

THE INTERNET AND VALUE INVESTING

Part I Economic Fundamentals

December 15, 1999

The Internet is a paradox. It was originally conceived and built on a non-profit basis, and (thus far at least) few “Internet companies” have reported sustained profits. Yet scores and perhaps hundreds of billions of dollars are resting upon the conviction that the Net will generate enormous returns to those who unlock its commercial potential. The resolution of this paradox clearly has tremendous implications for investors. Is the Internet an unprecedented bonanza of opportunity? Has it been hyped into a bubble of speculative excess? Should investors change their principles in response of its development? This six-part report addresses these questions. Part I defines e-infrastructure, e-business and e-commerce, and sets out some economic principles which appear to underlie them. [Part II](#) sketches some of the consequences of these fundamentals for the operations of [Internet Service Providers](#) (ISPs), and [Part III](#) does so for e-business and e-commerce ventures. [Part IV](#) sets out the criteria – and their consequent dangers – which market participants are using to evaluate Internet and [technology stocks](#), and [Part V](#) reviews the [impact of technology](#) upon consumers, businesses and investors. Finally, drawing from the findings of Parts I-V, [Part VI](#) describes and justifies the approach that Leithner & Co. is taking with respect to the Internet and Net-related phenomena.

What Is It?

Gradual deregulation and very rapid advances in technology are transforming telecommunications, such that the volume of traffic is increasing exponentially and the cost of service delivery is falling sharply. An unintended and largely unanticipated consequence of these developments is the Internet: a network of personal and [mainframe computers](#) which, virtually instantaneously and at negligible marginal cost, can distribute almost limitless amounts of information around the world.

A network is a set of points between which goods, services or information can be sent. Examples include road, canal, rail and [air transport](#) infrastructure; water, sewerage, gas and electricity grids; fixed, mobile and satellite [telephone systems](#); and radio, television and cable broadcasters. Some networks, such as TV networks, are one-way: television broadcasters transmit pictures to their viewers, but viewers do not transmit pictures back to the studio. In contrast, two-way (interactive) networks enable people to use compatible equipment (such as the telephone, fax, personal computer, etc.) to both send and receive information.

At its birth in the 1960s, the Internet was built by the U.S. government and intended primarily to preserve military security during times of actual or apprehended war. Since then it has been commercialised in three ways: e-infrastructure, e-commerce and e-business. *E-infrastructure* refers to the [private ownership](#) and operation of the hardware (i.e., the wires, cables, routers, switches, servers and so on) which comprises the Internet. Its explosive growth during the 1990s has been financed mostly by private capital and undertaken primarily by private (or, outside the U.S., partially- or soon-to-be-privatised) telephone companies. These companies have developed new markets and sources of revenue as Internet [Service Providers](#) (ISPs). Hence the increasingly close links between telecommunications (both fixed and mobile), telecom companies and the Internet.

E-commerce refers to business-to-consumer transactions conducted via the Internet. E-commerce gives consumers access to a much larger number of vendors, and a wider choice of goods and services, than does bricks-and-mortar commerce. As an example, rather than local bookshops with limited selections, e-commerce enables bibliophiles to choose vendors and inventories around the world. To attract business, on-line vendors must respond to consumer preferences at least as well as their physical counterparts. Technological developments give them means to do so: most notably, they can collect information about their customers and customise their services in ways which physical vendors cannot. In the U.S., according to Forrester Research, e-commerce generated \$8 billion of revenues in 1998 and is forecast to generate \$108 billion by 2003.

E-business refers both to business-to-business and intra- business transmission of information and to the sale of the goods and services, Information Technology, advice and support which facilitate it. E-business can provide companies with more and better-quality information about their suppliers, customers and internal operations. The possession of such information enables companies to reduce production, inventory and associated costs; learn more about their customers and suppliers; anticipate their customers' preferences and give them better service; create new sources of revenue and enter new markets. If companies do these things, then they operate more efficiently, effectively and thus profitably.

As detailed in [Part III](#), thanks to e-business entirely new strategies are emerging in mature industries, ranging from advertising to chemicals and road transport. Forrester Research estimates that e-business generated \$43 billion of revenue in the U.S. in 1998 and forecasts that this revenue will exceed \$1.3 trillion by 2003. (This discrepancy mirrors the physical world, where business-to-business transactions dwarf sales to final consumers by a ratio of 10 to 1, and where most business transactions are already conducted at a distance, whether by telephone, fax or private electronic links.)

What's the Big Deal?

More efficient production and greater choice for consumers are clearly important. But these developments can be attributed to a variety of causes and have been occurring steadily in Western countries for 200 years: by themselves, then, they cannot explain the enormous hype and expectations which currently surround the Internet. They do not explain why Jack Welch, the head of one of America's largest corporations, has said "I don't think there's been anything more important or more widespread in all my years at General Electric. Where does the Internet rank in priority [for us]? It's number one, two, three and four."

Nor do these developments explain why the 1990s have been identified as the beginning of a third industrial revolution. Alan Kohler, one of Australia's most prominent and respected business journalists, contends that "even the most cursory examination of history shows that the present period has most in common with the first industrial revolution, and in particular the period of incredible innovation that happened in England during the second half of the 18th century." Kohler states that "there can be little doubt that the history of the third industrial revolution will place the [inventors and developers of the Internet] alongside the founders of the first industrial revolution – Watt, Hargreaves and Cartwright – as well as Thomas Edison and Alexander Graham Bell in the 1870s, who began the second industrial revolution with the telephone and electric light."

Some Economic Fundamentals of E-infrastructure

The Internet is being hyped, ISPs are investing billions to build, modernise, expand and merge their networks, and companies are scrambling to get "on-line" because (theoretically at least) the Internet possesses "positive consumption and production externalities." In plain English, the Internet seems to possess a highly unusual economic characteristic: the greater the number of people and businesses on-line, the greater the Internet's value to both ISPs and their customers.

Positive production and consumption externalities do not normally co-exist in the markets for goods and services. Nor do they exist simultaneously in transport networks. When a company in a traditional industry introduces a successful good or service, it increases production until the cost of producing an additional unit exceeds the revenue obtained from selling it. This law of diminishing marginal returns is well known (at least in terms of its effects) by primary producers, manufacturers and service providers. Consumers might not recognise this law but have experienced its effects. Relative scarcity tends to increase items' utility and underpin their value. Consumers are typically prepared to pay more for items whose supply is limited; conversely, the greater an item's supply the less they will usually pay for it.

Contrast this with an interactive (i.e., telephone or other communications) network. If it has just one subscriber, then that subscriber cannot call anyone and the network is useless. The large sums of capital invested in it have produced a product which has no value, and

investors' returns will be correspondingly poor. But this situation changes dramatically when a second subscriber joins the network: suddenly calls in two directions can be made, and subscribers therefore attach some value (however modest) to this ability. Add a third subscriber and six types of calls can be made, and so on.

As their number increases, the number of persons whom each subscriber can call increases exponentially; and as a result, the value of telephone communications to all subscribers also increases dramatically. This "network effect" (what economists call a "positive externality") attracts still more subscribers, who generate more revenue for owners and thereby increase the network's value to them. Under these conditions (and given the critical assumptions that the network can cope with the volume of traffic, technology does not render it obsolete and government regulations do not ruin its profitability) the network's value to both its users and owners increases continually and exponentially. Communications networks can thus offer *increasing* marginal returns.

Some Economic Fundamentals of E-business and E-commerce

In considering the economic fundamentals which underlie e-business and e-commerce, it is worth keeping in mind that these businesses are, from the standpoint of ISPs, consumers of network services. They are not owners of a network and therefore do not supply network services.

Network Effects?

A critical question thus presents itself: do the "network effects" which can under certain conditions apply to ISPs also apply to e-business and e-commerce? Given the very special conditions outlined below (i.e., conditions even more favourable than those required by ISPs), the answer appears to be "maybe."

Take as an example a hypothetical e-commerce Web site called Acme.com. Assume that consumers want to make purchases via the Internet; that they are overwhelmed and bewildered by the huge number of products and vendors on the Net; and that in order to cut their search and transaction costs these overwhelmed consumers gravitate to a few well-known sites, including Acme.com. (They might gravitate to Acme.com for any number of reasons: perhaps it sells those goods and services which consumers want; perhaps its customer service is outstanding; and perhaps its prices undercut its competitors).

If, in response to the growth in "hits sites such as Acme.com further extend their product range, improve their standards of customer service, lower their prices, etc., then it is likely that they will attract more customers, whose purchases provide the revenue which improves the site further, which attracts more customers, and so on. If these assumptions are valid, then this e-commerce "network effect" produces a zero-sum (winner-take-all)

outcome: a handful of e-commerce sites which conduct most of the e-commerce, and the rest with next to nothing.

Exclusion and Rivalry

Two principles which underlie the consumption of most goods and services further illuminate the economic fundamentals of e-business and e-commerce – and help us to judge whether the assumptions which Acme.com requires for success are reasonable. The first is the “exclusion principle.” It states that if you cannot pay for a good or service, then its producer, supplier or owner can exclude you from the enjoyment of its benefits. You might, for example, like to eat a Big Mac; but if you cannot pay for one, then McDonald’s can prevent you from enjoying one. The second principle is that most goods and services, by their very nature, either cannot (or can only to a limited extent) be consumed jointly. Economists call this “rivalry of consumption”: only one of us can consume a particular Big Mac, and only a few of us can ride in the same Holden Vectra at the same time.

The principles of exclusion and rivalry not only underlie the consumption of most goods and services: they also provide incentives for their production by private-sector firms. Exclusion is a reflection of most goods’ and services’ inherent scarcity; and scarcity is the basis for consumers’ assessments of the value of what they are consuming. Businesses have an incentive to enter a market and can remain in business because, thanks to the exclusion principle, they are able to demand and receive payment in exchange for their products. Moreover, although the enjoyment derived by consumers from their consumption of goods and services is subjective, the fact that most consumption is either partly or completely rival makes the establishment of market values for businesses – as well as market prices for both their inputs (capital, supplies and labour) and outputs (goods and services) – an inexact but nonetheless non-arbitrary exercise.

Explicit Information and Tacit Knowledge

To grasp the fundamentals of e-business and e-commerce, it is important to appreciate the distinction between explicit information and tacit knowledge. Explicit information can be verbalised and therefore expressed in either words or numbers. It is derived from rules (whether formal or informal) of logic, observation and evidence. Accordingly, it tends to be universal, (i.e., its scope is not limited to a particular person, time or place); can be standardised and codified and assembled into manuals, textbooks, tables of statistical data and similar formats; and can be disseminated relatively easily from one person to another.

