

the Southwest ECONOMY

FEDERAL RESERVE BANK OF DALLAS

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Back in the Saddle Again

The Texas Economy 10 Years After the Bust

On the 10th anniversary of Texas' sharpest employment decline in four decades, what appears to be enduring is the resilience of the Texas economy. Economic activity has bounced back with gusto, and today, after nine years of expansion, Texas' employment growth again ranks among the fastest in the nation.

An important producer of high-tech equipment and petrochemicals, Texas manufacturing is strong. Construction of huge factories, homes and highways has revived a long-dormant real estate industry. Banks are profitable, and Texas remains a major energy producer.

The great oil price shock of 1986 and the boom that preceded it overshadowed many forces that have been driving Texas' economic growth since the turn of the century. When the bottom fell out of the energy market, Texas still had a low-cost business climate, large labor pool, strategic location, efficient distribution network and eager high-tech industry to help rebuild its economy. These factors stimulated

the state's economy before the boom and bust and continue to encourage growth today.

A Changing Structure

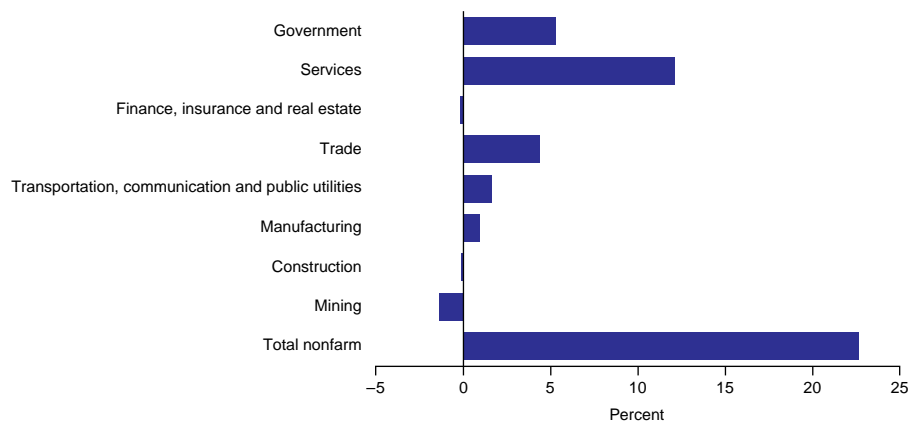
For most of this century, the Texas economy has been slowly changing, away from resource-based industries toward more knowledge-based industries. This transformation was put on hold during the energy boom, when rising oil prices during the 1970s and early 1980s encouraged the Texas economy to shift to profit from the increased value of one of its abundant natural resources (*Table 1*).

Texas has returned to long-run trends since the bust.¹ Since 1940, services have played an increasingly important role both in Texas and the nation. Technological changes in agriculture and manufacturing have raised productivity and held down prices, allowing consumers to spend more of their incomes on services. In the past 10 years, more than half of Texas job growth has been in the service sector (*Chart 1*).

While increasing productivity in manufacturing has held down job growth, Texas employ-

Chart 1

Net Contributions to Texas Employment Growth by Sector, December 1985–December 1995



I N S I D E

A Look at America's
Corporate Finance Markets

—
New Business Cycle
Indexes for Mexico Point
To Economic Expansion

Table 1
The Rise, Fall and Resurgence of Key Sectors in the Texas Economy

Boom	1973–85	Bust	1986	Today	1996
Energy	<ul style="list-style-type: none"> Oil prices rise in 1973 after OPEC restricts supplies. By 1981, prices have surged nearly tenfold to \$37 per barrel. In 1982, oil and gas extraction employment peaks at 5 percent of Texas' total, and the industry's output peaks at 19 percent of total gross state product. 	<ul style="list-style-type: none"> Oil prices plunge by two-thirds, from \$37 to about \$12. Within a year, over 50,000 Texas workers lose their jobs. Another 50,000 jobs disappear in the aftermath. 	<ul style="list-style-type: none"> The industry has refocused toward downstream industries that use refined crude and natural gas as inputs. Oil and gas extraction jobs represent about 2 percent of Texas employment. The energy industry contributes roughly 6 percent of the dollar value of output. 		
Construction and real estate	<ul style="list-style-type: none"> The mirage of "\$85 in '85" oil prices and tax breaks for apartment and office building under 1981 tax reforms create incentives to build with little regard for demand. 	<ul style="list-style-type: none"> As oil prices fall and tax breaks disappear, real estate property values plummet. Billions of dollars worth of development sit empty for years. Some properties are bulldozed and written off. Construction is nil. 	<ul style="list-style-type: none"> Texas real estate market is much healthier today. Recent growth is based on the fundamental strengths of the Texas economy. 		
Banking	<ul style="list-style-type: none"> Early '80s banking laws result in a larger pool of funds to lend. Bank portfolios are not geographically diversified. Texas banks number 1,936 before the bust. 	<ul style="list-style-type: none"> During the 1980s, 368 banks fail in Texas. Of the 10 largest Texas holding companies, all but one either failed or was acquired by out-of-state companies. 	<ul style="list-style-type: none"> Texas banks number 935. Bank consolidation has resulted from the repeal of Texas unit banking laws and scale economies from new technology and interstate bank combinations. 		

ment in that sector has grown more than in the rest of the country. In the early 1970s, the share of employment in the manufacturing sector was significantly higher in the United States than in Texas. Since that time, Texas' share of manufacturing employment has become more like the nation's by increasing slightly while U.S. manufacturing employment was declining rapidly.

One reason Texas' manufacturing sector has been increasing relative to the nation's is a rapid expansion of high-tech industries. Texas has become a leader in the production of computers, semiconductors and telecommunications equipment.² In fact, Texas has been a leader in high-tech industries since the 1970s, boosted by a buildup of defense-related manufacturing and technological advances from the oil and gas industry. The 1980s were difficult years for high-tech industries, with defense spending cuts and global competition pushing down prices for computer chips.³ After the bust, however, Texas high-tech

industries flourished as companies that were consolidating and downsizing moved to Texas, attracted by a large supply of low-cost land and labor. In Texas, employment at high-tech firms has grown twice as fast as the state's overall economy during the past 10 years. The share of Texas private employment in high-tech industries has risen from about 1 percent in the mid-1970s to 3.1 percent in 1994.⁴

Texas' growth in high-tech industries has been an important force in helping the state become more integrated with the global economy. In 1987, exports contributed roughly 10 percent of gross state product (GSP). Today, exports represent a significant share of Texas' economy, contributing roughly 21 percent of total GSP. Texas is a leading exporter of chemicals, electronics, computers, transportation equipment and agricultural products. In 1994, Texas' \$60 billion in exported goods constituted about 51 percent of the state's total manufacturing sales.

