to specification. Such initiative risk is compounded, however, by what he terms 'interdependence risks' that relate to the uncertainty of coordinating with the complementary innovators who make up the eco-system. As he points out, if the success of the project is dependent upon the successful delivery of three partners to the project and each of the partners maintains that they have a 90% probability of success, then the total probability of

success is only 66%. If only one of the partners believes that the probability of success of their part of the project is just 20%, then the joint probability falls to 15%. Of course, 15% may not in itself be a bad probability of success if the organisation is aware of it and in particular, if it is making multiple bets. (As Adner reminds us, the venture capital industry only expects 10% of projects to succeed). But it means that a delay by one of the partners can have a knock-on effect throughout the entire eco-system. Such problems can only be avoided by recognising the potential of such dependencies and by regular and candid reviews amongst the eco-system participants.

The final element of risk that needs to be accounted for is what Adner calls 'integration risks'. Essentially, the question is 'who else has to adopt the solution before the customer can?', since the greater the number of intermediaries involved, the higher the risk of failure. Thus, a flat screen manufacturer might need only eight months to design and produce a new screen; add to that four months for consumers to become aware of and purchase the product and one would assume that twelve months lead time would be appropriate. But a screen manufacturer in turn is dependent upon consumer product companies developing products that require the screen to be integrated, as well as the distributor, who may already have supplies of a product that he is anxious to shift before acquiring a new product. Such integration delays are likely to be caused as much by the sales cycles of the intermediaries as they are by the development process itself. Paradoxically, the effort involved in optimising the distribution may yield better results than spending money on trying to reduce the internal development process time.

Being first to market with a product may not guarantee success if a market has not emerged within the timeframe required for the company to recoup its investment, as manufacturers of technologies like videophones and high-definition TVs have discovered to their cost. Appropriate strategies under such conditions should be based upon a full and realistic assessment of the risks involved, remembering that external risks are likely to be more difficult to control or mitigate than internal risks. Equally, companies operating in eco-systems need to make conscious choices about roles. Being a keystone player or adopting the coordinator role appears to confer huge competitive advantage, but it also carries its own risks and can entail massive resource investments with an uncertain payoff. **MU**

Essentially, the question is 'who else has to adopt the solution before the customer can?'

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M&A – the roles of private equity and hedge funds

Roger Mills, professor of accounting and finance at Henley Management College, explores the major reasons behind the current boom in mergers and acquisitions (M & A) activity, paying particular attention to the significance of private equity and hedge funds. Might there be causes for concern about this boom, particularly about hedge fund growth?

For anyone looking to sell a company in 2005 the M&A market was ripe with opportunity¹, as relatively loose credit standards and cash-rich buyers competed aggressively for acquisitions. Unsurprisingly, therefore, last year was the most active since 2000 for global M&A deals, with total volume of approximately \$2.9 trillion, according to Dealogic², a 38% increase over 2004. In addition, US M&A activity surpassed \$1 trillion in 2005, up from \$886 billion in 2004 and current indicators suggest considerable sustained activity in 2006.

What, though, are the most important factors influencing this latest boom? According to Daniel deBrauwere they are:

- favourable debt markets;
- market forces – supply and demand;
- development of mega-funds;
- hedge fund growth and activity;
- dispersion of deals; and
- capital structure.

Favourable debt markets

The reliance upon debt financing has increased. In the US, the proportion of bank debt to profit – referred to as bank debt multiple – rose steadily from an average of 3.7 times earnings before interest, tax, depreciation and amortisation (EBITDA) in 2001 to 4.3 times in 2005. That's the highest level since 1999, according to S&P/Leveraged Commentary and Data.³ The relaxing of credit standards was supported in a survey by the US Federal Reserve, which reported the percentage of banks loosening their credit standards is at its highest level in ten years.⁴ Default rates, though, have continued to decline, and were at a decade low in 2005, according to PricewaterhouseCoopers.⁵

Market forces – supply and demand

Quite simply, there has been an increase in demand from all potential players, with corporations, private equity firms and hedge funds all in the hunt for deals. Strong equity market conditions have favoured the use of equity. For example, in 2005, more than \$172 billion was raised, according to Standard & Poor's.⁶

Development of mega-funds

The advent of mega-funds, some with more than \$10 billion of assets, has also contributed to the increase in M&A volume. Funds of such magnitude by private equity sponsors are a new phenomenon and, as a consequence, buyout firms are now able to compete with corporations on any transaction. Deals have become larger and according to Dealogic, nine of the ten biggest private equity transactions ever were announced in 2005.⁷ In addition, there has been an increase in 'clubbing,' which allows private equity firms to team up to pursue exceptionally large buyouts with a 'safety in numbers' mentality. Clubbing gives private equity firms access to more diversified experience to help win the deal while allowing them to spread the risk.

Hedge fund growth and activity

Hedge fund activity within M&A activity has also been very important.* Although hedge funds have traditionally been associated with

* A hedge fund generally refers to a lightly regulated private investment fund characterised by unconventional strategies (eg strategies other than investing long only in bonds, equities or money markets).



US M&A activity surpassed \$1 trillion in 2005

short term goals, today they seek returns wherever they can find them and locking up money for longer periods of time is not regarded as a barrier. They have become active in leveraged buyouts, often as the lead lender, and have also bought equity at auctions when a member of a private consortium is looking to exit but is unable to find the right bidder.

Hedge funds typically have the ability to provide their own acquisition financing, giving them a competitive advantage over most other buyers. Often, they aren't limited in terms of industry concentration or investment size and are quickly offering formidable competition to some private equity firms. Clearly, this is driving up prices.

Dispersion of deals

M&A activity is no longer concentrated within a limited number of industry segments. Unlike the late '90s, when the activity centred on media, telecom and technology, recent deals have occurred in a wide variety of industries including energy, utilities and financial services. The geographic spread has also become wider. For example, at more than \$1 trillion in 2005, European M&A volume was 49% higher than the \$729.5 billion reported in 2004, according to Dealogic.⁸ As in the US, telecommunications was the most active sector in 2005. Furthermore, Asian-Pacific M&A activity hit a record \$474.3 billion, a 46% increase from \$324.5 billion in 2004. Such geographical dispersion has helped to spread national and international M&A across sectors, eg steel, pharmaceuticals, hotels and commercial property.

The speed in which deals are completed has also accelerated. For instance, institutional investors such as hedge funds now simply buy a whole company, take it off the street and then 'parse' out the deal later rather than arranging the financing with four or five partners before closing the sale. Another factor that is speeding the time involved is so-called staple financing. During the 1990s, lenders typically wouldn't provide financing without knowing who was going to own the enterprise. This has changed and because competition is so intense, investment banks representing the seller often arrange financing for any buyer up to a certain level.

This so-called 'staple financing' is attached to the agreement and enhances the sale by giving sellers a ready idea of how much leverage a

buyer can put on the table. Previously a sponsor would look at a deal, evaluate it and then bid on it before arranging the financing, but with staple financing, the deal already has been reviewed by a lender.

Capital structures

Today, numerous different financing alternatives exist and the final structure for any given transaction may be a mixture of capital layers. To minimise financing costs, deals often start with a senior-secured loan, for example, which is borrowed against the assets of the business and has the advantage of being cheap. This senior debt is then followed by other layers, each becoming increasingly more expensive as it necessitates riskier funding, with equity at the bottom.

What is private equity?

As indicated earlier, private equity has helped fuel the resurgence in the M&A market. But what actually is private equity? Whereas the principle is quite straightforward, one of the challenges is that it may be encountered under different labels.

In principle, private equity is medium to long-term finance provided in return for an equity stake in potentially high-growth unquoted companies. Some sources use the term 'private equity' to refer only to the buy-out and buy-in investment sector, but others, in Europe (not the US), use the term 'venture capital' as an alternative. This can be quite confusing because in the US 'venture capital' refers only to investments in early stage and expanding companies. To avoid confusion, the term 'private equity' is used by the British Venture Capital Association (BVCA) to describe the industry as a whole, encompassing both 'venture capital' (the seed to expansion stages of investment) and management buy-outs and buy-ins.⁹

In short, private equity can provide a company with long-term, committed share capital to help it grow and succeed without many of the hindrances of a stock market listing. It can be applied to companies at all stages of development, from a start-up to mature established companies with a stock market listing. For a business start-up, expansion, a buy-out of a division of a parent company, a turnaround or the revitalisation of a company, private equity may well help. Private equity investment, though, is very different from raising debt or a

The speed in which deals are completed has also accelerated

Private equity investment is very different from raising debt or a bank loan from a lender

bank loan from a lender. Whereas lenders have a legal right to interest on a loan and repayment of the capital, irrespective of success or failure, private equity is invested in exchange for a stake in the company and, as shareholders, the investors' returns are dependent on the growth and profitability of the business.

The private equity investor will generally plan their exit from the business. This can take many forms, from a stock market listing for a reshaped business to a secondary sale to another private equity investor. For example, a unit of Kohlberg Kravis Roberts & Company (KKR), the private equity giant that came to fame with the \$25 billion buyout of RJR Nabisco in 1989, went public in a \$5 billion offering in Amsterdam.¹⁰ Demand for the fund unit was high, with the offering raising more than three times what was expected.

Taking such a fund public may seem like an oxymoron because private equity funds typically buy public companies listed on exchanges, take them private, turn them around and cash out! They operate on a schedule of years and avoid the demands that regulators and shareholders make on public companies every quarter. However, for KKR, which remains a private firm, a public unit gives it access to permanent capital, instead of raising money for a fund with a limited shelf life.

