Information technology and telecommunications (IT&T) firms, especially those related to the growth of the Internet, have rapid-growth valuation premiums. The newest include electronic commerce (EC) companies, those whose businesses are largely conducted through the World Wide Web.

A steady doubling in fibre-optic cable data capacity and chip speed every year or two helps create the impression that Internet growth is a sustainable phenomenon. Many researchers have documented the growth expectations; even though EC firms still have little or no profit records, they continue to be boosted by these forecasts.

Prediction is an art, rather than a science. Analysts are noted for their detailed understanding and forecasting of individual companies’ business and financials. But, as reported in the Financial Analysts Journal of November 1998, they show relatively large errors in forecasting overall conditions.

Technology stocks involve much more overall uncertainty than exists in more static, simple areas. Very high growth means that any valuation calculations necessitate highly speculative estimates of the next 10 or more years of business coverage, user numbers, revenues, profit margins and technologies. Volatility ensues, as optimism built in to these estimates can swing wildly to pessimism. Investors can race to factor-in visions of decades of rapid growth of a sector or business, but can even more quickly retreat from aggressive assumptions to the more modest business visible at present. Valuation conventions also vary widely over time.

EC/IT&T VALUATION METHODS AND METRICS

Traditional accounting measures
1. NTA: This is not relevant for growth businesses with large intangibles.
2. NPV (DCF): To use this, apply estimated profit margins to projected revenues (or even a certain market share of all e-commerce in that sub-segment), then discount this backward with risk-adjusted cost of capital for each segment. It is difficult to compute but is a basic first measure.
3. P/E to growth ratio: Around 1:1-2:1 is common — ie, a P/E of 50-100 is normal when annual revenue growth is 50%. This method is not accurate, especially if the firm is still loss-making, with high advertising spending to build the brand. Forward PEs use earnings from estimated future margins times projected revenues, since there are often no historical earnings.

E-commerce measures
4. Price/sales ratio for each sub-sector of the industry (price/cashflow is related): This is the most widely used method, allowing exact sub-sector comparability. Note that a company can operate in several sub-sectors, so a different P/S will be applied to each. The overall EC P/S average is about 2x, but varies widely between 1x and 90x. Year 2000 estimates: Yahoo 20x, AOL 10x, ISPs 3x, portals 13x, network equipment makers 4x.
5. Projected unique user capitalisation (lifetime value): This is the market value of the company divided by the number of future subscribers (estimated five or ten years forward). A typical industry subsegment capitalisation factor is then applied — eg, this factor is $3k average for portals (such as AOL $2K, or Yahoo $4K). This metric is also widely considered very relevant.

6. Traffic metrics: These relate to the company's Internet site. Examples are individual page views or site visits (hits) by each user; hours viewed per customer; banner advertisement clickthroughs (hits); CPMs (advertising cost per 1,000 page views); and resulting sales. They are all useful and are scrutinised by advertisers.

7. Other unconventional measures of relative and incremental (eg, monthly) corporate activity and growth rates: Examples are Internet surveys/awards won, new software or webpage production, number of employees or sales representatives and their turnover; hours worked, amount of Internet time or electricity used.

8. Effectiveness of brand building: This is measured by the ratio of marketing expenses to revenue increase or average cost to acquire a customer.

9. Brand strength: Loyalty and ranking; % of existing market share; "cash burn rate" (marketing spending needed to maintain existing market share); longevity of customers (Commonwealth Securities has a 2% churn rate compared with an average of 10% for Australian online brokers); market power (eg, Yahoo's ability to raise advertising charges when most in the industry are lowering theirs). These are all relevant for advertisers.

10. Projected market share: Determine the total projected market size and compute the company's share — eg, Yahoo has about 15% of all Internet advertising, Amazon has 10% of the global online book market.

11. Strategic alliances: Are there relationships with other big brands or Web leaders, especially unique franchises or in a local area? It may be as a 50/50 joint venture or at no outlay cost but with a requirement to generate a certain level of business or provide local content to justify renewing franchise.

