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Thematic Investing

GLOBAL INVESTMENT STRATEGY

Global Transformers

The Early Adopters

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Global Transformers

The Early Adopters

- Just as investors must be prepared to invest in new growth industries, so must they invest in new growth structures. In the New Economy, the structure of the business enterprise itself will be transformed to become far more efficient and competitive.

- In every economic era, businesses have a distinctive structure best suited to that economy:

    - The Agricultural Age was the era of the artisan shop that did custom work for a small local market.
    - The Industrial Age was the era of the vertically integrated corporation. Because communication *within a single firm* was more quick and precise than communication *between firms*, integration was necessary to coordinate the rapid flow of materials into, and finished product out of, the high-speed continuous process factory.
    - The Information Age is the era of the Transformers—companies that abandon vertical integration by focusing on what they do best while outsourcing or spinning off everything else. This is feasible because communication between firms is so quick, precise and seamless.

- As in the shift from the Agricultural Age to the Industrial Age, this corporate transformation will accelerate productivity growth by permitting a *finer division of labor*. By definition, vertically integrated firms handled non-core functions in which they had limited expertise. The transformed enterprise will do only what it can do best—usually on a global scale.

- Corporate transformation should produce a further acceleration of per capita GDP growth: 0.3% in the Agricultural Age, 1.8% in the Industrial Age, approximately 3.0% in the Information Age.

- Feature ten Early Adopters that are gaining a competitive edge by leading the process of corporate transformation: America Movil, Bank of New York, BHP, Canadian Pacific, Deutsche Post, Diageo, Nestlé, NTT DoCoMo, PepsiCo, and UPS Corp.

- Inevitably, corporate transformation will be a protracted process, and some of the Early Adopters are more advanced than others. But all have demonstrated a predisposition for the wrenching changes involved in transformation.

Global Transformers: The Early Adopters

In a New Economy it is not only possible for companies to perform individual tasks (such as inventory control or manufacturing) more efficiently. The structure of the business enterprise itself can be transformed, creating a company that is far more efficient and competitive.

Just as investors must be prepared to invest in new growth industries, so must they invest in new growth structures. In a New Economy it is not only possible for companies to perform individual tasks (such as inventory control or manufacturing) more efficiently. The structure of *the business enterprise itself* can be transformed, creating a company that is far more efficient and competitive. Such firms, the Transformers of the New Economy, are likely to take market share from Traditional Enterprises, and investors can benefit by identifying them early.

This process of corporate transformation is not new; it occurred in the 19th and early 20th centuries, during the transition from the Agricultural Age to the Industrial Age. And it is occurring today, as we make the transition from the Industrial Age to the Information Age (Figure 1). In addition to creating opportunities for alert investors, this process should lead to an acceleration in economic growth over the next few decades, just as it did in the Industrial Age.

The Agricultural Age: Era of the Custom Artisan Shop

In the Agricultural Age most manufacturing was carried out by a master artisan operating out of his own shop, perhaps with the help of a couple of journeymen (who received wages) and apprentices (who received room and board, as well as instruction in the "art and mystery" of the particular craft). Whether they produced shoes, furniture, or clothes, these artisans shared certain important characteristics. First, they produced the entire product, not just a part of it; for example, a shoemaker made both the sole of the shoe and "the upper" and then stitched them together. Second, they performed all related activities such as buying the raw materials and retailing the finished product. Third, most of their work was done on a custom or "bespoke" basis; a product was made only after the artisan had a firm order, which minimized inventory risk. Finally, technology was relatively static; a shoe was made in 1775 very much as it had been made in 1665.

One overarching economic circumstance made the Custom Artisan Shop the optimal business structure for manufacturers in the Agricultural Age: it served a *small local market* that could only absorb a limited amount of product. Indeed, many rural artisans in colonial America found that orders were so sporadic that they had to combine their artisan trade with another occupation, usually farming.

The Industrial Age: Era of the Vertically Integrated Corporation

The Industrial Age began at a specific place and a specific time—England between 1760 and 1790. It was then that a series of innovations in spinning and weaving cotton—the spinning jenny, the water frame, Crompton's mule, and the power loom—rapidly mechanized the production of cotton cloth, which historically had been far less important than woolens. As cotton mills sprang up in the British midlands, the amount of raw cotton imported into Britain grew from 2.5 million pounds in 1760 to 366 million in 1836.

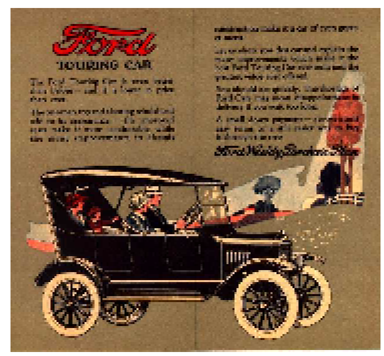
Figure 1: Transformers: Changing Business Structures

1) Craftsman —
Sole proprietor: All-in-one – buyer, manufacturer, seller

The Agrarian Economy

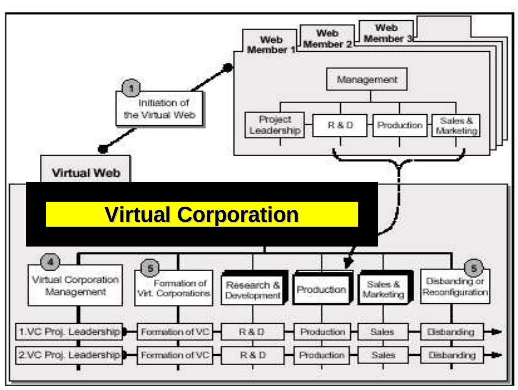
2) Assembly line—
Specialization of function of the individual

The Industrial Economy



3) Transformers—
Outsource all functions except core competency

The Information Economy



Source: UBS Warburg LLC.

The Expanding Market . . .

Which raises this question: Why England in the late 18th century? The answer lies *not* in the particular mechanical skills of British manufacturers (impressive though they were) but, rather, in the fact that *they served the largest and freest market in the world*. England's population grew about 50% during the 18th century, and owing to the successful modernization of agriculture, living standards were relatively high and demand for textiles and other manufactures was strong. Virtually the entire domestic market was readily accessible to manufacturers, either through coastal shipping or via England's growing network of turnpikes and canals. And almost as important as the domestic market was colonial demand for manufactures. The population of North America grew very rapidly during the 18th century—the U.S. population was 3.9 million by 1790—and its prosperous farmers eagerly purchased the textiles and hardware that poured into American ports from London, Bristol and (especially after the American Revolution) Liverpool.

. . . and the Division of Labor . . .

As Adam Smith pointed out in **The Wealth of Nations**, published in the fateful year 1776, England's large and rapidly expanding markets made it possible for manufacturers to increase productivity through a *division of labor,* a proposition he illustrated with the homely example of the pin maker. A single individual, Smith argued, could make only a few pins per day, but a well-organized shop employing ten persons could make "upwards of forty-eight thousand pins a day," through a proper organization of labor and use of the appropriate tools:

> "One man draws out the wire, another straights it, a third cuts it, a fourth points it, a fifth grinds it at the top for receiving the head; to make the head requires two or three distinct operations; to put it on, is a peculiar business, to whiten the pins is another; it is even a trade by itself to put them into the paper; and the important business of making a pin is, in this manner, divided into about eighteen distinct operations, which, in some manufactories, are all performed by distinct hands, though in others the same man will sometimes perform two or three of them."

Division of labor by itself, even before the application of new machinery to the production process, increased productivity far above what could be achieved by the individual artisan in the Agricultural Age.

As Adam Smith indicated, division of labor by itself, even *before* the application of new machinery to the production process, increased productivity far above what could be achieved by the individual artisan in the Agricultural Age. This occurred, for example, in the North American shoe industry, where different shops began to specialize in just one part of the shoe-making process—cutting the leather, making the uppers, making the soles, and stitching the pieces together.

. . . Plus Mechanization . . .

And once an entrepreneur had divided the manufacturing process into discrete, simple steps—and operated on a large scale that justified costly R&D and capital investment—manufacturing could be mechanized. This was a lengthy and uneven process that spanned the 19th century, with some industries being mechanized long before others.

Textile production was fully mechanized by the mid-19th century; many other industries were mechanized in the 1870s and 1880s (see Appendix).

The extraordinary productive power of combining division of labor with mechanization culminated in The Ford Motor Company's Highland Avenue factory, opened on January 1, 1910. Although the "assembly line" had many precursors, it was here that all the elements of the assembly line were brought together in a single plant that could produce 215 Model T's per day. According to historian David E. Nye, Henry Ford's new factory embodied four key principles:

- *The fine division of labor*: "Managers carefully timed each job, so that it could be subdivided into many small operations of nearly equal duration. A worker's job was reduced to repetition of a precise task that usually lasted considerably less than a minute."

- *The use of interchangeable parts*, a concept that had been developed in many earlier factories, particularly munitions plants.

- *Grouping machines in the most efficient sequence*, rather than by type (e.g., all the lathes or all the drill presses grouped together). As Henry Ford himself emphasized, the use of electric power made this possible. Because each machine had its own motor, machines of a particular type did not have to be grouped around a particular drive shaft driven by steam power.

- *A continuous moving belt* to transport the product from one workstation to the next.

. . . Led to Vertical Integration . . .

The mechanization of industries during the nineteenth century gave rise to vertically integrated corporations. The flow of raw materials into, and finished product out of, modern factories was massive and unprecedented. To maximize the efficiency of these high-volume factories in an economy that still had a huge rural population, a fragmented service sector, and a fairly primitive communications system heavily reliant on the telegraph, manufacturers integrated backward and forward to control and coordinate the flow of product. They acquired their own sources of raw materials to make sure there were no supply interruptions that would shut down their factories. And they developed their own distribution systems, advertising programs, and sales networks to maximize sales. This was all the more necessary because many of the products, including typewriters, sewing machines, cash registers, and electrical equipment, were unfamiliar to consumers; specialized sales offices were needed to demonstrate and service the products.

Vertical integration was necessary during the Industrial Age because communication within a single firm was far more quick and precise than communication between firms.

This vertical integration (which is described in greater detail in the Appendix) meant that hundreds of major firms whose core competency was manufacturing were also involved in a host of ancillary functions, ranging from mining to transportation to retailing to marketing. They were forced into these non-core activities during the Industrial Age because communication *within a single firm* was far more quick and precise than communication *between firms*.

. . . which Militates *Against* the Division of Labor

Note the irony of this situation. It was Adam Smith's *division of labor* that drove dramatic improvement in manufacturing productivity, culminating in the assembly lines of the auto industry. But to keep the factories humming, manufacturers had to become generalists who dabbled in commodities, transportation, retailing, and other areas they knew little about. In addition, nearly all of them produced their own energy (usually water power or steam power) before the 1920s, when the development of a power grid made it possible to "outsource" power generation to electric utilities. (Henry Ford's Highland Avenue plant produced its own electricity.)

The Information Age: Era of the Transformer

Contrary to conventional wisdom, the last 30 years were not the Information Age, but rather the Automation Age, when traditional functions (such as writing letters or tracking inventory) were done faster using computers.

Contrary to conventional wisdom, the last 30 years were *not* the Information Age, but rather the Automation Age, when traditional functions (such as writing letters or tracking inventory) were done faster by using computers. The Information Age is just now getting under way as firms integrate the Internet into their core activities and reconfigure corporate structures accordingly. As this happens, communication between a company and its suppliers, customers, employees, bankers, consultants, regulators, and all other constituents is becoming continuous, precise, and cheap. This in turn is *undermining the rationale for vertical integration*; after all, an executive at headquarters can now communicate just as effectively with an outside firm as with a division of its own firm.

Meanwhile, companies around the world find their profitability under unrelenting pressure from the "perils of perfection"—the downside for corporations of a superbly functioning global capitalist economy:

- Low inflation means lack of pricing power.
- Low unemployment means rising wages and a pervasive skills shortage.
- Declining trade barriers mean intense global competition.
- Deregulation, privatization, trade liberalization, and the Internet are destroying protected market niches.
- The Internet threatens the corporate "crown jewels"—intellectual property.
- High profit margins mean that the easy cost cutting and restructuring have been done.
- Strong profits and a healthy venture capital/IPO market have created a capital glut that is funding new competition.
- Peace, prosperity, and healthy government budgets leave bored bureaucrats with plenty of time to launch antitrust initiatives.

The Return of Adam Smith

To increase profits in this perilous environment, firms will be compelled to increase efficiency by achieving an even finer division of labor.

To increase profits in this perilous environment, firms will be compelled to increase efficiency by achieving an even finer division of labor. They must abandon vertical integration by focusing on what they do best while outsourcing or spinning off everything else. Functions and activities that can be outsourced include:

- Information Technology to such firms as EDS, Computer Sciences, IBM, and ADP.
- Web hosting to such firms as IBM and Digex.
- Human resources to TMP Worldwide, Heidrick & Struggles, Manpower, etc.
- Advertising/marketing to Omnicom, Interpublic, WPP, Aegis, etc.
- High-tech manufacturing to EMS firms such as Celestica, Flextronics, etc.
- Financial functions to banks and insurers.
- Transportation and logistics to such firms as UPS, FedEx, and Deutsche Post.
- Pharmaceutical firms' clinical trials to companies like Quintiles Transnational and Pharmaceutical Product Development.
- Oil exploration to oil service firms.

Obviously, firms may not elect to outsource *all* of a function if they consider it an integral part of their franchise. For example, finding oil is a core competency of energy firms that they would not want to totally relinquish to oil service firms. Nevertheless, a great many functions can be outsourced to firms that can perform the same activity more cheaply *because they specialize in that activity and do it on a global scale,* which means the costs of R&D and investment can be amortized over a much larger base of business.

And while costs drop, so does risk. As every investor knows, diversification reduces risk, and outsourcing firms reduce risk by providing services for many players in an industry. If Palm builds a factory to manufacture devices, it is stuck with an underutilized factory if the product doesn't sell well. However, if it outsources that manufacturing function and the devices don't sell well, the factory space can be reallocated to any one of the contract manufacturer's other customers (including some of Palm's competitors).

Finding the Core

In addition to outsourcing extraneous functions, Transformers will spin off non-core businesses, and focus on those businesses in which they excel.

