



JOHN DEERE & CO.

Agricultural Operations

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Executive Summary

The following is an analysis of the capital goods industry and John Deere's position within the industry. Both the external and internal analyses are included, as well as the SWOT analysis, followed by recommendations regarding the future of John Deere.

External Analysis

The external analysis includes the history of the agriculture industry. Next, the driving forces that affect the industry are detailed. These include the issues such as the economy, product and process innovations, government regulation, demographics, social factors, and entry and exit of firms. Then, competitive forces and their influences on the agriculture industry are discussed.

Internal Analysis

The internal analysis specifically addresses John Deere and its position within the industry. First, a brief history of John Deere is reviewed, followed by its relationship with employees and society. Next, a functional analysis discussing operation, administration, marketing, and finance is included. The analysis concludes with additional strategic options and recommendations for John Deere's future.

INDUSTRY ANALYSIS

History

Industry History

The agriculture industry has experienced its ups and downs with wars and the recoveries that followed these events. In recent years, the agriculture industry experienced a recession in the early 80's, but in the past decade agriculture has seen business expansion within the industry.

The agriculture industry has changed dramatically over the years and with these changes so has the farmer and his tools. In 1900, farmers made up 38% of the labor force in the United States. Compare this number with the agriculture labor force of today, which is 2.6% of the population. The agriculture industry has experienced this decline in labor, not because of a lack of willing workers, but because of technological advances, so more and more farmers are trading in their shovels and rakes for time cards and briefcases by moving into surrounding cities and towns. The trend over the past decades for how much one farmer can produce has increase significantly. In 1930 one farmer supplied food for 9.8 persons in the United States and abroad. In comparison, in 1970 one farmer supplied 75.8 persons food in the United States and abroad. These figures also contribute to more and more farmers moving into industrial settings and away from farming.

Industry Structure

Industry Structure

To be able to correctly accomplish an industry analysis, we have to define a boundary in which the products of the industry we analyze compete against. Due to the fact that a whole gamut of products exists in the market, we encountered the problem of determining the field where the products compete. To solve this problem, we use the fuzzy market concept.

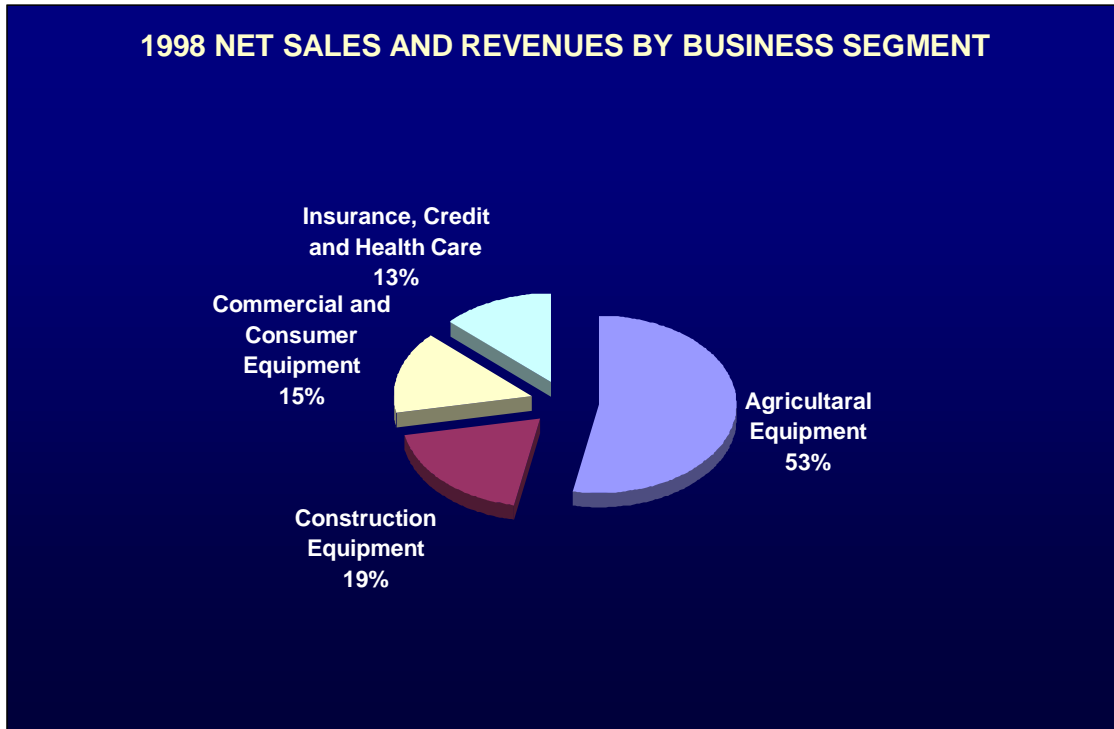
The North American Industry Codes (NAICs) were developed to aid us in developing these industry boundaries. The previous methods used were the Standard Industry Classification (SIC) codes.