Implicit knowledge, on the other hand, cannot be easily verbalised, and therefore cannot be expressed in words or numbers. It is derived from long experience and intuition rather than strict logic and evidence. Because it usually pertains to a particular person, time or place, it cannot be standardised, codified or assembled into manuals, textbooks and tables of data. And for these reasons it cannot be disseminated easily.

The Consumption of Explicit Information

The consumption of explicit information and ideas – on which much e-business and e-commerce depend – violates the principles of exclusion and rivalry. As noted by U.S. Secretary of State (and later President) Thomas Jefferson in 1795, the exclusion principle cannot be easily applied to explicit information and ideas:

“If nature has made any one thing less susceptible than all others of exclusive property, it is the action of the thinking power called an idea, which an individual may exclusively possess as long as he keeps it to himself; but the moment it is divulged, it forces itself into the possession of everyone, and the receiver cannot dispossess himself of it.”

It is not easy, in other words, to exclude non-paying users from the consumption and enjoyment of explicit, technical or “standardised” information and ideas. If exclusion is desired, the usual way to attempt it is through legal contrivances (such as patents) and technical devices (such as scramblers and passwords). Not surprisingly, the phenomenal rise of the Internet has been accompanied by the greatly increased prominence of intellectual property. Hence lawyers, once disdained by entrepreneurs and hired only to keep them out of court, are now key players who are frequently engaged in order to bring Internet companies into court: litigation is one of the few means to enforce the exclusion principle on which their existence often depends.

The consumption of standardised information and ideas – and therefore the consumption of its most important current manifestation, computer software – also violates the principle of rivalry. Through a network, for example, many people can jointly use a copy of Windows, Word or Outlook Express. Moreover, my use of these software packages does not decrease others’ use and enjoyment: indeed, because it enables me to send material to them and receive it from them, jointness of consumption produces positive externalities. Jefferson also recognised this point:

inciple cannot be easily applied to explicit information and ideas:

“The peculiar character [of ideas], too, is that no one possess the less, because others also possess the whole of it. He who receives an idea from me, receives instruction himself without lessening mine. That ideas should freely spread from one to another over the globe, for the moral and mutual instruction of man, seems to have been peculiarly and benevolently designed by nature, when she made them, like fire, expansible over all space, without lessening their density at any point. [Ideas and knowledge], then, cannot in nature be a subject of property.

It is not easy, in other words, to exclude.

If the consumption of explicit information and ideas is non-rival and not inherently exclusive, then the establishment of clear property rights over them will not be straightforward, and entrepreneurs will lack unambiguous motives to produce them. And if they do, they will not find it easy to capture the revenues from their production. In plain English: the barriers to entry into e-business and e-commerce will be very low and in some instances virtually non-existent; and it will be very easy for a firm to steal a march on its competitors, only to lose it soon thereafter to another firm.

Perhaps most ominous for e-business and e-commerce, computer and Internet technology makes it possible to copy and transmit explicit information and software at virtually zero cost and almost anywhere in the world. To economists, the duplication of goods at almost no cost is a contradiction in terms. Unless something (i.e., patents, passwords and litigation) prevents it, articles which can be copied and distributed almost effortlessly will quickly become low-value commodities.

Robert Kuttner, writing in *Business Week*, argues that few e-business and e-commerce firms will prosper – let alone make big profits – because the Internet is a nearly perfect market. Kuttner, citing economist Joseph Schumpeter, contends that all firms must rely on some imperfection in the marketplace in order to make money. “Every grocer, every filling station, every manufacturer of gloves or handsaws relies to an extent on imperfect consumer information, limited time for comparison shopping and a lot of brand loyalty.” The Internet, however, acts as a powerful solvent on all these market imperfections.

The Forbidding Economics of E-business and E-commerce

The foregoing analysis implies some less-than-encouraging implications for the providers of e-business and e-commerce goods and services (as opposed to their consumers). If we assume, like a standard microeconomic theory textbook, that there are few or no barriers to entry into a particular market and that no business can dominate this market sufficiently to influence prices, we describe a situation very similar to that faced today by e-business and e-commerce firms. E-business and e-commerce requires little more than an idea to get started, and these ideas are so easily imitated and duplicated that any successful idea will quickly attract a raft of competition.

Standard micro theory also tells that, as long as revenues cover variable costs and make some contribution towards fixed costs, in the short run businesses can operate at a loss. The Internet provides a host of examples: as long as the revenues from the sale of (say) a CD cover the cost of obtaining the CD from a wholesaler – even if these revenues do not cover all of the monthly lease payment on the computers, the warehouse and office space or the salaries of staff – an e-commerce company can remain in business.

The short run can last either until the company's capital is exhausted or it finds ways to increase its revenues such that all fixed costs are covered and a profit is earned. In the Internet economy, with its low fixed costs, this short run can last a long time. But this is a mixed blessing: if e-business and on-line shopping grow and revenues derived from them rise, new entrants will quickly enter the market and profits will remain as elusive as ever. Hence Amazon.com, the flagship e-commerce firm, accepts short-term losses whilst seeking to expand its revenues. To date it has found other things to sell; but these efforts have simply produced more losses. Which firms, then, will make a profit in an economy in which the Internet plays an increasingly prominent part? Microeconomics – and common sense – provide no ready answers.

Conclusion

This is the great paradox of e-commerce and e-business, “knowledge industries” and the “Information Economy.” In such an economy, the marginal utility (and hence the value) of explicit information, technical knowledge and software is purportedly greater than that of oil, steel and Snickers Bars. But because explicit information, data and software can be copied and disseminated so easily and cheaply, their price is threatened with collapse. If a motor car could be “copied” and shipped anywhere in the world as easily as a software package, e-mail message or data file, the price of cars – and hence the car industry – would collapse immediately. Hence the predicament of Information Technology, e-commerce and e-business firms: they are, at their core, collections of explicit but nonetheless intangible capital over which property rights are neither easily established nor maintained.

Given certain critical caveats, then, positive production and consumption externalities can make the ownership of communications networks – and therefore telecoms companies and Internet Service Providers – an extremely attractive proposition. In contrast, non-exclusive and non-rival consumption of standardised information and technical knowledge, together with the unprecedented ease of copying and disseminating it, makes the economics of e-commerce and e-business firms more problematic.

[Part II](#) sketches some key implications of these economic fundamentals for the operations of ISPs; and [Part III](#) does so for e-business and e-commerce firms.

Back to Fundamentals

To understand this contrarian case, consider for a moment why people invest. To invest is to forego jam today in order to enjoy at least as much jam tomorrow. If this is to occur, then the annual earnings from one's investments (or “coupons as I call them) must outpace the effects of inflation and other taxes. Two motivations thus underlie the decision to invest: the necessity of protecting the real value of one's capital, and the desirability of increasing its value over time.

Another basic point: any coupon which an investment generates must eventually return to its owner. Some coupons (such as stocks' dividends and bonds' interest payments) are reimbursed today; others (such as companies' retained earnings) are returned at some point in the future.

This latter point provides a basis by which investors can compare the relative attractions of major asset classes. A Commonwealth bond, for instance, is a "risk-free" asset in two senses: its interest payments are both fixed and virtually perfectly predictable over time. Real estate is a riskier asset because rental income is more variable and less predictable over time; and stocks and corporate bonds are riskier still because their earnings and ability to make interest payments, respectively, are most variable and least predictable (some studies would say unpredictable).

Calculating Bonds' and Shares' Coupons

Calculating a bond's initial coupon is very easy: it is the dollar amount which its issuer pledges to pay each year to the bondholder. In the case of a 10-year bond with a face value of \$1,000 and an initial yield of, say, 6.5%, the issuer pledges to pay the bondholder \$65 per year for 10 years; moreover, at the end of the 10 years, the issuer pledges to return the \$1,000 to the bondholder. In the meantime, and no matter how many times or at what price the bond changes hands, the \$65 annual coupon remains fixed. The price investors will be willing to pay for the bond depends upon three risks: the expected rate of inflation over the bond's remaining life; the yield on Commonwealth bonds maturing at the same time; and the "risk premium" (i.e., bondholders' perceptions of the borrower's ability to pay the coupons and repay the principal on time).

The "coupon" of a company's shares is merely its earnings per share (E.P.S.); and its earnings yield is E.P.S. divided by its shares' current market price. As an example, consider a company which earns ten cents per share, has a market price of \$2.00 and whose earnings can be expected to grow at a rate of 25% per year.

At the end of the first year, the investor receives a coupon of ten cents (either up-front, in the form of a dividend, or as earnings retained and re-invested in the company, or some combination of the two). This represents an earnings yield of 5% on the initial investment of \$2. At the end of the second year, the coupon grows to 13 cents (a 25% increase over the previous year), which represents a yield of 6.5% on the \$2. Given the growing coupon, the earnings yield increases year by year such that, at the end of the tenth year, it reaches 47.5%. This greatly exceeds any bond's yield and the rate of inflation which might reasonably be expected to occur over these years, and is especially alluring when compared to bonds' static return.

Clearly then, when a company is able to increase its coupon, the yield on one's initial investment also increases. This is a fundamental attribute which distinguishes ownership of

a company's equity (shares) from ownership of its debt (bonds). And it is this compounding which makes the ownership of "growth companies" – *if their shares can be bought at a sensible price* – so rewarding, since the price of these shares will tend over time to rise roughly in tandem with their growth in earnings. It is this compounding, among other things, which I seek when making Leithner & Co.'s investments.

We can apply this logic to determine whether a "risky" investment, such as a particular company's shares, offer a better or worse potential return than a comparable "risk free" Commonwealth bond. Generally speaking, shares are more attractive when their earnings yields are significantly greater than that of bonds; conversely, bonds are more attractive when their yields are equal to or greater than that of stocks.