The KKR offering is noteworthy for private equity because of its size and KKR's status but is, in fact, nothing new. Hundreds of publicly traded private equity funds are listed on global markets and together control an estimated \$80 billion in capital. The majority of these funds are based outside the US, and do deals in Britain and Europe and comprise private equity firms like Wendel Investissement and Eurazeo, both of France, and 3i in UK. In fact, in Europe some well-established companies have transformed themselves from manufacturing or industrial companies into private equity investors, like Ratos of Sweden, and just kept their public listing. Such funds make it easier to attract cash because, it seems, it makes it straightforward for shareholders to exit.

It can, however, be a while before investors in the initial public offerings (IPOs) of listed private equity funds see much of a return on their money. For example, Apollo Management followed KKR with a fund of its own, a \$1.5 billion offering on Euronext Amsterdam. Like KKR's issue, which traded down after the IPO, the Apollo offering has been touted as a potential victim of the infa-

mous private equity 'J curve'.¹¹ The J curve effect is where start-up expenses – such as the costs of the offering itself – reduce the net asset value of the fund at the outset, helping ensure returns only become positive later. Since shareholders in the listed funds have put in their capital up front, and they will not necessarily be getting cash distributions or dividends from the proceeds of exits, their only real upside is any gain in the share price.

Yet, at first glance, it doesn't seem as though the general partners of the sponsoring firms need have much reason to worry about share price levels, since they get their management fees in any case, the capital is perpetual, and their 'carry' or incentive fees, are based on the performance of the underlying private funds, not the listed one. In the case of Apollo, some portion of the carry will be put back into the listed fund, and members of the KKR general partnership have put \$72 million into the KKR Private Equity Investors fund.

Listed private equity funds have rather a chequered history. According to Lerner, a professor of investment banking at Harvard Business School, such listed funds were not uncommon from about 1940 through to the 1960s. They did, though, suffer from very volatile share prices, shareholder dilution as they undertook subsequent capital raising, and ultimately, some traded at such a large discount to net asset value that they became vulnerable to takeovers.¹²

In the late 1990s, listed venture capital funds ran into similar difficulties. The KKR and Apollo funds, however, are structured more like funds of funds in that investors do not own regular shares, but instead, units of a limited partnership based in Guernsey that itself chiefly owns limited partnership stakes in the underlying funds. By all accounts, the fund is pretty much immune to takeover and the structure also shields KKR and Apollo from having to make much in the way of disclosure about returns on individual portfolio investments, although they will have to make quarterly earnings reports. In the US, the issue was a private placement from a foreign issuer to qualified buyers only, which means the filing requirements are not very onerous.

Despite a chequered history, these publicly traded private equity funds are part of a growing asset class and in 2004 the first index for publicly traded private equity funds was developed by the Swiss company LPX GmbH/Ltd in

Despite a chequered history, publicly traded private equity funds are part of a growing asset class

Basel.¹³ The LPX50, which comprises the top 50 listed private equity funds, had a market capitalisation of €46 billion (\$58 billion) at the end of March 2006. Last summer, banks started introducing financial products linked to it.

From a UK perspective, private equity originated in the late 18th century, when entrepreneurs found wealthy individuals to back their projects on an ad hoc basis. This informal method of financing became an industry in the late 1970s and early 1980s when a number of private equity firms were founded. Private equity is now a recognised asset class. According to the BVCA, there are over 170 active UK private equity firms, which provide several billion pounds each year to unquoted companies, around 80% of which are located in the UK.

While much can be found in the academic literature on early stage venture capital investment, little attention has been paid to the recent developments in leveraged buy-outs (LBOs) and private equity, which mostly affect established (non-entrepreneurial) firms. These trends have important implications for the private equity market and also, more generally, for the governance and performance of corporations. What, for example, are the benefits of private equity? Some companies backed by private equity grow faster than other types of companies, through a combination of capital and experienced personal input from private equity executives. Private equity can, for example, help a company achieve its ambitions and provide a stable base for strategic decision making because the private equity firms may only seek to increase a company's value to its owners, without taking day-to-day management control. Thus, although the company may have a smaller 'slice of cake', within a few years the 'slice' could be worth considerably more than the whole 'cake' was before.

Private equity firms may need to adopt strategies to secure attractive deals without engaging in the public auctions that have become prevalent. While private equity transactions have often been associated with cost-cutting to improve efficiency, there may need to be a stronger emphasis on entrepreneurial activity to realise the upside potential of these firms. Changes in the stock market and the market for corporate control also raise issues concerning the ability of private equity firms to realise the gains from their investments (especially for modest sized deals in mature sectors) while at the same time meeting investors' significant return expectations within a particular time period. Private equity firms have developed

new forms of exit, such as the widespread growth in secondary buy-outs. These raise questions concerning the returns that can be generated and the willingness of limited partners to invest in the same deal a second time through a follow-on fund at a higher price.

In fact, the growth of the private equity market has raised many other critical questions, not least of which is how private equity transactions increase value. These concerns have been articulated by the principal academic finance journal, *The Journal of Finance*, which has prompted a call for papers for consideration in a special edition to be published.¹⁴ Lastly, high risk-adjusted returns from private equity transactions have attracted new types of entrants and, in particular, hedge funds. This has raised further concerns given the transaction-oriented nature of hedge funds and their ability to add real value (in a managerial sense) to enterprises.

Hedge funds and private equity

Hedge funds have attracted significant attention recently and been linked very strongly with private equity and the rise in M&A activity.¹⁵ A hedge fund generally refers to a lightly regulated private investment fund characterised by unconventional strategies (eg strategies other than investing long only in bonds, equities or money markets). They are primarily organised as limited partnerships and were previously often simply called 'limited partnerships.' Often, they were grouped with other limited partnerships such as those that invested in oil development.

The term 'hedge fund' dates back to the first such fund founded by Alfred Winslow Jones in 1949. Jones's innovation was to sell short some stocks while buying others, thus hedging some of the market risk. While most of today's hedge funds still trade stocks both long and short, many do not trade stocks at all. For US-based managers and investors, hedge funds are simply structured as limited partnerships or limited liability companies. The hedge fund manager is the general partner or manager and the investors are the limited partners or members. The funds are pooled together in the partnership or company and the general partner or manager makes all the investment decisions based on the strategy outlined in the offering documents.

In return for managing the investors' funds, the hedge fund manager receives a management fee and a performance or incentive fee. The

A 'slice of cake' could be worth considerably more than the whole 'cake' was before

A hedge fund is a lightly regulated private fund with non-traditional strategies

management fee is computed as a percentage of assets under management, and the incentive fee is computed as a percentage of the fund's profits. A 'high water mark' may be specified, under which the manager does not receive incentive fees unless the value of the fund exceeds the highest value it has achieved. The fee structures of hedge funds vary, but the yearly management fee may range from 1-2% of the assets under management and the incentive fee is usually in the range of 10-20% of the profits of the fund. Certain highly regarded managers demand higher fees.

Research by Edwin Elton, Martin Gruber and Christopher Blake has shown that incentive fees correlate to higher returns in mutual funds, perhaps suggesting the attractiveness of hedge funds, where incentive fees can be much higher and restrictions on trading are less.¹⁶ Offshore hedge funds are usually domiciled in a tax haven and, for US-based fund managers, are designed to allow the manager to manage the assets of foreign investors and tax-exempt US investors. In this structure, the manager will receive a management and incentive fee as in an onshore fund. The typical hedge fund asset management firm includes both the domestic US hedge fund and the offshore hedge fund. This allows hedge fund managers to attract capital from all over the world. Both funds will trade 'pari passu' based on the strategy outlined in the offering documents.**

Hedge funds are similar to private equity funds, such as venture capital funds, in many respects. Both are lightly regulated, private pools of capital that invest in securities and compensate their managers with a share of the fund's profits. Most hedge funds invest in very liquid assets, and permit investors to enter or leave the fund easily. By comparison, private equity funds often invest in very illiquid assets such as early-stage companies and so investors are 'locked in' for the entire term of the fund.

The amount of hedge-fund money flowing into public companies in the US has skyrocketed in the past year, thanks to a financing mechanism known as private investment in public equity (PIPE). PIPE investments, which involve the issuance of large chunks of new stock to a qualified investor, rose 20% in the first quarter, to \$6.03 billion, according to PlacementTracker, a unit of Sagient Research Systems of San Diego, which provides data on private placements.¹⁷ PIPE offerings cost less

than public offerings and require minimal regulatory oversight, making them attractive for small companies. The companies typically agree to discount the shares between 5% and 20%, with the agreement that they cannot be resold to the public for two months or more.

Is there a crisis for hedge funds coming?

The growing influence of hedge funds and their role in private equity and M&A activity has raised some concerns.¹⁸ For example, eight years ago, the Long Term Capital Management (LTCM) hedge fund crashed in the US, causing the country's Federal Reserve to engineer an extraordinary bailout of \$3.6 billion on the (highly debatable) theory that the financial markets would otherwise be fatally disrupted. What, though, would happen if there was another LTCM today?

Connecticut-based institutional service Bridgewater Daily Observations, which itself manages over \$150 billion, has received a disturbing answer to its questions on the subject. It has pointed out that the amount of money invested in hedge funds is now five times higher than in 1998 – when the LTCM debacle occurred – and has indicated that 'the system can withstand a moderate economic crisis (like those that occurred post-1993) but not a major one (like 1974)'. Bridgewater estimates that losses with the current hedge fund regime would have been \$80-\$100 billion in the post-1993 crises, \$300-\$350 billion in 1974 (and \$500-\$600 billion in 1929). However, the really bad news is that Bridgewater also expects a major international system crunch exactly like the collapse of the fixed exchange rate Bretton Woods system. Recently, in fact, Bridgewater's *Daily Letter* was headlined 'The tremors before the big one' and concluded, 'We believe the odds of a dollar/US debt crisis in the next 12 months are elevated (say 50%)'.