North American Industry Codes

These codes were developed by Mexico, Canada and the United States in order to facilitate trade and have a harmonized schedule in which to classify products. The following table summarizes the major industries in which John Deere participates:

NAIC	SIC	Description
333111	3523	Farm machinery and equipment
333112	3524	Lawn and garden equipment
333120	3531	Construction machinery

The other industries that John Deere participates in include miscellaneous business credit institutions (SIC 6159), equipment rental and leasing (SIC 7359) and accidental and health insurance (SIC 6321). Due to the broad market in which John Deere competes, we will limit our analysis to the major industries defined by revenues for 1998. The following graph illustrates the revenues generated for each of the industries:



Source: 1998 Annual Report. Pg 35

The 1997 NAIC Definitions

333 Machinery Manufacturing

Industries in the Machinery Manufacturing sub-sector create end products that apply mechanical force, for example, the application of gears and levers, to perform work. Some important processes for the manufacture of machinery are forging, stamping, bending, forming, and machining that are used to shape individual pieces of metal. Processes, such as welding and assembling are used to join separate parts together. Although these processes are similar to those used in metal fabricating establishments, machinery manufacturing is different because it typically employs multiple metal forming processes in manufacturing the various parts of the machine. Moreover, complex assembly operations are an inherent part of the production process.

3331 Agriculture, Construction, and Mining Machinery Manufacturing

33311 Agriculture Implement Manufacturing

This industry comprises establishments primarily engaged in manufacturing farm machinery and equipment, powered mowing equipment and other powered home lawn and garden equipment.

333111 Farm Machinery and Equipment Manufacturing

This U.S. industry comprises establishments primarily engaged in manufacturing agricultural and farm machinery and equipment, and other turf and grounds care equipment, including planting, harvesting, and grass mowing equipment (except lawn and garden-type).

333112 Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing

This U.S. industry comprises establishments primarily engaged in manufacturing powered lawnmowers, lawn and garden tractors, and other home lawn and garden equipment, such as tillers, shredders, and yard vacuums and blowers.

33312 Construction Machinery Manufacturing

333120 Construction Machinery Manufacturing

This industry comprises establishments primarily engaged in manufacturing construction machinery, surface mining machinery, and logging equipment.

Due to the fact that John Deere's majority of sales, which is 53%, is generated from the agricultural equipment sector we will concentrate this analysis and review on this sector.

Industry Description

Agriculture Equipment

Sales of agricultural equipment are determined by several factors, which include the following:

- Farm commodity prices.
- Acreage planted.
- Crop yields.
- Government payments.
- General economic conditions.
- Farmland prices.
- Farmer's debt levels.
- Interest prices.
- Agricultural trends.
- Weather and climatic conditions.
- Technological innovations.

All these factors significantly affect farmers' decision to purchase agriculture equipment. The seasonal nature of the industry is reflected in the variety of products sold during the course of the year. The diverse variety of short-line and specialty manufacturers with

differing manufacturing and marketing methods has characterized the competitiveness of this industry.

The agriculture equipment industry is very competitive and concentrated. This mature market is composed of several multinational firms, which have many assembly operations across the globe. A finished product in this industry can have parts from Mexico, Germany and France, which is assembled in the United States.

The U.S. agricultural industry is characterized by growing farm size and a shrinking number of farms. Similarly, U.S. farm machinery has increased in size, capacity, complexity, price, and decreasing in terms of units sold. The U.S. machinery market is largely a replacement market with more powerful and sophisticated units replacing older models.

The following table summarized the trade balance of SIC 3523 products between the U.S. and other major regions of the world:

U.S. Trade Patterns in Farm Machinery

(Amounts in millions of dollars)

Trade Areas	Exports	Imports
NAFTA	1459	699
Latin America	403	33
Western Europe	899	1418
Japan/ Chinese Economic Area	154	673
Other Asia	180	39
Rest of World	709	128
World Total	3804	2990

Source: U.S. Department of Commerce, Bureau of the Census

The main difference in the different world markets is that emerging countries emphasize product price and developed countries focus primarily on the durability of the equipment purchased.

As with agricultural equipment, the following table illustrates the U.S. trade balance for SIC 3531 products in 1996:

U.S. Trade Patterns in Construction Machinery

(Amounts in millions of dollars)

Trade Areas	Exports	Imports
NAFTA	1613	1032
Latin America	1040	89
Western Europe	1028	1990
Japan/ Chinese Economic Area	370	1009
Other Asia	622	184
Rest of World	1096	118
World Total	5769	4422

Source: U.S. Department of Commerce, Bureau of the Census

Industry Concentration

Since Deere is such a diversified company as far as their operations are concerned and due to their operations in multiple countries, it was difficult to quantify their concentration ratios in each line of operations. Additionally, there is a high degree of integration within the different departments of Deere. Therefore, we decided to calculate the concentration ratio for the industry in which Deere is the leader.