In addition to outsourcing extraneous functions, Transformers will spin off non-core businesses, and focus on those businesses in which they excel. Of course, defining the terms "focus" and "core" is tricky. To take one example, is PepsiCo in one business (convenience foods) or two (non-alcoholic beverages and salty snacks)? In their thoughtful book *Profit from the Core: Growth Strategy in an Era of Turbulence,* Chris Zook and James Allen suggest that, in order to correctly define their core business, managers (and investors) should begin by identifying five corporate assets:

- Your most potentially profitable customers.
- Your most differentiated and strategic capabilities.
- Your most important products.
- Your most important distribution channels.
- Other critical strategic assets such as patents, brands, etc.

The Early Adopters discussed in this report are reshaping their businesses to take maximum advantage of their strengths in one or more of these five areas. What this means in practice varies widely, depending on the specific structure, strengths, and history of each company. Some strategies are straightforward. BHP is becoming more focused by selling the steel business, while Bank of New York shed less attractive businesses to focus on the fast-growing securities processing market. America Movil and NTT DoCoMo were created through a spin-off from their gigantic parents, Telmex and NTT, respectively. PepsiCo has concluded that its core strengths are creating and marketing branded consumable products, and pushing them through its world-class distribution system. PepsiCo recognized that, even though Taco Bell and KFC arguably sell "convenience food," the firm was simply not very good at running restaurant chains employing tens of thousands of people. Diageo reached a similar conclusion and has decided to exit restaurants (Burger King) and food (Pillsbury). But whereas PepsiCo sells a wide variety of beverages and salty snacks, ranging from Fritos chips to Tropicana orange juice, Diageo is focused on the full range of alcoholic beverages.

Adjacent or Distant?

In any fairly mature company, there is an inevitable and ongoing tension between growth and profitability. Authors Zook and Allen point out that as they expand many firms make "adjacent" acquisitions or expansions that seem to be logical and natural extensions of the core business. In fact, sometimes they are, and sometimes they aren't. What could be a more natural combination than beer and pretzels? Presumably that is what Anheuser-Busch was thinking when it moved into salty snacks. Unfortunately consumers didn't care whether their beer and pretzels were made by the same company, and BUD could not break PepsiCo's iron grip on the snack food market. (Even more egregious was the creation of Allegis, which combined United Airlines, Sheraton, and Hertz; consumers simply wanted the best deals on flights, rooms, and car rentals, regardless of vendor.)

Acquisition of adjacent businesses makes the most sense when you can really deliver value to the customer by offering *full functionality*—a timesaving bundle of products and services. That is why UPS Corp.'s refocus of its core business as "global logistical services" rather than "domestic package delivery" makes so much sense: it is *still* focused on a single market but has plenty of room to expand while delivering a richer and more profitable bundle of services. Deutsche Post has a very similar strategy.

Table 1: Core Markets Served by the Early Adopters

America Movil:	Latin American wireless.
Bank of New York:	Global securities processing.
BHP:	Global mining.
Canadian Pacific:	Splitting into five separate firms focused on railroads, oil and gas, coal, hotels, and container shipping.
Deutsche Post	German postal market, global logistical services.
Diageo	Global alcoholic beverages market—beer, wine, and spirits.
Nestlé	Global food market.
NTT DoCoMo	Japanese wireless market.
PepsiCo	Global market for convenience food—salty snacks and beverages.
UPS	Global provider of logistical solutions.

Source: UBS Warburg LLC.

Five Strengths of the Early Adopters

Although their strategies vary considerably, the Early Adopters share certain virtues that should make them good stocks:

- Most of them are attempting to provide full functionality in a specific market (Table 1). There is no ambiguity as to the corporate mission. Top managers really understand and are committed to the core business; they have the business in their blood—not just in one block of an organizational chart. For example, the British executives who ran Diageo could never relate to the problems of Burger King franchisees in the United States.

- Because top management is committed to the business, it is willing to make the requisite expenditures for capital investment and advertising. This is critical. In their research, Zook and Allen measured companies' "reinvestment rate" defined as the sum of capital expenditures, R&D, and advertising relative to sales. They found that the most successful companies invested at a rate of 15.3%, versus just 8.7% for rivals. One reason for this is that industry leaders tend to be more profitable, and so can afford to invest more. In addition, top managers of diversified firms are tempted to "make the numbers" by under-spending on what are perceived to be peripheral businesses. Managers and key employees of the neglected division are likely to become dissatisfied and alienated, and mediocrity sets in.

- Focused firms that become major players in a market are likely to have plenty of clout with both suppliers and customers. Moreover, the largest firms in a market are best positioned to offer full functionality, which gives them a competitive edge by increasing customers' convenience and efficiency.

- Focused transformers that have split off from much larger entities are attractive to investors for a couple of reasons. For one thing, they are far more likely to be acquired than when they were attached to the parent company. Also, they provide a straightforward play on one industry, not several. For example, after Canadian Pacific splits into several pieces, investors will be able to buy a Canadian railroad without being forced to invest in oil and gas, coal, shipping, and hotels as well.

- Focused companies with strong managements and high reinvestment rates are likely to have relatively high P/E ratios which they can use as an acquisition currency. For example, America Movil should be able to use its shares as a currency to make acquisitions in the Latin American mobile telephony market.

An Evolutionary Process

Like the Industrial Age, the Information Age will produce corporate transformations over a period of years. For many firms, it is an evolutionary process. Some of the Early Adopters discussed here, including PepsiCo, Bank of New York, Diageo, UPS, and Deutsche Post, seem to have fully articulated strategies for focusing on attractive, fast-growing markets. Other firms such as Nestlé are on the road to corporate transformations but are not there yet; what they have done so far resembles the "corporate restructuring" that occurred in the U.S. in the 1980s.

Steps taken so far are strong evidence of management's cultural predisposition toward transformation in the years ahead, which should be positive for the share price.

There are no focused "virtual corporations" yet to identify. Rather, there are steps in the right direction. Nevertheless, steps taken so far are strong evidence of management's cultural predisposition toward transformation in the years ahead, which should be positive for the share price.

There is a strong regional dimension to Transformation. U.S. firms were in the vanguard of restructuring, thanks to a relaxed regulatory environment and the threat of hostile takeovers during the 1980s. Japan's aversion to layoffs and penchant for managerial consensus has impeded corporate transformation there. As for Europe, restrictive labor laws, corporate cross-holdings, and greater government involvement in business has slowed restructuring while at the same time, quite paradoxically, engendering one of the most dramatic types of corporate transformation—privatization. Among the Early Adopters discussed here, Deutsche Post stemmed from privatization. Hopefully the U.S. Postal Service can learn from the success of Deutsche Post.

The Next Acceleration: Corporate Transformation Should Boost per Capita GDP Growth During the Information Age

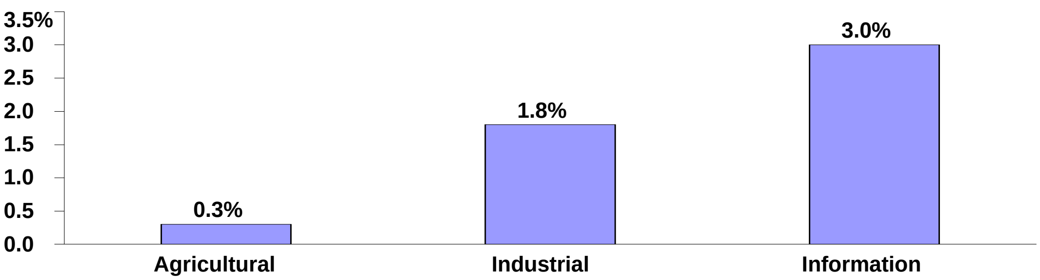
To review, as the cost of communications collapses during the Information Age, corporations will increasingly:

- outsource non-core functions to firms that specialize in that function and provide that service on a global basis.

- operate only those businesses in which they excel, and operate them on a global basis, while spinning off peripheral businesses.

Vertical integration will be viewed as an antiquated form of corporate organization that was appropriate to an earlier era, when communication within firms was cheaper and more effective than communication between firms. Because it leads to a finer corporate division of labor, with companies doing only what they do best, and doing it on a global basis, this transformation will likely lead to an *acceleration of economic growth*, similar to what occurred during the transition from the Agricultural Age to the Industrial Age (Chart 1).

Chart 1: Per Capita GDP Growth in the Agricultural, Industrial, and Information Ages



Sources: John J. McCusker and Russell R. Menard, *The Economy of British America, 1607-1789* (Chapel Hill, N.C., 1985), 55-57. *Historical Statistics of the United States* (Washington, 1975), 8, 224. United Nations, *The Sex and Age Distribution of the World Populations: the 1996 Revision* (New York, 1997), 836-839. See also Phyllis Deane and W. A. Cole, *British Economic Growth, 1688-1959: Trends and Structures* (Cambridge, 1967), 280, 329-331; Lance Davis and Stanley Engerman, "The Economy of British North America: Miles Traveled, Miles Still to Go," *William and Mary Quarterly*, 3rd Ser., Vol. 56 (1999), 21; Thomas Weiss, "U.S. Labor Force Estimates and Economic Growth, 1800-1860," in Robert E. Gallman and John Joseph Wallis, eds., *American Economic Growth and Standards of Living before the Civil War* (Chicago, 1992), 27.

The Agricultural Age: 0.3% per Capita GDP Growth

Virtually no one attempted to measure national income during the Agricultural Age, so estimates of GDP growth prior to the Industrial Revolution are somewhat conjectural. Regarding colonial America, two prominent economic historians, Lance Davis and Stanley Engerman, write that "there was probably some slow, but positive, growth in per capita income and wealth in most parts of the colonies." The best evidence for this view is probate inventories, which show a significant improvement in living standards during the colonial period. Historian John J. McCusker estimates that per capita GDP growth in colonial America was approximately 0.3% annually. This is the same figure used by Phyllis Deane and W. A. Cole for Great Britain over the years 1685-1785; their estimate is reasonably sound because information on the 18th century British economy is quite abundant.

The Industrial Age: 1.8% per capita GDP Growth

Economic growth accelerated dramatically during the Industrial Age—by a factor of six

Economic growth accelerated dramatically during the Industrial Age—by a factor of six. Whereas per capita GDP grew 0.3% during the Agricultural Age, it expanded 1.8% annually in the United States between 1875 and 2000. This figure is based on official GDP data, which begin in the 1870s. However, the acceleration in per capita GDP actually began in the two decades before the Civil War, when the Industrial Revolution got underway in America. Historian Thomas Weiss estimates that per capita GDP grew 1.54% annually from 1840 to 1860, far above the figure of 0.38% for the first two decades of the nineteenth century. Growth rates were similar in Britain, although the acceleration started earlier there. Dean and Cole estimate that per capita GDP grew 2.1% annually between 1855 and 1875, then slowed to 1.7% in the final quarter of the 19th century. (British GDP growth slowed sharply in the first half of the 20th century, mainly because of World War I, the overvaluation of the pound during the 1920s, and the Great Depression.)

Table 2 reveals an intriguing feature of American economic growth during the Industrial Age. Excluding the Great Depression, GDP growth has been remarkably steady; each of the 25-year periods since 1875 had annual GDP growth of 3.2%-3.6%. However, population growth has *decelerated* fairly continuously since 1875 (again excluding the era of the Great Depression, when fertility plummeted). Consequently, per capita GDP growth has *accelerated*, from 1.1% in the last quarter of the 19th century to 2.4% in the last quarter of the 20th.

Table 2: U.S. per Capita GDP Growth, 1875-2000
Compound Annual Growth Rates

Period	Real GDP	Population	Per Cap
1875-1900	3.2%	2.1%	1.1%
1900-1925	3.4	1.7	1.7
1925-1950	2.9	1.1	1.8
1950-1975	3.6	1.4	2.1
1975-2000	3.4	1.0	2.4

Source: Historical Statistics of the United States (Washington, 1975), 8, 224; U.S. Census, Commerce Dept.

The Information Age: 3.0% per Capita GDP Growth

In the Information Age, real GDP growth per capita should accelerate to around 3.0%. According to both the United Nations and U.S. Census Bureau, the U.S. population should grow 0.8% per year over the next quarter century. The labor force should grow at a similar rate, despite the aging of the baby boomers, because A) immigrants tend to be young workers, who boost the labor force by a higher percentage than the population, and B) a growing proportion of people in their sixties should remain in the labor force because of improving health and elimination of work disincentives. (For example, some older Americans are now able to keep all of their Social Security benefits while receiving a paycheck.)

Meanwhile, productivity growth should accelerate to 3% during the Information Age. This productivity estimate is modestly higher than many forecasts, but productivity growth of 3% is not only an achievable but a conservative estimate. It was actually higher (3.2%) in the first half of the 1960s and 2.8% over the 1960s as a whole. Productivity growth can hit or exceed 3% in the Information Age for a couple of reasons:

The 3.1% productivity growth already being realized by the use of improved technology in the manufacturing sector should become the norm for the entire economy.

- Improvements in information processing have led to a secular decline in the inventory-to-sales ratio, which has reduced inventory swings and made the business cycle far more muted—recessions are now a rare, rather than a frequent, occurrence. Productivity tends to decline during recessions; therefore fewer recessions leads to stronger productivity growth.

  Dampening economic volatility itself boosts productivity. Productivity (output per hour worked) declines when output declines. And it is a matter of simple math. A decline of 50% requires a gain of 100% just to get back to even. The cycle of the agrarian economy was annual—from harvest to harvest. Because of this volatility, the Agricultural Economy "exhausted" much growth each cycle simply recouping recent productivity losses.

  The cycle of the Industrial Age was an inventory-led recession about every five years, a major improvement over the annual volatility of the Agricultural Economy. Productivity growth increased because the economy was able to "keep" more of a cycle's gains before the next downturn. There was a virtuous cycle between two factors: better technology and a longer business cycle. New technologies muted the cycle, which in turn enabled these new technologies to boost productivity for a longer period of time before a downturn.

  Now, as the Information Age sees a further muting of the cycle—one or possibly two recessions in the last twenty years—again we have that same virtuous cycle: New technologies are muting the cycle, which in turn enables those new technologies to boost productivity.

- Second, the productivity benefits of a very fine division of labor, which have heretofore been concentrated in manufacturing, will spread to services as a result of the corporate Transformation discussed in this report. (Owing to lower productivity growth in services, since 1970 overall productivity growth has lagged manufacturing productivity by 130 basis points, 1.8% vs. 3.1%.) When firms do only what they do best and outsource or spin off the rest, productivity should improve significantly. The 3.1% productivity growth already being realized by the use of improved technology in the manufacturing sector should become the norm for the entire economy.