The Federal Reserve has not ignored the signs. According to Ben Bernanke, the Federal Reserve chairman, financial authorities must stay attuned to any potential risks posed by the growth of hedge funds, an investment domain of the wealthy that has become more popular with smaller investors.¹⁹ In fact, Bernanke made a direct reference to lapses in

In the case of hedge funds, the reasonable presumption is that market discipline can work.

** *Pari passu* is a Latin phrase that means 'at the same pace', and by extension also 'fairly', 'without partiality'. In finance this term refers to two or more loans, bonds or series of preferred stock having equal rights of payment, ie, having the same level of seniority.

The growth of
hedge funds
and private
equity poses
narrow and
wider risks

risk management of 1998 in terms of the collapse of Long Term Capital Management. He's made a case for closely monitoring hedge funds but avoided advocating they be directly and more heavily regulated like banks. Direct regulation may, he argues, be justified when market discipline is ineffective at constraining excessive leverage and risk-taking but, in the case of hedge funds, he argued that the reasonable presumption is that market discipline can work. This, though, may raise some alarm bells when we look at some of the statistics offered by Bernanke. For example, he says, some 7,000 to 9,000 hedge funds in the US command an estimated \$1 trillion in assets and account for as much as 20% of all US stock trading.

The Securities and Exchange Commission (SEC), concerned about the explosive growth of hedge funds in recent years and their virtually unregulated operations, brought them under new supervision early in 2006. In the US, most hedge fund managers now must register with the agency.

That opens the funds' books to SEC examiners and makes them subject to accounting and disclosure requirements. The examiners will be able to conduct inspection 'sweeps' of hedge funds. Despite the SEC supervision, concerns in the US about hedge fund supervision are worth noting – as are the concerns about the econo-

my generally which were all captured in Bridgewater's savage summary:²⁰

"...Now you've got a new, academic, waffling Fed chairman, a falling dollar, a falling bond market, rising gold and commodities prices, and an underperforming stock market all with a giant current account deficit..."

The scale and speed of developments such as the growth of private equity and hedge funds poses both narrow and wider issues about risk in rapidly-evolving markets. In the former case, the issue is corporate governance. For example, under ownership structures developed by the funds, how is responsibility to be assigned for protecting stakeholders and not only shareholders' or investors' interests? Is the market – by its very complexity and changeability – in fact eluding regulatory and other constraints in the very same era when older forms of corporate 'piracy' (Enron, WorldCom) come under stricter surveillance?

Bridgewater raises the broader issue as to whether there are risks, not to specific parties, but systemic risks to all the players and their wider dependencies with the growth of hedge funds? Here it is nothing less than the classic issue, revised and reappraised since the birth of capitalism, as to whether market systems can implode or are, on the contrary, ultimately self-correcting. **MU**

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Challenging conventional wisdom in R&D

Discontinuity in technology can have a frustrating influence on research and development (R&D) structures. What managers need is a framework to help them to understand significant advances in technology. Here **Giampiero Favato**, a director of the Henley Centre for Value Improvement, and **Roger Mills**, professor of accounting and finance at Henley Management College, examine how an explosion of biotechnologies has made managers question traditional R&D models.

Managers need an effective framework to help them understand leaps in technology

The complex way in which technology influences the structure of R&D can create managerial frustration over the extent of ambiguity and discontinuity in the technological platform. The challenge to manage technology implies a degree of control over – and understanding of – the commercial application of new technological advances. The prevailing pharmaceutical R&D invention model is centered on a bricks-and-mortar infrastructure and the idea that innovation must principally take root inside a company's own research labs. The explosion of new technologies is questioning the ability of this conventional R&D model to drive a sustainable top line growth with a continuous flow of innovative medicines.¹

Clearly, managers need an effective framework that will enable them to understand the most significant leaps in technology and to anticipate their impact on other dimensions of a firm's dynamic environment. This article discusses the complex interdependencies of technology and R&D innovation models and uses two cases drawn from the pharmaceutical industry, one of the most R&D-intensive sectors, to provide an understanding of how technological change creates distinct patterns of industry competition.

Changing patterns of pharmaceutical innovation

No single factor has impacted the economics of pharmaceutical R&D more in the last half century than the advent of biotechnology. Biotechnology refers to the development of medicines derived from proteins, DNA, enzymes and products of life and living organisms. Most existing drugs employ chemotherapy, or the ingestion of chemical compounds.

The modern pharmaceutical industry actually developed from a form of biotechnology – when bacteria were used to ferment penicillin. Recent advances, though, moved away from this early process as the understanding of the processes involved became more sophisticated. The leading paradigm of pharmaceutical innovation, following the random process of screening and serendipity, was the rational drug design, or the capability to deliver drugs synthesised specifically to activate or inactivate a physiological mechanism.² Clearly, this knowledge building was evolutionary and incremental, opening up a wide range of research opportunities and a faster rate of innovation for the pharmaceutical industry. Desirable therapies could be pursued based on the understanding of human biological targets and the chemical processes involved, without, for example, the need of a chance side effect.

The new biotechnology platform differs from rational drug design – and represents a significant threat to the research base of traditional pharmaceutical firm – as it constitutes a break from the organic chemistry base of drug research. Rational drug design advances, for example, allowed firms to build on their existing organic chemistry skills. Biotechnology, though, represents a radical shift away from this toward biology as a primary science. Although both sciences share a similar fundamental approach to research, the biotechnology skills used in drug development are not an incremental step beyond existing chemotherapy knowledge. Biotechnology represents a new stream in pharmaceutical research technology, emerging directly from life sciences. While it targets the same medical needs, the key competencies to develop blockbuster innovative treatments are very different. Just as pharmaceutical scientists are becoming familiar with

No single factor has impacted pharmaceutical R&D more than biotechnology

the 'innovation funnel' pattern of R&D, they are watching the shapes of drug discovery change almost beyond recognition.*

Until recently, the pharmaceutical industry learning process was focusing on 'funnel compression', a series of incremental improvements aimed at increasing productivity by shortening the overall funnel length by a few months. The massive volume of information generated by the biotechnological approach to innovation is rapidly turning the funnel into a 'bathtub'.³ Indeed, the emerging biotechnological research platform means that more and more data are flooding in from a discovery, only to try to pass through a small hole defined by the limited growth in the number of clinical trials. Clearly, advances in data mining are required to filter the greater volumes of data and translate the new wealth of choices in the preclinical segments into a set of more robust candidates for the clinical trials. This, for example, would probably lead to lower attrition in the higher cost portions of the pipeline, such as the late stage clinical development. In fact, the hurdle is no longer the conventional cycle compression but actually the alignment with a changing profile. The key to effective innovation funnel management is to design effective screening processes and to make rational stop/go decisions as far upstream as possible. In other words, to know more, sooner.

Given the shifting face of the complete funnel, point solutions – 'silver bullet' technology solutions that support only a part of the R&D cycle – will ultimately only provide a partially effective answer. Technology development must be coupled to applications, accelerating the transition from 'high-throughput' (large volumes of numbers moving through) to 'high-output' (large volumes of useful numbers coming out) discovery. In fact, the need to manage the unprecedented flow of information and decision points in the new pharmaceutical innovation process requires that the entire process be rethought, redesigned and integrated.

While such a broad redefinition of pharmaceutical R&D organisations may appear daunting, closing the transitional gap between rational drug design and biotechnology is absolutely critical, as the rate of new compounds available to patients is visibly slowing down. For example, research by the National Institute for Health Care Management (NIHCM, 2002) pointed out that over the 12 year period 1989-2000, just 15% of all new drug approvals by FDA were medicines that used new active ingredients and provided significant clinical

improvement.⁴ Then, to assess changing patterns in new drugs approval, the research divided the twelve years into to six-year periods, extending from 1989 to 1994 and from 1995 to 2000, respectively. Priority new molecular entities (NMEs), the most innovative drugs, represented 17% of total approvals in the earlier period 1989-1994, while they accounted for just 13% of all NDA approvals in the later period 1995-2000. If 'other drugs' (marginal utility) are excluded, the decline of new innovative products is more dramatic, falling from 21% in the earlier period to just 14% in the later years.

Priority rated drugs accounted for 33% of prescription drug spending growth over the 1995-2000 period. Total retail prescription drug spending more than doubled over the same time period, from \$64.7 billion to \$132 billion. The NIHCM research would suggest that the pharmaceutical industry is realising excess returns from a stream of innovation that is drying out. The industry has the opposite view. A position statement released by the American Association of Pharmaceutical Industry (PhRMA, 2002) challenged the NIHCM findings.⁵ According to PhRMA, NICHM arbitrarily excluded all vaccines and biotechnology products from its report, eliminating de facto 130 new medicines approved by FDA during the report period.

It is impossible, according to the industry association, to discuss pharmaceutical innovation fairly without referencing one of the most important and promising areas of pharmaceutical R&D: the production of complex, large molecule drugs derived from biotechnological research. The same industry seems to have a controversial perception of the value of biotechnology, maintaining a more prudent position when it comes to justify the rising costs of pharmaceutical development (IFPMA, 2004).⁶ While biotechnology is increasing the number of biological targets – and combinatorial chemistry and chemical libraries are raising the number of potential drug candidates – neither necessarily increases the prospect for positive matches between the two.^{7 8} The potential for expensive failures is accentuated by the accumulation of non-validated targets, although some risk can be mitigated by a greater focus on strategies that draw out drug candidates less likely to fail pre-clinical testing. Such a focus, though, adds two or more years to

Closing the gap between rational drug design and biotechnology is critical

Potential for expensive failures is accentuated by non-validated targets

* The 'innovation funnel' effectively describes the rational drug design process: a wide range of development candidates and research options are narrowed down over time until one or two compounds that are commercially viable emerge from the end of the funnel.

the drug development time line and reduces the innovation's opportunity to recover development costs before the patent expires. New survey and testing technologies also require significant upfront investments and the life cycle of these technologies is reducing. Put simply, they are forcing R&D managers to spend more just to keep pace. In fact, the testing and diagnostic equipment that companies rely on to screen and identify promising compounds is superseded by technological advances every three to four years: in the recent past it was ten or more years. The implications for investment are clearly highly significant. For example, in 2005 the leading 11 pharmaceutical companies invested \$7.4 billion in information technology, up from \$5 billion in 2000.