12. Management team's strength and experience: Record of innovation; focus and competitive response; age (youth suggests familiarity with new-generation Web users); where they come from (strong contacts can be crucial in forging future deals); salaries; impact of future stock option liabilities.

13. Business model extension possibilities (scalability): Consider up/downstream or geographic possibilities (eg, EBay's 100,000-strong user base could be multiplied by world coverage); strategic plans; adaptability; vulnerability to low-cost copycat start-ups; critical success factors such as first-mover advantage; potential new regulations; strengths/opportunities vs business threats/investment risks.

14. Plans to expand margins to achieve ultimate profit potential in the face of stiff competition (eg, EBay's strong 78% gross margins could be eroded by new-entrant competitors); cost controls and operating efficiency.

15. Infrastructure development: Has the company developed proprietary transaction software such as EBay's high-volume servers? Other examples are: intricately programmed websites; computational capacity to handle outages or high-volume spurs (Schwabs and Etrade have had several down days because of traffic problems); distribution capabilities (eg, Amazon has developed an efficient book-delivery system).

16. Potential acquisition prices: A company's share value can represent a deal-making currency for takeovers. Most initial public offerings (IPOs) in e-commerce are not only to cash in on the rich current valuations, but also to allow fast-growing Web-based arms of existing businesses to use their futuristically-valued scrip as currency for takeovers of other e-commerce concerns (Yahoo took over Geocities and Broadcast for some $5 billion in scrip each). Now preference is for tracking stocks (subsidiaries rather than independent firms, with lower takeover premiums because control remains with the parent company).

17. IPO (new float) market values: A good lead indicator of trends in relative industry valuations and investor sentiment, illustrated by the recent shift away from "me-too" website floats towards infrastructure providers.

GROWTH RATES AND RISKS IN INDUSTRY SUBSECTORS

EC stocks are involved in complex, fast-changing technologies. The many subsectors of the IT&T field are growing at very different speeds, with widely varying revenue-to-enterprise multiples. A major valuation issue is to classify the subsector to which each business unit of an IT stock belongs. Each sector has different growth projections, implying very different growth premiums. High growth makes for controversial market valuations. Further, market perceptions of which category a company's businesses fall into can change.

Basic sectors include Internet service providers (Web access); online retailing; free search engines and user-pays information; software vendors (website designers and support software); hardware makers (modems, fibre-optic cables).

PRACTICAL VALUATION PROBLEMS

New business models may seem unsustainable, or else may drive out many smaller firms. Free Internet access became available from FreeServe, a subsidiary of the UK retailer Dixons; in response, more than 200 free ISPs popped up, many of which will fail. Linux offers free and open source code for its variant of Unix operating systems software. Sun is offering Star Office as a free alternative to the $500 Microsoft Office. Microsoft has introduced "annual licensing per head" deals to replace software purchase. Carnegie Mellon University now pays $20 annually per user, or a total of $200,000 a year, a fraction of previous costs. Some IT firms may never achieve the high profits assumed in forecasts as commoditised services remain low-priced or free.
Low barriers to entry for Internet firms allow rapid competitive challenges. Entrepreneurs try to set up e-businesses with fast revenue growth and float them before problems emerge. Many large companies can leverage existing brands to float a website arm at a huge profit.

Overall conditions skew valuations much more in growth industries. Risk-seeking speculative investment can create a “bubble”. Bullish investors get richer, so acquiring more power to reflect their optimism in stock prices. But business cycles can be very volatile and risk-seeking sentiment can quickly flip to risk-aversion. Many stocks “blow up” instead of correcting.

In the tech-evolutionary process, most new attempts fail, while a few big successes more than make up for the losses. Many more NASDAQ stocks have fallen than have risen in the past decade, even as its composite index climbs higher and faster.

OPEN-ENDED GROWTH RATES?
Low costs and low barriers to new entrants are fuelling a boom in consumer-commerce firms. Half of new IPOs are now EC-related. Growth expectations among retail investors may reflect an optimistic sense that growth blockages can be identified, researched and eventually overcome. A 20% rate of return on equities has come to be considered normal, even though GDP is still growing at around 3-4%.