America Movil

In February of this year the Mexican phone giant Telefonos de Mexico split into two companies. Telmex, which retained all of the Mexican wireline operations, is the nation's incumbent phone company. It is a conservative stock with a strong franchise and strong cash flows, but slow growth. America Movil received all of the wireless operations within Mexico, as well as most of the foreign operations. The spin-off of America Movil was motivated by several considerations:

- Investors wanted a split in order to unlock values in Telmex that were not properly recognized by the market in the valuation of the pre-split Telmex.
- Because of its higher growth rate, America Movil was correctly expected to have a relatively high-P/E stock that could be used as a currency to make acquisitions in the wireless industry.
- America Movil could be acquired by another company, something that was not legally or politically feasible for the pre-split Telmex.
- America Movil's management could focus on a single business line, wireless telephony. Whereas American firms have a long history of pulling back when Latin America encounters economic, political, and currency problems, America Movil will keep investing and building the business during challenging periods.

Valuable Assets . . .

America Movil has unique and valuable assets that might well be an attractive acquisition for a company intent on building a pan-American wireless phone company.

Rated Buy by UBS Warburg analyst Josh Milberg, America Movil has unique and valuable assets that might well be an attractive acquisition for a company intent on building a pan-American wireless phone company. Its Telcel division is the largest wireless phone company in Latin America, with 11.7 million subscribers in Mexico, or about 73% of the Mexican cellular market. This business accounts for 76% of AMX's revenue. In addition, AMX has a number of other properties, notably:

- Tracfone is a wireless reseller in the U.S. that sells handsets and prepaid wireless phone cards to lower-income consumers. Cards are sold through 34,000 retail outlets, such as 7-Eleven stores. Tracfone's prepaid cards may be used only in conjunction with handsets installed with the company's patented, proprietary software. These phones are manufactured by such firms as Nokia and Motorola and are sold in stores under the Tracfone brand.

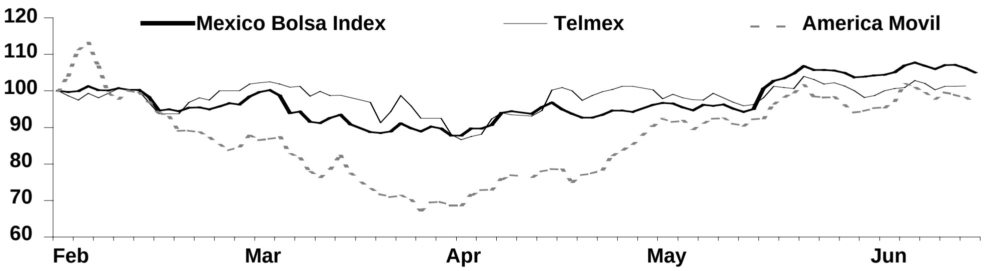
- A joint venture in Brazil with Bell Canada International and SBC Corp., called Telecom Americas. This JV represents the efforts of all three firms to enter the big but challenging Brazilian market. It recently acquired a substantial equity interest in Tess, a wireless company serving Sao Paulo state. More recently still, BellSouth was brought into Telecom Americas by receiving an option to purchase a stake in Tess. (Bell South was already a partial owner of a company that provides wireless service to one million subscribers in the city of Sao Paulo, the third largest city in the world.)

- Small telecom businesses in Puerto Rico, Guatemala, Ecuador, and Argentina, as well as certain other properties such as a 49% share of CompUSA and a 49% interest in Empresas Cablevision, the cable subsidiary of Grupo Televisa and the largest supplier of television programming in Mexico.

. . . And a Solid Operating Performance

After the spin-off, America Movil initially underperformed Telmex and the Mexican stock market (Chart 2). Investors were concerned by high 4Q00 EBITDA losses at Tracfone, and they worried that AMX was spending heavily to build a wireless footprint in Brazil that might not pay off for a number of years. However, AMX has performed well since March, as solid 1Q01 earnings suggested to investors that the company was functioning well.

Chart 2: Stock Price Performance of Telmex and America Movil since Feb. 7, 2001



Source: Bloomberg.

America Movil expects to finance some 70% of its growth over the 2001-2003 period with existing cash and cash flow. By its estimates, the company will only need to take on US$2 billion in new debt, which should keep leverage at reasonable levels. The outlook for capital spending is also encouraging, because it is targeted to trend down after 2001. Outside Mexico, the company's investment plans are cautious. CEO Daniel Hajj indicated that the company would "under invest" in Tracfone, suggesting that investment would be curtailed there in the interest of reducing EBITDA losses.

Telcel should remain the primary driver behind AMX's growth over the next few years while the other subsidiaries post losses as they continue to expand. UBS Warburg forecasts an 83% year-on-year real increase in EBITDA by the end of 2001, along with real growth of 42% in net revenues. The EBITDA margin should end the year at 25.7% as the non-Telcel businesses prove to be a drag on the margin in the medium term. However, overall company growth looks promising; UBS Warburg forecasts five-year average annual real growth rates of 39% in EBITDA, 21% in revenues, and 68% in EPADS.

A Strategic Asset

Perhaps what makes America Movil most attractive is its value as a strategic asset. It is the dominant wireless business in Mexico, and through Telecom Americas it has an increasingly attractive footprint in the Brazilian market. In our view, it is likely that America Movil and BellSouth could merge their Latin America assets in some form of joint venture. The assets of the two entities are highly complementary. Also, AMX may at some point sell some of its non-core assets, including Empresas Cablevision and its 49% share of CompUSA, which would help it to fund its operation.

Bank of New York: Transformed into a Processing Specialist

Bank of New York is a textbook example of how a firm can transform itself by investing heavily to become a dominant player in a fast-growing market while de-emphasizing businesses that are less attractive.

Bank of New York is a textbook example of how a firm can transform itself by investing heavily to become a dominant player in a fast-growing market while de-emphasizing businesses that are less attractive. The share of Bank of New York's profits derived from processing securities for pension funds, mutual funds, corporations, and governments grew from 27% in 1995 to an estimated 57% in 2001. This segment has grown rapidly through both acquisitions and internal growth; meanwhile, Bank of New York exited asset-based lending and credit cards, which accounted for fully a quarter of profits in 1995 (Chart 3). This focused strategy has given Bank of New York an advantage in a market that is highly competitive but growing rapidly (15-20% annually) because:

- There has been a vast increase in the volume of activity in the securities markets, because of the bull market of the past two decades and the associated "securitization" of the world economy—the development of asset-backed debt securities, privatization of state-owned enterprises, and the issuance of securities by private and semi-private firms (e.g. mutual insurance companies). This has driven up volumes in a variety of issuer-related product categories such as corporate trust, shareholder services, and ADRs. It is also behind the volume growth in securities clearance, repo products and trade settlement functions.

- Investment management firms are deciding to focus on their core competence and to outsource peripheral activities such as fund administration and recordkeeping. Such reforms as decimalization, shortened settlement cycles, extended trading hours, and consolidation in European clearing systems create a strong added incentive to leave processing to the experts. High-tech labor shortages make it all the more difficult to grapple with these issues. Yet another incentive to outsource is that, for the CEO of an investment firm, the risk is asymmetric: no one congratulates her if the dividend checks are mailed on time, but she's in big trouble if they aren't.

Exceptional Focus

Bank of New York is gaining market share because it is recognized as a specialist that is investing consistently and aggressively to provide superior service. Since 1996 its technology budget has grown at a 12% annual rate, raising technology spending from 14% to 21% of total expenses. Bank of New York can also offer customers a fully integrated, soup-to-nuts product offering, which other firms are not positioned to match. Bank of New York is the industry leader in terms of assets under custody, followed closely by State Street and Chase Manhattan. However, State Street is the only other firm besides Bank of New York that *specializes* in securities processing outsourcing. Senior management at Bank of New York lives and breathes the business, while its peers at J.P. Morgan Chase, Deutsche Bank, and Citigroup have different priorities.

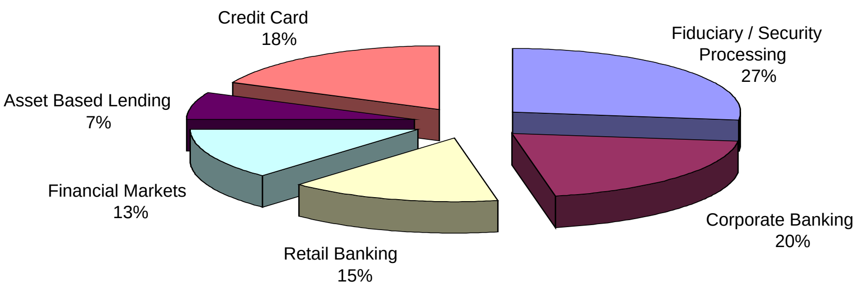
Buying Market Share

Acquisitions are an important avenue of growth for Bank of New York. Many banks with small securities processing operations realize they lack the scale or expertise to compete and sell out to Bank of New York; in the year 2000 alone, Bank of New York did ten small deals. More large-scale acquisitions, such as the 1995 purchase of J.P. Morgan's global custody business and the 1999 acquisition of RBS Trust, have massively increased Bank of New York's footprint in Europe, where it now has 4,000 employees, or 12% of its worldwide total. Europe represents a major growth opportunity for Bank of New York, because the continent is at a much earlier stage than the U.S. regarding consolidation and outsourcing of securities processing services: Bank of New York's size, expertise, and focus should enable it to take a large share of the European market, much as it has done in the U.S, and continue to grow EPS at a secular rate of 12-15%.

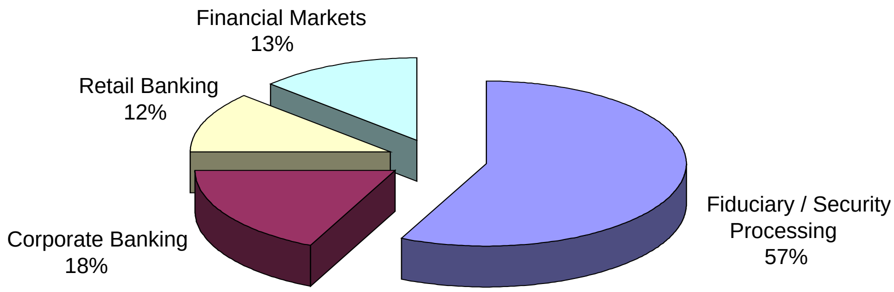
Europe represents a major growth opportunity for Bank of New York, because the continent is at a much earlier stage than the U.S. regarding consolidation and outsourcing of securities processing services.

Chart 3: Bank of New York's Earnings by Division: 1995, 2001E

1995



2001E



Source: UBS Warburg LLC.

BHP: Extracting Value

Over the past few years the Australian natural resources company BHP has been transformed into a much leaner company focused on discovering and extracting minerals on six continents.

Over the past few years the Australian natural resources company BHP has been transformed into a much leaner company focused on discovering and extracting minerals on six continents. This transformation had three phases:

- Extensive sale of BHP's non-core and less profitable businesses in the mid- and late 1990s;
- Ending vertical integration by closing/spinning off steel operations (spin-off expected to be completed by year-end 2002);
- The just-completed merger with Billiton, another major global mining company.

During the early and mid-1990s, BHP experienced a period of rapid expansion and declining profitability. Management used cash flow from operations to invest aggressively in a number of areas, notably iron ore, copper, steel, and petroleum. But many of the acquired properties (including Magma copper, Hartley platinum, and Beenup mineral sands) performed below expectations. Part of the problem was that commodity prices plunged during the 1998 Asian recession and global financial crisis, but there were also operational problems. BHP's rapid expansion stretched management's capacity to perform appropriate due diligence and project oversight, and large write-downs had to be taken.

At this time BHP was a vertically integrated company. Part of the iron ore and coal mined in Australia was used in the company's own steel mills located in the vicinity of Sydney. The steel operations accounted for a quarter of earnings and consumed a similar proportion of capital investment. But in comparison to mining, steel production was very labor intensive; in 1998 steel operations employed fully half of BHP's 55,500 employees, even though steel accounted for only a quarter of profits.

Phase I: Internal Transformation Under a New CEO

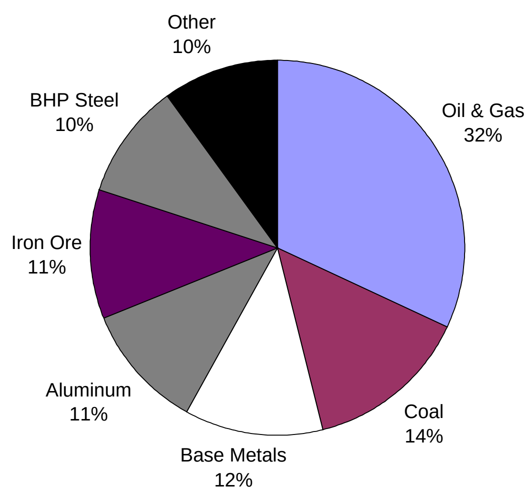
The need for asset redeployment was demonstrated by the fact that in 1998 83% of BHP's EBIT was produced by just 36% of the company's assets. In fact, the corporate transformation was already under way by 1996, but the pace picked up in the difficult year 1998 and accelerated further in December of that year with the appointment of a new CEO, Paul Anderson, who had extensive experience with turning around resource-based companies. Anderson had been appointed Chief Operating Officer of Panhandle Eastern Pipeline in 1991, and in two and a half years he was credited with changing the culture and performance of that troubled company, boosting its share price dramatically. He later merged it with Duke Power, which boosted shareholder value further.