More than 50 countries regularly purchase Texas products. Texas' neighbor to the south is its leading export market. Over the past decade, exports to Mexico have more than tripled. Texas' other major export markets include Canada, Japan, the United Kingdom, Taiwan, China, Singapore, Korea, Venezuela and the Netherlands.

Reinventing the Energy Industry

While high-tech industries have been gaining strength, the energy industry has been rebounding. The energy industry, while still important to Texas, looks very different from Texas' energy industry 10 years ago. Oil and gas extraction output is about one-third its former size. Still, Texas continues to be the nation's number one combined oil and gas producer; 26 percent of the crude oil and 33 percent of the natural gas produced in the nation come from Texas. Since 1986, new technology—including 3-D seismic, horizontal drilling, coiled tubing and sophisticated fracturing—has caused a drop in oil production costs, encouraging drilling in places that were previously cost-prohibitive.

Texas still benefits from rising oil prices, although the state's economic well-being is less tied to oil prices than it was 10 years ago.⁵ During the 1990–91 Persian Gulf war, oil supply disruptions from the Middle East sent oil prices to more than \$30 per barrel for several months, helping push the nation into recession. The Texas economy avoided recessions however, thanks to a mini-boom in oil and gas extraction. The state remains susceptible to changing oil prices. Each sustained dollar change in oil prices changes Texas employment by about 18,000 jobs.⁶

After the oil bust, the state's energy industry shifted from upstream oil and gas extraction industries toward downstream industries. The 1986 plunge in prices was good news for the producers of downstream products, which use refined crude oil and natural gas as inputs.⁷ High pre-

bust oil prices had limited demand and profits for such downstream products as gasoline, petrochemicals, plastics and rubbers. Lower prices and a rebounding economy stimulated demand and led to a building boom along the Gulf Coast.

Today, the chemical industry generates one-fourth of Texas' manufacturing shipments and is a leading export industry. Texas processes more natural gas than any country in the world.⁸ In fact, the world price of natural gas liquids is set in Mont Belvieu, a Houston suburb. With the nation's largest refining capacity, Texas and Louisiana are the only refining states to export a significant amount of product to other parts of the country, particularly the East Coast.

Texas has become a multinational supplier of oil field equipment and engineering and construction expertise. Texas ships oil field equipment and services to help other countries extract oil and gas. Texas engineering and construction firms build major industrial facilities, roads, highways, airports, hotels and resorts around the world. In 1994, four of the top 10 industrial contractors in the world were based in Texas—Centex, Raytheon Engineers, John Brown/Davy and Brown & Root—and generated \$11.1 billion in revenues.⁹

Construction and Banking On More Solid Ground¹⁰

Just as Texas' energy industry had to be reinvented, Texas' construction and banking sectors needed to regain solid footing. Expansion of the economy in the 1980s went beyond what the economic fundamentals could support, pushed by the expectations of higher oil prices and distortionary tax and banking policy.

In 1982, most analysts expected that the Organization of Petroleum Exporting Countries (OPEC) would keep world oil prices artificially high and, at the worst, that oil prices would stagnate around \$30 per barrel. Respected forecasters at

Data Resources Inc.¹¹ and the University of Texas were projecting that oil prices could reach as high as \$60 to \$90 per barrel by the year 2002.¹² Analysts put the bottom of their forecast range around \$20 per barrel and considered that outcome very unlikely. Forecasters did not anticipate the surge of cheap oil that would send prices near \$10 per barrel.¹³

Distortionary public policy also encouraged overbuilding. The Economic Recovery Tax Act of 1981 created tax breaks for apartment and office building investors, giving investors and builders incentives to build without much regard for demand. At the same time, banking laws passed in the early 1980s gave financial institutions a larger pool of funds to lend investors.

In 1986, falling oil prices and elimination of tax breaks for real estate led to massive job losses, plunging property values and widespread bank failures. Risk-taking contributed to the severity of the financial losses. Banks that adopted relatively risky management strategies in the form of both high reliance on commercial and industrial loans and construction loans, and greater use of large certificates of deposit for funding, suffered much greater difficulties than did their more conservative counterparts.¹⁴ Large banks were particularly hard-hit, suffering greater losses than small banks.¹⁵ The banking industry had negative returns on average assets from 1986 through 1989. In 1989, 65 percent of total U.S. bank failures were in Texas, and less than one-fourth of Texas thrifts were both profitable and solvent. The number of thrift closures would have been extremely high, but inadequate funding of the Federal Savings and Loan Insurance Corporation (FSLIC) prevented thrift regulators from aggressively closing insolvent thrifts through most of the 1980s.¹⁶

While dreams of \$80-per-barrel oil died quickly, investments made to chase those dreams were not as easily liquidated. Although Texas

employment growth began to accelerate in 1987, it took several years for the excess supply of real estate to be absorbed to the point that real estate values began to strengthen. Construction activity continued to decline throughout the late 1980s.

Today, the Texas real estate market is much healthier than it was 10 years ago. Recent growth is based on the fundamental strengths of the Texas economy.¹⁷ The rebound has been uneven, however. The warehousing industry is strong across most of the state, but office markets remain weak in many places. Although improving, office vacancy rates in downtown Dallas and Houston are still among the highest in the nation.

Return to Trend

When oil prices are relatively stable, as in the 1990s, Texas economic growth is propelled primarily by the same factors that stimulate economic growth throughout the rest of the country. As Chart 2 shows, Texas employment growth has been following a pattern similar to that of the nation's for more than five decades. The energy boom during the 1970s and the bust in 1986 now appear as deviations from the long-run trend.