Concentration ratios are used to determine whether a industry's tendency is to be monopolistic or perfectly competitive. The ratio is calculated by dividing the total revenues of the largest four six or eight firms in the industry by the total industry revenue.

Deere is a leader in the Farm Equipment industry and has fairly large share in the Construction Equipment industry as well. Although, there are some major players in both these industries who are foreign corporations, our group has computed a separate concentration ratio.

According to Standard and Poor's, Deere with revenues of about \$ 14 billion is the largest company in the \$ 43 billion global farm equipment industry. The next largest players include New Holland and Case (\$ 6 billion in revenues each), which recently agreed to merge, and AGCO (\$ 3 billion.) The total revenue of the top four companies within the industry is nearly \$ 29 billion. Based on these figures it can be said that the four-firm concentration ratio in 1998 was 67%. A 67% concentration ratio clearly indicates that farm equipment industry does not operate in a perfectly competitive environment rather operates in an oligopoly.

Industry Growth Rate

With the U.S. economy and most of the world's economies growing steadily, if not strongly, the capital goods sector has thrived in recent years. In 1997, the growth rate leveled out in most of the capital goods industries, but shipments remained firm and profits were generally robust.

Among the diverse industry groups, agricultural and construction equipment have been the leading factors and should continue to outperform in the future years. The steady strengthening of the dollar has severely eroded the competitiveness of U.S. exporting industries, including most capital good sectors. The fortunes of capital goods companies usually rise and fall with the general economy, although on a lagging basis.

The diverse industries in the capital goods have a number of common themes and strategies, despite their varying customer bases. In North America, most of these industries are highly concentrated after years of consolidation, so they are seeking faster growth in overseas markets. Although some companies have found significant potential in established European markets, a growing number have looked to developing and

emerging growth markets for greater opportunities. Many U.S. based companies are moving into the Asia-Pacific region, Eastern Europe, and South America.

The growth rate for John Deere's agricultural sector is expected to be 10% for the fiscal periods 1998 and 1999.

Competitors

Market Guide has ranked the top ten participants in the agricultural and construction equipment industry worldwide. Within the top ten, only two corporations are based outside of United States, New Holland (England) and Metso Corporation (Finland). The table below list these companies in order of descending market capitalization. It also shows their revenues and profits for 1998, their industry and profit rank, number of employees and country of origin.

(Amounts in thousands of dollars)

Symbol	Company	Industry Rank	Revenue	Profit	Profit Rank	Country	Employees
CAT	Caterpillar	1	20,977,000	1,513,000	1	USA	65,824
DE	Deere	2	13,821,500	1,021,400	2	USA	37,000
CSE	Case	3	6,149,000	57,000	7	USA	17,700
NH	New Holland	4	5,717,200	257,600	3	England	21,344
MX	Metso Corporation	5	3,954,760	196,940	4	Finland	23,064
MTW	Manitowoc Company, Inc	8	694,822	51,380	8	USA	3,300
AG	AGCO Corporation	6	2,941,400	60,600	6	USA	10,572
KMT	Kennametal Inc	7	1,678,388	71,197	5	USA	14,400
JLG	JLG Industries, Inc	9	530,859	46,510	9	USA	2,664
OMQP	OmniQuip International	10	455,653	27,343	10	USA	1,750

Note: The Industry rank is according to the revenue each company made in 1998 and the profit rank is based on the profits each company made in 1998.

Scope of Competitive Rivalry

The industry that John Deere and Co. is categorized in is capital goods and the sector that they compete in is construction and agriculture machinery. This industry is a very competitive sector with thirty-seven companies competing with all of the other companies in the sector for customers and revenues and also continually trying to increase or maintain their position in the marketplace nationally and internationally. It is difficult for the smaller companies to compete with the industry giants because the large corporations have established relationships with the major construction companies, economies of scale, and superior research and development.

A rivalry emerges because one or more competitors' sees an opportunity to better meet customer needs or is under pressure to improve its performance. The construction and

agriculture machinery sector is no different from the rest of the marketplace and the following are descriptions of products and services that the top five competitors of John Deere and Co. offer to their customers.

Caterpillar Inc.

Caterpillar has a network that features 23 distribution centers in 11 countries and has facilities in 1500 locations in over 200 countries. Caterpillar and John Deere are very comparable companies as both companies offer almost the same products and services. Where Caterpillar offers over 300 machines for agriculture and construction purposes. Caterpillar designs, manufactures and markets earth moving, construction and materials handling machinery and heavy-duty engines. Along with the financial alternatives and insurance to purchase equipment that Caterpillar offers its customers, the company also has business segments consisting of parts and services, a rental store, and CAT Logistics; which entails customized distribution solutions for businesses and services that include information technology, inventory management, warehouse and operation management and transportation management.