Many may believe that overall growth rates might never slow significantly, but could even increase gradually over a very long time horizon. If this were so, valuations could skew favourably towards equities, especially in growth industries. NPVs are boosted greatly by high growth rates, but are finite as long as the growth slows. However, if growth expands steadily, even at a slow rate, then a finite NPV cannot be reached.

This could suggest that enormous PEs might be excused sometimes. Investors are increasingly willing to accept very high forecasting uncertainty, gut-wrenching volatility, complex businesses and a majority of their stocks falling by the wayside, when chasing the fastest sustainably growing firms. These few “stayers” are perceived to be dynamically competitive and responsive to radical change. They may be better placed to attract and retain superior talent, or more able to use their premium-valued stock as currency to takeover promising newer companies.

Intel, Microsoft, Cisco and other majors are involved in venture capital funding of hundreds of startups. They may be the most likely, in the current view of investors, to use their strong brand and user bases to lead the way in new, as yet unimagined, services or informational uses of the Net. Most firms (especially those far removed, for example in Australia) will trade at large and volatile discounts (more than 50%) to these leaders, their performance tempered by growth limits in their niche, or the difficulty of integrating geographically dispersed businesses in smaller markets.

The Internet may well become useful for much more than advertising, discount “e-tailing”, e-banking, e-trading, leisure and general information. It may become a force for shortening the “innovation loop” between business and technical people analysing existing knowledge and ways of doing things, reflecting from their experience, creatively devising better ways of organising processes or new knowledge, and articulating this back into the system of information, organisations or processes. This loop has been reduced from lifetimes to decades, to years, and may yet come down to months or weeks.

The marketplace for ideas has barely been recognised in the context of real-time world exchange systems as in the financial markets. Articulation of existing and emerging knowledge online and interactively is just beginning. Serials are increasingly online before they are available as hardcopy magazines and newspapers. When these are widely used by business and information decision-makers, professionals, researchers and students, a new rapid feedback may emerge that is not yet common, despite free e-mail.

Online conferences and streaming of interests to attract potential new specialists into new fields can result in faster set-up and disbanding of temporary new projects. But, in the main, people are still not yet articulate, directed and rewarded enough to make it worth their time to surf more cerebrally or seriously.

US, AUSTRALIAN AND EU IT&T MARKETS
The size comparison between the US and Australian IT stockmarkets is closer to 100:1 than the 15:1 of GDP. Daily dollar volumes of US/Australian stocks also average close to 100:1. Liquidity in Australia will improve when the 0.15% share trade stamp duty is abolished in July 2001. Also, most new IT techniques have US origins and a careful watch on developments there is needed; bringing the latest innovations here is a strong focus of the IT industry and IT stock analysis.

IT&T stocks are very liquid relative to market value and present business size. These are “ultimate” equities, almost like call options — or lottery tickets, as US Fed chairman Alan Greenspan has said. Continental Europe, with much smaller venture capital fundraisings, seems to prefer formulaic securities such as bonds and blue chips. But the American capital market has an increasing predominance of aggressive growth investors. This is led by individuals who do not need to justify their actions to a trustee or board. They are reinvesting accumulated profits from aggressive technology investments over decades, and so are more willing to chase high risk for higher returns. Web access makes information widely available, but in practice many individuals are fickle momentum traders, looking for quick daytrades and new float stags, with less understanding of businesses and valuations, and more susceptibility to chat-room gossip.

Valuation comparisons of Australian and US EC/IT&T subsectors are difficult, often requiring discounts of more than 50% to the US market, sometimes without clearly comparable local firms. Institutional investors find it difficult to justify exposure to such high risks without clearer valuation parameters and a better understanding of technology investment issues. But multiplying market values eventually force funds into technology stocks because they have to benchmark to indexes containing more of these growth components (for example, the Dow now includes Microsoft and Intel).
CONCLUSION
Valuation of a stock is hugely dependent on assumptions of its growth rate. For example, it could be valued at (say) $1, $2 or $4 billion, if earnings growth rates for the next 20 years are assumed to be 30%, 50%, or 80% respectively. Theoretically, the net present value of a “hypergrowing” firm may not have a finite figure, if its net earnings growth never slows. Therefore, changing market consensus on large or open-ended growth rates makes a big difference to valuations of hypergrowing firms. As a Merrill Lynch Internet analyst said, investors are buying a vision of the far future.