Telstra's Coupons

Consider Telstra. Assume you have the choice of buying one share at \$8.20 (its average closing price over the past several weeks) or a hypothetical five-year \$8.20 Commonwealth bond with a yield of 6.35% (the average yield over the past several weeks of Commonwealth bonds maturing in September 2004). Further, assume that whichever you choose you are a "long term" investor and will hold your investment for five years. By late 2004, you will earn \$2.57 (51.4 cents per year for five years) in coupons from the bond, and will collect total proceeds of \$10.77 (\$8.20 + \$2.57). If the Telstra share is to be a better investment than the bond, then it must return to you at least \$10.77 in five years' time. At first glance, judging from both recent increases in its market price and statements by analysts and market commentators, this will be a very easy hurdle for Telstra to jump. But when you take another look, it becomes considerably less easy.

A Simple Evaluation of Telstra

"Coupon" Cumulative Earnings	Earnings Yield on \$8.20	
1999	\$0.27 \$0.27	3.3%
2000	\$0.32 \$0.59	3.9%
2001	\$0.37 \$0.96	4.5%
2002	\$0.43 \$1.39	5.2%
2003	\$0.51 \$1.90	6.2%

2004	\$0.59 \$2.50	7.2%
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The table shows Telstra's current earnings per share ("coupon") of 27 cents, together with its projected coupons for the next five years under the rather generous (considering analysts' statements and reports) assumption that earnings will grow at a compound rate of 17% per year. At the end of five years, cumulative earnings of \$2.50 – *slightly less* than the bond's cumulative earnings – will accrue to the Telstra shareholder as dividends, retained earnings or some combination of the two. Note, however, that only in the fifth year does Telstra's earnings yield exceed that of a "risk free" Commonwealth bond (7.2% versus the bond's 6.35%).

That's Why Leithner & Co. Is Steering Clear of Telstra

The owner of the Telstra share, in other words, will have to wait five years before the share's *projected* earnings yield matches that available *today* from the bond. Further, given that its E.P.S. is projected to be fifty-nine cents in 2004, Telstra must trade at no less than 18 times ($\$10.77/\0.59) its projected earnings in 2004 in order to (barely) exceed the bond's return. Telstra's fortunes, in other words, must unfold exactly according to these rosy projections for the full five-year period in order in the fifth year to provide a return which only barely exceeds that guaranteed today from a five-year Commonwealth bond.

What are the chances that these rosy projections will transpire? Should we accept analysts' assumption (perhaps faith is a better term) that Telstra's earnings will grow at 17% per year over the next five years? (Over the past five years, how many Australian companies have been able to increase their earnings per share at this compound rate? Far fewer than you might think.) Can we rely upon other "investors" (speculators is a better term) to keep Telstra's share price at this level for the next five years? Affirmative answers to these questions provide the rationale for the purchase of Telstra at today's prices.

For the Telstra share's return to exceed that of the Commonwealth bond by a significant margin, we must expect either that analysts' earnings projections turn out to be conservative or that Telstra's share price will increase faster than its earnings. Over the long term, however, the intrinsic value of an asset cannot grow faster than its earnings.

For this reason, and because its projected return cannot reasonably be expected to surpass by a wide margin the current return of a "risk free" Commonwealth bond, I do not believe that it makes sense to purchase Telstra shares at anything approaching their current market price. To do so is not to invest on the basis of the company's fundamental operations: it is to gamble that the market price of its shares will continue to increase and become even more detached from the company's operations, and that it will be possible to sell them at an even more inflated price. Because Leithner & Co.'s investment philosophy precludes

speculation, it precludes the purchase of Telstra at current prices.

Others who have purchased Telstra shares or installment receipts recently should ponder very carefully the words of Benjamin Graham and David Dodd: “with encouragement from the past and a rosy prospect for the future, the buyers of ‘growth stocks’ [are] certain to lose their sense of proportion and pay excessive prices.” Warren Buffett described last year what happens when they do so: “investors making purchases in an overheated market need to recognise that it may often take an extended period for the value of even an outstanding company to catch up with what they paid.” Perhaps that is what the Commonwealth Government, together with many stockbrokers, funds managers, financial advisors and media commentators, mean when they say that Telstra is a “long-term investment.”

Part II ▶

THE INTERNET AND VALUE INVESTING

Part III

Consequences of Economic Fundamentals for E-Business and E-Commerce

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...continued from [Part II](#)

[Part II](#) of this report set out the major economic bases of e-business and e-commerce. It concluded that non-exclusive and non-rival consumption of explicit knowledge and software, together with the unprecedented ease of copying and transmitting them, make the economic fundamentals of e-commerce and e-business firms problematic. This report explores implications which follow from these fundamentals.

It seems reasonable to assume that the growth of the Internet (in terms of the percentage of homes which have access to it) and the on-line economy (in terms of both the absolute amount and relative proportion of [consumer sales](#) conducted on-line) will continue. At the same time, however, it is by no means certain that [Internet access](#) in Australia will soon approach that of the telephone (94%) and [radio and television](#) (96%), or that Internet sales will comprise more than a relatively small fraction of retail spending.

In his path-breaking analysis of the economics of agriculture, nineteenth-century economist David Ricardo distinguished between the extensive margin (bringing new land under cultivation) and the intensive margin (increasing the productivity of land already under cultivation). John Quiggin, in an article published in the [Australian Financial Review](#) in April 1999, used these concepts to shed light upon the possible growth of e-

commerce.

According to Quiggin, the spectacular growth of Internet consumption has taken place mainly on the extensive margin. A few years ago it was mainly the preserve of academics and university students, and today one-third of Australians have access to it. Given Quiggin's assumption that one-third of the population will never go "on-line there is scope for, at most, another doubling of the extensive margin.

Hopes for big profits from e-commerce must therefore rely on the intensive margin. Superficially, the scope for the growth of e-commerce looks limitless. Thus far, however, sales have been strong only in those market segments where business was previously done by phone or mail-order. Examples include [computer hardware](#) and software, books and CDs, florists and travel services. Once the bugs are ironed out, e-commerce may well offer a better service than call-centres or paper catalogues. But, concludes Quiggin, the growth of e-commerce on the extensive margin will be restricted to a level comparable to that of the present mail-order and phone-order sectors."

Explicit Information Is Becoming a Commodity

Computer and Internet technology are making it increasingly easy to copy standardised information, technical knowledge, data and software at virtually zero cost and instantly transmit them anywhere in the world. In so doing, every industry is becoming part of a global network in which companies' once-privileged access to and supply of explicit information is eroding. In consequence, this information – which was once closely guarded and hoarded – is becoming a commodity. Just few years ago, for example, companies such as Reuters could charge a small fortune for a "live" feed of [stock quotes](#); today, almost all financial Websites provide them (albeit delayed by a few minutes) free of charge.

[Financial services](#) more generally provide an excellent example (there are several others) of how the Internet can transform an industry's prospects. In the past, brokers justified their high fees by pointing to the quality of their advice. But now amateurs and experts alike can exchange tips at no charge in popular Websites, and can execute trades on-line at a fraction of the cost charged by "full service" brokers. In the U.S., more than 30 discount brokers are offering on-line trading accounts that match or undercut the market leader. Financial transactions, once the preserve of an elite profession, are rapidly becoming a commodity. Providers must therefore either survive on razor-thin margins or find another way to add value.

Rapid and Profound Changes to Businesses and Their Plans

Given the low barriers to entry, not just books, CDs and software but any product which can be produced and transmitted in an electronic format may be rapidly and profoundly

affected by the Internet. The same applies to goods and services which used to benefit from the public's limited access to explicit information. These industries include financial services, investment and insurance; TV, radio, film, publishing, advertising and music; education; transport (somebody has to deliver all of Amazon's books to consumers); travel services; retail; and Information Technology.

As one commonly-cited example of this rapid and profound change, in 1993 the Encyclopaedia Britannica was often sold door-to-door, and exclusively in a bulky multi-volume print version, for approximately \$2,000. By 1998 (after Microsoft launched Encarta) it was typically sold as a CD-ROM, often over the Internet, and for as little as \$300 (today it can be purchased for as little as \$60). Because Britannica neither recognised nor embraced Internet, IT and CD technologies quickly, it squandering its leading position in the market and narrowly averted financial collapse.

For media and entertainment companies, the Internet has equally destabilising implications. For newspapers and magazines, it is a potential tidal wave for which some will not prepare adequately. To decide whether to deliver news and entertainment in a digitised or traditional (print) format is to undertake totally different strategies and tactics. Further, if the Internet reduces the (traditionally very high) barriers to entry into these industries, it will encourage a further dispersion and fragmentation of sources of explicit information – making the market share on which media companies have traditionally based their profit margins virtually impossible to achieve.

Commodities Do Not Command Fat Margins

The development and explosive growth of a communications network opens new markets and entrepreneurial opportunities to conduct new kinds of business. But if the Internet puts an unprecedented amount of explicit information into consumers' hands (which it does), and if barriers to entry are low (which they are), then the economics of e-commerce will not be favourable. The basic problem is that profit margins from advertising, retailing, merchandising, subscriptions and the like are often low, and that the volumes and customer base required to derive sustainable profits from them are usually quite large. Customers may sometimes be prepared to pay a small premium for particular companies' services. But if they can use "bots" (search engines which scour the Web for the latest offers, cheapest prices and so on), and if rivals are only a click of the mouse away, then even well-known firms with respected brands may be obliged to accept thin margins.

In what may be a harbinger, two American e-commerce firms, Onsale and Buy.com, are deliberately selling to consumers at and below wholesale prices. Both firms have implicitly acknowledged the obvious point that these activities can never be profitable; instead, they expect to make money by selling advertising aimed at the customers who visit their Websites. This strategy has prompted The Economist to quip: "is it too implausible to imagine Dollar.com – a company that sells dollar bills for 90 cents and makes money from

advertising?” If so, then leading e-commerce firms such as Amazon.com may become businesses with billions in revenue but the profits of a corner shop.

Don't Sell Commodities, Provide Packages of Services

In a range of industries, businesses which once survived and prospered because they were conveniently located, had privileged access to information or provided information which consumers could not easily find are now threatened with shrinking margins and must therefore find other *raison d'être*. These include the provision of packages of specialised services tailored to the customer rather than single, undifferentiated commodities.

Airlines' Websites, for example, are becoming conduits for selling travel-related services (such as hotel bookings, car rentals and travel insurance) rather than simply seats on a plane. As they collect more information about their customers' preferences, e-commerce firms can offer other things of interest to them. For a business traveller to London, for example, an e-travel Website could suggest a theatre performance, book the tickets and arrange limousine transport. It could also order flowers for delivery before arrival and reserve a table at a favourite restaurant after the end of the show. The e-commerce firm has no need to own the companies which actually provide these services: it simply brings them together under its brand umbrella. (It is significant that Microsoft's on-line car, travel and finance service delegates final transactions to third parties, but through its "brand" retains "ownership" of the consumer).