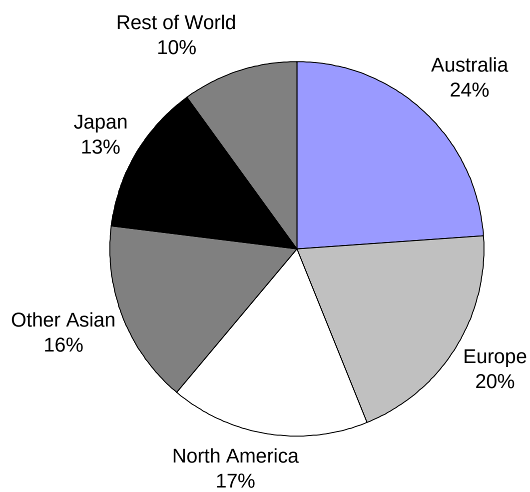
During his tenure at BHP, Mr. Anderson rationalized and disposed of assets totaling A$7 billion and achieved cost savings of more than A$1 billion in fiscal years 1999 and 2000. Divestments and write-downs have been concentrated in low-return businesses (including many poor-quality mineral projects and steel operations) and in non-core activities such as power, engineering, IT services, and real estate. In addition, the corporate structure has been shrunk from eight business units to three (soon to be two when steel is spun off in 2002), and the number of senior managers has been slashed. The combination of a streamlined management structure and better-focused set of businesses should improve operational efficiency; BHP management estimates that costs can be cut 2% annually in real terms over the next five years. Capital spending has been cut back from an average rate of A$5 billion between 1996 and 1998 to less than A$2 billion, and cashflows have instead been used to reduce debt and buy back equity.

Phase II: Creating a Global Minerals Giant

With the company now greatly strengthened, both operationally and financially, the next stage in BHP's transformation is to fortify the core business by merging with Billiton to create a company with $19 billion in revenues. Headquartered in the U.K., and with operations concentrated in South Africa, Latin America, and Australia, Billiton is one of the world's leading producers of coal, nickel, and aluminum/alumina, as well as chrome and manganese ores and alloys. Measured in terms of enterprise value, BHP Billiton is one of the world's largest diversified metals and mining companies; only Alcoa is significantly larger. Given the volatility of commodity prices and investors' sensitivity to political risk, a major strength of the combined company is that it is widely diversified across commodities and geographies (Chart 4).

Chart 4: BHP Billiton: Well Diversified by Commodity and Geography
EBIT, Calendar Year 2000





Source: Company reports.

Merger benefits include better procurement, shared business services, better freight rates, and eliminating duplication. We expect these benefits to reach U.S. $270 million pre-tax in the fiscal year ending June 2003 and U.S. $400 million in 2005. There are also synergies in the sense that BHP has very strong cash flows while Billiton has a stronger portfolio of growth projects that will merit heavy investment over the next five years.

Canadian Pacific: Destructuring into Focused Firms

Destructuring will allow managements to be more focused, flexible and entrepreneurial.

In February, Canadian Pacific announced plans to spin off its five subsidiaries as separate publicly traded companies to operate independently. The plan is expected to be voted on by shareholders and take effect in the fall. The subsidiaries that will be spun off are:

- *Canadian Pacific Railway*, one of the two dominant transcontinental railways in Canada, with services to most principal industrial centers in Canada and 16 U.S. states in the midwest and northeast;
- *PanCanadian*, one of the largest oil and gas exploration and production companies in North America;
- *CP Ships*, the seventh largest container shipping company in the world and the largest carrier of containers on the North Atlantic;
- *CP Hotels*, the largest luxury hotel operator in North America and the largest first class hotel management company in Canada;
- *Fording*, the largest exporter of metallurgical coal in Canada.

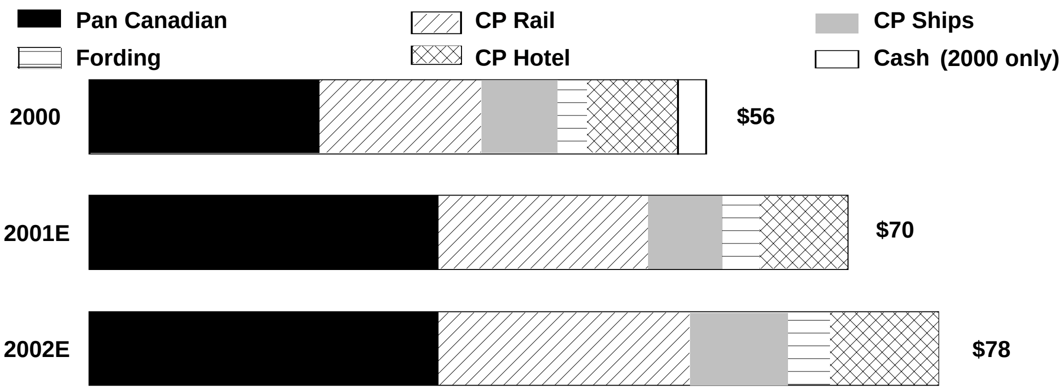
Currently, these companies are wholly or majority owned by Canadian Pacific through a holding company structure. For the past five years, Canadian Pacific has managed the group in a manner similar to that employed by General Electric. The parent company has governed the allocation of capital to the subsidiaries, thus overseeing their broad strategy, but has left operating decisions to the individual company managements. Capital has tended to be directed toward the businesses with higher returns, but all of the companies have been considered capable of generating returns in excess of their capital costs, and so have continued to receive some allocation. Under this structure, performance of the businesses has generally been solid.

At a Discount

Nevertheless, investors have tended to consider Canadian Pacific to be undervalued by the market; it has carried a fairly substantial "conglomerate discount." Likely causes of the discount include:

- The smaller businesses may have been overlooked and therefore undervalued by investors (i.e., people forgot that this "railroad" owned energy, hotel, and container shipping divisions).
- CP's five companies may have been perceived by investors as more constrained than industry peers, and less able to quickly respond to opportunities and challenges.
- Institutional investors had some aversion to the forced diversification across industries that owning Canadian Pacific entailed.

Chart 5: Canadian Pacific Net Asset Value per Share
In Canadian dollars



Source: UBS Warburg LLC. F2001 NAV per company based on current market multiples against forecast 2001 EBITDA performance, F2002 on current market multiples against F2002 EBITDA forecast.

Still More Upside . . .

On the announcement of the planned spin-off, the Canadian Pacific share price jumped approximately 30%, eliminating a significant part of the perceived discount. Nevertheless, the stock is still trading below its estimated break-up value. UBS Warburg analyst James David estimates that the net asset value per share of the company is about C$70 based on 2001 EBITDA estimates and C$78 based on 2002 estimates (Chart 5). These estimates take account of the normal multiples that apply in the respective industries, and the competitive position of the Canadian Pacific companies within them. The stock still trades at a discount, partly because the restructuring is still to be voted on, and there are tax issues to resolve.

More important, in our view, destructuring will allow managements to be more focused, flexible and entrepreneurial:

- The businesses have not been completely free to determine their broader strategy, as they will be when they stand alone. They will determine all investments and how to fund them, rather than being limited to projects the parent could and would finance.

- Although the companies are generally well managed, when they are publicly traded companies the quality of management could be enhanced. Management incentives will be sharpened by the stock market, because of the "carrot" of compensation in shares and options, and the "stick" of tough scrutiny by public investors.

- It should be easier to recruit good people, because of the upside potential of equity-linked compensation, and the managerial independence that comes with working for a focused firm rather than a division of a conglomerate.

Though impossible to quantify, these changes should raise the managerial quality and therefore the aggregate economic value of CP's five businesses.

. . . Plus Takeover Potential

Three of the five independent businesses could be plausible acquisition targets over the next few years.

Destructuring also creates value by making it easier for the individual businesses to be acquired. UBS Warburg believes that three of the five could be plausible acquisition targets over the next few years.

- The North American rail industry has already been through a round of mergers, but more consolidation is necessary if the industry is to compete effectively with trucking. Canadian Pacific may not figure in this immediately, but a deal is quite possible over the next few years.

- The container shipping industry is continuing to consolidate, with a number of genuinely global operators established in the last few years. CP Ships is a large player and would more likely be involved in a merger of equals than be acquired; however, this would still realize value through the synergies involved.

- The coal industry is likewise consolidating, as the large producers look to reduce the number of players in order to improve the pricing environment. Fording would be relatively digestible.

The remaining two businesses may be less plausible consolidation candidates. Although PanCanadian is in an industry currently subject to frantic corporate activity, its relative size and bias toward shallow gas assets render its takeout probability low. CP Hotels finds itself in a sector in which consolidation activity is relatively quiet and, in any event, is more apt to be an acquirer than a target.

In sum, the case for buying CP shares has two parts:

- *The focus/independence premium*: Once they are independent, focused firms rather than parts of a conglomerate, the five businesses could see enhanced management and therefore could achieve stronger results than currently forecast.

- *The acquisition premium* that corporate buyers would pay, above their market value as independent firms.

Deutsche Post

Deutsche Post, formerly the German Post Office, was privatized in 1994 and did an initial public offering last year. It is now in the third phase of a ten-year transformation from an inefficient government bureaucracy to a dynamic firm that is both the world's largest global supply chain provider and the world's largest private postal operator. Leading this transformation are CEO Dr. Klaus Zumwinkel and CFO Dr. Edgar Ernst, who joined the company in 1990 from Quelle Group, a German mail order company that is DP's largest customer. Prior to that both men were consultants at McKinsey.

Deutsche Post is in the third phase of a ten-year transformation from an inefficient government bureaucracy to a dynamic firm that is both the world's largest global supply chain provider and the world's largest private postal operator.

Phase 1: The Turnaround of the Domestic Business (1990-97)

In 1990 Deutsche Post lost €320 million in West Germany alone and €720 million if East Germany is included. During the 1990s the domestic core mail business was turned around, as Table 3 highlights. The number of branches has been cut in half, employee headcount is down by a third and productivity and service rankings have soared.

Table 3: Transformation Phase 1: The German Letter Market

	1990 *	1999	% change
Employees	389,000	244,000	-34%
Branches	29,200	14,000	-52%
Productivity **	39,010	92,490	+137%
Quality ***	75%	95%	+25%

*Combination of West and East Germany ** Shipments/employee per year

*** Next day delivery rate. 1990 is W. Germany only

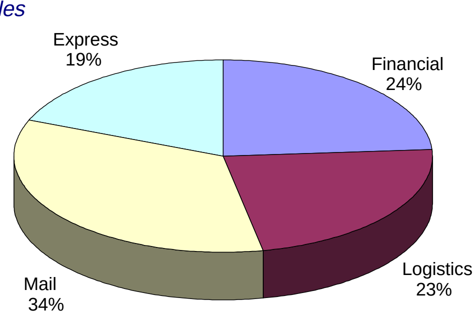
Source: UBS Warburg LLC.

Phase 2: Building a Supply Chain Platform (1998-2001)

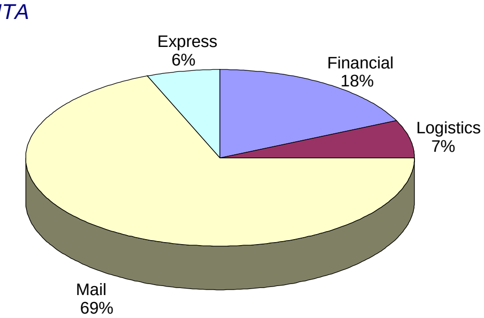
Phase 2 of the transformation commenced in 1998. Over a three-year period a global supply chain provider was created by making €6 billion in acquisitions, chiefly in the mail, parcel/express, and logistics areas. Currently, the profitability of mail is stellar, as reflected by the fact that it accounts for a third of estimated 2001 revenues but more than two-thirds of earnings (Chart 6). Now DP is not just Europe's largest postal operator; it rivals the smaller Dutch operator, TNT Post Group, as the most efficient.

Chart 6: Business Mix: 2001E Sales and EBITA by Division

Sales



EBITA



Source: UBS Warburg LLC.

Phase 3: Going for Growth (2001 Onward)

The challenge ahead is to integrate the acquisitions made in the last few years and to achieve in the express and logistics business the same standards of competitiveness and profitability already attained by the mail businesses. Leading this effort will be the same management team that already turned around the mail division.

Raising the profitability of these businesses to industry norms would dramatically boost earnings; UBS Warburg forecasts that EBITA will grow 24% over the two-year period 2000-2002. Table 4 shows the unit growth of DP's major business lines, which range from just 2%-3% for mail to 9% for logistical solutions and 19% for European cross-border parcel/express. DP's competitiveness is enhanced by its ability to offer corporations a full functionality solution, something only one competitor, UPS, can claim to have (Table 5). The awarding to DP in 2000 of the largest single logistics contract in Europe, a €280 million contract by Deutsche Telekom for a full range of services from warehousing to mailing, indicates the potential success of this strategy.

Table 4: Unit Growth Rates of Deutsche Post Business Lines, 2000–2003E

Division	Industry	Growth Rate
Mail	Domestic	2-3%
Express/Parcels	Domestic	5%
	Euro cross-border	19%
	Global	3-5%
Logistics	Solutions	9%
	Intercontinental	7.5%
	EuroCargo	3%
Financial Services	Bank Deposits	4%
	Mutual Funds	21%

Source: UBS Warburg LLC.

Table 5: Only Deutsche Post and UPS Offer Customers Full Functionality

	Website Home Delivery	Electronic Data Handling	Electronic Stamping	Track & Trace	E-commerce Consultancy	Logistics Solutions	Financial Services
Deutsche Post	X	X	X	X	X	X	X
La Poste (France)				X		X	
Post Office (UK)	X	X		X		X	
Sweden Post	X	X		X		X	
UPS	X	X	X	X	X	X	X

Source: UBS Warburg LLC.

Growth Drivers for DP's Major Business Divisions

Mail

The European Mail Business is in the process of being deregulated. This means that DP will face competitive challenges to its 95.8% market share in Germany but have the opportunity to try to gain share in foreign markets. Deregulation, which should be complete by 2010, is likely to cause prices to fall. But DP is used to operating in a business where growth comes from volume increases, not pricing gains, and has already proved to be competitive in a deregulated segment of the German mail business, "junk mail," where it has a 24% market share.

With DP having an efficient business model and access to/knowledge of all 37 million German households, it should continue to dominate the German letter business. The evidence from other deregulated mail markets, such as Sweden and Spain, is that the domestic supplier retains a very high market share; in Sweden and Spain the domestic incumbents have shares of 90% and 80-90%, respectively. It remains to be seen whether DP will be able to break into other large markets, such as the U.K. and France, when they are open to competition.

Express and Parcel Delivery

Up to now DP's Express division, the largest distribution network in Europe, has concentrated on "day definitive" rather than "time definitive" delivery. But acquisition of a controlling 51% stake acquired in DHL should allow it to move into the more lucrative time definitive segment. DHL has a 38% market share in international air express, versus FedEx at 21% and UPS at 13%.