Case Corporation

Case Corporation designs, manufactures, markets and distributes farm and light to medium sized construction equipment such as loader/backhoes, farm tractors and self-propelled combines. Case also manufactures replacement parts and has an insurance brokerage firm that offers physical damage insurance and life insurance. Case has over 4900 independent dealers and distributors in 150 countries.

New Holland

New Holland engineers, manufacturers, markets and distributes agricultural and construction equipment. New Holland also provides wholesale dealer and retail financing. New Holland has 29 branches internationally in 5 continents. New Holland's product line consists of tractors, combines, hay tools, industrial products and construction machinery. This company is based mainly in the United States and Italy where they have a combined 10,150 employees in these two countries.

Metso Corp.

Metso Corp. specializes in the development and manufacture of process engineering and machinery. Metso comprises three business areas: Fiber and Paper Technology, Automation and Control Technology, and Machinery. Metso has four types of machinery that it manufactures are forest machines, fiber processing equipment, rock crushing

equipment, and valves and flow control systems. Metso does not internally finance purchases for its customers, but works with Bank One in financing equipment for its customers.

Manitowoc Company

Manitowoc Company, Inc. designs and manufactures commercial ice machines and refrigeration products, cranes and related products, and ship-repair and construction services for the maritime industry. Manitowoc holds the number one position in high-capacity boom crawler cranes for heavy construction and the company also produces boom trucks. Over half of all sales in 1998 came from the crane and related products segment.

Stage of Industry Life-Cycle

The factors that describe the maturity of the industry include total sales, the age of the industry, dividends paid out to shareholders and the level of consolidation within the industry. The total world sales for agricultural equipment were \$43 billion for 1997. When comparing sales between the 1992 through the 1997 period, sales increased 12% (cumulative figure). Thus, indicating a mature industry with a relatively slow growth rate. The industry has existed for over a century, where consolidations have occurred throughout the recent years. An example of this consolidation trend can be seen in the merger between Case Inc. and New Holland and the acquisition of Homelite Division of Textron Inc. by John Deere. Also, evidence of the maturity of this industry is visible in the relatively high dividend payout by the companies within the industry.

Characteristics of Consumers

The consumer base for the capital goods industry includes individuals and corporations. The companies that are included in the capital goods sector that produce heavy-duty trucks or agricultural and construction equipment tend to create more uniform products for its customers. Often these products are made on an assembly line, instead of customer-specified or specific job orders.

For the large majority of corporations in the capital goods sector, most dealers of goods are affiliated with a single manufacturer, which provides sales, marketing, and financing support. The financing support is given in the form of wholesale financing of dealers' inventory, and sales and lease financing to retail customers. Manufacturers also give discounts, rebates, and other marketing subsidies to stimulate sales when needed.

Driving Forces

Government Regulation of Industry

Agricultural Equipment

Farm equipment demand is being stimulated by changes in U.S. agricultural policy. To comply with related provisions of the World Trade Organization (WTO) Agreements, the U.S. Congress passed the Federal Agriculture Improvement and Reform Act of 1996. With this act the government is eliminating land set-aside programs that restricted the number of acres planted by farmers. In addition, U.S. commodity price support programs have been modified and extended to 2005. A Price support, which is where the government guarantees farmers a minimum price for their crops, still remains in effect.

Product Characteristics, Innovations, and Trends

Electronics

Capital goods makers have applied sophisticated electronics to previously mechanical systems in order to enhance productivity, increase the precision of the equipment, facilitate maintenance, and provide operators with more complete information on the equipment's operating status.

Complexity

Many capital goods companies have tried to reduce the complexity of their equipment. Doing so often improves the equipment's quality and reliability, while reducing the cost to buy it and operate it.

Reduction of complexity can involve several aspects. It usually involves minimizing a number of parts or components used in assembling a piece of equipment. The fewer the number of parts, the greater the likelihood that the equipment will be built right the first time. In addition there will be fewer parts that can break.

Complexity can also involve a number of variations of particular equipment produced on one assembly line. Time and again, reducing the number of pieces of equipment manufactured on a production line has been shown to lower the incidence of defects in the output; it also reduces the production costs.

Product Innovation

The technological advances in the computer industry have tremendously influenced agricultural equipment industry, like many others. The focus has clearly shifted towards research and development in the agricultural equipment. Introduction of precision farming has revolutionized the primary design and outlay of the tractors and harvesters.

The competition between the companies now relies more exclusively upon the degree of computer integration in the operations of the machinery. Lately harvesters have been introduced where the volume can be controlled electronically. Likewise the seeding process has been greatly improved due to the introduction of electronically controlled seeders. Precision seeding has also improved the weeding process. The companies have been trying to introduce the machinery with increased area coverage.