Although the pattern is similar, Texas employment has grown faster than the nation's for 43 of the past 55 years. Several factors attract firms to Texas.¹⁸ Real estate and labor are

Chart 2
Texas Payroll Employment Growth, 1940–95
(December over December)

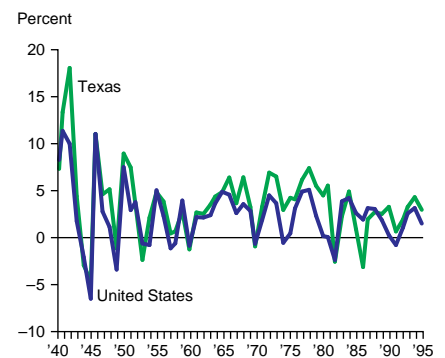
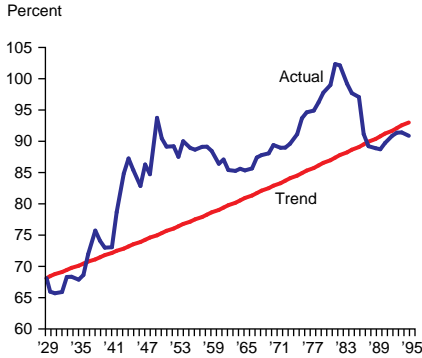


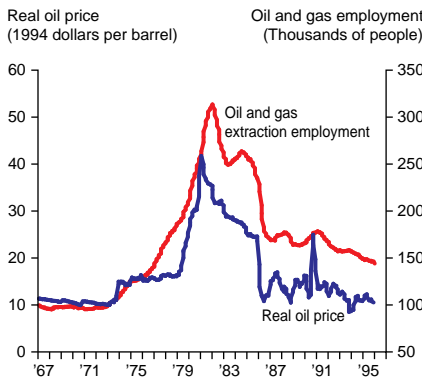
Chart 3
Texas Per Capita Personal Income
As a Percentage of U.S. Per Capita
Personal Income



relatively less expensive in the state. Texas has an efficient distribution network and is strategically located in the center of North America, a factor of increasing importance since the passage of the North American Free Trade Agreement. The oil bust made Texas an even cheaper destination for expanding companies, by freeing up labor and real estate and attracting bargain-hunting developers.

While Texas employment has been growing faster than the nation's, Texas per capita income has historically been below the national average. Texas per capita personal income has been slowly inching closer to the national average, however, as shown in Chart 3. In early 1970, before the oil boom, Texas per capita personal income was around 88 percent of the national

Chart 4
Real Oil Price and Texas Oil and Gas
Extraction Employment



average. During the oil boom, Texas per capita income accelerated and briefly matched the U.S. average, but then declined in the mid-1980s. And, in recent years, Texas per capita income as a percentage of U.S. income has returned to its long-run trend rate of growth, increasing around 0.1 percent per year.

Conclusion

Although the oil bust 10 years ago will always be an important part of Texas history, visible signs of this economic shock are fading. Today, the mining industry has shrunk. As Chart 4 shows, oil and gas extraction has returned to the same share of employment as in 1972, prior to the first big jump in oil prices. Inflation-adjusted oil prices are back to pre-oil-embargo levels, and the Texas economy has returned to the trends that were evident before rising oil prices sent the economy skyrocketing.¹⁹ High-tech industries have accelerated expansion. Increased exports have helped Texas become more of a more globally focused economy. The service sector has resumed rapid growth, and Texas continues to grow faster than the nation. Although per capita personal income is below the national average, Texas is again slowly converging to the national average.

—Fiona Sigalla

Notes

- 1 See Beverly J. Fox and Keith R. Phillips, "The Texas Economy: Beyond the Boom and Bust," Federal Reserve Bank of Dallas *Southwest Economy*, January/February 1992 and Federal Reserve Bank of Dallas, "The Service Sector: Give It Some Respect," *Annual Report*, 1994.
- 2 See D'Ann M. Petersen and Michelle Thomas, "From Crude Oil to Computer Chips: How Technology Is Changing the Texas Economy," Federal Reserve Bank of Dallas *Southwest Economy*, Issue 6, 1995.
- 3 See *Forces of Change*, "Industry: High Tech and Defense," Texas Comptroller of Public Accounts, Austin, 1994.

- 4 High-tech does not include most defense- and oil and gas-related industries. For a definition of high-tech industries, see Petersen and Thomas.
- 5 Mine K. Yücel and Stephen P. A. Brown, "The Energy Industry: Past, Present and Future," Federal Reserve Bank of Dallas *Southwest Economy*, Issue 4, 1995.
- 6 Stephen P. A. Brown and Mine K. Yücel, "Energy Prices and State Economic Performance," Federal Reserve Bank of Dallas *Economic Review*, Second Quarter 1995.
- 7 Thanks to Bill Gilmer for his assistance with this section.
- 8 With the exception of the United States.
- 9 According to *Engineering News Record*.
- 10 Thanks to Kelly Klemme and Ken Robinson for their assistance with information about Texas banking.
- 11 Data Resources is now DRI/McGraw Hill.
- 12 P. R. Hughes, "Texas' Future," *Dallas Morning News*, December 21, 1982.
- 13 See Yücel and Brown.
- 14 See Jeffery W. Gunther, "Texas Banking Conditions: Managerial Versus Economic Factors," Federal Reserve Bank of Dallas *Financial Industry Studies*, October 1989.
- 15 See Robert Moore, "Financial Shakeouts' Slow Erosion of Small Bank Market Share," Federal Reserve Bank of Dallas *Financial Industry Issues*, Second Quarter 1995.
- 16 See Kenneth J. Robinson, "The Performance of Eleventh District Financial Institutions In the 1980s: A Broader Perspective," Federal Reserve Bank of Dallas *Financial Industry Studies*, May 1990.
- 17 See D'Ann M. Petersen, Keith R. Phillips and Mine K. Yücel, "The Texas Construction Sector: The Tail that Wagged the Dog," Federal Reserve Bank of Dallas *Economic Review*, Second Quarter 1994.
- 18 Fiona D. Sigalla, "Another Strong Year in the Eleventh District," Federal Reserve Bank of Dallas *Economic Review*, First Quarter 1995.
- 19 Although current oil prices are near \$20 per barrel, real (inflation-adjusted) oil prices are at pre-OPEC-restricted levels of 1973.

A Look At America's Corporate Finance Markets

“This article describes and analyzes the spectrum of finance markets available to U.S. corporations and... explains why some countries are now trying to emulate the U.S. structure.”