The biotechnological revolution demands a new approach to the fundamentals of pharmaceutical innovation and R&D. Research labs can today run one million genetic experiments a day, generating enough data to saturate any conventional computing capacity. Research teams, which in the past could spend years looking for a single promising compound, now face thousands of candidates to evaluate in a much shorter space of time. Without a clear process to handle all of this information, it is possible to drown in the data. So, how can companies face such challenges? To illustrate, let us consider how the Roche Group is reinventing how it invents.

Roche's new pattern to drug discovery

For Roche, the only way to embrace a technological revolution is to respond with an organisational revolution. It begins with embracing the excitement of having too much data, too fast. It goes on to include new thinking about the best way to build teams of scientists and create a culture where failure is not stigmatised, as long as the decision to discontinue research is taken as early as possible in the R&D process. Finally, Roche is introducing change systematically, one step at a time. While basic research has been revolutionised by biotechnology, other areas – such as animal studies and clinical development – are just beginning to experience the outcomes of new technologies. Not everything needs to be rebuilt at once. Over time, though, every aspect of life science research will be transformed.⁹

GeneChip technology, a device capable of identifying the specific genes that are activated in a medically-interesting tissue sample, has deto-

nated the biotechnology explosion. A single chip can identify as many as 12,000 different genes, assembled one amino acid at the time. Each time a chip lights up, the researcher beholds a glimpse of which genes might be markers for disease. Roche's greatest challenge has been to use the chip effectively in the organisation. Each sample run on a GeneChip set generates 60 million bytes of raw data. Running 1,000 GeneChip experiments a year, which is the operational objective of Roche labs, would use up 90% of the company's total computing capacity. An even bigger challenge involves the management of biotechnological data: many scientists would refuse to touch the data report for fear that they would never be able to make sense of it.

For Roche, the correct approach did not involve a geometric increase of data storage capacity, but actually an iterative communication process between biologists and statisticians about how to use data from a GeneChip experiment. Researchers from different disciplines can gradually make sense of the immense amount of data generated, turning it into a shortlist of best prospects for more research. In fact, sometimes the most valuable outcome is to know when not to run a GeneChip analysis.

Clearly, though, this level of multidisciplinary approach to hard-to-understand science demands flexible teams. Roche has formed eclectic discovery teams – ad hoc combinations of research experts in complementary fields, ranging from genetics to bio-informatics. Gradually, team members have found ways to integrate knowledge and to make the most of one another's expertise. The Genomics Oncology team, for instance, conducted a battery of focused GeneChip experiments, identifying more than 100 genes potentially associated with colon cancer. Some genes, though, also turned out to be critical for normal heart or kidney function and thus were rapidly discarded. Narrowing the list using strict cut-off rules, the team selected two research targets which were endorsed by senior management for clinical development. Interestingly enough, both of the first two targets selected had been among the 50 most promising prospects in early GeneChip experiments, but neither had been among the top ten. By combining biotechnology experiments and oncology-specific techniques, researchers isolated new drug targets that would have been probably overlooked by either set of specialists working alone.

Roche is committed to change patterns of innovation across its entire global research effort. In

Biotechnology
now demands
a new
approach to
innovation
and R&D

Over time,
every aspect
of life science
research will
be
transformed

Palo Alto, bio-scientists have built a computerised model of a mouse genome that allows classical lab studies to be simulated in a matter of minutes. In Nutley (New Jersey), research is ongoing to run GeneChip experiments with potential new drugs to establish their potential side effects before embarking in lengthy toxicological studies with animal models. In Iceland, Roche is partnering with a local biotech company (Decode), which researches genealogical records from the Icelandic population. That data could enable Roche to identify and locate genes that are associated with stroke as well as schizophrenia and other genetic-based diseases. Each initiative is running on a different time line. Some parts of the company will be reshaped in the next few years; others may take a decade or more to feel the full impact of the most recent biotechnology breakthroughs.

Roche's approach to radical technological changes in drug discovery can be defined as a gradual reshape of the internal R&D organisation. Other companies though, such as Procter & Gamble (P&G) have taken bolder steps to manage the discontinuity generated by the development of genetic biotechnology.

P&G: from R&D to C&D

As indicated earlier, the prevailing pharmaceutical R&D invention model centres on a bricks-and-mortar infrastructure – with the idea that innovation must principally reside inside the company's own research labs. The explosion of new technologies is, however, questioning the ability of the conventional R&D model to drive sustainable top line growth with a continuous flow of innovative medicines.¹⁰ P&G realised that small and mid-size entrepreneurial companies, eager to license and co-develop their intellectual property, were increasingly delivering innovation. Universities and government institutions – eager to monetise their research – had also become more interested in forming alliances with the industry.

P&G, after studying the performance of a small number of products licensed-in at a very early stage of development, decided that external connections could produce highly profitable innovation and that a network of scientific collaborations outside the internal R&D organisation was the key to future growth. The company created the 'connect and develop' (C&D) innovation model, focusing on the vision to identify promising ideas throughout the world and apply the internal R&D capability to develop better and less expensive medicines, faster.

Tapping into the creative thinking of scientists and clinicians on the outside world would require major operational changes. The C&D strategy was not about replacing internal R&D capabilities, but actually to better leverage them by reducing the resistance towards innovation 'not invented here.'

In effect, the drive was to generate enthusiasm for those ideas 'proudly found elsewhere'. The final goal was to create a consistent flow of innovative medicines, half coming from internal discovery and half coming through internal R&D. The C&D innovation seems to be working for P&G: almost half of the development candidates in the pipeline have key elements discovered externally. Through C&D, the R&D productivity has increased by almost 60% and the innovation success rate has more than doubled. The costs of innovation, on the other hand, fell from 4.8% in 2000 to 3.4% in 2005.

Internal competences vs external network: who got it right?

The tie between different patterns of deploying resources – and the resulting competitive distinctiveness – is clearer when observing competition over time.¹¹ After the last period of rapid technological shift in the industry in the early 1980s, driven by the advent of rational drug design, technology advances moved beyond the control of established firms' laboratories. Leading players were unable to respond to the early use of molecular computer modelling with the same internal control and adaptation techniques employed in managing the incremental changes in chemotherapy screening platforms which had been continuously evolving in the 1960s and 1970s. The first insights that made rational design possible were a mix between internal, external and government research efforts. The interaction of technological advancement with management choice was the key to competitive advantage: innovative research trajectories were pushed only as far as managers could reasonably foresee results.

From this perspective, Roche and P&G are both winners, as they clearly recognised the potential impact of technology discontinuity on existing innovation models and they did not hesitate to take bold steps to anticipate change in the organisations' mindset.

The strongest evidence, though, that biotechnology represents a major break in the drug discovery process is the wave of new start-ups that entered the market in the last decade,

Roche and Procter & Gamble are both winners

Sustaining
competences
requires a
constant
inflow of new
knowledge

compared with the relative absence of significant new entries among research-driven pharmaceutical companies in prior periods of evolutionary change. While it targets the same medical needs, biotechnology implies the development of new competences significantly different from skills held within conventional R&D labs. Often, the founding scientists of a biotechnology firm are among the very few with comprehensive knowledge of the subject matter. This tacit knowledge is truly a scarce resource because it makes an elite of scientists the arbiter of scientific competitive advantage. Both Roche and P&G responded to the critical need to incorporate new knowledge into existing research organisations, but in different ways.

The Roche bet was on the stretch of internal core competences, achieved by functional reorganisation, hiring fresh talent and team work. However, competences are not permanent and any competence-based protection strategy that exists for a research based firm comes from inside, not from external partners. Sustaining competences and competitive advantage is the key for sustaining above average returns and creating value for the shareholders. Sustaining competences requires a constant inflow of new knowledge: knowledge, skills based on knowledge, and intangible

assets combine to constitute a resource bundle often referred to as the firm's resource base, capturing the unique innovation model that the firm has built up as its core competence.¹² Strategic alliances are an alternative way to gain advantage with distinctive competences.

In comparison, P&G's networking strategy reduced the time and the risk involved in creating knowledge internally. The research outcomes derived from strategic alliances reflect the distinctive advantages from both firms' resource bases, enhancing the competitive position that could have been obtained by either firm acting individually.

The constraints imposed upon a firm by its resource base help in understanding the pattern of industry competition as well as the decisions of individual players. The time, cost and uncertainty involved in creating an innovative resource base both protect the leader and hinder the follower. By recognising early a significant discontinuity in the innovation model of drug discovery process – and by implementing a clear strategy to incorporate the new technology in their *modus operandi* – both Roche and Procter & Gamble should have increased the probability of sustaining a profitable competitive position in the research-based life science industry. **MU**

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The high-risk scenario in the global economy

Economists alarmed by the state of US debt to Asia-Pacific banks employ scenarios to illustrate the forces that produce risk. Proactive risk management must weigh up the contesting views of the chances of serious economic upheaval to assess the severity of any potential damage. **Bill Weinstein**, professor of international business at Henley Management College and a director of the Henley Centre for Value Improvement, looks at the issues.

The use of scenarios to depict forces of potential risk is demonstrated by economists alarmed by the imbalance between the debtor US and its creditors among Asia-Pacific central banks. One credible, if contested, pessimistic scenario until 2010 focuses on US debt, current account and government, which in the early 2000s had sustained growth led by consumer spending in the US and English-speaking countries. The crisis scenario over the current account deficit challenges the influence over risk thinking of alleged conventional wisdom based on favourable US economic performance data, IMF optimism about leading economies' future growth, and the questioning of the deficit itself as important and dangerous. The emerging interdependence of the US and China casts doubt on the feasibility of the radical economic and political changes that are needed to avoid a crisis that could seriously damage the global economy. Active preparation of risk management against the eventuality of a serious economic upheaval must weigh contested views of probability against less doubt about the severity of the damage if it were to occur.