DP's parcel division has the leading share (11%) of the fragmented European parcel business. This is the business in which DP has made the most acquisitions (14 since 1998), so a key challenge is to integrate them into a cohesive business. With the company using such measures as reducing headcount, consolidating sorting centers, centralizing purchasing, and integrating information technology, UBS Warburg believes that margins can improve from 1.5% in 1999 to 3.1% in 2002. This would boost EBITA to €208 million from €83 million in 1999. Longer term, the growth of this business may be driven by e-commerce, particularly business-to-business.

Logistics: the Leader in a High-Growth Market

DP is the world's largest logistics provider and has the ability to completely control the supply chain for a customer. This division has grown through acquisition, and the main near-term challenge is to integrate the pieces into an efficient unit. In this space DP uses the brand name Danzas, a Swiss company that was acquired in 1999. Subsequent acquisitions included ASG of Sweden, Nedlloyd of Holland, and AEI of the United States.

DP is the world's largest logistics provider and has the ability to completely control the supply chain for a customer.

Table 6: Transformers: Ten Early Adopters

America Movil, which was spun off from Telmex earlier this year, received all of Telmex's wireless operations in Mexico (which account for 75% of America Movil's revenue and have a 73% market share) as well as the non-Mexican assets, notably a wireless joint venture in Brazil. Now that it is a focused play on wireless telephony, AMX can use its stock as a currency to make acquisitions. And (unlike Telmex) it could be acquired, most probably by a U.S. telecom company looking to establish a wireless franchise throughout the western hemisphere.

Bank of New York exited credit cards and asset-based lending and has concentrated on the fast-growing but highly demanding business of securities processing. Bank of New York's technology budget is growing 12% annually, and it is buying small players that cannot remain competitive. Only one other firm (State Street) is similarly focused on the business; the other major players are huge diversified banks in which lending, trading, and investment banking are higher priorities. Bank of New York is leveraging expertise developed in the U.S. market by expanding overseas, where it is growing through acquisition.

BHP, the Australian mining company, has transformed itself in a three-phase process: Extensive sales of non-core and less profitable businesses in the mid- and late 1990s; ending vertical integration by closing/spinning off steel operations (spin-off to be completed by year-end 2002); merger with Billiton, another major global mining company, to create a firm that is focused on mining but is well diversified across commodities and geographies.

Canadian Pacific is transforming itself by destructuring into five firms: Canadian Pacific Railway, PanCanadian (oil and gas exploration and production); CP Ships (a container shipping company), CP Hotels, and Fording (the largest exporter of metallurgical coal in Canada). When these businesses are independent, focused firms, the “conglomerate discount” should disappear, causing them to be more highly valued in the stock market. In addition, three of the five businesses—rails, shipping, and coal—have a good chance of being acquired, which would boost investor returns further.

Deutsche Post, formerly the German Post Office, was privatized in 1994 and did an IPO last year. It is now in the third phase of a ten-year transformation from an inefficient government bureaucracy to a dynamic corporation. In Phase 1 the productivity and profitability of the Germany mail business was dramatically improved. In Phase 2 (1998-2001) it made many acquisitions to build a supply chain platform. In Phase 3 it will integrate these acquisitions and raise their profitability as it attempts to become a leading provider of logistical services, offering “one-stop shopping” to customers.

By shedding extraneous businesses and making shrewd acquisitions, **Diageo** is transforming itself from a conglomerate into a well-focused leader in the slow-growing but highly profitable alcoholic beverages market. Formed in 1997 through the merger of Guinness (the leading U.K. brewer) and Grand Metropolitan (which owned Pillsbury, Burger King, and a large spirits and wine business), Diageo has already sold Pillsbury and intends to spin off Burger King once operations are strengthened. Meanwhile, Diageo is buying a number of major spirits brands from Seagram, which will boost its North American market share from 15% to 22% and give it 18 of the world's top 100 brands.

Nestlé is in an evolutionary transformation that should lead to higher profit margins. The company is focusing on leadership brands and away from low-value-added areas. It is also focusing production in fewer factories and cutting administrative costs. The margin expansion opportunity is large because Nestlé has world-class brands (73% of which rank first or second in their market) yet lags many of its peers in terms of profitability.

NTT DoCoMo transformed itself into a highly entrepreneurial wireless company that has grown rapidly by extending beyond voice to data, via its wildly popular i-mode service. Much of the firm's success can be traced to management foresight and the hiring of visionary executives from outside the parent firm, and making shrewd strategic moves such as developing a billing system that enabled third parties to provide content for i-mode. The company is now applying its wireless data expertise in the Japanese corporate market as well as in foreign markets.

PepsiCo has transformed itself by exiting two relatively low-margin businesses—restaurants and bottling—and focusing on a profitable activity in which it excels: manufacturing and marketing convenience foods. PepsiCo's net profit margin climbed 320 basis points between 1996 and 2000 while return on assets rose 370 basis points. PepsiCo's key talents are product innovation, creative marketing, and direct-to-store distribution; through acquisitions of Quaker Oats and South Beach, these talents will be applied to relatively new markets for PepsiCo: sports drinks and "new age" drinks.

UPS Corp. is transforming itself from a package delivery company into a global provider of logistical solutions. By expanding internationally and offering auxiliary services such as freight forwarding, service parts logistics and finance, UPS is offering "full functionality" to corporate customers, which enhances convenience while making customers more loyal and less price sensitive. This strategy has enabled UPS to expand while remaining firmly focused on a single, well-defined market that it understands well.

The Solutions and Intercontinental divisions are the fastest-growing parts of the logistics business. Solutions is growing at 9%-10% per annum and includes warehousing and distribution facilities plus such services as customs clearance, packing, and labeling. It is eurocentric but geographically diverse with Germany, the largest revenue center, accounting for only 27% of revenues. It is also diversified across industries, with consumer goods, fashion, and electronics all well represented. UBS Warburg expects the EBITA margin of the logistics business to rise from 1.2% in 1999 to 3% in 2002, which would boost profits from €50 million to €271.5 million.

Postbank: Cross Selling Is the Key

DP operates Postbank, one of the largest German retail banking networks with 10 million customers serviced through 14,000 branches in Germany; 1.3 million customers utilize telephone banking and 713,000 use online banking. Because it is inextricably linked to the network of post offices, Postbank cannot be sold off. Growth potential lies in cross selling. Postbank currently sells 1.2 products per customer, and hopes to increase this to 2 products per customer by selling insurance, mutual funds, consumer loans, etc. With pension reform fostering an “equity culture” in Germany, the opportunity for such cross selling seems reasonably good.

Diageo: De-Conglomerating to Focus on Alcoholic Beverages

By shedding extraneous businesses and making shrewd acquisitions, Diageo is turning itself into a well-focused giant in the highly profitable alcoholic beverage market.

By shedding extraneous businesses and making shrewd acquisitions, Diageo is turning itself into a well-focused giant in the highly profitable alcoholic beverage market. The company was created in 1997 through the merger of Guinness, a leading international brewer and spirits company, and Grand Metropolitan, which owned Pillsbury foods, Burger King, and a large international spirits and wine business. While the synergies were minimal outside of the spirits businesses, the great managerial challenge was the maximization of the opportunities in the merged spirits and wine business. The combination of the two businesses brought Diageo an enhanced spirits and wine brand portfolio, along with enhanced consumer insight, and by using EVA-based management and innovation to exploit this enhanced base, profit growth in the spirits and wine business has accelerated.

Concentrating . . .

Diageo's decision to focus on alcoholic beverages is wise, because it is a profitable but fragmented market where the biggest player has a competitive advantage. Diageo is in the process of selling Pillsbury to General Mills for about $11 billion. Diageo also intends to spin off Burger King, but it would like to first improve BK's performance, which has been dismal lately, with same-store sales estimated to be down 5-6% in fiscal 2001. The former chief operating officer of Northwest Airlines has been hired as the division's CEO. An IPO of Burger King is unlikely to occur before 2003, but with Burger King only accounting for 7% of earnings, Diageo has already shed its conglomerate image.

To sharpen its focus on beverages, Diageo has been buying as well as selling. Via a joint bid with Pernod-Ricard, it will acquire a number of major brands from Seagram, whose line-up includes Chivas Regal, Glenlivet, Crown Royal Canadian whiskey, Captain Morgan rum, and Martell cognac. Diageo missed out on Absolut vodka (which is to be distributed in the U.S. through a joint venture with Fortune Brands and by the Maxxium partnership outside of the U.S. and Scandinavia), and it is battling in the courts with Allied Domecq for control of Captain Morgan rum. But, in any case the Seagram deal greatly increases Diageo's scale and clout, boosting its North American market share from 15% to 22%, giving it 18 of the world's top 100 brands and more than twice the market share of its closest competitor (Table 7). This deal boosts considerably Diageo's distribution power, especially in the United States.

Table 7: 2000 Spirits Global Market Share of Major Producers

	Million case - Spirits	% Global Mkt Share
Diageo*	95	4.5%
Allied Domecq	39	1.8
Pernod Ricard**	38	1.8
Bacardi	32	1.5
Fortune Brands***	16	0.8
Brown-Forman	13	0.6
Global Market	2130	100.0

*Proforma including Seagram acquisition **Proforma including Seagram acquisition - Wybrorowa/Becherowka not included
***Not including j.v. distribution of Absolut vodka.
Source: UBS Warburg LLC estimates based on Pernod Ricard data.

. . . and Innovating

Diageo is innovating in a deeply conservative industry. For example, Jose Cuervo tequila is being sold in cans, so that it can be drunk like a beer. Diageo has convinced some bartenders to serve Jose Cuervo margaritas on tap. As aging, increasingly affluent baby boomers drink less but drink better, the whole direction of the spirits business is toward the premium sector. Guinness does not have a strong brand in the premium lager segment to compete with Heineken, Michelob, Labatts, etc., so it is targeting that market with Smirnoff Ice, a malt based "cooler," with which it hopes to attract beer drinkers looking for a change from their usual premium beer. It is this innovation and the continued focus on core premium products that is driving strong profit growth in Diageo's spirits and wine division.

Diageo's high market share gives it competitive advantage in a comparatively fragmented market. Its marketing costs per unit sold are relatively low, and it has an increasing amount of clout with wholesalers and distributors. The wholesale level of the spirits business is also highly fragmented, but as it consolidates, Diageo the brand producer can align with a major wholesale network (much as Anheuser-Busch has done in beer) and leverage that power at the retail level. Because consumers are loyal to a brand and one 750-ml bottle of Tanqueray gin is identical to the next, this might seem to be an excellent area for using the Web to sell direct to the consumer. However, the industry is proceeding slowly here because of the legal and regulatory risk of selling or marketing to minors. Nevertheless there could well be longer-term opportunities for alcoholic beverage companies to send spirits and wines to consumers whose age has been properly verified.

Diageo should grow its beverage sales by 4-5% annually. Thanks to cost savings, acquisitions and mix improvements, EPS should expand at least 15% per annum for the next three years (Table 8). It has been annually generating free cash flow of circa £500 million (before disposals/acquisitions), which will be used partly to repurchase shares and partly to fund acquisitions, particularly in wines.

Table 8: Composition of Diageo's Annual EPS Growth
CAGR, 2001E-2003E

	2001E-03E
Organic sales*	4%
Seagram acq. sales	4
Cost savings, acquisitions and improved mix	7
EPS	15

*Excluding discontinued businesses
Source: UBS Warburg LLC estimates.

Nestlé: Evolutionary Transformation to Higher Margins

Nestlé is transforming itself by:

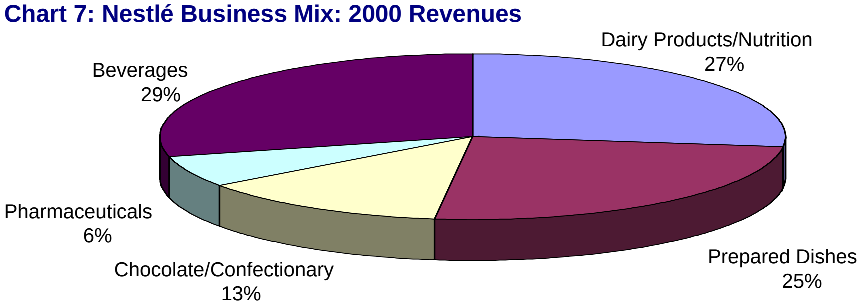
- Focusing on leadership brands and away from low value-added areas.
- Focusing production in fewer factories and cutting administrative costs. Since 1997 Nestlé has closed 127, or 21%, of its factories.

Nestlé has a remarkable portfolio of brands, including the largest market share in soluble coffee (Nescafe), mineral water (Perrier, San Pellegrino), chocolate and confectionery (Milka, Kit Kat), frozen prepared dishes (Stouffers) and infant nutrition.

Nestlé has launched "Project Global" designed to standardize IT systems across the group. The project, which is to finish by 2005, allows much better management of information; possible management on a regional rather than country basis; reduction in administration, overhead, and waste; and encouragement of "best practices" across the group. Project Global is designed to realize savings of CHF3 billion per year in 2004/2005.

The scope of this transformation is impressive. It has already contributed to boosting the EBITA margin from 9.9% two years ago to 12.2% in 2000. EPS is estimated to rise 10% this year.

Chart 7: Nestlé Business Mix: 2000 Revenues



Source: UBS Warburg LLC.

Nestlé has a remarkable portfolio of brands, including the largest market share in soluble coffee (Nescafe), mineral water (Perrier, San Pellegrino), chocolate and confectionery (Milka, Kit Kat), frozen prepared dishes (Stouffers) and infant nutrition (Chart 9). Fully 73% of group sales are in products in which Nestlé has the number one or number two market share. Nestlé also has the most geographically diverse sales mix of the major food producers. Developing countries, which offer the greatest growth potential, account for 31% of sales compared to 30% at Unilever, 21% at Danone, and less than 10% at Cadbury Schweppes.