Clicks and Mortar

This "bundling" of goods and services need not be the preserve of "e-commerce" companies, and its growth points to the blurring of e-commerce and e-business. Home Depot, for example, an American retail chain which serves building contractors and Do-It-Yourselfers, is using the Internet to transform itself from a (low-margin) retailer and merchandiser into a (higher-margin) provider of bundles of renovation and building services. Small contractors, who are Home Depot's most valuable customers, are given a userid and password to its Website. The contractor enters details about his job; and the Website tells him what materials he needs, how to schedule the work and what glitches might be encountered. Home Depot's Website will also ask whether the builder wants the materials to be delivered on-site and whether they should arrive all at once or on a "just in time" basis. And if the builder needs a plumber or an electrician, then the Website can arrange that too.

The use of Home Depot's Website has clear advantages for the builder: he saves time, has immediate access to expert advice, no longer needs to over-order materials, need not carry unnecessary stock and can find help quickly when required. As a result, the builder may be able to bid more competitively for work – and stands a better chance of completing jobs

on budget and on time.

The Website also benefits Home Depot. It can carry far less inventory, gains a wealth of information about its customers and, by deepening relations with them, improves its chances of “building its brand” and turning them into repeat customers. If Home Depot forwards customer information to its suppliers, it takes much of the guesswork out of their production runs and thereby helps them to become more efficient. In doing these things, Home Depot ceases to be simply a retailer and instead becomes a provider of “virtual services.”

E-business and the Fully Integrated Value Chain

Businesses can reduce their costs by rationalising, automating and consolidating their purchases of goods and services from suppliers; providing better information about their purchase requirements to their suppliers; reducing the amount of inventory on hand and the time which it rests on their shelves; and learning more about their customer’s preferences. The creation of a “fully integrated value chain” via e-business has the potential to contribute to each of these objectives.

Through its on-line Trading Process Network, for example, General Electric purchased \$1 billion from its suppliers in 1997 and almost \$8 billion in 1998. Using TPN, GE has achieved supply price reductions of 15 percent and purchasing cycle decreases of 50 percent. So far TPN has been used just by GE; but because it spends \$30 billion a year on supplies, it can pull many potential suppliers into its orbit. Indeed, perhaps more than any other American company GE can use its purchasing power to pull entire industries into e-business. Similarly, American auto manufacturers have established the Automotive Network Exchange, an on-line logistics system, in order to link manufacturers and their suppliers. ANE has decreased inventory lead times from 11.5 days to as little as 6.5 hours and has generated at least \$1 billion in cost savings.

The Internet has enabled Dell Computer to create a three-way “information partnership” with suppliers and customers. Dell treats them as collaborators who, together, find ways of improving efficiency across the company’s chain of supply and demand. And in Britain, Safeway, a leading supermarket chain, has constructed a Web-based system which is revolutionising the way it does business. On the buying side of its operations, it allows hundreds of its suppliers access to its data warehouse on the Web, thereby giving them real-time information about how each of their products is selling in every one of Safeway’s stores. This access enables suppliers to tailor production to both current demand and shifting tastes, and to ensure that Safeway’s inventories remain lean but are never exhausted. On the selling side, Safeway uses its Website for “standard” e-commerce, as well as collecting and extracting data about customers’ preferences.

These innovations tend not to be visible to consumers. Evidence is mounting, however,

that significant improvements in productivity can be attributed to them. Joel Stern, the American management consultant best known for the creation and popularisation of economic value-added analysis (E.V.), says that “the coming revolution” in e-business will (through the reduction and in some cases elimination of inventory and labour costs) reduce the prices of some goods and services by at least 5% and as much as 25-40%.

New Business Models

Home Depot’s and Safeway’s approaches blend e-commerce and e-business and harness implicit knowledge as well as explicit information. In so doing they suggest that three of the Internet’s unique characteristics can be used to create niches for “Infomediaries” (specialists who position themselves as brokers between buyers and sellers, are uniquely placed to collect local or specialised information, add value to it and disseminate it to those who value it most).

First and perhaps foremost of these unique characteristics is the speed, range and accessibility of the explicit information on the Internet. The breadth and depth of the available information may be so great that it overwhelms users and poses significant search costs upon them. Second, however, for users so inclined the Internet reduces the cost of switching vendors and suppliers (another may be no more than a mouse-click away). By freely distributing a huge amount of price and product information, it shifts power from sellers to buyers. Again, however, this power can overwhelm some buyers. They want to reduce their search costs and rely upon accurate information and advice. Sellers are in no position to offer disinterested information and advice. That opens up opportunities for a third party, the “Infomediary to provide a one-stop-shop.

Finally, the Internet is reducing the cost of bulk (or “standardised transactions” and thereby stimulating economic activity. A banking transaction via the Internet costs a few pennies, 27 cents at an ATM and 52 cents over the telephone. But such savings may be available only to large businesses, such as banks and airlines, which serve mass markets and can reach consumers directly. Infomediaries, by linking specialist buyers and sellers via the Internet, can achieve similar savings in niche markets.

Aggregators

Forester Research has identified three business models which the Internet makes possible. The first is the “aggregator”: the firm which helps buyers in fragmented markets to select products. Aggregators provide up-to-the minute price and product information and a single contact point for service. An example is Chemdex Corporation, which provides a one-stop shop for both academic researchers and companies in the pharmaceuticals and biotechnology industries. The market for biological chemicals is fragmented and inefficient. No fewer than 250,000 laboratory scientists waste valuable research time struggling to purchase their supplies, using dozens of catalogues and making many fruitless

telephone calls. Market fragmentation extends the R&D cycle and increases the costs of the industry's 2,500 life-science companies; and hundreds of suppliers are hamstrung by the logistical inefficiencies inherent in paper-catalogue distribution.

Chemdex creates a less fragmented and more efficient marketplace on the Internet for the three groups it serves. For researchers, it has created a Web-based catalogue with powerful search engines and the information they require to make purchases much more rapidly; for suppliers, it offers supply-chain automation which lowers costs; and for life-science companies it provides detailed sales and customer data which shortens the R&D cycle.

Auctioneers

A second type of e-business, the on-line auctioneer, provides a means for sellers to dispose of perishable or surplus goods or services at the best possible prices (and for buyers to get bargain prices). The advertising industry provides a typical example. No matter the medium (print, poster or broadcast), advertising sales staff spend a disproportionate amount of time trying to sell "remnant space at very short notice – and sometimes for as little as 20% of the normal full price.

Enter Adaction.com, an "on-line media marketplace which conducts Web-based auctions in which buyers of ads can bid for what they want without time-consuming negotiating with publishers' sales representatives." Adaction.com is attractive to sellers of ads because it offers a simple solution which does not undermine rates (to offload remnants, sales teams must often return to clients to whom they have already sold ads at a higher price, which risks spoiling the market and loses goodwill). And it is attractive to buyers because it provides a low-cost alternative to standard means of acquiring ad space.

Exchanges

As a third e-business model, there are on-line exchanges. These firms create liquidity in otherwise fragmented markets, lower average stock levels by matching bids and offers, act as neutral third parties and enforce market rules and settlement terms. A good example is National Transportation Exchange. In the road haulage industry, lorries tend to be full in outbound journeys but partially or completely empty on return trips. (According to one industry estimate, 50% of the lorries on American roads at any given time carry no cargo).

The problem is that there exists no mechanism to link buyers of lorry space with empty vehicles. Enter NTE, which uses the Internet to connect shippers who have loads they want to move cheaply with fleet managers who have space to fill. NTE creates a spot-market by setting daily prices based upon information from several hundred fleet managers about the destinations of their vehicles and the amount of space available. It then ascertains the best deals. When terms are agreed, NTE issues the contract, handles payment and collects a commission based upon the dollar amount of each deal. This spot

market benefits both parties: the fleet manager obtains extra revenue which would otherwise be unavailable; and the shipper gets a bargain price for transport.

Conclusion

Despite the sector's problematic fundamentals, the prospects of particular e-commerce and e-[business firms](#) need not be unfavourable. Indeed, of the entirely new business models made possible by the Internet, e-business "Infomediaries have the potential to be both highly and sustainably profitable. They might also improve significantly the efficiency of even low-tech vertical markets such as road haulage or steel.

Infomediaries use the Internet to create markets, change the way markets operate and improve markets' efficiency. Despite their many differences, they have an important common feature: in one way or another they consolidate buyers and sellers in fragmented markets. They do so by utilising implicit knowledge. In Friedrich Hayek's words (written more than 50 years ago): "the shipper who earns his living from using otherwise empty or half-filled journeys of tramp-steamers, or the estate agent whose whole knowledge is almost exclusively one of temporary opportunities, or the arbitrageur who gains from local differences in commodity prices – all are performing eminently useful functions based on special knowledge of circumstances of the fleeting moment not known to others [i.e., implicit knowledge]."

It was thought initially that the Internet would mainly be an e-commerce phenomenon, and that it would make money from its rapid dissemination of explicit information and sale of physical goods. It has long been fashionable to disparage the relevance of the knowledge of the particular circumstances of person, time and place. But it now appears that e-businesses, thanks to their recognition and use of implicit knowledge, possess the ability to provide services which will reorganise entire industries. The (market) mechanism by which implicit knowledge can be disseminated is, according to Austrian School economists such as Hayek and Ludwig von Mises, the central problem to which economics should be devoted. It is apt that the Internet, an unintended consequence of advances in computing and telecommunications technology, is providing one such mechanism.

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THE INTERNET AND VALUE INVESTING

Part IV Investors Meet the Internet

1 February, 2000

...continued from [Part III](#)

[Part I](#) of this report defined e-infrastructure, e-business and e-commerce, and set out some economic fundamentals which appear to underlie them. [Part II](#) and [Part III](#) sketched some of the consequences of these principles for the operations of ISPs, e-business and e-commerce ventures respectively. Considered as a whole, Parts I-III suggest that the prospects of most “[Internet companies](#)” are considerably less compelling than is commonly supposed.

This report shows that most investors appear to be either oblivious to or dismissive of this point. Nor has the difficulty (and, as I believe, impossibility) of [assessing](#) the [intrinsic](#) value of e-business and e-commerce firms deterred them. Quite the contrary: if anything, ignorance in these respects has increased speculators’ convictions about Net stocks. Today’s market participants are thus treating the Internet much like their forebears treated the communications innovations of yesteryear. Therein lie great dangers.