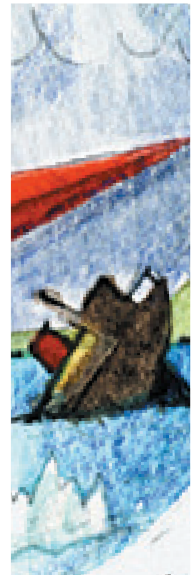
Raw material

Ideas about upheavals in the global environment constitute the raw material of many a disaster movie, depicting events such as inter-planetary wars, ecological and climate disasters and pandemics. No longer alien are scientific projections about, for example, the cooling of the Atlantic Ocean and its Gulf Stream, with massive consequences for life and production in Britain, Western Europe and West Africa. Relatively smaller risks, though, can be crippling in proportion to

very high levels of human effort and business investment. The world of derivatives and swaps is under no human control and could, some argue, bring the whole edifice of international and national economy crashing down were a crisis to occur. Indeed, the ripple effect after the crisis of derivatives trading by Long Term Capital Management spawned several scenarios of global financial breakdown that depicted ineffectual official containment responses to such devastating scenarios.

This article examines how large-scale economic change can sometimes create a major disruption and reconfiguration. One major issue addressed concerns the risks up to 2010 arising from two crucial features of the global economy: the dual development of the current account deficit of the US economy, and the interdependencies among national economies that are integral to the deficit. Among the remarkable features of this scenario – a breakdown of the intensified interdependence between the US and Asia-Pacific over their trade and US dollar imbalances – is that:

- it may be unavoidable if it were to develop beyond a particular point of momentum;
- as with all truly telling scenario exercises, the scenario is far from being endorsed by all analysts and policy makers;
- in consequence of the disagreements marking this scenario, it must indicate uncertainty about the future and continuing disagreement about its probability and timing of occurrence; and
- the more seriously its occurrence and consequences were taken, the higher priority would be given to the search for individuals and enterprises to hide, escape, circumvent and reduce the damage.



Large-scale economic change can sometimes create a major disruption

The high-risk scenario

The potential impact of a malign scenario would have deep and extensive consequences for everyday lives and economic activities. Indeed, in this sense it's a natural subject for risk analysis. Whilst acknowledging that specific risks to specific enterprises, and projects and deals in specific places cannot be straightforwardly 'read off' global radar screens depicting 'macro' or system risks, it is nevertheless important for all players to seize upon the blockbuster risks and understand their broader consequences.¹ Some specific risks, for example, should be obvious for certain activities and planning intentions or assumptions. Others, though, would need tracing through complex webs of variables or matrices of causes and effects.

The scenario developed centres on the growing interdependence of the US – as the world's largest debtor – and the capital positions of many Asia-Pacific economies whose 20-30% savings from income per year mark them as the world's leading group of savers and creditors. Crudely stated, the economies of the US and these other countries have become locked into each other. Disengagement is not an option and each side needs the other. The situation has unexpectedly become of major importance as recently as since the late 1990s. Today, its unremedied imbalance could help spin the world into a steep recession. The speculative pathway, as this scenario might be described, leads to the perception that without any overall architect or master design-hand, the US and China might in the 21st century either divide up the globe into two co-existing parts (as was the case of the US and Soviet Union during the Cold War era), or fight for global scale dominance – another clash of empires. In any case, the key concerns are as follows:

- the US economy has been running current account (CA) deficits for about the last 20 years. This has become a major factor in funding its high rate of economic growth and provoked concern as it has reached a succession of new highs in recent years, previously believed to be unsustainable. For example, as a percentage of GDP, the current account deficit was estimated to reach or exceed 6% last year (depending on methods of calculation) and could now be approaching as high as 8%.² Previously, analysts regarded 2.5-3.5% as normal and implied that at over 6%, some kind of thermostat would blow – eg, the world would cease to trust dollars, interest rates would be

forced up to compensate for exchange rate weakness of the dollar, followed by demand depression, unemployment and a downward spiral of global scale;

- furthermore, since 2000, the US current account deficit – largely made up of the balance of imports over exports – has been part of a massive move towards high growth that's been driven by consumption. Without this move in the US, supported by others in the 'Anglo-sphere', the UK, Australia, New Zealand and Canada – growth would have become stagnant or even negative.³ Indeed, spending on imports had been a key strategic factor in US economic policy, going back to the revival of Western Europe after World War Two, the strengthening of European and Japan's economies in the Cold War, and the ascent of the 'Pacific tigers' (Singapore, Hong Kong, Taiwan and South Korea), and the partial opening of US markets to South East Asia, Latin America and the Caribbean. Trade policy in the 1990s has been used to support the breakaway Eastern European states and, most notably, to bring China into trade interdependence with the US and the West through the World Trade Organisation and bilateral preferential agreements. In contrast with the beggary-neighbour trade policies of the leading economic players of the 1930s, which allegedly contributed to war, the US led the post-War world into trade liberalisation. The US not only bought from others more than it sold – unlike, for example, Japan, Germany and Britain – it was the only rich nation to import on a massive scale.; and
- the trade account's progress within the US current account is testimony, since about 2000, to the fact that the country has become addicted to imported products. The Asia-Pacific central banks, for their part, have funded the US deficit by piling up unprecedented levels of dollars as foreign reserves and IOUs in the form of US Treasury bonds. What has been perceived in an earlier phase (1945-1970s) as a policy of enlightened self-interest, and then later as a critical support for policies to counteract the threat of recession through low interest rates and relaxed money supply controls, has given way to the charge that the profligate US consumer is jeopardising their own and others' economies. For over half a decade up to 2005, US domestic savings plummeted to zero and even into negative territory as consumers spent, safe in the knowledge that housing and stock assets were gaining in value. Once hailed as a basis for preventing the global economy

US and Asia-Pacific economies have become locked into each other

sinking into recession after the stock market fall from March 2000, the massive household debts of the US are now seen by many as a major threat to confidence in the dollar, demand, employment and maintenance of company value.

From perspectives to scenario-building evidence

The current account is technically the total 'trade' balance, ie imports over exports or vice versa, and in addition the balance for labour payments, the balance on international investment income, plus 'unilateral transfers' such as foreign aid and remittances. The current account has climbed from over \$500 billion in mid-2004, to about \$620 billion by end-2004, through \$800 billion by end 2005 – and moved from 4% of GDP in 2000 to over 6% in 2005. In this process, 25% of the US merchandise trade deficit of over \$600 billion in 2005 was with China. However, concerns have been expressed about the fact that this has increasingly depended upon Asia-Pacific accumulating dollar assets – thereby exposing the creditors to considerable risks.⁴ By 2003 a clear pattern had emerged. In the case of foreign currency reserves, the big accumulators became China, Hong Kong, Japan, Malaysia, Taiwan, South Korea and Singapore, but with India and Russia also rolling up significant reserves.⁵

The key holders of Treasury bonds by end 2005 were Japan (by far), China, Hong Kong, Taiwan and Korea. There were also significant holders in the UK, Caribbean banking centres and Germany. Notably, the Chinese central bank steered increasingly away from bonds and towards currency holdings, becoming in 2006 the top holder of US IOUs, estimated as \$1 trillion. An interesting number when set against the US double-debt of trade and government budget of \$2 trillion. But whilst the exchange rate of the US dollar has declined over 20% in the last three years – and its trade-weighted index by somewhat less – the underlying concern has been about loss of confidence in the dollar. 'Dollar watching' was accentuated by the Japanese Prime Minister's remarks about 'diversifying' from US dollar reserves.⁶

Indeed, the insecurity of the dollar was demonstrated by an utterance from South Korea about diversification on 22 April 2005, causing the dollar's biggest fall since October 2004. Believers in the ultimate big slide of the dollar may not, however, go as far as predict-

ing the loss of the dollar's reserve currency status, as they, even with bigger declines in exchange rate, will not challenge the thesis of the Wall Street exchange-rate guru, Henry Kaufman.⁷ Indeed, many analysts share his view that one of the bonds between the US dollar and China is founded on the asset backing which is needed by China's weak banking system; in fact, some part of the reserves are periodically used as operating subsidies to bankrupt state banks.⁸

When the current account passed 5%, then 6% GDP and headed for 7%, alarms were sounded. However, it would take a major change in the US economy to bring it back to a 'manageable' figure of 3% within the next 10-15 years.⁹ Such a change, moreover, would be hard for economic and political reasons. The Asia-Pacific economies were locked into the dollar after their 1997-8 financial crises – which converted them to lowering their dollar debt exposure, and the securing of the national currency against devaluation by supporting the dollar and gaining or sustaining export advantages to the US. Japan, China, Taiwan, Korea, Thailand and Singapore heaped up massive dollar holdings and the strong dollar accelerated US demand for their exports. Thus, from the late 1990s, there developed a powerful reciprocity between the US and the Asia Pacific countries – an understanding of mutual advantage.

As concerns about the trade imbalance between the US – and especially China – emerged, the US repeatedly put pressure on China to revalue its currency, the Yuan, which China finally did officially on 21 July 2005 by 2.1%. However, facts suggest that the US propensity for cheap imports from China, leading to battles over cheap textiles and garments, is not based on the kind of price sensitivity implied in US pressures. As previous experience with Japan has suggested, even enormous revaluations – 300% in the case of Japan against the US dollar over 18 years – did little to reduce imports to the US. Why not?¹⁰ One general observation is that once an economy goes into a phase of high growth through export overdrive – like Japan had earlier and China's has currently – their competitive advantages are virtually unstoppable for as long as three decades.