Chart 8: Operating Margins for 2000

Percent

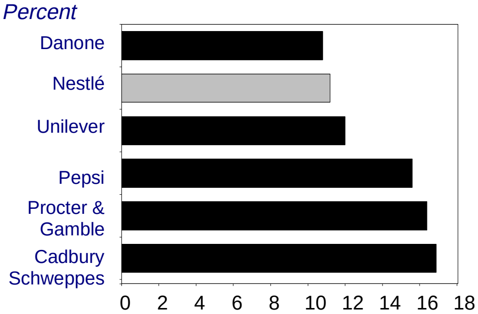
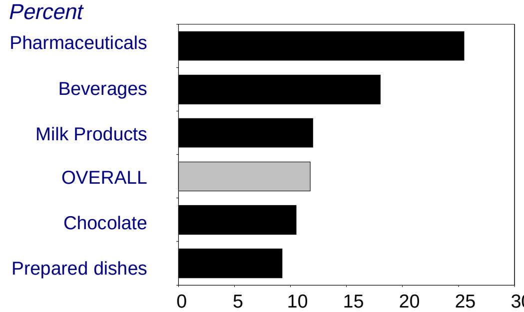


Chart 9: 2000 Operating Margins by Division

Percent



Source: UBS Warburg LLC.

Unilever's "Path to Growth" . . .

However, this strong market position has *not* led to appropriately high profit margins. When it comes to profitability, Europe's two food giants, Nestlé and Unilever, lag behind both their U.S. counterparts and certain smaller European rivals such as Cadbury Schweppes (Chart 8). U.S. firms tend to have a narrower product range, highly efficient supply chains, and regional rather than local manufacturing sites.

In an effort to catch up, Unilever (which in February 2000 announced its "Path to Growth" program) aims to raise margins from 11% to 16-17% over four years by cutting the number of factories from 380 to 280, rationalizing its brand portfolio from 1,600 to 400, and boosting sales growth from 2%-3% to nearly 6%.

. . . and Nestlé's Margin-Expansion Opportunity

While Nestlé is unlikely to announce a comparable grand plan, it is taking similar steps. There is plenty of room for boosting profitability, particularly in Europe, where it has excess capacity of 40% and where 2000 operating margins for the food business were just 10.5% versus 13.7% for the Americas and 17.0% for developing markets. Unilever and Danone both had 12% operating margins in Europe. For the company as a whole, Nestlé's 11.3% operating margin is only 0.7% below Unilever's at present (Chart 8). However, after Unilever's acquisition of Best Foods, 2001 EBIT margins at Unilever should be 2.6% higher than at Nestlé.

Initiatives designed to boost Nestlé's margins include the following:

- In chocolate and confectionery, where Nestlé has 11% of the global market, the EBIT margin is 10.6% (Chart 9) versus 14.7% for Cadbury. Nestlé has 40 confectionery plants across Europe, some of which are likely to be closed, and a country-based rather than regional approach to running operations. Some restructuring has already occurred; cocoa processing has been outsourced and industrial chocolate businesses in Italy and Malaysia have been divested. The division EBITA margin increased by 1.9% in 2000 thanks to strong results in China and Russia where a lot of infrastructure investment in the last ten years is now paying off.

- A similar process of closing factories and rationalizing the supply chain is occurring in other product lines such as frozen foods, pet foods, and dairy products. As noted earlier, 127 factories have been closed since 1997, bringing the total down to 479. To reach the same level of sales per factory as Unilever, Nestlé would have to close a further 100, and it would actually be feasible to close 200. How many factories are ultimately closed remains to be seen.

- In mineral water—which for many firms is a license to print money—Nestlé has an EBIT margin of 9% versus 14% for Danone, even though Nestlé has a bigger global market share (14% versus 10%). In the U.S. alone, Nestlé operates 30 different water brands, plus Perrier and San Pellegrino. With water accounting for 6% of sales, improvement in margins would meaningfully benefit Nestlé's results.

- Some progress has been made toward developing a more regional structure in Asia Pacific (excluding Japan) which is now divided into four regions rather than thirteen separate markets. However, it will be a long process to make managers view the world on a regional rather than country basis, given the national power bases that have built up.

- Nestlé also set up a program called "Management Heads in 1997" to share best practices within the group; this has significantly improved supply chain management. Savings of CHF2.8 billion have been made so far, 50% from procurement, 35% from production efficiencies and 15% from administrative savings. In 2000, administrative costs as a percentage of sales fell for the first time.

Transformation Will Enhance Strong Underlying Growth

This wide-ranging "evolutionary restructuring" merely enhances solid internal growth. Nestlé volume growth was a strong 4.4% in 2000, higher than at Unilever or Cadbury, but lagging Danone, which has a more focused product range. Nestlé has benefited from a recovery in emerging markets and from strong category growth in soluble coffee, mineral water, and pharmaceutical products. Nestlé's estimated constant currency 16% EPS growth in 2000 was faster than most of its peers'. With this solid momentum being enhanced by restructuring, earnings growth of 14% should be achievable over the next four years. UBS Warburg forecasts EBIT margins to rise from 11.3% in 2000 to 12.4% in 2004.

But Nestlé is not just relying on margin expansion. Growth is expected to be strengthened by strategic acquisitions that build its franchise in attractive markets. For example, Nestlé is buying Ralston Purina, the leading supplier of pet food in the U.S. market. This is a relatively fast-growing category in the U.S. (+6% by value in 2000), and Ralston's leadership of dry pet food nicely complements Nestlé's leadership in "wet" (i.e., canned) pet food. The category should grow rapidly in developing nations as families shift from kitchen scraps to commercially processed pet food. Nestlé may also make acquisitions in confectionery, where it ranks third behind Mars and Hershey.

NTT DoCoMo: Entrepreneurial Spin-Off

A bright spot in Japan's rather bleak corporate history in the 1990s, NTT DoCoMo demonstrates the ability of spin-offs to generate entrepreneurial energy.

A bright spot in Japan's rather bleak corporate history in the 1990s, NTT DoCoMo demonstrates the ability of spin-offs to generate entrepreneurial energy. Once part of Japan's protected domestic wireline monopoly, NTT DoCoMo was spun off from its parent in a 1998 IPO. This was the culmination of a gradual transformation of DoCoMo from an obscure business unit inside NTT to the world's largest wireless company. Relative independence from NTT allowed DoCoMo to focus on creating wireless services that have proven wildly popular with consumers and businesses alike. With a simple analogue voice network, DoCoMo nonetheless figured out how to do what so many promised but so few delivered: making money from mobile data. Now the company is looking to export its know-how around the world.

Having enjoyed a monopoly on wireline service since 1952, NTT maintained a mindset of providing universal telecom services whether profitable or not, as regulations required, with the company's annual budget determined by the Japanese Diet. It started providing cellular services from the early 1980s, and in 1987 new licenses were issued to DDI Cellular and IDO. Despite the fact that the latter two were not allowed by regulators to serve all regions of Japan and therefore could not provide nationwide roaming, by the early 1990s DoCoMo had lost significant market share. Though new entrants were bound to take some market share, it didn't help that NTT DoCoMo also made the "Betamax mistake" of using proprietary technology. DDI went with a widely used standard known as TACS, thus providing it with a temporary advantage by being able to offer better choice in handsets. However, this is something NTT DoCoMo would soon reverse.

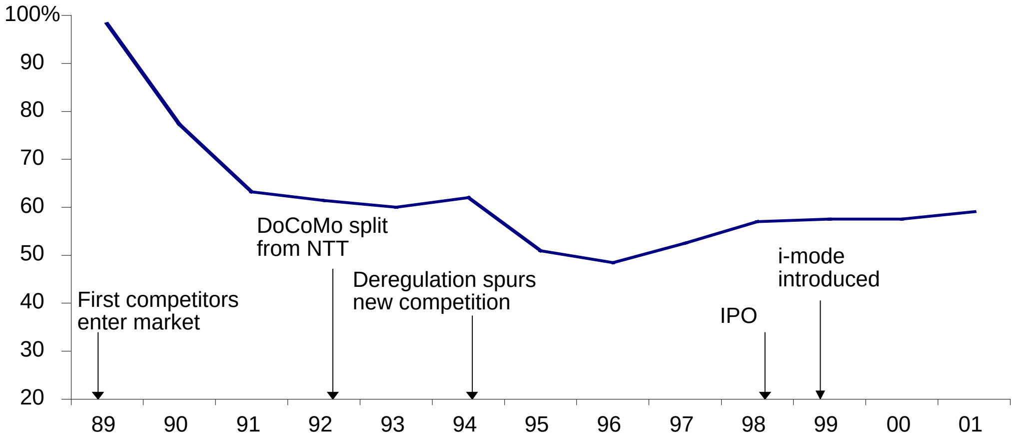
A Spin-Off . . .

In 1992 DoCoMo was spun off from NTT and established as a separate company by government regulators, in an effort to improve service and unlock shareholder value (Chart 10). The order specified that DoCoMo would have to deal with NTT at arm's length, as would any other wireless company. In exchange, DoCoMo was liberated from the regulatory obligations that governed NTT. The government also ordered DoCoMo to aim for an IPO within five years, in order to reduce NTT's ownership stake.

Though DoCoMo was now charged with providing wireless service as a stand-alone business, few were enthusiastic about its prospects. Phones were still prohibitively expensive. Engineers at NTT were reluctant to be transferred to the new company.

Two years later Japan's wireless market was deregulated. Handsets got more affordable and usage tariffs fell as newly licensed competitors entered the market. Subscriber numbers started to increase much like elsewhere in the world. By now DoCoMo had introduced digital service, but the proliferation of competitors meant DoCoMo continued to lose market share, although subscriber growth masked the problem somewhat.

Chart 10: NTT DoCoMo's Share of Cellular Subscribers in Japan and Brief History



Source: Japan Ministry of Posts and Telecommunications, UBS Warburg, LLC.

. . . Creates an Entrepreneurial Culture

It is at this time that strong entrepreneurial leadership emerged at DoCoMo that would transform the company. President Koji Ohboshi had the vision to extend beyond voice into data. In need of fresh ideas to build a new business, Ohboshi made a break with tradition—he went headhunting outside the company, eventually landing Takeshi Natsuno, an early Internet entrepreneur in Japan.

With its congested 2G spectrum exacerbating the market perception that voice quality on the company's PDC network was inferior to that on the competition's new digital *cdmaOne* network, DoCoMo realized it needed to win on marketing, and offer something different. The emphasis was now on figuring out what customers really wanted and delivering it, which is what continues to set the company apart today:

- **Size matters.** With handsets at least, the smaller the better. So Ohboshi had his engineers set about shrinking components and then leveraged DoCoMo's long-standing relationships with handset suppliers as well as its size to obtain new handset models months before competitors.

- **Mobile Internet.** Natsuno started working on Ohboshi's vision of extending beyond voice to data, developing what would eventually become i-mode. Here again it is not the technology—launched on a slow 9600kps network—that set DoCoMo apart, but a business model that gave consumers what they really wanted, and lots of it.

i-mode Takes Japan

DoCoMo spent several years and around $1 billion on R&D getting i-mode and other mobile data services right, making it a smash hit with consumers and helping DoCoMo add roughly $20 per month to ARPU (average revenue per unit), which was already high in the $70 area. While much of the industry was focused on developing a complex protocol known as WAP that would supposedly enable all sorts of pie-in-the-sky applications, DoCoMo's research found that Japanese consumers really wanted a simple, quick way to access handy information on the Internet.

So DoCoMo went with a simple version of the already widespread HTML protocol used for Web pages, but developed a unique billing system that enabled it to bill on behalf of content providers. This made it easy for third parties to develop content; Internet sites and services of all sorts quickly became accessible from i-mode phones and were an instant hit with Japanese consumers. This drove subscribership and ARPU northward. Services include practical applications such as banking, travel reservations, email and restaurant guides, and entertainment features such as games and karaoke.

With PC penetration relatively low, but wireless subscribership much higher, phones are a natural vehicle for Internet access in Japan despite the limitations with screen size. It is somewhat ironic however that part of the reason Internet access from a home PC is so low in Japan is because the per-minute rates NTT charged until recently made dial-up service rather expensive.

When the technology is changing rapidly, matching technology to consumer tastes only buys a company a temporary advantage. What is NTT DoCoMo doing for an encore? Now led by Keiji Tachikawa, an engineer with an MBA from Massachusetts Institute of Technology, the transformation of DoCoMo continues. Mobile data has lots of potential uses beyond consumers sending messages and getting stock quotes. Corporations are issuing handsets to employees so that they can work and access information away from the office. For this to be of much value, DoCoMo needs to become an integrator, helping Japanese companies link their local area networks to its own network. UBS Warburg analyst Kate Lye believes DoCoMo stands head and shoulders above its rivals in the provision of mobile services for the corporate sector, given its subscriber base with a far higher portion of business users that that of its competitors. DoCoMo is also developing new applications in partnership with Microsoft and others. In time, and with the eventual deployment of more wide-band networks, DoCoMo handsets with some basic processing capability will come to resemble tiny workstations with some of the functionality of their desk-bound brethren back at the office.

"Risutora," or Restructuring in Japan

Because of the ongoing push towards becoming a one-stop shop for all things mobile- and data-related, DoCoMo has a key role to play in the restructuring of corporate Japan. U.S. technology companies were beneficiaries of corporate restructuring in the United States, and DoCoMo's focus on providing fully functional wireless solutions to corporate clients could push ARPU "sharply higher." Two examples featured in recent DoCoMo advertisements are:

- A large package delivery company started using i-mode to track collection and delivery as well as to communicate with drivers—a vast improvement over the CB radio system.

- Employees at a major retailer now send inventory reports and customer feedback to headquarters via i-mode directly into a central database. Previously reports were faxed, and secretaries then re-entered data into the system by hand—a slow, costly, error-prone process.

International Opportunities

DoCoMo also has international aspirations. It has formed alliances overseas and assumed 15%-20% stakes in KPN Mobile, Hutchison 3G UK, AT&T Wireless, KG Telecom in Taiwan, and Hutchison Telephone in Hong Kong. DoCoMo offers these companies expertise in developing profitable wireless data businesses and leverages its considerable financial strength. In return, these companies give DoCoMo access to faster growing wireless markets, the opportunity to promote its technology as a de facto world standard and broaden its base of content providers globally, as well as the chance to generate cash flow and capital gains from these investments.

The New PepsiCo: More Focused and Profitable

By focusing on snacks and beverages, while exiting restaurants and bottling, PepsiCo has raised its profitability and growth rate.

In the 1980s Coca-Cola blundered by bringing "New Coke" to the supermarket, but in the late 1990s PepsiCo has succeeded by bringing a "New PepsiCo" to the stock market. The company has transformed itself by focusing on businesses that:

- Make and market convenience foods—snacks and beverages;
- Have relatively high margins and return on capital;
- Utilize PepsiCo's core competency of product innovation and creative marketing;
- Leverage PepsiCo's giant, highly sophisticated direct-to-store distribution system.