How an economy channels finance from savers—typically individuals—to those with ideas about how to invest productively—the business sector—has always been recognized as important for economic growth. Some recent academic work has emphasized this point. Historians are now attributing a greater role to the development of corporate finance markets in spurring the emergence of the railroads and other heavy industries that were key engines of growth in the industrial revolution. And some recent empirical work suggests that the level of a country's financial development helps predict its future rate of economic growth.¹ Such work has reignited economists' interest in how firms get financed in both the United States and abroad.

This article describes and analyzes the spectrum of finance markets available to U.S. corporations and examines how firms as large as General Motors and as small as the tiniest start-up get financed, with particular attention to the recent dramatic expansion in finance markets for small and medium-sized firms. It explores some reasons for this dramatic expansion. It then examines why U.S. finance markets are structured as they are. Finally, it compares other countries with the United States in terms of how their firms obtain financing and explains why some countries are now trying to emulate the U.S. structure.

How Firms in the U.S. Get Financed Today

As shown in Chart 1, even after adjusting for inflation, corporate finance markets have grown extremely rapidly over the past 15 years. This expansion has largely been fueled by the rapid growth of nonbank financial institutions, such as pension funds, life insurance companies and mutual funds. In comparison, commercial banks have shown steady though less rapid growth, reflecting in part the regulatory constraints on their activities and the rise of competitors such as finance companies and money market mutual funds. Nonbank financial institutions are now the major suppliers of funds to corpo-

Chart 1
The Growth of Corporate Finance Markets in the United States

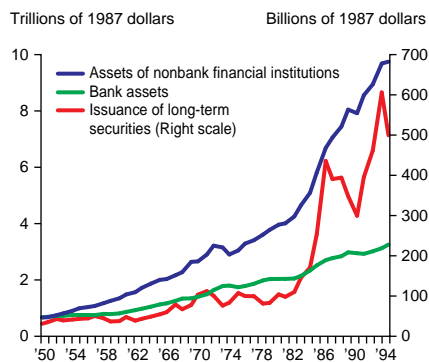
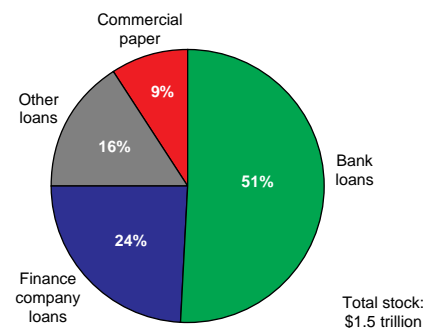


Chart 2
Short-Term Liabilities of Nonfinancial Business, 1994



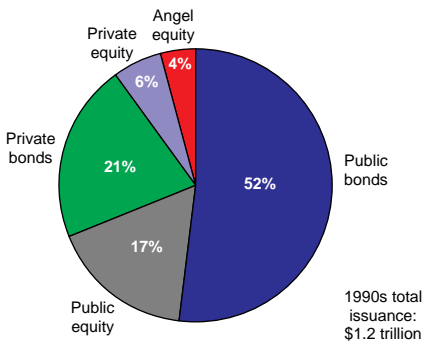
rations, and they have helped fashion for the United States the most diverse and rich set of corporate finance markets in the world.

Firms use short-term finance markets for working capital purposes, such as financing inventories or receivables. As shown in Chart 2, in 1994 short-term business liabilities totaled \$1.5 trillion, and they came from a number of sources, the most important being loans from banks. Banks are somewhat unique among financial institutions in that they are important lenders to firms of all sizes. Overall, banks supply over half of all short-term business finance. Finance companies are also important lenders to business, while other intermediaries also make business loans, such as savings institutions and mortgage companies. Issuing commercial paper is typically an option only for larger, more highly rated firms.

Long-term finance markets are used to finance capital expenditures that pay back returns over a long period of time. As shown in Chart 3, issuance of long-term securities so far in the 1990s totaled almost \$1.2 trillion. Five markets have contributed to this financing. The most well-known are the public markets for bonds and equity. The public bond market is the largest source of long-term finance because it caters to the biggest firms that have the largest capital needs.

This article will focus on the three private markets—the private bond, private equity and angel equity

Chart 3
Issuance of Long-Term Securities
In the 1990s



markets—because they are the only realistic sources of long-term finance for small and middle-market companies and because they have grown extremely fast in recent years. Despite their importance, relatively little is known about how these markets operate.

The largest of these private markets is the private placement, or private bond, market. It offers long-term debt at fixed interest rates. Primary lenders are life insurance companies. Primary borrowers are middle-market companies with annual revenues between \$100 million and \$500 million that are generally not large enough to issue public bonds. Although this market receives little attention, it has grown rapidly over the past 15 years and is now quite large. Average annual issuance in recent years is almost five times greater than in the early 1980s, and in some recent years, issuance has actually exceeded that of public bonds, even though individual issue sizes are much smaller than those in the public market. In short, the private placement market is a major source of funds for middle-market firms.²

The private equity market consists of equity investments professionally managed by specialized intermediaries, mostly limited partnerships. These limited partnerships are funded by institutional investors such as pension funds, banks, endowments and insurance companies. Although this market is small

compared with others, its growth since 1980 has been astronomic, almost 10 times faster than other long-term finance markets. I estimate that the private equity capital stock in 1994 was about \$100 billion, almost 25 times larger than in 1980.³

One reason for this explosive growth since 1980 has been regulatory and tax changes that encouraged pension fund investment through limited partnerships (LPs). Partnerships have proved to be the most efficient vehicle for investing funds from institutional investors in firms seeking private equity. As shown on the left of Chart 4, most of the growth in the private equity market since 1980 has been through partnerships. Prior to 1980, private equity investments were undertaken mainly by wealthy families, industrial corporations or banks directly investing their own capital. This practice was inefficient because it required all individual investors to bear the costs of managing their own investments. The pooling of funds into one entity—the LP—that does all the management has proved to be a more efficient way of organizing private equity investments.

The right half of Chart 4 shows that in 1980 this market was focused almost exclusively on traditional venture capital targets—small firms, often in high-tech lines of business that have a chance of growing into highly successful large firms. Today, the market has a much wider range of activity, including nonventure in-

vestments such as expansion capital for middle-market firms, turnaround capital for firms in financial distress and buyout investments.