Can the Intrinsic Value of Dot Coms Be Estimated?

Reasoning from first principles, I conclude that there exist no rational means by which the valuations of many e-business and e-commerce companies can be established. This result does not imply that they have no value; rather, it is simply that their value, if any, cannot be reliably ascertained.

[Part I](#) showed that the consumption of the explicit information, technical knowledge, data and software on which much e-business and e-commerce depends is non-rival and not inherently exclusive. Exclusion and rivalry reflect most goods’ and services’ inherent scarcity; and scarcity is the basis for consumers’ assessments of the value of what they are consuming. Further, the fact that most consumption is either partly or completely rival makes the establishment of market values for businesses – as well as [market prices](#) for both their inputs (capital, supplies and labour) and outputs ([goods and services](#)) – an inexact but nonetheless non-arbitrary exercise.

Given exclusion and rivalry, then, there will exist incentives for the production of goods and services by [private sector](#) firms and clear criteria for the establishment of their market values by consumers. In their absence, however, incentives for production are weak and standards of valuation either absent or arbitrary.

It is therefore not surprising that there exist no established means to capitalise an e-business or estimate the value of an e-commerce stock. Dennis Eck, CEO of Coles Myer, Australia’s largest retailer, was much closer to the mark than he might have intended or realised when, at the launch of his company’s on-line [retailing strategy](#) in July 1999, he was asked about the value of e-commerce. His reply: “either zero or infinity – nobody knows.”

Those who believe that traditional methods of valuation do not apply to Internet companies are therefore unwittingly correct. The difficulty is usually ascribed to the unprecedented novelty and revolutionary character of the cyber-economy, and to many of these companies' lack of earnings. As my examination of their economic characteristics demonstrates, however, the problem is much more fundamental – and seemingly much less solvable – than this.

In the absence of clear and agreed standards of valuing Internet stocks, market participants have become more and more willing to accept heroic assumptions and pie-in-the-sky projections about these companies' prospects. Current approaches to e-business and e-commerce valuation are therefore completely arbitrary. Analysts ignore bottom-line earnings (which in any case often do not exist) and focus on revenues, subscriber numbers, “eyeballs” (number of “hits” on the company's Web site) and other ad hoc measures.

Consequences of Evaluative Arbitrariness

In the absence of clear and agreed criteria to guide their valuations, four optimistic (and perhaps heroic) sets of assumptions seem to underlie the assessment of many e-business and e-commerce stocks:

Optimistic Assumption 1:

As noted by the U.S. Federal Reserve Chairman, Dr Alan Greenspan, the extraordinary hype about the Internet has been generated by the conviction that the Net will shortly become as ubiquitous as the telephone, and that a substantial proportion of the transactions, goods and services now conducted or distributed via conventional means will eventually be conducted via e-business and e-commerce.

It seems reasonable to assume that the percentage of homes and businesses which have Net access, together with the amount and relative proportion of business conducted on-line, will continue to increase. As shown in [Part III](#), however, it is by no means certain that the extent of Internet access in Australian households (currently 25-30%) will soon – or ever – approach that of the telephone (94%) and radio and television (96%). (Perhaps for that reason, strenuous efforts are currently underway to combine mobile phones and TVs with access to the Internet). The market valuation of e-commerce stocks far exceeds anything that could be justified even if e-commerce took over the entire mail-order sector. Indeed, to justify their current valuations, Internet sales would have to displace shopping malls; thus far, however, there is no sign that this is happening.

Optimistic Assumption 2:

ISPs' prosperity is conditional upon reaching a “critical mass” of subscribers. It also depends upon the extent to which technological developments render existing networks (in

which billions have been invested) obsolete. Yet many investors – including professional and large institutional investors – are acting as if ISPs have already achieved critical mass and (curiously, given the breathtaking rate of technological change) today’s networks will not be superseded by new and better networks.

As shown in [Part I](#), these expectations are questionable. Because one sees Internet addresses displayed almost everywhere, one might think that most people surf the Net daily. Surprisingly few people, however, do so. It requires time, money, technical skill and interests which the average consumer lacks. Users of the Internet, especially for services beyond e-mail, constitute a minority segment of the population; and although this segment is growing steadily, for the foreseeable future it may remain unrepresentative of the whole.

Optimistic Assumption 3:

Given problematic economic fundamentals, the dynamics of stiff competition etc., it is likely that many – and perhaps most – of today’s Internet ventures will either earn meagre returns or fail outright. Investors readily acknowledge this likelihood but are not deterred by it. Quite the contrary, it encourages them: they believe that it will ensure that a select few of today’s minnows will become the giants of tomorrow which earn enormous and sustainable profits. Hence investors’ desire to “get in on the ground floor.” This motivation is hardly new: as stated in a 1905 ad for the De Forest Wireless Telegraph Company, “all great discoveries which have brought civilised communities into close touch have made millions for those who attained an interest in them in the early stages of their development.”

Investors in Radio Corp. of America, the biggest and best-established company in its field during the radio boom of the 1920s, would disagree. RCA, unlike most of its competitors, made profits during its formative years. It also launched America’s first nation-wide broadcasting network and diversified into a range of cognate technologies. Indeed, it would be difficult to name a company which was better managed and did a better job of planning and executing a long-term business strategy.

Nevertheless, investors who bought RCA shares in the summer of 1928, when the company, analysts and investors alike agreed that its prospects were virtually limitless, soon lost nearly everything. From almost \$500 in 1929, between 1930 and 1950 RCA stock hovered around \$US10. Its technology was indeed revolutionary, its business plan was executed successfully and its operations were therefore profitable. But its early investors lost heavily just the same. (Three decades passed before RCA’s stock, adjusted for splits, returned to its pre-crash high – in 1960, this time at the crest of a boom in consumer electronics companies created by the development of television).

This point applies not just to leading firms within a “New Era” industry, but to the industry itself. The aviation, air transport and airline industry also owes its existence to

scientific breakthroughs and the development of particular technologies. Like computers in the last quarter of the 20th century, aviation revolutionised business and everyday life during its second and third quarters.

Warren Buffett has illuminated this point in a witty but nonetheless sobering way. Imagine if you were present with the Wright Brothers in Kitty Hawk, North Carolina, at the birth of aviation in 1903. Assume that you could foresee both the explosive growth of the industry and its enormous impact upon the country, and that you had the opportunity to “get in on the ground floor” with as much money as you wanted. What would have been the result? In Buffett’s words:

“Despite putting in billions and billions and billions of dollars, the net return to owners for the entire airline industry... [has been] less than zero. If there had been a capitalist at Kitty Hawk, the guy should have shot down Wilbur [Wright]. One small step for mankind and one huge step back for capitalism.”

Optimistic Assumption 4:

To maximise their chances of survival, today’s minnows are plowing enormous resources into technology, marketing and people. Mike Vallender (CEO of the Internet stock forum HotCopper, which listed in November) has stated that “the Internet is unexplored territory when it comes to generating revenue. What we do know, however, is that getting your slice of the market is the number one priority in the short term. In two years, if we have 250,000 members of our forum, the value of our company will be so much more than what it cost to get the members and we’ll look like geniuses.” Growth for tomorrow, in other words, is infinitely preferable to profits today.

Some disturbing developments are appearing as a direct consequence of this optimistic assumption and the inability to evaluate Internet companies. Most notably, revenues are not always revenues. Some companies are using barter arrangements rather than cash transactions in order to increase their revenues and growth rates. At iVillage, an on-line media site for women, the barter of banner ads with other sites accounted for 21% of the company’s 1998 revenue. Quokka.com, a sports media site, received Internet services, computer hardware digital cameras and software to the value of \$4.4 million in 1998 – and recorded it as part of its \$8.6 million in annual revenue. And customers are not always customers. Although ExciteAtHome claims 38 million “registered users it has only 620,000 customers paying regular fees for the company’s high-speed Internet service.

Optimistic Assumptions’ Consequences: the Dot Com Boom

Seemingly as a result of these optimistic assumptions and inability to assess their intrinsic

values, the Australian share market (like its American and British counterparts) is currently besotted with the shares of Internet, telecoms and technology companies.

Initial Public Offerings (IPOs)

Just three years ago, just one e-business company (Sausage Software) and no ISPs or e-commerce outfits were listed on the ASX. By my reckoning, on 1 January no fewer than 127 companies (most newly-listed, others rebadged mining exploration companies) derived significant revenues from Internet service provision, e-business or e-commerce activities. Ten Net-related IPOs occurred in November and December, and at least as many have been scheduled to follow during January and February. Most of these IPOs have fully-subscribed within days of their announcement, and over-subscriptions have been the norm.

“Stag” Profits

Lacking standards of evaluation and given very optimistic assumptions, no price seems to be too high to pay for these stocks. Take Microsoft’s newest listed competitor, VA Linux Systems. Floated at \$30, its shares rose by the end of their first day of trade to \$239. Yet its prospectus states: “we do not expect to generate sufficient revenues to achieve profitability and therefore we expect to continue to incur net losses for at least the foreseeable future. If we do achieve profitability, we may not be able to sustain it.” Linux is capitalised at \$10 billion – exactly the same as defence contractor General Dynamics, a company founded in 1952 and having 44,000 staff, revenue of \$3 billion and a track record of profit increases throughout the 1990s.

At least ten other American IPOs floated in the second half of 1999 obtained first-day “stag” profits of at least 350%. This is not a purely American phenomenon. The prospectus of Melbourne IT, a company which registers Internet domain names in Australia, advised that it may not be able in future to charge fees for domain registration. No matter: floated at \$2.20, on its first day it traded as high as \$9.00. Other Australian companies floated in the past four months, including Open Telecommunications (350%), Technology One (305%), Lake Technologies (58%) and IT&e (56%), have also experienced huge first-day profits.

Market Capitalisations

The total market capitalisation of the approximately 100 small computing, IT, Internet, telecom and biotechnology companies which comprise the Deutsche Bank Technology Index has increased from \$9 billion in mid-1999 to almost \$25 billion today. In mid-December, the total market cap in the Australian Technology Index established by Warburg Dillon Read was \$23.6 billion. And according to a report released by

stockbroking firm Hartley Poynton in November, Australia's 41 listed telecoms and Internet stocks have a total market capitalisation of \$A136.4 billion. (If Telstra is removed from this list, the remaining 40 have a market cap of \$34.4 billion).