One of the most important trends in the equipment industry has been the increased degree of consolidation of the operations in the machinery. Recently firms have started producing what has become known as “multi-purpose equipment”. These models incorporate the productive capacity of heavy machinery with integration of various tools required for agricultural production. Combined with the latest computer technology, the consumers have found that they just need to buy one piece of machinery in order to carry out the operations previously handled by heavy equipment.

Due to recent farm crisis across the world, the demand for agricultural equipment has gone down dramatically and has left the agricultural equipment industry in a very vulnerable position. Due to decreased commodity prices, the sales of the agricultural equipment has gone down substantially as farmers are finding it harder to buy tractors and combines. To counter this downturn, the industry has increased their focus on acquisition of credit unions in order to increase their financing operations. The leasing operations have increased greatly across the industry. Lower interest rates in the last few years have also enabled the farmers to lease the machinery on much lower rates. This has enabled the competitors to focus increasingly on maintaining brand loyalty with their customers.

The recent farm crisis has started a new form of competition among the firms in the agricultural industry; price leadership. The firms have come with much cheaper models and financing programs to keep up their sales volume. At the same time globalization has introduced these firms to new markets. Different means of agriculture across the globe has forced the industry to come up with the products with more adaptability to different farm conditions. As the new markets tend to exist in the third world countries, it has also forced the firms to make the production more efficient in order to keep the prices down. This is one of the main reasons for expansion into cheap labor markets such as Mexico.

In order to ensure customer loyalty, the firms have recently started focusing on forward and backward linkages. The distribution networks have been reorganized to ensure fast customer service. Some firms have started utilizing Internet for fast delivery of replacement parts. At the same time increased warranty coverage has helped the customers to be loyal to a specific brand name. This has forced the companies to fiercely ensure their product quality in order to decrease their product liability. The introduction of dealership insurance has shifted the liability directly to the manufacturing company itself. This, once again, has forced the company to ensure quality control.

Finally, the environmental issues; Recent efforts by the environmental protection agencies across the world have forced the companies to come up with better emission

control systems. Major competitors have affiliated themselves with major research centers and universities in order to produce more compact engines with limited emissions. Moreover due to recent increase in oil prices, firms have focused on finding new ways to produce more fuel-efficient engines.

Environmental Issues

Deere has announced that a breakthrough in small engine design could allow regulators to adopt stricter government standards for two-cycle engine emissions sooner than previously planned. The breakthrough came in Deere's Consumer Products division, which produces the company's Homelite brand of hand-held power equipment. Two-cycle engines using the technology could cut emissions by 75 percent compared with current engines.

Deere recently presented information on the breakthrough technology to the U.S. Environmental Protection Agency (EPA) in support of the agency's desire to implement tougher emission standards. Deere has also discovered that, in addition to the significant reduction of emissions, the technology will reduce fuel consumption of the small engines by up to 30 percent. Deere has assured the EPA that the company will license the new technology to other manufacturers of small two-cycle engines to help the industry meet lower emissions standards sooner. According to the Portable Power Equipment Manufacturers Association, more than 7.5 million two-cycle engines are manufactured for hand-held equipment in the U.S. each year.

The primary characteristic of Deere's new technology is its low emission performance, which is achieved through the almost total elimination of an unburned fuel charge during the two-cycle engine's exhaust stroke. The new technology preserves the desirable characteristics of the two-cycle engine including simplicity of construction, low cost of manufacturing, high power-to-weight ratios, high-speed operational capability and ease of maintenance.

Economic Indicators

Industry and competitive conditions change because forces are in motion that creates incentives or pressures for change. The most dominant forces are called driving forces because they have the biggest influence on what kinds of changes will take place in the industry's structure and competitive environment. The forces will affect the long run activities of the industry rather than the short run.

Up to 1997, the world economy grew an estimated 4%, marking four consecutive years of solid growth. In 1998 and 1999, the expectations were far less positive than they were in late 1997, owing to the economic turmoil that began in Asia, and spread to Russia, Latin America and other emerging markets.

In the U.S., the health of the economy has been demonstrated by the first federal government surplus since 1969. The dramatic swing from deficit to surplus freed financial resources for the private market contributing to the low inflation, high consumer confidence, and a hot job market for most of 1998. As the year came to an end, the effect of the Asian financial crisis began touching the U.S. economy.

During the last decade, the U.S. economy has entered into a new era in which its world-class managerial talent, multiple sources of finance capital, freedom from government regulation and debt, and rapid technological innovation gave it a large, and growing competitive advantage over other economies. Many economists have defined this new era as the “new economy”.