Finally, there is the market for angel capital. Angel capital refers to equity investments in small firms by wealthy individuals, often with entrepreneurial backgrounds. Unlike the private equity market, this is a very localized, informal market. Angel capital is targeted at start-up or infant stage firms that cannot attract venture capital because they don't have exciting enough growth prospects. Although it's hard to estimate the size of this market, it is very important for small firms, not least because it's often the only realistic source of capital available to such firms. The most conservative estimates suggest that angels invest about \$10 billion in more than 30,000 small firms each year. This market has also likely grown very fast in recent years, in part because the number of wealthy individuals in the economy has grown so fast. For example, after adjusting for inflation, there are roughly six times as many people making \$1 million or more a year in the U.S. today than there were in 1980.

Why have the finance markets for small and medium-sized firms expanded so rapidly? First, these firms have become increasingly important in the economy, as illustrated in Chart 5. Per capita new business incorporations have almost doubled since the late '60s, while

Chart 4
Stock of Private Equity

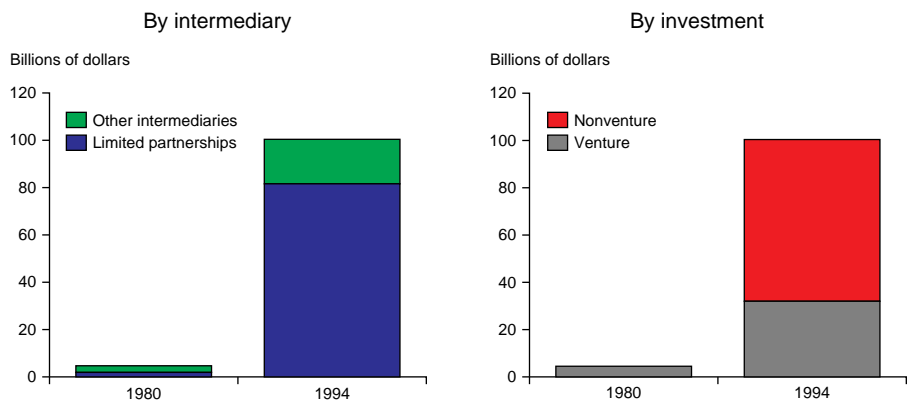
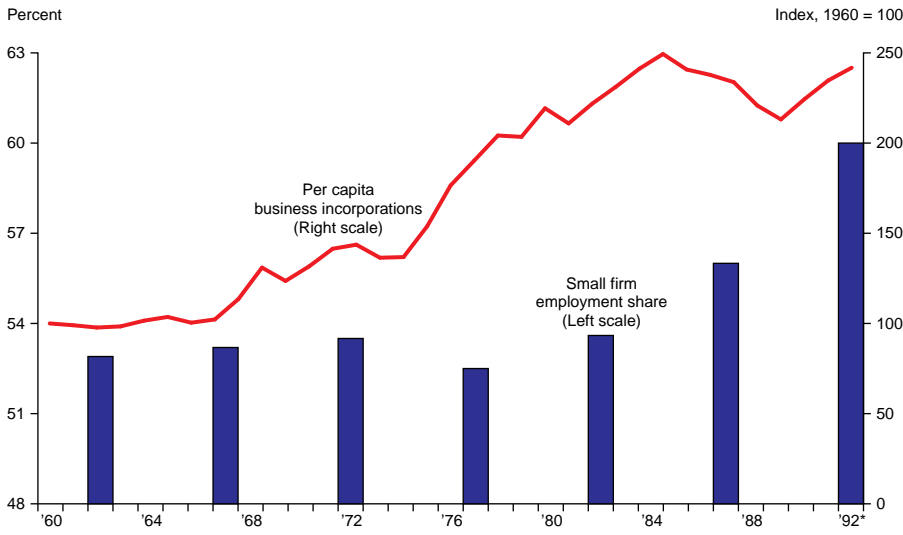


Chart 5
Small Business Has Been Increasing in Importance



* Estimate.

the share of total employment in small firms has increased sharply since the mid-'70s. The evolution to an information-based economy has probably contributed to small firm growth, since many service and technology-based firms tend to be small or medium-sized. The tendency for large firms to outsource many of their administrative functions to smaller firms (such as payroll, accounting and personnel) may also be a factor. As small and medium-sized firms have increased in importance, so has their demand for capital. Second, there has been an increased interest and ability of institutional investors to supply capital to smaller firms, as illustrated by the previously discussed pension fund involvement in the private equity market.

Why Corporate Finance Markets Are Structured as They Are

Why are corporate finance markets structured as they are in the United States? A partial answer lies in how the finance market has addressed two generic information problems faced by all firms trying to raise capital.

First is the selection problem, which investors face in choosing where to invest. Out of the hundreds

of investment proposals investors receive from firms, how do they select the ones most likely to succeed or least likely to fail? A second problem is one of monitoring or governance: how do investors ensure that, after funding, the firm puts the funds to the proper uses? These are essentially information problems: they stem from the fact that potential outside investors typically know much less about the firm than the firm's managers. This limitation impairs investors' ability both to assess which firms are the best investments and to know exactly what the firm is doing with the money made available to it.

Information problems tend to be worse for small firms, which do not produce very detailed information

about themselves and are often too young to have a track record about which they can boast. Medium-sized firms, being typically somewhat more mature than small firms, have a more solid track record and tend to produce more information about their activities. They consequently suffer somewhat less from the handicap of the unknown. Large public firms make available detailed information about their activities and usually have long track records. They suffer least from such problems.

However, just as firms differ in the extent of the information problems they pose to outside investors, corporate finance markets differ in the extent to which they can deal with these shortcomings. As shown in Table 1, small firms are forced to raise funds in markets that have developed the greatest safeguards to mitigate information problems, such as the markets for angel capital, private equity and bank loans. Medium-sized firms may be able to tap the private bond market, while some of the larger or more promising middle-market firms may also be able to issue public equity. Large firms that suffer least from information problems gravitate toward the markets that have the fewest such safeguards and where, in general, capital is the cheapest, such as the public bond and commercial paper markets.

What type of safeguards have markets developed? Two phenomena are common in the bank loan, private placement, private equity and angel capital markets. First, as

Table 1
Capital Sources for Firms

	Firm size		
	Small	Medium	Large
Information availability:	Low	More	High
Selection/monitoring problems:	High	Less	Low
Capital sources:	Angel capital Private equity Bank loans	Private equity Bank loans Private bonds Public equity	Bank loans Public equity Public bonds Commercial paper

a general practice, investors in these markets have the expertise and resources to obtain information about the firms who solicit them for money. These investors report selecting about 1 percent of the hundreds of investment proposals they receive per year. Proposals are usually from firms about which there is little or no publicly available information. Thus, banks, life insurance companies and limited partnerships have staff capable of producing information about the firm from scratch and analyzing that information intelligently. These resources help mitigate the selection problem.