In the U.S., technology stocks comprise an unprecedented 25-30% of the capitalisation of the Standard & Poor's 500 Index, and the average price-to-earnings multiple of stocks listed on the technology-heavy NASDAQ Index is no less than 170 times (up from 21 times in 1990, 39 times in 1996, 62 times in 1997 and 78 times in 1998). The NASDAQ itself has risen from 5% of U.S. GDP at the start of the 'Nineties to more than half – 55% – of GDP today.

Amazon.com, the e-commerce retailer which has yet to earn a penny of profit from the billions which has been poured into it, has a market capitalisation approximately equal to that of General Motors, the world's largest vehicle manufacturer; and the market cap of Yahoo!, the Internet portal which trades at more than 100 times its annual revenue (that's right, revenue, not earnings), is twice as great as GM's.

In Australia, One.Tel, the fourth-ranked ISP and telco, and Computershare, the share market registry firm, were capitalised in January at \$4.1 and \$4.0 billion respectively. That is equivalent (\$4.2 billion) to Cola-Cola Amatil and greater than industrial giants such as CSR, Fairfax, Lion Nathan, Boral and Pioneer International. Yet in the past year One.Tel's profit was less than \$1m, and Computershare sells for no less than 240 times earnings. Australia's largest "Internet" stock (it derives surprisingly little of its revenue from the Internet), Ecorp, has no earnings but a capitalisation of \$800 million; and Sausage Software, whose shares have risen in the past year from \$0.25 to \$5.40 (a modest 260 times earnings), is capitalised at \$690 million.

Saturnia, Near Money and Ponzi Schemes

In ancient Rome, the seven-day festival honouring Saturn, the deity dethroned as ruler of the world by his son Jupiter, took place at the end of each year. Its ostensible purpose was to pause long enough to resynchronise the lunar and solar calendars. As the years passed, however, it degenerated into a lengthy debauch during which Romans of many walks of life engaged enthusiastically in all manner of licentious, self-indulgent and excessive behaviour.

Strong parallels exist between the Saturnalia and segments of today's Internet IPO industry. The original purpose of merchant banking and venture capital industries was cautiously to couple particular investors (i.e., those possessing considerable knowledge, capital, appreciation of and appetite for risk) with particular technology firms (i.e., those possessing a record of short but nonetheless profitable operations, sound business plans and promising proprietary technologies). Today one might be forgiven for thinking that their purpose appears to be frenetically to marry inexperienced people possessing untested

ideas to those possessing much money and even less common sense.

Today's Internet sector concentrates upon the selling of business plans for their own sake, and the lust for money derived thereby, rather than upon the creation and nurturing of viable businesses. "MBAs aren't going to class anymore; they're taking sabbaticals to write Internet business plans" says Ann Winblad of Hummer Winblad Venture Partners of San Francisco. Unfortunately, however, this "overwhelming flood of plans are products for Wall Street, not real businesses, says Yogen Dalal, a general partner with the Mayfield Fund venture firm in Menlo Park, California.

The Internet boom, like a typical central bank, is thus creating vast amounts of "near-money" (i.e., pieces of paper which can be converted readily into cash). Shares of Internet and technology companies constitute one type of "near-money." Until recently it was rather expensive to buy and sell the securities of small companies, particularly technology companies, and these transactions might take several days to consummate and process, thus attenuating the demand for these companies' securities. Today, however, on-line transactions can be conducted cheaply and quickly. The Internet itself, then, is helping to create "Internet stocks" whose supply is constantly increasing and which can be liquidated readily and quickly. People want the dot com stocks to trade, not to hold as long-term investment.

Options over shares in these companies constitute a second type of "near-money." Options are perfectly suited to cash-strapped, start-up companies: like banknotes printed by a reckless central bank, options can be created at any time and in virtually any quantity by their parent company. An option offers its owner the right (but not the obligation) to buy an underlying share at a fixed price. The greater the share's market price exceeds the option's exercise price, the greater the gain to the option's owner. The owner thereby participates fully in the "upside" but bears no penalty if the share's market price remains below the option's exercise price. Options have become the inducement of choice for Internet and technology companies, and their use (allegedly to "motivate" senior executives) is spreading well beyond these sectors.

Internet and technology companies have voracious cash requirements, their business models presuppose its availability and near-money provides it. Both types of near-money derive ultimately from an expanding base of shareholders. In this respect the Internet and technology sectors of American, Australian, British and other equity markets resembles a giant Ponzi scheme. (Named after the infamous swindler, Charles Ponzi, who operated in Boston in the 1910s and 1920s, a Ponzi scheme is essentially a scheme in which returns are paid to earlier participants entirely out of money paid into the scheme by newer participants.) It is noteworthy that all Ponzi schemes have met ignoble ends because a point is eventually reached at which there are too few new participants to reward existing ones.

Haven't We Seen All This Before? A History Lesson

*“As the century closed, the world became smaller. The public rapidly gained access to new and dramatically faster communications technologies. Entrepreneurs, able to draw on unprecedented scale economies, built vast empires. Great fortunes were made. The government demanded that these powerful new monopolists be held accountable under anti-trust law. Every day brought forth new technological advances to which the old business models seemed not to apply” (Shapiro and Varian, *Information Rules*, Harvard University Press 1999).*

An accurate description of 2000? In fact, Shapiro and Varian are describing the year 1900. The Internet would not unduly impress Victorians travelling in a time machine to 2000. This is because they had their own “Internet.” Tom Standage, author *The Victorian Internet*, shows that the development of the telegraph 150 years ago has many parallels with the advent of the Internet in the 1990s: “the hype, scepticism and bewilderment associated with the Internet... mirror precisely the hopes, fears and misunderstandings inspired by the telegraph.”

These authors conclude that the proponents of the Internet and today’s “New Economy” overlook two crucial points. First, the changes which the Internet has prompted, whilst undeniably important, are hardly unprecedented. Second, the laws of economics have not been repealed. Despite strident claims to the contrary, they are as applicable today as they have ever been. In Shapiro and Varian’s words: “technology changes. Economic laws do not.”

It is with this second point in mind that the insights of Bob Hoye (the editor of *Institutional Advisors*, a newsletter published at Vancouver, British Columbia) are particularly relevant. Hoye shows that over the past 150 years every major breakthrough in technology has produced both demonstrable benefits for consumers and a speculative frenzy on the stock market. Each breakthrough (i.e., turnpikes, canals, steam engines, railways, telephones, the motor car, aeroplanes, etc.) improved the productivity of production, transport and communications, and thereby raised living standards. Without exception, however, the promoters of each advance made vastly exaggerated claims about its benefits. By so doing they were able to attract large numbers of “investors” and large amounts of investment capital.

By 1893, for example, during the early days of telephony, it was widely predicted that the telephone would obviate the need for office workers to travel to work, eliminate regional accents, help eradicate military conflict and generally revolutionise society. Railways provide another example in which wild speculation preceded profits – and, in many instances, the laying of track. “The human mind,” according to John Steel Gordon, author

of *The Scarlet Woman of Wall Street*, “is most creative about the fortunes to be made when you don’t have to look at hard economic statistics.”

But by creating unrealisable expectations, the promoters of each new technology also facilitated unsustainable expectations about the technology, excessive expansion of infrastructure and unsupportable debt. Serious financial reverses have thus followed and been attributable to major technological innovations. As Hoye emphasises, these reverses have had more to do with the nature of speculation on financial markets than with the ultimate significance of the technology in question.

Fortunes for the Fearless? An Illuminating Case Study

Years may pass before the Internet fervour of past several years can be judged dispassionately. In the meantime, and as shown by James Lardner in *U.S. News and World Report*, history provides some warnings and sharp lessons for investors and speculators convinced that the Internet defies comparison with anything which has preceded it. Lardner cautions that true believers in the 'Net should ignore the early development of the radio industry.

Like the Internet, which owes its success to quantum leaps in computing technology, the discovery of radio was the consequence of another breakthrough in communications: the telephone. Also like the Internet, radio passed through a long incubation period during which funds for its development were provided outside the private sector. In North America and Australia, many of the first wireless stations were run by educational institutions, local councils, municipalities, trade unions and churches. And as has been the case with the Internet, the amateur ethos was at the outset so pervasive that many businesses, once they began broadcasting, had little idea how it might be made commercially viable. Radio’s development thus closely parallels that of the Internet.

The exponential growth of the sale of wireless receivers and components, and the even more exponential predictions of their continued growth, soon attracted the attention of Wall Street. In the U.S., the industry’s revenues increased from \$60 million in 1922 to nearly \$850 million in 1929. By the end of the decade, one-third of American homes possessed radios and investors dreamt about the capture of the remaining two-thirds (just as Internet investors today dream about the 60% of homes without Net access). Car radios created another avenue for growth.

Like the [dot coms](#) of today, in the 1920s the market capitalisation of companies which made wireless receivers or components skyrocketed. Investors bought shares in anything even remotely to do with radio; and like today, a few speculative mining companies quickly rebadged themselves as radio companies. The stock of the industry’s flagship, Radio Corp. of America (which marketed the first radios in a patent-trust arrangement with General Electric, Westinghouse and American Telephone and Telegraph), increased from \$5 in

1922 to more than \$500 in 1929. The radio boom was fed by an unprecedented increase in the number of Americans with the means and the confidence to speculate in the stock market. As the pool of investors grew, newcomers naturally followed the example set by more experienced players. Under such conditions, even a real industry with a real future takes on some of the attributes of a pyramid scheme.

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THE INTERNET AND VALUE INVESTING

Part V

The Internet's and Technology's Impact Upon Consumers and Businesses

15 February, 2000

...continued from [Part IV](#)

Even a casual perusal of [economic history](#) demonstrates that technology affects businesses and their customers in significant ways. Sustained improvements in communications, of which the Internet is the latest major innovation, have been occurring steadily since the mid-nineteenth century. It is therefore banal to state that Internet technology is making and will continue to make its presence felt in [commerce and industry](#). It does not, however, follow that e-infrastructure, e-business and e-commerce will be bonanzas for all businesses; nor does it imply that Internet technology companies will benefit disproportionately from the Net's expansion and elaboration.