Second, the income and wealth levels of the US – with the attendant high consumption expectations – make its demand insensitive to price improvements due to exchange rate changes. China's 2.1% revaluation, for example, is more a placatory gesture for a few

Underlying concern has been about loss of confidence in the dollar

Even enormous revaluations did little to reduce imports to the US

product sectors. Indeed, even were it to quadruple it may to little overall to change the trade imbalance. The prime suspect in explaining why arresting US imports is not the price inelasticity of demand but the income inelasticity of demand.¹¹

Why is the scenario apparently unstoppable?

What, then, would change the trade imbalance, bearing in mind the further threats to the balance? The signs in 2006 are that the US housing boom might be slowing down, household debt is showing some slight signs of being reduced and that consumption spending is plateauing. The US government spend, though, and not merely on the wars in Iraq and Afghanistan but also on welfare programmes, has been rising ever since Bush inherited a balanced budget from Clinton. Hence, using the school book guideline that GDP equals consumption (C), plus I (Investment), plus government spending (G), plus Exports over Imports or vice versa (E/I), the dramatic fact is that even a slight reduction in the US trade imbalance would be more than offset by G, the growing budget deficit. In reality, the US total debt must be about \$2 trillion – funded not from internal US sources but from foreigners. The foreign creditors who bear the risks are central banks. Obviously, these are less exposed than investors in businesses or managed asset funds.

The US could cut back on G and would reduce C if confidence was to weaken, but this has its own problems. The scale is what defines the seriousness of the scenario and its ultimately deeply damaging impact on the economy. According to studies by authors such as Roubini and Setser, the dependency of the US debt on foreign support would move the reserves required from \$2.4 trillion at year-end 2004 to close to \$5 trillion at year end 2008, by which time the increase in US net external debt would move from \$3.3 trillion to \$7.4 trillion.

For the two big players, China and Japan, their year-end 2004 combined reserves of \$1.4 trillion would have to rise to about \$3 trillion by year-end 2008. That would mean an annual increase in their reserves of more than \$350 billion over the period 2005-8. The piling-up of US dollars from export earnings to the US and dollar areas may well not yield enough to fund the whole current US current account deficit or even the trade deficit within it.

In Knight's¹² view, though, the probability of financial imbalances causing serious economic disturbance is small. The costs, though, could be large should it emerge. Although he claims the global financial system over recent years has become more robust against shocks – with greater scope for risk-spreading including reduced dependency on any individual institutional or market channel – global interdependencies and liberalisation have generated excessive credit expansion and the build-up of debts may ultimately prove unsustainable. Global financial imbalances are, he says, unprecedented, with the US current account the most vulnerable.

Underpinning his analysis is the claim that stable, low and predictable inflation has lulled the 'Anglo-sphere' countries (Wolf's term) into their lowest savings ratios, investment and potentially very poor fiscal balances. Had they not taken this pathway into the early 2000s, the world would have sunk into depression. Yet, he says, the time has come to assert that the US, which has no serious conflicts that would constrain a move to tighter policies that would address external and internal balances, must take control of its own destiny. Controlling the growth of the government deficit is one such move, but the key is avoiding a disruptive dollar depreciation.¹³

Fred Bergsten, director of the Institute for International Economics, lends force to such views. Writing in 2005 – when he marked the US current account deficit at £600 billion and over 6% of GDP – he foresaw a deep fall in the dollar and much higher interest rates that would choke off growth. That in turn would seriously weaken growth in Asia-Pacific and Europe – unless they could sharply boost domestic demand, a point I shall consider below. Like Malcolm Knight of the BIS, Bergsten holds the US as mainly responsible for the risks. Indeed, the US and other key institutions and governments have done nothing to counter the distortions, he contends.

Nor has the IMF done anything to stop Asia-Pacific governments from manipulating exchange rates for competitive export advantage. China, with its dollar peg maintained for years, would be the chief culprit, in effect weakening its currency against the dollar whilst building its growth mostly on merchandise exports. Bergsten calls for China to revalue by 25%, claiming it would cut \$50-60 billion off the annual US current account deficit – a useful start.

In reality, the US total debt must be about \$2 trillion

The key is avoiding a disruptive dollar depreciation

Finding the way out of the scenario

The path, though, is not through incremental dollar devaluation. Much more radical action is required. If the US waits until its external debt ratio reaches 40-50% before beginning adjustment, for example, there will be little room to manoeuvre – the deficit will simply continue to rise for years ahead on interest payments alone. In such a scenario, a crash for the global economy would become increasingly probable. Hence the prescriptions – the more grandly scaled, the less likely, and the less likely, the more the worst case scenario looms ahead. Prescriptions are as follows:

- to reduce the US trade deficit, US income would have to grow faster than consumption and domestic spending;
- therefore, the US must change from an economy driven by consumption to one driven by income growth;
- to achieve this without slowing down US growth, exports would have to drive the US economy;
- the rest of the world, especially Asia-Pacific, must change from relying for their growth on US demand for their exports to demands for what the US can export to them; and
- therefore the pattern of the past nine years must go into reverse.

The implications are that Asia-Pacific governments would have to adopt exchange rate and other policies that would support demand growth – suppression of domestic consumption must slow down. For some, this means making the domestic price of imports high. Furthermore, the US would have to switch strongly into tradeable manufactures and knowledge-intensive products for export. One problem, though, would be how to get Asia-Pacific markets to demand such imports? Another problem would be how to make investment in the competitive tradeables and non-tradeables that circumvent Asia-Pacific competition in top class areas for return on investment? Thus, any such reversal would take many years and must start now. As one analyst said, there is now a burden to be shared – the US must save more and Asia must spend more.¹⁴ The question is whether this reasoning remains theoretical or not!

Clearly, the choice of previously interdependent macro-economic policies by the US and much of Asia-Pacific worked to their mutual advantage to the mid-2000s. The process has now, though, brought China into a pivotal

position, well beyond that envisaged when the US championed China's membership of the World Trade Organisation by 2000. Both US and China would have to co-ordinate and jointly manage changes in their exchange rate, demand management and capital markets policies which enable them to support each other in conducting the type of reversal mentioned earlier. The US, clearly, has to rein in consumption and government debt – and restructure to diminish its exposure to tradable products in open competition. China, for its part, has to focus on diminished dependence on exports and more on domestic consumption and government spending. It is easy to imagine that the large political and cultural changes necessary for this in both countries would be virtually revolutionary.

The dangers if they do not are massive. Indeed the point of this analysis about avoiding 'disaster creep'¹⁵ is not to advocate policies or a new global order, but only to reinforce the point that the means of avoiding the severe fall-out from a current account crisis are far from available. This approach demands a comparison between the magnitude of the challenge on the one hand, and the priorities, will power, and diplomatic and organisational skills of the political and administrative leaders of the 'great powers' on the other. What, though, do the sceptics make of all this?

The US must save more and Asia must spend more

It won't happen – don't worry about the risks

Clearly some are unprepared for the idea of a potential economic tsunami. Indeed, in mid-April 2006, the IMF foresaw further growth for some years ahead on the platform of four years of growth, 2002-06.¹⁶ Alan Greenspan, chairman of the US Federal Reserve until early 2006, did not address the threat head-on. Indeed his references to inflation were attached to the impact of higher oil prices or productivity growth failures to offset higher rewards to labour. Inflation would be dealt with ahead of the curve by regular 2.5% increases. Thus, with robust growth in the US, consumer confidence only occasionally dipping on concerns about personal debt, Wall Street producing bonus-laden results, a strong stock market, and low-inflationary or demand depressive effects from oil prices in the \$70 range, the only serious concern would be fulfilment of Bush's assurance that the budget deficit would be halved over four years. In this mood, troublesome issues like

The US is really a net creditor, not a net debtor

US non-compliance with Kyoto or dealing with states such as Iran and North Korea seemed marginal.

Inevitably in this climate, the question was raised about what was so important about the current account deficit – and is it really as large as has been supposed? It has been argued that the current account deficit is based on a flaw – or at least an idiosyncratic feature in national income accounting – which assumes that the merchandise trade deficit must be ‘mirrored’ by a capital import surplus – that is, foreigners must buy US assets, stocks and bonds. The appropriate broader view is that foreigners in turn earn dollars to pay for those investments by selling more American goods and services than they buy from the US. Out of this global exchange process, the US gains jobs from foreign investment, lower cost products from imports, and thus a higher standard of living. Therefore, the argument runs, get rid of conventional ideas such as the ‘trade deficit’ or ‘surplus.’¹⁷

Added to this is the argument that American assets abroad earn higher than normal rates of return. Factors that are not ‘counted in’ are insurance, know-how and the value of truly global brands that are predominantly American. In fact, taking into account all such factors, the US is really a net creditor, not a net debtor, according to the boosters. The current account ‘deficit’ for them is a statistical illusion because not all relevant calculations have been factored in, such as the alleged fact that foreigners accept a lower rate of return (eg 2.2%) on their US investments including Treasury bills – in exchange for dollar security, liquidity and low political-economic risks. The placing by foreigners of dollars into investments in the US for a low return is close to a zero interest rate loan to Americans.¹⁸

Unreported profits that accrue to foreign companies must be even larger than previously reported

Not true, says Paul Krugman, who has dismissed as wishful thinking beliefs that the value of such US intangibles or invisible exports makes the trade deficit disappear. In a swift turn of the tables, he invokes the recent study of Daniel Gros of the Center for European Policy Studies who claims that it is not credible that foreign companies persist in investing in the US for an average return of only 2.2% a year. Probably they are understating the profits of their US subsidiaries. More radically, Gros also suggests that official data fails to pick up foreign profits that are re-invested in American operations. If we assume that Gros is right, however, then the true trade deficit, now to include, say another \$100 billion, unreported profits that accrue to foreign companies, must be even larger than previously reported – over \$900 billion, not \$800 billion. Do not, Krugman warns, dismiss the blow-up merely because it hasn’t happened yet.