Second, investors use their direct influence or other control mechanisms to ensure that the firm makes proper use of invested funds. Such influence helps mitigate the monitoring problem. Tight covenants in bank loans and private placements, for example, give the firm little leeway to stray from the straight and narrow path.

Private equity investors and angels also use a number of mechanisms to gain management influence. Representation on the firm's board and a majority voting right position are common examples. In addition, investors typically hold the purse strings for subsequent capital. Fast-

growing firms depend crucially on the initial investors to either provide subsequent capital themselves or find other investors to do so. Initial investors will be unwilling to do either task if they believe the management team has not performed up to par. And management almost always has a significant level of stock ownership in the firm, so that management's incentives are more aligned with those of the outside investors.

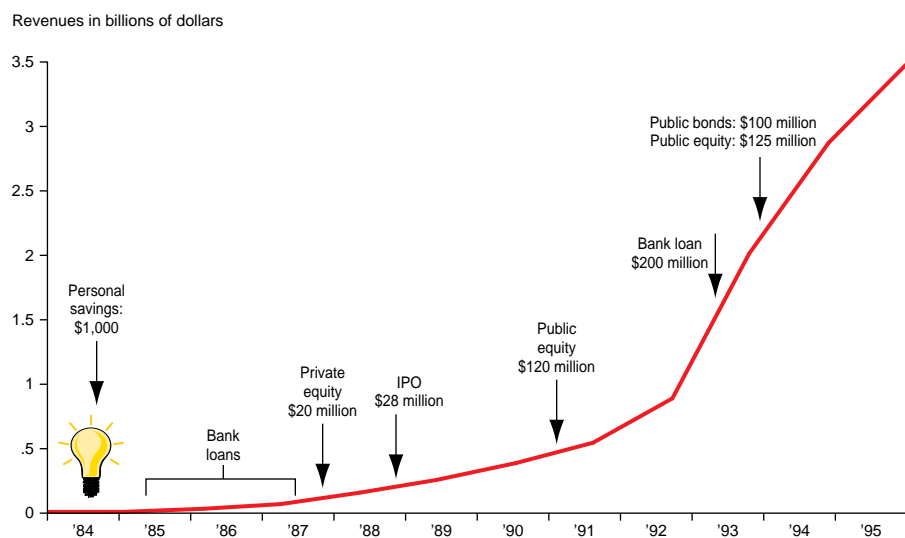
Chart 6 shows how this structure of financial markets works in reality, using the financing history of Dell Computer as an illustration. Dell, based in Austin, is currently the world's fifth largest personal computer maker, with annual revenues of almost \$3.5 billion. Twelve years ago, Dell was merely an idea in its founder's head. In 1984, Michael Dell started making and selling IBM PC clones through the mail from his college dorm. As with almost every start-up, his first source of financing was his own personal savings. Since the company had some inventory and sales to which it could point, for the next three years Dell tapped bank lines of credit secured by inventories and receivables.

By 1987, the company had grown so fast that it had exhausted its debt

capacity. Given the company's size and youth, the only realistic source of funds was private equity venture capital. That year Dell convinced a group of venture capitalists to invest \$20 million in the company. As is typical in venture financings, the investors wanted some control over the company in return for their money—in this case the lead venture capitalist took the positions of president and chief operating officer. The infusion of equity proved crucial to subsequent expansion, and by 1988 Dell had become large enough to raise \$28 million from the public equity markets through an initial public offering (IPO).

Dell continued to grow fast, and in 1991 returned to the public equity market for \$120 million. Although Dell was a successful, fast-growing company, its relatively small size, youth and potentially volatile line of business meant that it still could not tap the public bond market. After obtaining a \$200 million bank line of credit in early 1993, Dell had enough of a track record to be acceptable to public bond investors and issued \$100 million of public bonds in August 1993. Thus, in 12 years, and with the aid of a variety of corporate finance markets, Dell Computer went from a one-man operation housed in a college dormitory to a multinational company that employs over 7,500 people.

Chart 6
From an Idea to a \$3.5 Billion Company in 12 Years...
Dell Computer's Financing History



International Comparisons

In Japan and Germany, the corporate finance system is very different from that of the United States. Firms in these countries, large and small, typically have relied much more on bank financing than have U.S. firms. The primary reason for this reliance lies in the heavily regulated nature of German and Japanese securities markets, which has severely stunted their growth. Their public securities markets are extremely small compared with those of the United States, and their small firm finance markets are even more undeveloped. For example,

many medium-sized European firms are now finding it easier to do IPOs on the U.S. NASDAQ exchange rather than raise capital domestically.

Although the bank-centered systems may have had some advantages in the past, there is an increasing feeling that such systems may not provide adequately for the credit needs of small and medium-sized firms that are the engine of future economic growth and innovation. This may be one reason many of the success stories in the past 15 years have come predominately from the United States, while there have been few Dell's or Microsoft's in Japan or Germany. Recognizing this, policy-makers in these countries recently have deregulated their securities markets in an effort to emulate the U.S. system of corporate finance.

Conclusion

A recent *Business Week* cover article celebrated corporate America's access to the public equity markets and the positive effect the recent boom in IPOs had for innovation and growth. The magazine called this phenomenon "IPO capitalism."⁴ This article argues that the story is really a much bigger and broader one. Dell is a success story about the capacity of U.S. capital markets to provide funds to firms at *all* stages in their life, not just the IPO stage.

This is not to say that all deserving firms get the type of access that Dell enjoyed, nor that our capital markets could not be improved. Nor is it meant to imply that it is now easy for small firms to raise capital. Raising capital for small firms is not easy and probably never will be because of the severe information problems that small firms pose to outside investors. But the rapid expansion of markets devoted to solving these problems has made raising capital easier than it was in the past. And today there are thousands of firms of all sizes in America that are benefiting from the unique

scope and breadth of U.S. corporate finance markets. Such access to capital deserves a somewhat more encompassing term than just "IPO capitalism."