In an increasingly [competitive environment](#), it is also plausible that the Internet's undoubted benefits will eventually diffuse so widely that the 'Net becomes part of the basic commercial infrastructure which all enterprises must use in one way or another in order to remain in business. If so, then established companies which harness the opportunities provided by Internet and other technologies (as opposed to the developers of those technologies) may benefit most from it.

For Consumers, Technology Is an Unambiguously Good Thing

If they are commercially viable – and it is important to recognise that they usually are not – technological developments such as e-infrastructure, e-commerce and e-business deepen the division of labour and provide more “roundabout” methods of production and [service](#)

[delivery](#).

In so doing they have two beneficial effects. First, they increase the variety of [goods and services](#) on the market, present them to consumers in a more convenient form and thereby increase consumers' scope for choice. Consumers' ability to choose is the basis of individual morality and responsibility, and these virtues can be exercised only against a backdrop of personal freedom. It is thus no accident that technological progress and personal liberty go hand in hand. Second, commercially successful technologies improve consumers' standard of living: they enable businesses to supply more and better-quality goods and services at the same price, equivalent qualities and quantities at cheaper prices, or more and better goods and services more economically. Technological progress, in other words, exerts a beneficially deflationary impact upon production.

For both reasons, technological progress and prosperity are most prevalent in [free markets](#) and open societies. Hence the Internet is regarded with apprehension by illiberal governments as an insidious and "chaotic" phenomenon which must be regulated (in Western and [developing countries](#)) or repressed (in Third World dictatorships). It is therefore desirable that the impact of the Internet be as revolutionary as that claimed by its promoters. Whatever its precise impact (which is pointless to predict), it is reasonable to expect that consumers of goods, services and information, rather than their producers and custodians, will benefit disproportionately from e-infrastructure, b-business and e-commerce.

For Its Producers (i.e., Technology Companies and their Investors) and Intermediate Consumers (i.e., Other Businesses and their Shareholders), Technology Is an Ambiguously Good Thing

Technology clearly provides unambiguous benefits to consumers. Equally clearly, however, not all – indeed, relatively few – technological innovations become commercially successful. Those which do not incur losses (in the form of opportunity costs or permanent loss of capital) for their owners and backers. Economic history is replete with examples of companies and entire industries which possessed seemingly revolutionary technologies but were unable to commercialise them successfully. In this respect hi-tech companies resemble mining prospectors: they must do much research (or guesswork), explore extensive territory and drill many holes before (once in a blue moon) finding a mother lode. Drawing another analogy, like the homesteader the technology company's objective is to claim territory now and ascertain later whether it is fertile. Many more prospectors, homesteaders and [technology companies](#) go to the wall than strike it rich.

Economic Fundamentals

Some hi-tech company failures can be attributed to entrepreneurial error and business

miscalculation; others, however, may stem from more fundamental causes. Most importantly, the economic fundamentals of many technologies are not (from an investor's perspective) as favourable as their promoters and investors typically suppose. We have seen that, given certain assumptions, e-infrastructure possesses positive fundamentals. But it hardly follows that all e-infrastructure companies will be able to reap them. And although there will be some exceptions ("Infomediaries" are one possibility), e-business and e-commerce firms do not generally possess compelling fundamentals: most notably, barriers to entry into their markets are very low, property rights difficult and costly to enforce and the software on which they depend virtually costless to copy and distribute.

If this diagnosis of fundamentals is even remotely close to the mark, then e-business and e-commerce activities risk becoming commodities which companies compete to provide most efficiently and cheaply. This prognosis is the polar opposite of that envisaged by leaders of and investors in Internet companies. Instead of finding a new pot of gold, dot coms are entering markets in which fierce competition and contracting profit margins are the norm. It is ironic that in these respects e-business and e-commerce may be little different from the smokestack and bricks-and-mortar businesses which they often disparage.

Complexity and Unpredictable Development

By its very nature, technology is technical, arcane and complex. Given these attributes, together with its progressively more rapid rate of advance and expansion since the Industrial Revolution, experts can claim to understand no more than very specialised areas of technology. Further, they can command no more than an imperfect understanding of the wider field within which their technological speciality lies. And given the spontaneous and sporadic ("Eureka!") nature of technological progress, not even experts can accurately divine the timing and direction of its future development. At best, laypersons can comprehend technology and its development very dimly; and usually they do not understand it at all.

It is for these reasons that Warren Buffett, the world's most successful investor and doyen of value investing, has never invested in technology companies. This position is somewhat surprising, given Buffett's close and longstanding friendship with Microsoft Chairman Bill Gates. Their camaraderie notwithstanding, Buffett has stated repeatedly that he does not possess the competence to understand (and therefore to value) technology companies. "I've been an admirer of Andy Grove and Bill Gates... But when it comes to Microsoft and Intel, I don't know what the world will look like ten years from now, and I don't want to play in a game where the other guy has an advantage."

Buffett has also stated: "if I had to bet on anybody [in the technology field], I'd certainly bet on Microsoft – and heavily. But I don't have to bet." (Buffett's use of the verb "to bet"

is telling). Berkshire's Vice Chairman, Charlie Munger, echoes Buffett's thinking. "The reason we are not in high-tech businesses is that we have a special lack of aptitude in that area. The advantage of low-tech stuff is that we think we understand it fairly well. The other stuff we don't and we'd rather deal with what we understand."

Value investors thus tend to invest in companies whose products and their uses are easily understandable to non-experts. Comprehension of a company's basic business is the key to understanding the economic fundamentals of the industry within which it operates. Berkshire Hathaway's investment in General Foods Corporation in the early 1980s provides a typical example. GFC owns familiar brand names such as Tang, Jell-O and Kool-Aid. At the time of Berkshire's purchase, and as one justification for it, Buffett stated: "I can understand Kool-Aid." High-tech companies clearly do not have this attribute. (In October 1985 GFC was sold to Phillip Morris; proceeds from the sale earned Berkshire a modest profit of \$335 million).

Displacement Effects

Those technologies which defy the odds and become commercially successful displace older technologies. These technologies, in turn, are sooner or later displaced by newer and better technologies. In the longer term, this process is beneficial: it provides a discovery mechanism and price signals which free resources from uses which obtain relatively low returns and release them for applications where they can achieve higher returns. In the shorter term, however, it can displace existing businesses and their workers. It was no fun being a horse or a carriage maker when the tractor and motor car were bursting on the scene, or being a guild craftsman when mass production was made possible. For the same reason, being a bank teller or stock broker is no more likely to be enjoyable at a time when ATMs and the Internet are becoming ubiquitous.

Reflecting their contrarian nature, value investors thus focus on the *absence* of technological change. They prefer to invest in companies and industries in which fundamental technological change is likely to be limited and manageable, whose economic fundamentals are stable as well as favourable – and therefore whose fortunes and characteristics can (roughly and cautiously) be projected into the future. These companies tend to produce goods and services whose demand is not rendered obsolete by technological advancement. Chewing gum provides a seemingly-flippant yet telling example. People chew gum today in precisely the same way that they did 50 years ago. Technological improvements are very likely to change the process by which gum and certain other consumer products are manufactured; but they are very unlikely to affect (let alone obviate) consumers' demand for these products. In Buffett's words, "I don't think the Internet is going to change how people chew gum."

Value investors thus look for companies which resemble (the analogy is Buffett's)

impregnable castles which are surrounded by deep and wide moats and which possess honest and competent leaders. The castle's strength derives ultimately from its leader's acumen; but since good leaders are few and difficult to replace (and all have human foibles and deficiencies), the moat is reassuring because its depth, width and permanence deters companies which are considering an attack. Management is clearly important; but favourable economic fundamentals are just as important. Businesses require "moats" in order to protect against other companies who can place an equivalent product on the market at a slightly cheaper price. Value investors appreciate franchise value, respect pricing power and therefore search for companies with strong positions in their respective markets, whose goods or services are difficult to duplicate and which have a track record of profitable operation. Surprisingly few technology companies possess these characteristics.

Financial Position and Longevity

Companies which successfully develop and market a particular technology will not necessarily be able to translate its benefits into returns for their shareholders. Even if were true (it usually is not), the statement "technology X will revolutionise business and benefit society" does not imply the statement "investing in companies which produce and license technology X will make us rich." As described in [Part IV](#), aviation and air transport provide excellent counter-examples.

Given its specialised nature and the rapid rate at which it advances, with few exceptions the companies which develop technologies from scratch tend to be financially precarious and short-lived. Benjamin Graham reported in *The Intelligent Investor* the results of various analyses of listed technology companies which he had conducted over the years. In September 1971, for example, 46 were listed in Standard & Poor's *Stock Guide*. Of these, 26 were reporting losses and only 5 were paying dividends.

The December 1968 *Stock Guide* listed a virtually identical number (45) of technology companies. Tracing their fortunes from 1968 to 1971, Graham found that the share prices of just two had increased, the prices of 8 decreased by less than 50%, the prices of 23 decreased by more than 50% and 12 had been delisted. In Graham's view, "the harrowing results shown by these samples are no doubt reasonably indicative of the quality and price history of the entire group of 'technology' issues. The phenomenal success of IBM and a few other companies. produce a spate of public offerings of new issues in their fields, for which large losses [are] virtually guaranteed."

This has proved to be the experience of Peter Lynch, one of the most successful funds managers of the 1970s and 1980s. Lynch wrote in *Beating the Street* that "I note with no particular surprise that my most consistent losses were the technology stocks, including the \$25 million I dropped on Digital in 1988, plus slightly lesser amounts on Tandem,

Motorola, Texas Instruments, EMC (a computer peripherals supplier), National Semiconductor, Micron Technology, Unisys, and of course that perennial dud in all respectable portfolios, IBM. I never had much flair for technology, but that didn't stop me from occasionally being taken in by it."

Shareholder Returns from Technology

The possession of superior technology can contribute towards the generation of returns to a company's shareholders. But it is a contributing factor, and is neither a necessary nor a sufficient condition, for the creation of such returns. In order to earn returns for their shareholders, companies must develop competitive advantages in the marketplace (or, to return to Buffett's analogy, dig a deep and wide moat). They can do so by producing a product for which there is great demand but few or no suppliers. Alternatively (since few products have these attractive attributes), they can cut production, inventory and associated costs; learn more about their customers and suppliers; anticipate their customers' preferences and give them better service; and create new sources of revenue and enter new markets. Technological innovations such as the Internet, e-business and e-commerce, in short, can help companies to do these things. Critically, however, these innovations cannot do it for them; nor can they do so single-handedly.