GDP

Real gross domestic product (GDP) means the output of goods and services produced by labor and property located in the United States. The GDP increased 4.2 percent during 1999, a similar growth rate to that recorded in 1997 and 1998. This means that the end of the year 1999, the expansion set an endurance record for peacetime expansions of 94 months (8 years). The longest expansion record lasted 106 months (1961-1969) and coincided with the Vietnam War. Once again, business investments in equipment made a substantial contribution to GDP growth, while a larger drag from net exports was offset by a step up in household spending on goods, services, and housing.

Household Spending

Household spending (real personal consumption expenditures (PCE)) surged during the first half of 1998, increasing roughly at a 6.1 percent annual rate. PCE growth downshifted during the third quarter to about a 4.1 percent pace, which still exceeded its growth rate for the four quarters of 1997, and remained strong in the fourth quarter pacing at 5.0 percent.

Demand for homes was also very strong. Single-family housing statistics were the highest they had been since 1978, and new and existing single-family home sales reached record levels. The percentage of Americans who own their own homes reached an all-time high of 66.8 percent. Growth of home-ownership was especially fast for groups that have been under-represented in the past, such as African Americans and Hispanics. This expansion in household resources permitted spending to grow significantly faster than disposable income. Indeed, the personal savings rate fell sharply again during 1998. After averaging roughly 4.5 percent between 1992 and 1994, this rate dropped to about 3 percent in 1996, about 2.8 percent in 1997, and about 3.2 percent in 1998.

Low interest rates and a ready availability of credit also stimulated household spending. In particular, housing affordability soared, as interest rates on 30-year fixed rate mortgages averaged below their 1997 values. Over the same period, consumer credit

grew at a somewhat faster rate than in 1997, but well below the pace of 1994 and 1995. Personal bankruptcy filings reached a new record high in the third quarter of 1998, but the rate of increase over the preceding year was well below the pace recorded between 1995 and mid-1997. The Consumer Sentiment Index of the Survey Research Center at the University of Michigan posted its highest reading in more than 30 years in early 1998. This optimism waned somewhat in the fall, but the Michigan index finished the year near the top of its historical range.

Consumer Price Index:

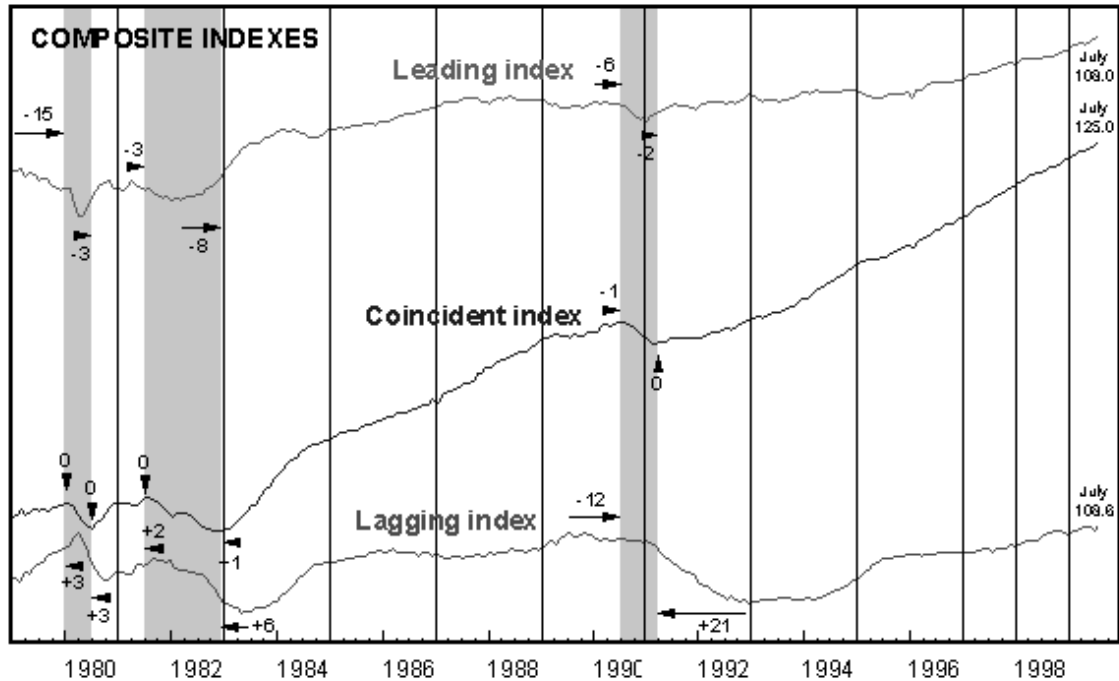
In 1998, the U.S. economy experienced a decrease in inflation. The Consumer Price Index (CPI) increased by only 1.6 percent last year, just below its 1.7 percent rise during 1997 and well below its 3.3 percent rise during 1996. Much of the 1998 decline in inflation can be attributed to a significant slide in crude oil prices. Weak demand for oil in Asia, together with a plentiful worldwide supply, helped push down CPI energy prices by almost 9 percent for the year as a whole. The core CPI, which excludes the food and energy components of the broader index, increased 2.4 percent during 1998, a little above the previous year's 2.2 percent. Several factors helped to hold down core inflation despite the strong growth of aggregate demand and very tight labor markets.