If the severity of this view were thought to be unpalatable, we may refer to a wider ranging and more dramatic economic and geopolitical scenario authored by Professor Niall Ferguson: impasse in Iraq, US and UK popular disaffection, oil price spikes, more imports to the US, continuing trade conflicts involving China and Asia-Pacific exporters, and a seismic shift as the rise of Islam, with or without terrorism works through to the point where the post-1979 Iranian regime smashes the Cold War mould of East-West co-operation on nuclear proliferation. Then we would know what a lethal cocktail of geopolitical and economic change would taste like.¹⁹

The seriousness of the scenario sketched here would justify a highly active risk-management response, defining mental and policy readiness on the one hand, and preparing organisational, human, communications resources on the other. **MU**

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Reputation is an evaluative concept based on past performance

Aligning internal and external stakeholders

Reputational risk is a hot topic and is on the agenda of many boards, but what are the key issues associated with ensuring that it is appropriately managed? Here **Nuno da Camara**, research fellow at The John Madejski Centre for Reputation, Henley Management College, assesses the importance of corporate brand management and the issues central to aligning reputation management amongst internal and external stakeholders.

For Tony Aperia, Peggy Bronn and Majken Schultz,¹ reputation building is most successful when it starts from within a company and repeatedly fulfils the expectations of (external) stakeholders. According to Charles Fombrun and Cees van Riel,² Ian Fillis,³ and Grahame Dowling,⁴ reputation is a perceptual and intangible asset that exists in the minds of stakeholders both inside and outside the organisation. Moreover, it is influenced by the interaction between different stakeholders⁵ – most visibly in the relationship between employees and customers.⁶ Consequently, many organisations are increasingly aware of the need to understand and manage the impact of internal behaviour on external stakeholder perceptions.

Many organisations also want to live up to the values and identity that they communicate to the outside world, and ensure that behaviour is aligned and integrated with their overall strategy. How, then, can organisations begin to assess the relationship between internal and external stakeholders in reputation management and understand the need for behavioural and strategic alignment vis-à-vis stakeholders? This article will seek to answer such questions by reviewing the definitions of identity, image and reputation in academic literature – including early marketing and organisational behaviour studies – before explaining the rise of corporate brand management and the logic of organisational alignment. It will critically examine the application of different reputation measurement models and examine the relationship between internal and external stakeholders.

Corporate identity, image and reputation

Stuart Albert and David Whetten⁷ give a classic definition of organisational identity as that

which is ‘central, distinctive and enduring.’ Some (such as John Balmer) say that identity is an organisation’s ‘innate character’, and ‘a description of ‘what the organization is’ that affects everything the organisation says, does and produces.’⁸ Clearly then, identity has as much to do with behaviour as appearance and can be interpreted as ‘the ways in which an organisation reveals its philosophy and strategy through communication, behaviour and symbolism.’⁹ Discussion continues on the definition, but it is clear that corporate identity is about the internal culture, values and behaviour of an organisation that help to differentiate it from competitors.

Most definitions of image focus on ‘the feelings and beliefs about the company that exist in the minds of its audiences.’¹⁰ That compares, of course, with the beliefs of internal stakeholders such as management and employees. Image can also be interpreted as ‘what comes to mind when one hears the name or sees the logo.’¹¹ One common distinction now is that corporate identity is what a firm is,¹² while image is what a firm is perceived to be.¹³ Clearly, further research is necessary to more completely understand all facets of the image construct. There is, though, general agreement that it represents the sum of a ‘person’s beliefs, ideas, feelings and impressions’ about an organisation. These result in ‘the set of meanings’ through which people know, remember and relate to an organisation.¹⁴

According to Fillis,¹⁵ the interpretation of organisational behaviour over time results in a reputation. Reputation is, therefore, an evaluative concept based on past performance. It has been described, for example, as a ‘subjective, collective assessment of an organisation’s trustworthiness and reliability.’¹⁶ Dowling¹⁷ defines

reputation as 'a multi-dimensional structure comprised of corporate image and identity' within the context of 'the perceived industry image and stakeholder values, driven mainly by the behaviour (strategy, business process, culture, controls, employees, and governance) of the organisation, its value proposition to customers and its integrity.' Reputation therefore reflects an organisation's internal and external behaviour and its relationships with all stakeholder groups over time.

Marketing and organisational approaches

Reputation also draws from other academic disciplines such as marketing and organisational culture and behaviour. These have, for example, concentrated on the relationship between internal factors – like corporate identity – and external factors like image, as organisations have increasingly struggled to maximise their visibility in highly competitive markets.

The link between internal identity and external image has attracted significant attention. Most research, for example, has focused on the relationship between employees and customers – a key interface between an organisation and external stakeholders.^{18,19} Clearly, in service-led environments in particular, customers are strongly influenced by employee behaviour and their perceptions of the organisation. Staff, then, can act as brand builders for the organisations, linking the internal culture with brand identity. Organisations can manage their brand by narrowing the gap between brand identity and brand reputation.²⁰ The assumptions, values, attitudes and beliefs of employees are thus seen to affect consumers in their purchase decisions and relationship with the organisation. Indeed, many studies in the marketing literature have even linked positive employee behaviour with higher customer satisfaction levels and improved organisational performance.

Marketing and organisational scholars agree on the interrelationship between internal understandings and external perceptions, yet have only recently started to explore how identity influences image and reputation. As Mary Jo Hatch and Majken Schultz note, there is limited understanding within marketing of how internal organisational factors affect external image.²¹ Instead, the emphasis has been on external images constructed by, for example, customers and suppliers. Conversely, the organisational studies literature concentrates

almost solely on the internal factors contributing towards the formation of a corporate identity.

The rise of corporate brand management and alignment strategy

The development of powerful corporate brands, like Virgin which offers a range of products from air travel to CDs in an innovative and consumer-friendly style, has changed the way many consumers perceive and relate to organisations over the last 20 years. Some well-known fast-moving consumer goods companies like Procter & Gamble still operate a stable of individual product brands and do not directly project a corporate brand or identity to stakeholders. Yet, increasingly, organisations use their identity and corporate brand to differentiate themselves in highly competitive markets.

While product brands may appeal to separate groups of stakeholders, any corporate brand needs to appeal, at an emotional level, to both internal and external stakeholders.²² Recent work in corporate communication suggests that internal and external perspectives on reputation are highly interdependent, and that gaps between the two are potential causes of crises.²³ The response of Hatch and Schultz (op cit) is to argue for the alignment of three essential strategic elements for the corporate brand: vision, culture and image. A management team's overall vision should, they say, be supported by the culture amongst employees, and be reflected in the external image of the organisation.

There are clear advantages in adopting a corporate brand, rather than operating a subset of individual product brands. These include structural efficiency, cost-saving and the fact that a certain level of trust and commitment can be communicated through various products to diverse audiences. Yet, corporate branding does carry a risk of damage through disassociated actions and misaligned behaviour towards different stakeholder groups. Hatch and Schultz (op cit) identify the case of British Airways' attempt to market itself as a global airline. The company undertook this mainly by redesigning airplane tailfins to reflect artwork from around the world. Yet the staid cabin crew uniforms and silver tea service remained unchanged, continuing to give passengers the impression of a very British company. A gap thus emerged between the image and culture of the company. Unsurprisingly, the branding experiment failed.

Organisations can manage their brand by narrowing the gap between brand identity and brand reputation

Others, though, have been more successful. Amid falling sales in the mid-1990s, Lego, for example, transformed itself through a new vision of creativity and learning, expressed in the slogan ‘just imagine...’ This involved extensive work with internal and external stakeholders to align the new vision with the corporate culture and image.²⁴ Clearly, the successful development of integrated corporate brands requires a concerted effort to understand the perceptions and experiences of stakeholders inside and outside an organisation.²⁵

The idea of alignment is evident in the corporate identity literature too, most of which has a strong practitioner slant.²⁶ Wally Olins,²⁷ for example, concludes that successful organisations align the different ways in which their corporate identity is presented to their audiences – namely their products and services, the environments in which they make or sell products, the ways they communicate, and their internal and external behaviour – in order to provide consistent corporate images.

As reflected in the marketing and organisational literature, this process of alignment occurs especially in service industries where the junior staff have most contact with external stakeholders and there is a requirement for employees to ‘buy in’ to the desired corporate identity.²⁸ Employees, therefore, have the vital role of communicating the corporate identity through their behaviour.²⁹

A company's reputation
“sits on the
bedrock of its
identity”

The measurement of reputation

With the rise of corporate brand management – and the success of other developments such as crisis management programs in the 1990s³⁰ – reputation has become a key framework for corporate strategy and the measurement of stakeholder perceptions in the 21st century.

The role of intangible assets like reputation has attracted great interest amongst strategy scholars as interest in the firm-based factors that contribute to superior financial performance has grown.³¹ According to a resource-based perspective, firms with a good corporate reputation – and one that is difficult to emulate – have a competitive advantage over peers and may also expect to achieve sustained superior financial performance.³² Reputation as an academic discipline is also founded in a stakeholder-based theory of management and seeks to measure and understand the experience and behaviour of internal and external stakeholders in the organisational context.

There are various types of measurement in the reputation literature, with the two most popular being the social expectations and corporate personality approaches. We will examine these in terms of their ability to examine the interaction of internal and external factors in organisational reputation and the need for strategy and behavioural alignment.

The first approach, in fact, concentrates on the different social expectations that people have regarding companies. It includes a generally observable split between economic performance and social conduct factors. Fombrun's well-known ‘reputation quotient’ (RQ) – which surveys members of the general public – is a good example of this approach.³³ Another would be *Fortune* magazine's annual survey of corporate reputation amongst CEOs and investors. The RQ is made up of six dimensions, namely financial performance, products and services, vision and leadership, social responsibility, workplace environment and emotional appeal, thus typically conceptualising reputation as a sociological as well as an economic phenomenon.