As Joseph Schumpeter once put it, "Credit creation is the monetary complement to innovation." For every underlying type of "real" economy—agricultural, industrial and so forth—there are a unique set of financing problems for firms and an optimal way of addressing those problems. As American innovation moves us beyond the agrarian and manufacturing eras and into the service and information age, our capital markets must evolve also, else economic growth will surely slow. The rapid expansion of the corporate finance markets for small and medium-sized firms documented in this article is one sign that this evolution is already taking place. Indeed, U.S. corporate finance markets today appear to have become the best in the world at funding "entrepreneurial capitalism," whatever the source of that entrepreneurial spirit.

— Stephen D. Prowse

Notes

- ¹ See R. G. King and R. Levine, "Finance and Growth: Schumpeter Might Be Right," *Quarterly Journal of Economics* 108 (August 1993): 717–37.
- ² See M. Carey, S. Prowse, J. Rea and G. Udell, "The Economics of the Private Placement Market," Federal Reserve Board Staff Study, no. 166, 1993.
- ³ See G. Fenn, N. Liang and S. Prowse, "The Economics of the Private Equity Market," Federal Reserve Board Staff Study, no. 168, 1995.
- ⁴ See *Business Week*, December 18, 1995.

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Beyond the Border

New Business Cycle Indexes for Mexico Point To Economic Expansion

New composite indexes of leading and coincident economic indicators for Mexico suggest that Mexico began an economic recovery in the second half of 1995. The indexes were created by Dallas Fed economists Keith Phillips and Lucinda Vargas, and Victor Zarnowitz, director of the Center for International Business Cycle Research (CIBCR) at Columbia University. A more detailed discussion of the indexes will appear in the second-quarter 1996 issue of the Federal Reserve Bank of Dallas *Economic Review*.

A composite index of coincident economic indicators aggregates into one index the movements in various broad indicators of economic activity such as output, employment and income. Movements in the coincident index reflect the current state of the economy: growth in the index signifies that the economy is expanding, while persistent de-

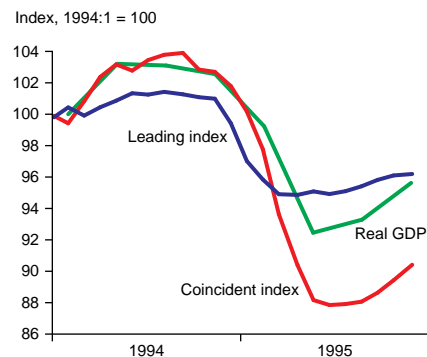
clines in the index show that the economy is in recession.

A composite index of leading economic indicators aggregates into one index the movements of series that generally reflect commitments or opinions about *future* economic activity. Examples of leading indicators include new orders for capital goods, building permits and business expectations.

In constructing the indexes for Mexico, the economists use traditional indicators that, in previous studies, proved to be important cyclical indicators in many countries. Other variables specific to the Mexican economy were also evaluated. All the components included in the indexes performed well using a simple set of criteria similar to that used by the National Bureau of Economic Research to evaluate components of the U.S. leading index.

The selected components of the coincident index are industrial production, insured employment, the unemployment rate (inverted), real manufacturing and trade sales, and an estimate of monthly real gross domestic product (RGDP). The components of the leading index are average hours worked in manufac-

Chart 2
Mexican Economy Improves In Second Half of 1995



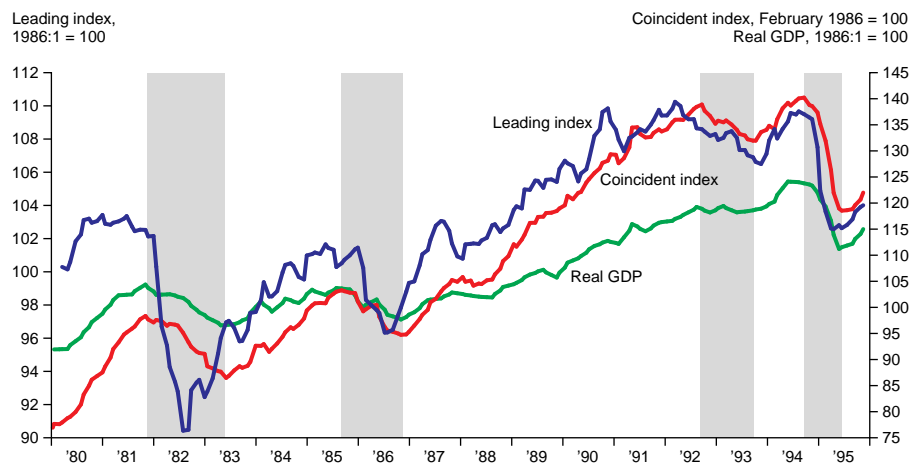
turing, the real value of construction structures, an index of real stock prices, real labor costs (inverted), net insufficient inventories, the real peso/dollar exchange rate, the real oil price and imports of capital goods.

As shown in Chart 1, the leading index typically turns down prior to recessions and turns up prior to expansions. From their analysis of the performance of the leading index, Phillips, Vargas and Zarnowitz conclude that while volatility reduces its predictive ability, the leading index signals business cycle changes before movements in RGDP or the coincident index.

The Mexico leading index increased from May through November 1995, while the coincident index increased from July through November 1995 and RGDP increased in the third and fourth quarters (*Chart 2*). The probability that Mexico was in an economic expansion, based on changes in the leading index, was 82 percent in August, 92 percent in September and 97 percent in October and November.

Overall, movements in RGDP and the composite indexes suggest that Mexico began an economic recovery in July 1995 that should continue at least through April 1996. While economic indicators suggest a recovery is under way, activity is improving very gradually, especially compared with the sharp decline experienced in the first half of 1995.

Chart 1
Leading Index Anticipates Business Cycle Turns



NOTE: Shaded areas represent recessions, as defined by declines in the coincident index.

—Keith Phillips

Regional Update

The Southwest economy made a healthy showing in 1995, as growth in all three District state economies outpaced the national average. Nevertheless, District economic activity slowed from the rapid pace of 1994, a result of increased labor market tightness, a weak Mexican economy and a slowdown in the national economy. Recent movements in some indicators suggest a further slowdown in economic growth in 1996.

District jobs increased at a moderate 2.9-percent pace in 1995, near the historical-trend rate of growth but noticeably slower than the 4.3-percent rate of 1994. The fastest growing industry in 1995 was construction, which

benefited from firm and employee relocations, high-tech expansions and relatively low mortgage rates. The services industry also grew at a healthy pace last year, aided by robust job growth at computer-related services firms and temporary help agencies.