This transformation has boosted the company's profitability, and UBS Warburg analyst Caroline Levy believes its growth prospects are bright, with sales likely to grow 7%-8% annually and EPS 13%-15%.

Back in 1996, the old PepsiCo was in three businesses, two of which had significant drawbacks: restaurants and the bottling of soft drinks.

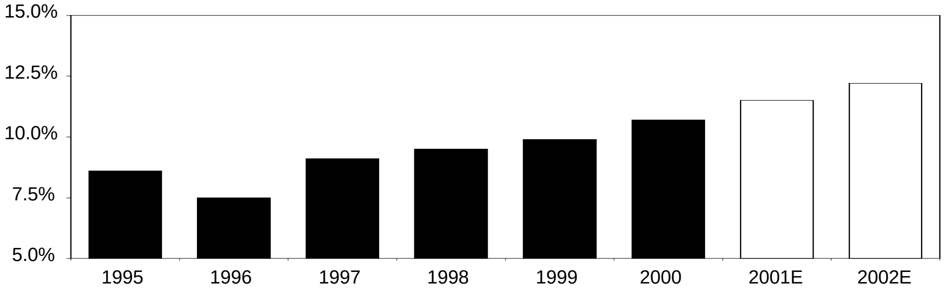
- Frito-Lay was, and still is, the "jewel in the crown" with a dominant position in the lucrative and relatively fast-growing salty snack food market. No one could catch up, not even Anheuser-Busch, which unsuccessfully attempted to sell a line of snack foods (Eagle Snacks) to complement its beer business.
- Soft drinks performed very well in the U.S. But in most foreign markets PepsiCo was a distant number two, and the company made the mistake of spending heavily to try to catch up with Coca-Cola. The folly of this strategy became apparent in 1996 when PepsiCo had to take a $576 million write-off in its Latin American beverage business. A second weakness of PepsiCo's soft drink operations was that, in contrast to Coca-Cola (which had spun off its bottling operations as a separate business in the 1980s), PepsiCo owned its operations, an intrinsically capital-intensive low-margin business.
- Operating three major chains (Taco Bell, Pizza Hut, and KFC), PepsiCo was the world's largest restaurant company (in number of units). It seemed to investors that at any given time one of the three chains was performing poorly. A second drawback of the restaurant business was that it conflicted with the company's fountain beverage business: it was tough to sell Pepsi and Mountain Dew to restaurant chains such as McDonalds and Wendy's when PepsiCo was competing with them.

3 - 1 + 1 = 4

PepsiCo transformed itself through a process of subtraction and addition. It totally exited the restaurant business by spinning it off as a separate firm, Tricon. And it spun off its bottling business to shareholders. By exiting two relatively unprofitable businesses, PepsiCo has dramatically increased both its net profit margin and return on assets since the mid-1990s (Charts 11, 12).

Chart 11: PepsiCo Net Margin

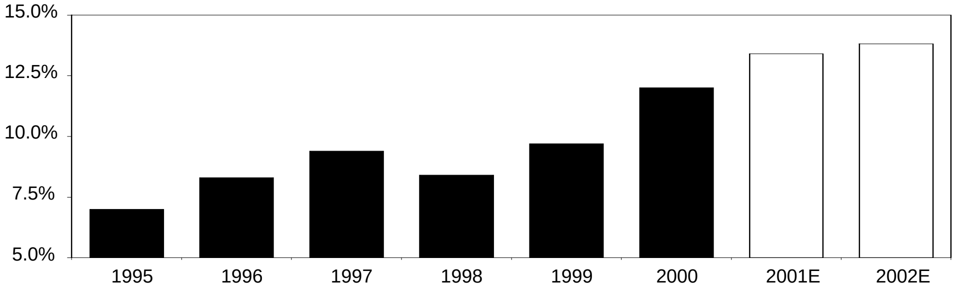
1995-2002e



Source: UBS Warburg LLC.

Chart 12: PepsiCo Return on Assets

1995-2002e



Source: UBS Warburg LLC.

No longer forced to "put out fires" in the problem-plagued restaurant business, PepsiCo's senior management could focus on what PepsiCo has always done best: creating, marketing, and distributing convenience foods and drinks. Obviously its core offerings are salty snacks (Fritos, Doritos, Cheetos, etc.) and carbonated soft drinks (Pepsi, Mountain Dew, etc.), but PepsiCo has been highly successful at developing or buying new product lines more quickly and effectively than Coca-Cola. These include:

- Tropicana, premium branded fresh juice products that are the category leader, with 35% market share of chilled juice drinks versus the 18% share of Minute Maid, owned by Coca-Cola.

- Aquafina, the number one water brand in the U.S., which Pepsi developed internally.

- South Beach Beverages ("SoBe"), a highly successful line of "new age" drinks, which contain natural ingredients and herbal supplements in such flavors as Oolong Tea, Orange Carrot, and Zen Blend. PepsiCo completed the purchase of SoBe in January.

- Quaker Oats (we expect regulatory and shareholder approval of the merger in 3Q01), which will give PepsiCo control of Gatorade—by far the dominant sports drink with over 80% market share and 15% sales growth.

This wide-ranging transformation of PepsiCo's product portfolio accomplishes several things. It increases its exposure to non-carbonated drinks, which are growing faster than traditional soft drinks. It leverages PepsiCo's superb distribution system (both vending machines and direct-to-store delivery) by providing new brands that can be pushed through it; for example, Gatorade can be put in more vending machines. Third, a broader product line gives PepsiCo more clout with retailers, which is critically important at a time when the supermarket business is being consolidated into a few huge chains such as Safeway and Wal-Mart. After the Quaker Oats acquisition, for instance, PepsiCo will control over 40% of the non-carbonated (non-water) drink market (Table 9). Furthermore, its non-carbonated brands (including Gatorade) grew at 11% in 2000, over twice the growth rate for the non-carb category.

Table 9: Market Shares in Non-Carbonated Drinks, Excluding Water
2000, all-channels

Rank	Company	2000 Share	Share Change	Volume % Change
1	PepsiCo/Quaker Oats/SoBe	40.5%	2.2%	11.1%
2	Coca-Cola Co./Procter & Gamble J.V.	27.0	-1.4	-0.5
3	Cadbury/Triarc	13.6	-0.4	1.7
4	Arizona	3.0	0.2	9.0
5	Ocean Spray	2.0	-0.4	-12.1
6	Pernod Ricard	1.2	0.0	0.6
7	Veryfine	1.0	-0.3	-18.9
	All Others	11.9	0.4	8.2
	Total Non-Carbs	100.0%		5.0

Source: Beverage Digest, Maxwell, UBS Warburg estimated.

Foreign Operations

In international markets, PepsiCo will "pick its spots" by focusing on areas where it can win while avoiding a full frontal assault on Coca-Cola's Big Red Machine. Specifically, it will emphasize the beverage business in a few markets such as India and the Middle East. Currently, 46% of PepsiCo's beverage volume comes from outside North America, versus 70% for Coca-Cola. PepsiCo hopes to increase foreign sales of Gatorade as well.

Frito-Lay is doing quite well overseas, particularly in Mexico (81% market share), the U.K., Spain and Brazil. Frito-Lay's strategy is to acquire foreign brands, and then improve its distribution system while gradually introducing products from its U.S. brand portfolio.

Superb Distribution

PepsiCo has improved its distribution efficiency by adopting an internally developed "pre-picked" approach. This uses customer-ordering patterns to determine the manner of loading merchandise on trucks, which has greatly increased truck capacity by eliminating the need for a center aisle in the truck. It has also freed up drivers to devote more time to customer service on each call. PepsiCo is also developing online procurement and will benefit from other new technologies, such as real-time monitoring of vending machine inventory.

UPS: Focused on the Global Logistical Market

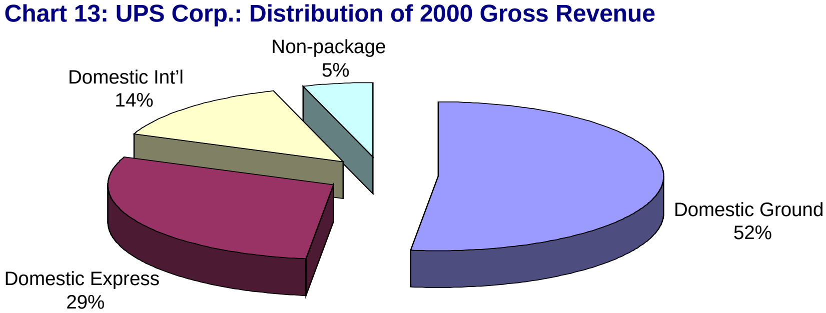
UPS is acting as a Transformer in two respects:

- It is helping *customers* "transform" themselves by providing outsourced logistics—everything having to do with moving merchandise between factories, warehouses, stores, and final customers. Companies are shipping more and smaller parcels of goods in order to keep inventories lean while providing quick, responsive service. UPS helps them do this faster, better, and cheaper.

- UPS is transforming *itself* from a U.S. package delivery company into a global provider of logistical solutions. It can not only ship packages around the world, but also provides such ancillary services as freight forwarding, finance, and logistical consulting services. Because corporations are reducing the number of vendors providing logistical service and want "full-functionality," UPS is well positioned to gain share using its broad service offering. Economies of scale and a fully integrated ground and air network give it a significant cost advantage over smaller rivals.

UPS is transforming itself into a global integrated supplier of logistical solutions at a time when world trade is growing rapidly and companies are looking to outsource non-essential functions such as transportation.

Chart 13: UPS Corp.: Distribution of 2000 Gross Revenue



Source: Company reports.

Domestic Business Is Highly Profitable, Growing 6%-7%

UPS's domestic business is highly profitable, and in recent years has grown at 6%-7%. As Chart 13 shows, over half of UPS's revenues still come from domestic ground transport of packages (usually 3-5 days); another 29% comes from faster-growing domestic overnight express (1-2 days). Domestic ground and express together account for over 80% of the company's revenues, and have been growing at a combined 7-9% per year. One important driver of ground growth is delivery of consumer goods bought on the Web.

The domestic delivery business is highly profitable because ground and air operations are *fully integrated.* If a customer pays for, say, two-day delivery between New York and Chicago, the shipment will be priced as an air delivery, but UPS may be able to ship it via truck, which is much cheaper than air. This capability explains why UPS's net margins are 10% vs. 4% for FedEx, which operates separate ground and air networks.

New Frontiers

UPS's domestic business generates significant free cash flow—approximately $1.5 billion this year—much of which will be used to expand into new, fast-growing segments. The company has successfully moved into the international delivery market, which is growing rapidly and accounted for 7% of corporate EBIT last year. UPS has also made a number of niche acquisitions in order to expand the portfolio of logistical services available to its customers, many of whom are simplifying their operations by dealing with fewer vendors. Recent deals include:

- Fritz, a large freight-forwarding company that books cargo space on ships and aircraft. This gives UPS a new capability and allows the company to handle more business from existing customers.

- Several smaller companies involved in "service parts logistics" (SPL). This business involves shipping small, high-value products (such as medical devices and computer motherboards) to a service center to be repaired or serviced and then quickly cycled back to the customer. SPL generates revenues for UPS's logistics division but also for its package division.

- First International Bankcorp, which will allow UPS to provide letters of credit and other commercial financing to mostly small and medium-sized customers. UPS' AAA balance sheet will help to improve the profitability of the small financial firms that it acquires.

- Mail Boxes Etc., which strengthens UPS's ties to the relatively fast-growing and high-margin retail/small business channel. Over time, UPS is likely to pursue preferred marketing arrangements with Mail Boxes Etc. outlets, possibly at the expense of FedEx and other rivals.

The theme that ties together all of these acquisitions is that, by providing a broader range of services to customers, UPS effectively reaches deeper into their supply chains, thus raising switching costs and making pricing for individual services less important. For a customer obtaining many of UPS's parcel and logistics services through a single point of contact, one can imagine that the opportunity to save a few pennies by using several smaller niche competitors would not be terribly attractive.

In sum, UPS is transforming itself into a global integrated supplier of logistical solutions at a time when world trade is growing rapidly and companies are looking to outsource non-essential functions such as transportation. Although it is not immune to the U.S. business cycle, it is becoming less sensitive to the cycle.

Appendix

Vertical Integration: Corporate Structure of the Industrial Age

As we have seen, today firms are able to sharply focus on their core competency because the Internet enables them to closely coordinate their business operations with suppliers, customers, and vendors of outsourced services. But, just as the focused firm is admirably suited to the Information Age, so was the sprawling, vertically integrated firm—controlling everything from the raw materials that entered the factory to, in some cases, retail stores that sold its output—well-suited to the Industrial Age. Indeed, in many industries it was virtually mandatory for large industrial firms to be vertically integrated in the 19th and early 20th centuries.

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The reasons why are admirably spelled out by Alfred D. Chandler, Harvard Business School's renowned historian of the modern corporation, in *The Visible Hand: The Managerial Revolution in American Business*. Although the process of industrialization got underway in the first half of the 19^{th} century, the early manufacturing firms were relatively small and simple. Typically a partnership or closely held corporation controlled several mills and relied upon merchants for both the acquisition of raw materials (such as cotton shipped from southern ports to the Northeast) and sale of finished goods. Owing to both their geographic scale and capital intensity, railroads (which began to proliferate in the 1850s) were the first "big business." But although they were big, railroads were still fairly simple, single-function firms; there was no need for them to be vertically integrated.

Transforming the Firm for an Age of Mass Production

Things changed rapidly in the 1880s, when large, vertically integrated manufacturing firms began to spring up in many industries. By World War I, a scant three decades later, such firms dominated the industrial economy. In 1917 there were 48 integrated firms with assets of $100 million or more (Table 10). According to Professor Chandler's expert analysis, this transformation was driven by two momentous changes:

- Thanks to the rapid build-out of a railroad system, by the 1880s the U.S. constituted an integrated mass market for consumer and industrial goods. For the first time, manufacturers could operate on a massive scale.

- In many industries, technological innovation vastly expanded factories' potential output. An extreme but instructive example was cigarettes. A really fast hand worker could produce 3,000 per day, but a machine developed in the 1880s was able to produce 120,000. Just 30 such machines could saturate the entire U.S. cigarette market (which still accounted for a limited share of the entire market for tobacco products).