It is unclear what comprises the non-economic portion of reputation but Fombrun suggests that cultural aspects, ie values such as credibility, reliability, trustworthiness and responsibility are central to the perceptual representation of an organisation. A company's reputation, he adds, “sits on the bedrock of its identity – the core values that shape its communications, its culture, and its decisions.” Reputation is, therefore, built upon and determined by the internal environment of an organisation, and not just economic product-related concerns.

In an analysis of the RQ in three Scandinavian countries, Aperia, Bronn and Schultz (op cit) lend further credence to this view. Emotional appeal was the most important dimension for respondents' images of a firm and, while products and services was the most important driver of this dimension, workplace environment and corporate social responsibility (CSR) were also seen as central. Furthermore, the general public considered treatment of employees to be the most important activity of CSR. The most significant communication dimension was sincerity. In other words, organisations must ‘walk the talk’ and keep their promises to stakeholders.³⁴ This measurement approach indicates that internal culture, values, and behaviour are extremely important in the development of external perceptions about an organisation, although it does not attempt to measure this link directly.

The second approach to measuring reputation focuses on the different personality 'traits' that people attribute to companies. In fact, this personification approach makes good sense of the complex individual associations around brand and image. It is, though, less evaluative in nature than the social expectations approach and is also more likely to be influenced by personal identification with an organisation. The 'corporate personality scale' developed by Davies et al is the best example of this approach.³⁵ It stems from Jennifer Aaker's work on brand personality and rates organisations on 48 traits that factor into seven higher-order dimensions of agreeableness, enterprise, competence, chic, machismo, informality, and ruthlessness.

This method is useful for identifying gaps in internal and external perceptions of an organisation. For example, Gary Davies and Rosa Chun (op cit) used the corporate personality scale to examine the differences between internal employee perceptions (ie identity) and external customer perceptions (ie image) of the corporate brand of two UK-based department stores. In store 1, which had benefited from a substantial investment in store redesign, the image was found to be superior to the identity. In store 2, staff morale was higher and identity was superior to image but not markedly so. In the case of the former, it seems, staff training had been neglected during the store redesign, and low staff morale was beginning to affect customers. The authors concluded that if gaps do exist then it is preferable to have a situation where identity exceeds image, rather than the other way round. Whilst the identification of gaps in internal and external perception is a useful starting point for organisations, the significance of each factor in the Corporate Personality Scale – and its effect on overall reputation – is difficult to determine.

Davies et al (op cit) addressed this in a later study by linking ratings to measures of customer and employee satisfaction. They found that the dimensions of agreeableness, enterprise, competence, and chic, in that order, correlated most strongly with satisfaction. Ruthlessness was highly correlated with satisfaction levels in a negative way; machismo and informality seemed less important to overall stakeholder perceptions. Further refinement and development of the links to customer satisfaction are likely to shed light on the co-variance of corporate personality dimensions in stakeholder perceptions but still fall short of identifying the link between internal and external stakeholders in reputation.

The MacMillan SPIRIT model conceptualisation of the causes and consequences of reputation

Internal organisational factors	Reputation	Resulting stakeholder behaviour
Causes (experiences, observations)	Corporate reputation (beliefs, attitudes)	Consequences (future intended behaviour)
Material benefits	Trust	Advocacy
Non-material benefits	Emotional commitment	Cooperation
Service benefits	Level of positive and negative emotions	Extension
Coercive power		Retention
Termination costs		Subversion
Shared values		
Equity of exchange		
Communication		
Keeping commitments		

Adapted from MacMillan, Money, Downing and Hillenbrand;³⁷ and Money and Hillenbrand.³⁸

Organisations, then, can make good use of current methods of identifying gaps in internal and external perceptions. How, though, is corporate identity transmitted from internal to external stakeholders who, in turn, construct images of an organisation and make these into a reputation, as described by TC Melewar and Elizabeth Jenkins?³⁶ More work is needed on the impact of internal factors on external perceptions in a relationship context. Naturally, external perceptions also feed back into the organisation and impact on internal factors. It may, though, be most useful in the first instance to approach the research from an internal to external direction (see table above).

The MacMillan SPIRIT model³⁷ is currently the only Reputation model that examines the causes and consequences of reputation, and could be used as a framework for analysing the effect of internal organisational factors on reputation and the impact on future intended behaviour. The model is based on the well-known Fishbein and Ajzen causal framework of how 'antecedent' experiences and observations result in beliefs and attitudes, which in turn lead to 'consequent' intentions and behaviour.³⁸ Thus, the causes of reputation are

How is corporate identity transmitted from internal to external stakeholders?

conceptualised as stakeholder experiences and observations. Reputation itself, though, is understood as stakeholder beliefs, attitudes and emotions, which is similar to the social expectations approach described above. What, then, are the consequences of reputation? They are defined as the future intended behaviour of stakeholders in terms of their relationship with the organisation. Reputation, according to this perspective, is not simply an end in itself but as an evaluative judgement that impacts on future stakeholder behaviour.

In comparison with Fombrun's RQ approach – and also the corporate personality work by Davies et al – the MacMillan SPIRIT model can focus on one specific stakeholder group and identify the factors that influence reputation and how it impacts on behaviour. For example, Keith MacMillan, Kevin Money, Steve Downing and Carola Hillenbrand found that in their study of a financial services company they could account for over three quarters of the overall variance of reputation (as expressed through trust), which in turn was mainly influenced by non-material benefits and shared values, with material benefits, communication and coercive power also having an impact.³⁹ This suggests that internal stakeholders have an important influence on the levels of trust experienced by stakeholders; and, the real power of the MacMillan SPIRIT model is its ability to identify and quantify this relationship.

Conclusions

Clearly, the inside of an organisation, namely its culture, values and strategy, has a significant impact on the perceptions of it held outside. Reputation, therefore, is increasingly viewed as a behavioural process, which must be built from within and integrated across the organisation. Indeed, the rise of corporate brand management amidst the pressures of differentiation

in highly competitive markets has only made this phenomenon more apparent. Moreover, particularly in the service industry where customers interact directly with employees, organisations risk damaging their reputation if they don't act according to their rhetoric towards all stakeholder groups. Increasingly, organisations are called to account if they do not practice what they preach, not only by customers, but also by the media, the government and investors.

To examine the development of reputation – and the relationship between stakeholders inside and outside the organisation – managers can draw on several approaches. The reputation literature has contributed significantly to the measurement of gaps in internal and external perceptions of an organisation between different stakeholder groups, namely through the social expectations and corporate personality approaches. This, then, is an important first step for organisations to identify the extent to which reputation is internally and externally aligned, and to help unearth strategically important issues in organisational identity and image. Organisations must, though, look towards a cause-effect methodological approach like the MacMillan SPIRIT model to really understand how reputation is formed amongst a specific stakeholder group.

Indeed, the proposed extension of this model would allow managers to answer crucial questions about how internal behaviour impacts on reputation amongst different stakeholder groups and, even more importantly, what effect reputation has on future stakeholder behaviour. This type of analysis can inform companies' reputation strategies going forward – allowing organisations to decide how they wish to try and form their reputation, what the ultimate purpose of that reputation should be, and how to align strategy and behaviour to fit those goals. **MU**

Increasingly, organisations are called to account if they do not practice what they preach

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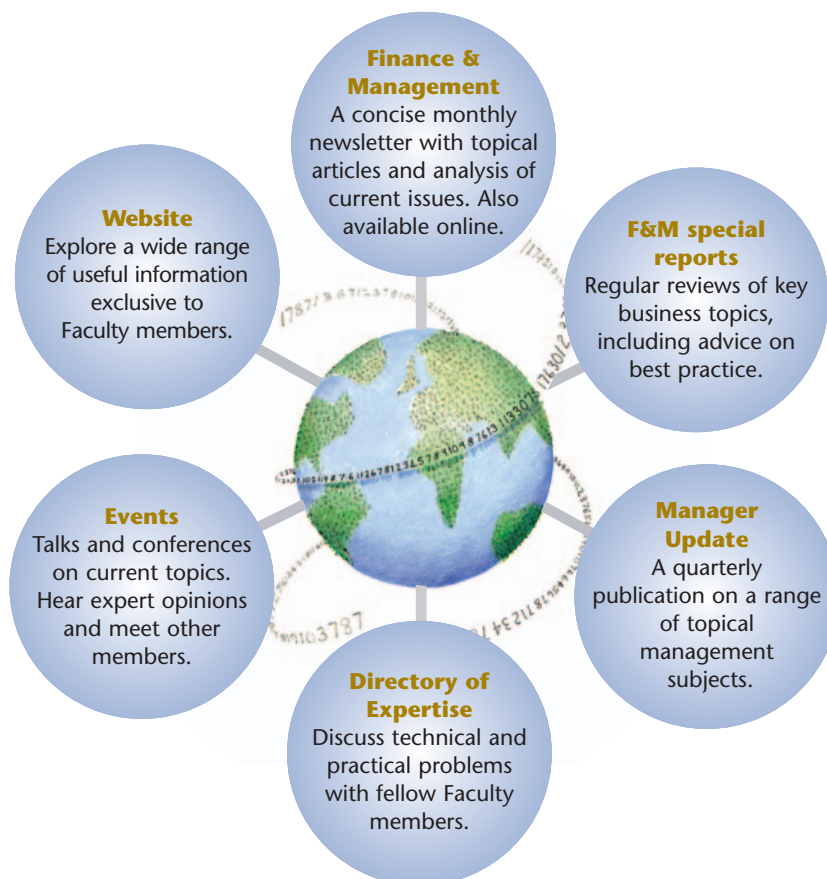
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