Hence the conclusion of Fred Hilmer (CEO of Fairfax Ltd and former Dean of the Australian Graduate School of Management): "the opportunity for fundamental competitive advantage via [the Internet] is limited. Put another way, advantage in user industries is rarely created by purchased technologies." Any business (whether or not it uses the Internet) which offers its customers value for money will remain in business; and any business which can use the Internet or any other technology to provide even better value for money is going to thrive. The message (customer service and value for money), however, is more significant than the Internet medium.

The All Ordinaries.com

When Australians prognosticate about the Internet and the transformations of business and society which it may cause, they tend to think computer geeks, under-30s worth tens of millions, Looksmart, Ecorp and Solution6. Although these upstarts currently have paper wealth and market capitalisations somewhere in the stratosphere, the more pervasive effects of e-infrastructure, e-business and e-commerce may be more likely to be felt by – and their benefits captured by – the long-established behemoths in the ASX.

We have found, generally speaking but with some notable exceptions, that e-business and e-commerce firms (i.e., the *suppliers* of Internet goods and services) do not possess compelling fundamentals. As we have also seen, however, *consumers* of these goods and services may be able to reap significant gains from the Internet; and in a competitive environment it makes sense to assume that those which have not integrated e-business and

e-commerce activities into their operations may find themselves outmanoeuvred by others who have done so. CEOs at more and more of Australia's largest corporations are therefore taking the Internet more and more seriously and implementing some sort of strategy with respect to it. But as in the U.S., so too in Australia: to date it is rare to find a Chief Executive who is willing (as is Jack Welch of General Electric) to "destroyyourbusiness.com" – i.e., change the company's existing business and operations radically.

Prognosis

The objective of e-business and e-commerce is to enable companies which adopt these strategies to cut costs, eliminate middlemen, attract new customers and thereby increase profits. Established, well-managed companies in mature markets may be best placed to take advantage of these developments. Based upon scattered and anecdotal evidence from the U.S., however, investors should not expect dramatic returns from these Internet strategies during the next several years. Building state-of-the-art Web sites and putting entire companies on-line can take several years and cost hundreds of millions of dollars. And the efforts of established companies will be harried by upstarts.

Although they are unlikely to be dramatic, these returns are nonetheless likely to be significant. The most recent scenario, cited in the *Wall Street Journal* in December 1999, is that Internet strategies might cause profits in the companies which comprise the Dow Jones Index to increase by an average 2-3% in the next couple of years. At the most aggressive Dow companies, profit increases of up to 10% might be attributable to Internet activities. Combined with reductions in costs and other efficiencies, e-business and e-commerce activities have the potential to add 10% to the average Dow stock's earnings per share.

Part VI ►

THE INTERNET AND VALUE INVESTING

Part VI

The Internet and Value Investing Leithner & Co.'s Case for Caution

1 March 2000

...continued from [Part V](#)

Two critical points emerged from [Part V](#). First, value investors usually maintain a cautious,

largely-sceptical yet open-minded attitude towards biotech, computer, telecoms, Internet and other technologies. Second, value investors tend to avoid “technology companies” (i.e., companies which develop and commercialise particular technologies). Three major results of Parts [I-IV](#) justified this position:

- the economic fundamentals of e-business and e-commerce do not appear to be as compelling as is usually supposed;
- the basic characteristics of property and exchange make the intrinsic value of many e-business and e-commerce firms very difficult – and perhaps impossible – to estimate;
- market participants are oblivious to these difficulties; further, they possess seemingly overly optimistic assumptions about the Internet’s future and are responding to the Internet with much the same euphoria that their forebears welcomed the communications innovations of yesteryear.

From these points follows Leithner & Co.’s basic position with respect to technology in general and the Internet and “Internet companies” in particular.

Given Technology’s Fundamental Attributes, Tech Companies – Like Wildcat Mining Companies – Tend To Be Playthings of Speculators

We have seen that [information technology](#) possesses several distinctive economic attributes. Most notably, its consumption violates the principles of exclusion and rivalry. Computer and Internet technology enable the reproduction and transmission of explicit information and software at virtually zero cost and almost anywhere in the world, threatening their price with collapse.

Hence the establishment and enforcement of clear e-[property rights](#) are not easy; [barriers to entry](#) into e-business and e-commerce are very low and in some instances virtually non-existent; price decreases in these industries are the norm and it is commonplace for one firm to steal a march on its competitors, only to lose it soon thereafter. As the [Australian Financial Review](#)’s [Silicon Valley](#) Observed column reported on 5 January 2000: “[Internet] companies face more competition than ever. New ideas come with less intrinsic worth these days, unless they are patented network designs... Concepts are cheap when it comes to online shopfronts, software [and] internet services... As soon as an internet idea arrives, copies follow so quickly that no one can be sure if there was ever an original... In today’s [internet business](#), speed is the biggest product differentiator.”

In addition to these fundamentals are several commercial realities: few technological innovations (Internet or other) become commercially successful; very few people can thoroughly understand and keep fully abreast of new technological developments; [technology advances](#) spontaneously and unpredictably; and for non-tech

businesses (e.g., retailers, media and transport companies) the possession of superior purchased technology contributes towards – but is neither a necessary nor a sufficient condition for – the creation of wealth for shareholders. Given these attributes and realities, it is not surprising that technology companies tend to be financially precarious and have short life spans. And those which beat the odds and successfully develop and market a particular technology are often unable to translate its benefits into solid returns for their shareholders.

These characteristics of technology have important implications for Internet companies' (and, more generally, technology companies') quoted market prices. Because there exist no established means to estimate the value of an e-business or e-commerce stock, investment *per se* becomes impossible and speculation inevitable. Technology companies are therefore (in Benjamin Graham's usage of these terms) clearly unsuitable for investment and made-to-order for speculation.

In contrast, value investors have a strong bias towards the hard numbers in financial statements and a retrospective record of wealth creation which can be used (using suitably cautious and pessimistic scenarios) to make projections into the future. Value investors also have a strong bias against soft rhetoric and the absence of a successful track record. Alas, for many and perhaps most Internet companies and technologies, hard numbers and financial statements are absent and lofty rhetoric is in superabundance.

Consequences of Speculation

Speculation plays an important and positive role in a market economy. Most importantly, speculators accept (at a price) risks of one sort or another which non-speculators do not wish to bear. Trouble, however, arises when speculation seems effortlessly to generate paper gains. This raises expectations to unsustainable levels, obscures the risks which inhere in speculation, clouds the distinction between investment and speculation and encourages market participants to accept speculative risks which they cannot afford to bear. This process, as set out in my [report of 15 November](#), almost inevitably ends in tears.

Given technology's fundamental attributes, Internet and technology companies are much more often appraised in terms of hype, emotion and reckless abandon than caution, reason and risk. They are currently priced as if (in the case of e-infrastructure companies) they have already achieved network critical mass, or (in the case of e-business and e-commerce firms) their most favourable profit forecasts have already occurred or will certainly eventuate. A shift in tolerance of risk – or perhaps a change in the conception and recognition of risk – has prompted more and more participants to spurn “Old Economy” (i.e., physical capital) companies and embrace “New Economy” (i.e., intangible capital) companies. Indeed, many speculators proceed as if risk does not attach to these companies. As Byron Wien noted in *Barron's Online* on 19 February: “the ‘New Economy’ stocks are being priced as if there is no risk, and the ‘Old Economy’ stocks are being priced

as if there is no opportunity.”

But It's Different This Time!

To a value investor, “It Is Different This Time” should be regarded as the five most dangerous words in investing. They are dangerous because even a casual perusal of economic history is sufficient to indicate that the current preoccupation with Internet and technology stocks bears a striking resemblance to a series of financial market events (“bubbles”) which have recurred during the past 400 years. By this analogy, it is quite possible that few of these companies will survive – let alone maintain their stratospheric market capitalisations. Promise, hype and speculation attract competition. And competition cuts profit margins, such that it is very difficult for upstarts to obtain – and for incumbents to maintain – sustainable margins. Hence only a few of the innovators survive, and survivors continue as much-chastened entities. At no time have these competitive dynamics exempted particular technologies.

The most reasoned dissent to this view has been written by Alan Kohler and appeared in the *Australian [Financial Review](#)* in July of last year. Kohler observes correctly that the Internet is not a commodity. Indeed,

“It is not even a ‘thing’ at all. If it is anything, the Internet is a mechanism for businesses to reduce their costs. That’s because it is, in essence, little more than a cheap way to distribute data between a lot of computers. That’s the difference between the Internet boom and the commodity price booms that have come before: it’s about costs, not prices. That means two things: it is being pushed by corporate executives, not pulled by consumers; and it’s more permanent, because costs tend to stay down when they are cut whereas when a price goes up, it usually falls again.”

Each of these points is well-taken. From none of them, however, does it follow that e-infrastructure, e-business and e-commerce will be bonanzas for all businesses; and still less do they imply that Internet technology companies will benefit disproportionately from the Net’s expansion and elaboration. Indeed, given the characteristics of the Internet and of technology more generally, it is equally plausible to expect that in an increasingly competitive environment the Net’s undoubted benefits will eventually diffuse so widely that it becomes part of the basic commercial infrastructure which all enterprises must use in one way or another in order to remain in business.

Two Lessons

What, then, is the overarching message posed by the Internet for value investors in general and Leithner & Company Pty. Ltd. in particular?

First, I have no idea (nor, I believe, has anybody else any credible idea) how long Internet-

and technology-inspired excesses will last. Nor do I know what will change the behaviour of the governments, lenders and speculators which are fuelling them. The fact that these and other actors are motivated by greed, fear and folly is predictable; but the timing and sequence of these emotions are not. Hence the less the prudence with which others conduct their affairs, the greater the prudence with which we should conduct ours.

Second, the key to successful investing ultimately has nothing whatever to do with predicting the demand for and growth of a particular technology (Internet, biotech, pharmaceutical or whatever). Still less has it anything to do with predicting how a particular technology is going to affect the economy or society at large, or which company will emerge as its principal or most profitable provider.

The keys to successful investing – as Benjamin Graham outlined them during the 1930s and as Warren Buffett, Walter Schloss and others have practised them since the 1950s – remain the estimation (using cautious and conservative assumptions) of individual companies' intrinsic value, and the purchase of their securities when they are available at a discount to that value. The advent of Internet and other technologies do not affect – and still less do they upset – these principles.

END