- Rapid productivity growth caused the wage increases to not put pressure on prices.
- Declining prices of non-oil imports, as excess capacity in Asia and depreciating foreign currencies have encouraged foreign producers to reduce the dollar prices of their goods.

Actual inflation depends on expectations of inflation, because the wage and price increases approved by workers and firms are influenced by the prices they expect to pay for other goods. Long-term inflation expectations of professional forecasters have been failing in recent years, according to a survey conducted by the Federal Reserve Bank of Philadelphia.

Leading, Coincident, Lagging Indicators

The indicators are identified as leading, coincident or lagging, depending on the time correlation between changes in them and in the economy. For example, changes in a leading indicator occur a little before they do in the economy whereas the lagging indicators change a little after a change occurs in the economy. Specific industries follow one indicator more closely than another. The agricultural industry for example, lags the economy a little.



Composite Indexes Of Leading, Coincident And Lagging Indicators

The leading index increased 0.3 percent, the coincident index increased 0.2 percent, and the lagging index increased 0.6 percent in July. Taken together, the three composite indexes and their components show a healthy economy:

- The coincident indicators point to economic activity rising in the 3rd quarter from the 1.8 percent (annualized) rise in GDP in the 2nd quarter.
- The leading indicators point to continuation of the expansion through early 2000.
- Cyclical imbalances and related economic instability problems show inconsistent patterns of growth.

Leading Indicators

Seven of the ten indicators that make up the leading index rose in July. The most significant increases—in order from the largest positive contributor to the smallest—are stock prices, manufacturers' new orders of non-defense capital goods, and average weekly hours in manufacturing. The most significant negative contributor to the composite leading index in July is a narrowing of the interest rate spread.

With the increase of 0.3 percent in July, the leading index stands at 108.0 (1992 equals 100). This index increased 0.3 percent in June and increased 0.3 percent in

May (the same values reported last month). During the six-month span through July, the leading index rose 1.0 percent, and eight of the ten components advanced (diffusion index, six-month span equals 80 percent).

Coincident Indicators

All three of the available components of the coincident index—employees on nonagricultural payrolls, industrial production, and personal income less transfer payments—increased in July. (Data on manufacturing and trade sales are not yet available).

With the increase of 0.2 percent in July, the coincident index stands at 125.0 (1992 equals 100). Based on revised data, this index increased 0.5 percent in June and increased 0.2 percent in May. During the six-month period through July, the coincident index increased 1.7 percent, with all four components making positive contributions.

Lagging Indicators

With the increase of 0.6 percent in July, the lagging index stands at 108.6 (1992 equals 100). A sharp decrease (after last months' sharp increase) in average duration of unemployment (an inverted series, where decreases make positive contributions) is partly responsible for the rise. Commercial and industrial loans also contributed positively to the lagging index. Change in labor costs was the sole negative contributor. The lagging index decreased 0.4 percent in June and held steady in May.

No Let-Up in Consumer Spending

Despite the September dip, confidence levels are still at historically high levels. The latest figure is only five points off the June reading, with consumers generally optimistic about both the economy and job prospects.

All regional economies continue to exhibit overall strength, with most experiencing moderate rates of growth. Industrial activity is on the rise in most parts of the country, with orders and production both up. In some cases, resurgent Asian demand is contributing to this rise in activity. The recent drought has worsened crop and livestock conditions in the East and parts of the Midwest.