Table 10: Large Integrated Industrial Firms in the U.S., 1917
Firms with assets of $100 million or more, by industry (assets in $ millions)

Agricultural	United Fruit Co.	$109.8
Chemicals	E.I. du Pont de Nemours & Co.	263.3
	Union Carbide & Carbon Corp.	155.9
Electrical machinery	General Electric Co.	231.6,
	Westinghouse Electric & Mfg. Co.	164.7
	Western Electric Co.	122.6
Food	Armour & Co.	314.1
	Swift & Co.	306.3
	American Sugar Refining Co.	137.3
	Corn Products Refining Co.	112.0
	Wilson & Co.	102.0
Fabricated metals	American Can Co.	133.1
Leather	Central Leather Co.	145.3
Lumber	Weyerhaeuser Timber Co.	153.2
Machinery, non-electrical	International Harvester Co.	264.7
	Singer Mfg. Co.	192.9
Mining Companies	Consolidation Coal Co.	127.8
	Pittsburgh Coal Co.	112.9
	Philadelphia & Reading Coal & Iron	100.0
Petroleum	Standard Oil Co. of New Jersey	574.1
	Standard Oil Co. Of New York	204.3
	Texas Co.	144.5
	Gulf Oil Co.	142.9
	Standard Oil Co. of Indiana	126.9
	Standard Oil Co. of Ohio	126.9
	Magnolia Oil Co.	122.8
	Ohio Cities Gas Co.	110.0
Primary metals	U.S. Steel Corp.	2,449.5
	Bethlehem Steel Corp.	381.5
	Midvale Steel & Ordnance Co.	270.0
	Phelps Dodge Corp.	232.3
	Anaconda Copper Corp.	225.8
	Jones & Laughlin Steel Co.	159.6
	Kennecott Copper Corp.	142.4
	Republic Iron & Steel	122.3
	Lackawanna Steel	117.3
	Aluminum Co. of America	104.0
Rubber	U.S. Rubber Co.	257.5
	B.F. Goodrich Co.	146.1
Textile	American Woolen Co.	123.0
Tobacco	American Tobacco Co.	164.2
	Liggett & Meyers Tobacco Co.	111.2
Transportation equipment	Ford Motor Co.	165.9
	Pullman Co.	143.3
	General Motors Corp.	133.7
	American Car & Foundry Co.	127.2
	Willys-Overland Co.	113.2

Source: Alfred D. Chandler, Jr., *The Visible Hand: The Managerial Revolution in American Business* (Cambridge,Mass.,1977), 503-512.

To maximize the profits of these high-volume factories in an economy that still had a huge rural population, a fragmented service sector, and a fairly primitive communications system heavily reliant on the telegraph, manufacturers integrated backward and forward in order to, as Chandler puts it, "control and coordinate" the flow of raw material into the factory and the distribution of product to the final customer. The vast expansion in the volume of output, as well as the novel and unfamiliar character of certain products (e.g., electrical motors and sewing machines) made it impossible for these revolutionary manufacturers to operate through traditional channels. Vertical integration was a logistical necessity, and if done correctly enabled fast-moving entrepreneurs to grab a large part of the market, achieve superior economies of scale, generate the cash to fund heavy advertising, and dominate an industry for many decades. Importantly, the rationale for vertical integration was *not cost cutting per se*, but rather to ramp up volumes, which would in turn drive down unit cost.

Packaged Consumer Products

A wide variety of consumer products industries—including matches, cigarettes, soap, photographic film, breakfast cereal, canned vegetables and soups—followed a similar development path. Invention of continuous process machinery made it possible to concentrate production in a handful of huge, modern factories. But to keep those factories humming, major organizational innovations had to be made. To stimulate demand, firms advertised heavily, using both advertising agencies and their own staffs. To promote its soaps and perfumes in the 1880s, Colgate took out particularly large and costly ads in *Harper's Weekly* (Figure 2). Firms also set up networks of branch offices of salesmen to push the product into the marketplace, by selling the product both to major retail chains and to jobbers.

George Eastman had to integrate forward into film processing and camera manufacturing in order to establish a market for amateur photographic film. He developed a simple camera that was loaded with film (100 exposures). After use, the customer turned in the camera and the film was developed; then the camera was re-loaded with film and returned to the customer. The company assured consumers that "No dark room or chemicals are necessary. A division of labor is offered, whereby all the work of finishing the pictures is done at the factory, where the camera can be sent to be reloaded. The operator need not learn anything about photography." Although it considered itself a film company, most of its ads featured the camera, not the film (Figure 3).

Figure 2: Firms, such as Colgate & Co., that used mechanization and vertical integration to achieve scale could afford to advertise aggressively.

Source: Harper's Weekly.

Figure 3: To encourage film sales, Eastman Kodak integrated forward into selling cameras and developing film.

Source: Harper's Weekly.

Importantly, the competitive advantage of these firms generally did not lie primarily with patents, technological secrets, or superior access to capital. Rather it was the corporate structure itself that was the key to success.

In addition to integrating forward toward end markets, the new mass-market consumer firms integrated backward into commodity markets. To procure high-quality bright leaf tobacco cheaply, American Tobacco's network of buyers purchased at tobacco auctions rather than from wholesalers; then the tobacco was cured and stored in the firm's own warehouses. Diamond Match Company had its own sawmills, as well as a network of buyers in Europe to buy chlorate of potash. Eastman Kodak also integrated backward into the production of paper, celluloid, etc.

As Alfred Chandler points out, the high-tech, vertically integrated consumer product companies that sprang up in the 1880s quickly established remarkably durable and profitable franchises. Walk the aisles of a Safeway supermarket today in Los Angeles or Chicago, and you will see dozens of names that were prominent in the business press of the 1880s—Procter & Gamble, Campbell Soup, H.J. Heinz, Pillsbury Flour, Eastman Kodak, Diamond Match. Importantly, the competitive advantage of these firms generally did *not* lie primarily with patents, technological secrets, or superior access to capital. Rather it was *the corporate structure itself* that was the key to success. By being the first to establish national networks of buyers to supply their factories, and salesmen to build the brand, they achieved economies of scale that drove down per-unit costs while establishing a market presence that could not be challenged.

Conquering Markets Through Forward Integration

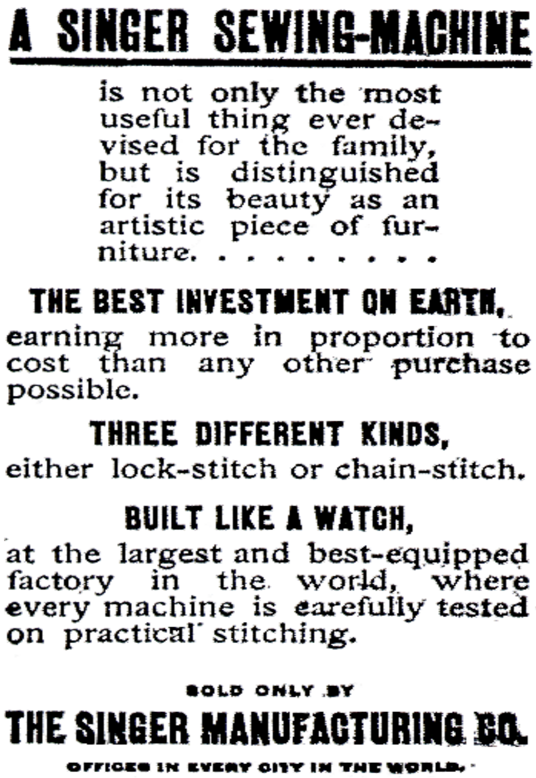
Some of the most successful corporations of the late 19th century conquered markets because of forward integration—they developed superior methods of distribution and bypassed the established network of wholesalers and jobbers. One important example was refrigerated beef. Until the 1870s, live animals were shipped by railroad from Chicago to northeastern cities. This system was highly inefficient because 60% of the animal could not be consumed. Gustavus Swift devised the solution—the refrigerated rail car—but it was staunchly resisted by railroads that stood to see their business shrink as meat was shipped more efficiently. Swift also built a network of "branch houses" in the U.S. According to Chandler, "Each house included refrigerated storage space, a sales office, and a sales staff to sell and deliver the meat to the retail butchers, grocers, and other food shops."

Similar innovations in distribution and marketing were needed to effectively sell machinery such as sewing machines, cash registers, typewriters, electrical equipment, and agricultural machinery. These novel products had to be demonstrated by well-qualified salesmen, and maintenance and financing had to be provided to customers. In each product segment, a key to corporate success was rapidly establishing a sales and service network.

This was strikingly true of the first home appliance, the sewing machine, which gave rise to one of the first truly multinational manufacturers, the I. M. Singer Company. According to Professor Chandler, "By 1859 Singer had opened 14 branches, each with a female demonstrator, a mechanic to repair and service, and a salesman or canvasser to sell the machine, as well as a manager who supervised the others and handled collections and credits." By the 1870s, this system was perfected in the U.S. and successfully transferred to Europe, where the company lacked patent protection. The company established 25 sales offices in the U.S., 26 in the U.K., and 53 in Continental Europe, and claimed to have "offices in every city in the world" (Figure 4). Manufacturing was largely concentrated in enormous factories in New Jersey and Scotland. The company also integrated backward, controlling some of the raw materials that supplied these plants.

Chandler explains the rationale for this forward and backward integration as follows: "Close and constant communication between the branch sales offices, the factory, and its purchasing organization make it possible to schedule a high-volume flow of goods from the suppliers of raw materials to the ultimate consumer, and so to keep the manufacturing facilities relatively full and running steadily." In the industrial age, unlike the information age, this critical information flowed most effectively *within a single firm*. However, now the Internet makes it possible to outsource critical functions.

Figure 4: Singer claimed to have "offices in every city in the world," where sewing machines could be sold and serviced.



A SINGER SEWING-MACHINE

is not only the most useful thing ever devised for the family, but is distinguished for its beauty as an artistic piece of furniture. . . . .

THE BEST INVESTMENT ON EARTH,

earning more in proportion to cost than any other purchase possible.

THREE DIFFERENT KINDS,

either lock-stitch or chain-stitch.

BUILT LIKE A WATCH,

at the largest and best-equipped factory in the world, where every machine is carefully tested on practical stitching.

SOLD ONLY BY

THE SINGER MANUFACTURING CO.

OFFICES IN EVERY CITY IN THE WORLD.

Source: Harper's Weekly.

Additional information available upon request.

Prices of companies mentioned as of June 20, 2001:

7-11		SE	$12.48
Aegis		AGS.L	£115
Alcoa Inc.		AA	$38.08
Allied Domecq		ALLD.L	£450
America Movil		AMX	$19.90
Anheuser-Busch Inc.	2	BUD	$41.65
AT&T Wireless Group Inc.	2	AWE	$15.85
Automatic Data Processing		ADP	$52.19
Bank of New York Co. Inc.	2	BK	$51.40
BellSouth Corp	2	BLS	$39.40
Bethlehem Steel		BS	$3.15
BHP	20	BHP.AX	A$21.87
Billiton		BLT.L	£362
Brown-Forman -Cl B		BFB	$65.94
Cadbury Schweppes		CBRY.L	£487
Campbell Soup Co.	2,19	CPB	$27.90
Canadian Pacific		CP.TO	C$60.15
Celestica Inc		CLS	$40.06
Citigroup	2	C	$50.65
Coca-Cola Co.		KO	$43.93
Colgate-Palmolive		CL	$59.20
Computer Sciences Corp.		CSC	$35.84
Danone		DANO.PA	€158.5
Deutsche Bank AG	2	DBKGn.F	€85.6
Deutsche Post		DPWGn.D	€18.1
Deutsche Telecom		DTEGn.F	€24.25
Diageo		DGE.L	£772
Digex	1,2	DIGX	$11.48
Duke Power	2	DUK	$41.32
DuPont	2	DD	$47.59
Eastman Kodak Co		EK	$47.55
Electronic Data Systems		EDS	$59.31
FedEx Corp		FDX	$37.00
Flextronics International	1,2	FLEX	$21.31
Ford Motor	2	F	$24.65
Fortune Brands, Inc	2	FO	$35.58
General Electric Co	2	GE	$50.77
General Mills Inc.	2	GIS	$43.00
General Motors	2	GM	$61.80
Grupo Televisa		TV	$39.40
Heidrick & Struggles Intl Inc		HSII	$24.98
Heineken		HEIN.AS	€45.1
Heinz (H J) Co.	2	HNZ	$42.17
Hershey - A		HSY	$60.50
IBM	2	IBM	$113.09
Interpublic Group Of Cos	2	IPG	$28.30
J.P. Morgan Chase & Co	2	JPM	$45.60
ManPower Inc.		MAN	$31.01
McDonalds Corp		MCD	$28.22
Microsoft Corp	1	MSFT	$69.41
Motorola Inc.	2	MOT	$13.48
Nestlé		NESZn.S	CHF380.5
Nokia Corp		NOK	$22.62
Northwest Airlines	1,2	NWAC	$23.59
NTT		9432.T	¥659000
NTT DoCoMo		9437.T	¥2020000
Omnicom Group		OMC	$81.95
Palm Inc.	1	PALM	$4.15
PepsiCo Inc.	2	PEP	$44.06
Pernod Ricard		PERP.PA	€83
Pharmaceutical Prod Devp	1	PPDI	$30.00
Phelps Dodge		PD	$40.50
Procter & Gamble	2	PG	$62.55
Quaker Oats Co		OAT	$90.99
Quintiles Transnational Corp	1	QTRN	$21.62
Ralston Purina Co.		RAL	$30.20
Safeway Inc	2	SWY	$47.85
SBC Communications, Inc.	2	SBC	$40.00
State Street		STT	$50.18
Telmex		TMX	$33.60
TMP Worldwide	1,2	TMPW	$55.65
Tricon Global Restaurants		YUM	$46.24
UAL Corp	2	UAL	$32.25
Unilever N V -NY Shares	2	UN	$57.99
United Parcel Service	2	UPS	$56.33
USX-U.S. Steel Group		X	$20.83
Wal-Mart Stores	2	WMT	$49.80
Wendy's International Inc		WEN	$24.63
Weyerhaeuser		WY	$53.70
WPP		WPPGY	£634

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