It must be emphasised that the 17 valuation methods explained above do not establish absolute valuations, because growth assumptions are so subjective or arbitrary. Rather, they seek to measure businesses in ways that can be used in comparisons with industry peers. This can frustrate valuers used to traditional securities. There is no right answer, and valuation conventions will change as growth rates change in each sub-industry.

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created by the ability of a control group to unilaterally obtain benefits not available to other shareholders. A control group could still overturn any limitations on their ability to extract private benefits by obtaining approval at a shareholders’ meeting where voting is by one-share-one-vote. However, this would make public the conflict of interest and jeopardise the reputation of the control group if it also used its shares to vote for private benefits.

The division of power created by a CGB removes the most contentious conflicts of director self-interest to significantly reduce their exposure to personal liability and potential damage to their reputation. It provides a win-win outcome for directors and shareholders. Without a division of power it is not possible to introduce meaningful self-regulation to reduce the complexity of corporate laws and stock exchange rules. The introduction of a CGB with stakeholder councils as envisaged in Table 2 provides a basis for replacing government regulation with self-regulation and self-governance. It would greatly simplify various codes of allegedly “best practice” and eliminate the need to justify non-conformance in the situations where conformance is not relevant, desirable or practical.

Stakeholder boards empower external directors with independent information on which to act. Cumulative voting provides some directors with the will to act by having an independent power base. A CGB provides external directors with the power and capability to stop problems of insider dealing before they occur. Government regulators and the common law can provide remedies only after a problem occurs. Corporate governance codes may not even be relevant and when they are, they offer problematical protection.

Governments can no longer protect the interests of both corporations and the public with regulations because business has become too diverse, complex and dynamic. One set of regulations cannot be appropriate for all types of companies, or even for one type of company all the time. Only through prescribing self-governing processes can governments enhance investor and stakeholder protection while allowing business greater flexibility.

### TABLE 2
Competitive advantages in decomposition of decision-making

<table>
<thead>
<tr>
<th>Activity</th>
<th>Anglo practice</th>
<th>Competitive practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select, direct, control, remunerate and retire management</td>
<td>Board</td>
<td>Board with advice and consent of CGB</td>
</tr>
<tr>
<td>Nominate directors</td>
<td>Board</td>
<td>Shareholders with advice of CGB</td>
</tr>
<tr>
<td>Appoint directors</td>
<td>Board</td>
<td>Shareholders</td>
</tr>
<tr>
<td>Remunerate management and directors</td>
<td>Board</td>
<td>CGB using performance indicators established by stakeholder councils</td>
</tr>
<tr>
<td>Retire directors</td>
<td>Board</td>
<td>CGB with advice from stakeholders</td>
</tr>
<tr>
<td>Appoint auditor</td>
<td>Board</td>
<td>Shareholders, CGB</td>
</tr>
<tr>
<td>Control auditor</td>
<td>Board</td>
<td>CGB</td>
</tr>
<tr>
<td>Determine accounting practices</td>
<td>Board</td>
<td>CGB</td>
</tr>
<tr>
<td>Evaluate business</td>
<td>Board</td>
<td>Board with advice from stakeholders</td>
</tr>
<tr>
<td>Monitor management</td>
<td>Board</td>
<td>Board with advice from stakeholders</td>
</tr>
<tr>
<td>Appoint specialist advisers</td>
<td>Board</td>
<td>CGB with advice from board</td>
</tr>
<tr>
<td>Control specialist advisers</td>
<td>Board</td>
<td>CGB</td>
</tr>
<tr>
<td>Remunerate CGB members</td>
<td>Not applicable</td>
<td>Shareholders (percentage of dividend)</td>
</tr>
<tr>
<td>Remunerate stakeholder representatives</td>
<td>Not applicable</td>
<td>No remuneration</td>
</tr>
</tbody>
</table>