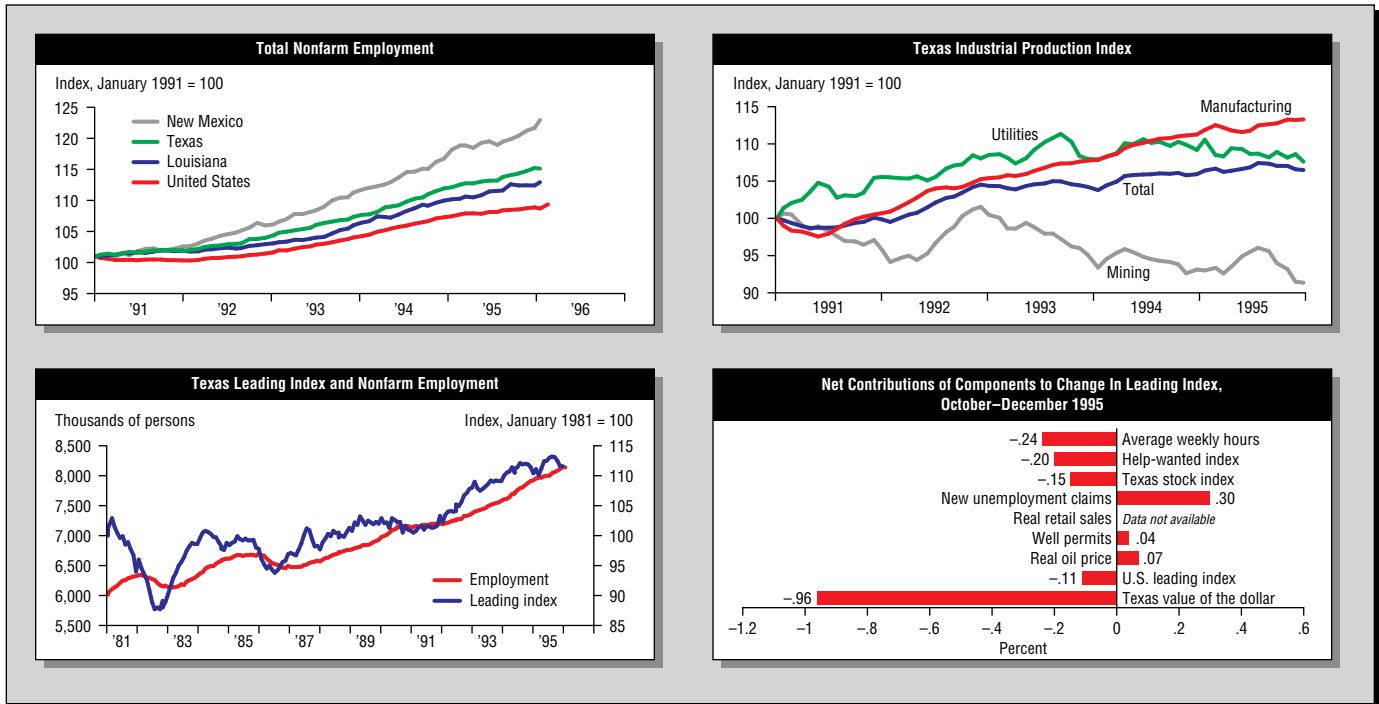
Recently released data suggest the District economy expanded at a slower pace in January 1996 because of a slight employment dip in Texas. The Texas dip was a result of continued declines in energy-related employment and job losses in some service-sector industries, such as transportation, trade, real estate and hotels. Anecdotal information suggests much of the service-sector job decline is temporary and

does not signal a downward trend.

One sign of strength in the January numbers was an acceleration in the growth of manufacturing jobs. The manufacturing sector has been boosted in recent months by strong demand for electronics and construction-related products. Also, Texas manufacturing output has been improving since mid-1995 and rose faster than the national average in 1995 as a whole.

The Texas Leading Index was flat in December after edging down in the previous three months. Recent movements in the Texas Leading Index suggest a slowdown in the Texas economy in 1996 from the moderate pace of last year. Nevertheless, economic growth should be positive and remain stronger than the national average.

—D'Ann M. Petersen



REGIONAL ECONOMIC INDICATORS

Texas Leading Index	Texas Employment							Total Nonfarm Employment		
	TUPI total	Mining	Construction	Manufacturing	Government	Private service-producing	Texas	Louisiana	New Mexico	
1/96	—	—	152.3	421.5	1,038.6	1,461.8	8,138.5	1,796.5	709.5	
12/95	111.6	118.9	154.5	421.4	1,035.3	1,461.9	8,145.1	1,788.1	702.1	
11/95	111.6	119.0	154.4	418.4	1,032.4	1,459.6	8,110.8	1,788.4	699.5	
10/95	112.5	119.6	154.8	415.8	1,030.7	1,455.3	8,082.5	1,788.2	694.8	
9/95	113.1	119.6	155.3	411.7	1,031.3	1,453.0	8,063.0	1,791.1	691.5	
8/95	113.2	119.9	155.4	408.0	1,029.3	1,458.9	8,041.1	1,775.1	689.1	
7/95	113.0	120.0	155.1	405.0	1,026.2	1,449.4	8,001.0	1,774.1	686.2	
6/95	112.5	119.3	156.7	407.3	1,028.0	1,445.1	7,999.7	1,772.7	689.5	
5/95	112.4	119.1	156.9	406.1	1,027.2	1,441.8	7,989.5	1,762.8	688.1	
4/95	111.2	118.8	156.0	401.7	1,029.4	1,440.2	7,968.4	1,757.3	683.4	
3/95	110.1	118.7	157.0	404.4	1,032.7	1,435.7	7,969.0	1,759.3	685.7	
2/95	111.1	119.1	157.0	405.3	1,030.0	1,432.3	7,953.5	1,753.7	685.6	

FURTHER INFORMATION ON THE DATA

For more information on employment data, see "Reassessing Texas Employment Growth" (*Southwest Economy*, July/August 1993). For TIPI, see "The Texas Industrial Production Index" (*Dallas Fed Economic Review*, November 1989). For the Texas Leading Index and its components, see "The Texas Index of Leading Indicators: A Revision and Further Evaluation" (*Dallas Fed Economic Review*, July 1990).

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