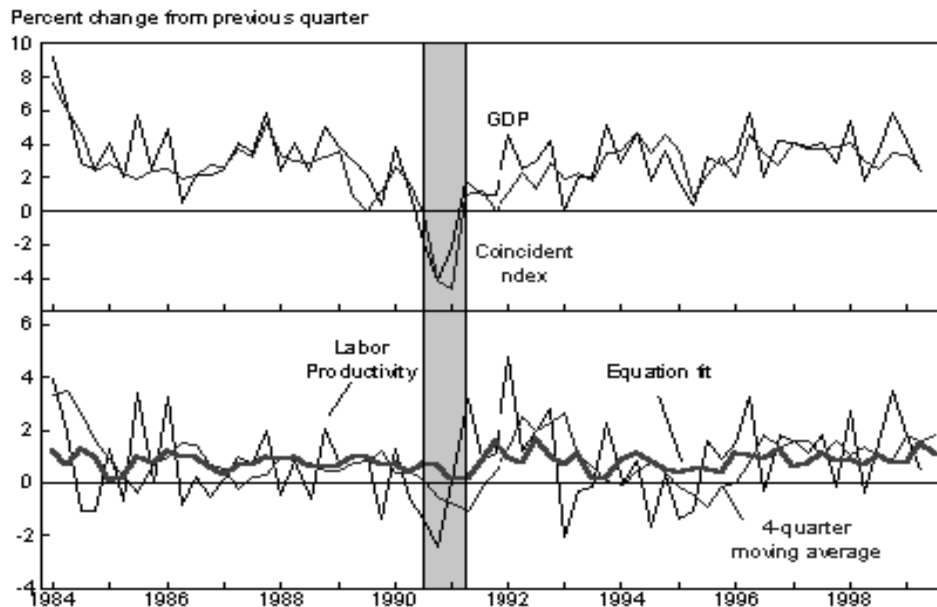


Manufacturing

Manufacturing activity appears to have accelerated almost ubiquitously. The San Francisco district reports that improving demand from East Asia has boosted orders in the electrical equipment, wood, chemicals, processed food, industrial machinery industries and industrial machinery production also.

The production of apparel appears to be down across the board. Orders for heavy trucks and construction and agricultural equipment have weakened at Chicago district firms.

Chart 1: GDP, Coincident Index, and Productivity



Labor Markets

The demand for labor continues to outstrip the readily available supply of labor in most areas. In contrast, a few districts have noticed a slight easing of labor market tightness.

Wages and Prices

Wage and salary increases remain within an expected range. Price pressures at the wholesale level appear to be somewhat greater, with steel makers in some areas announcing hikes of between 5 and 7 percent. Most reports indicate that higher raw materials costs are imminent. In Texas construction costs (both labor and materials) are up between 5 and 8 percent so far this year.

Real Estate and Construction

While home sales remain inflated, growth in sales and construction has slowed. Higher mortgage rates are a primary reason for the recent slowing. Other reasons include rising building costs and market saturation. Many districts are still reporting labor and/or material shortages, which are delaying construction. Commercial real estate markets are tight in the East, but performing well in the Mid-West.

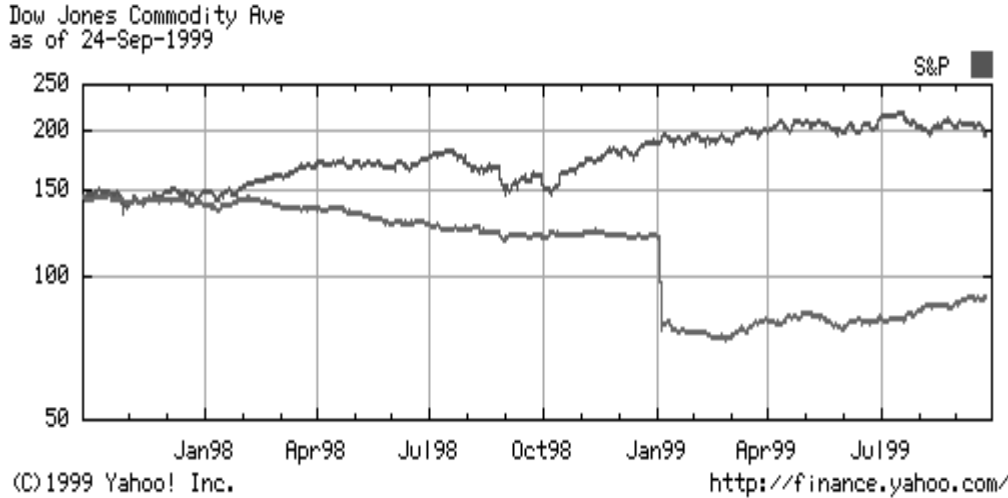
Banking and Finance

A few banks have recently tightened credit standards, but for the most part there has been no recent change in standards. Outside of a concern about agricultural loan performance, credit quality remains good.

Agriculture and Natural Resources

Drought conditions in much of the East and parts of the Midwest have taken their toll on both crops and livestock. Many farmers have resorted to feeding hay to their herds

because of poor pasture conditions. Some are even paring down the sizes of herds. However, low feed costs, stronger cattle prices and increasing profits are leading to a



rebuilding of herds. Strong demand for natural gas has increased prices and drilling activity in Central and Southern US. With the price of oil also on the rise, the number of rigs on-line has been rising. In the Minneapolis area, though, the rig count is below year-ago levels.

Summary of Composite Indexes (Jan 98-July 98)							
	Jan	Feb	Mar	Apr	May	Jun	Jul
Leading Index	106.9	107.1	107.2	107.1	107.4	107.7	108.0
Percent Change	0.5	0.2	0.1	-0.1	0.3	0.3	.3p
Diffusion Index	90.0	45.0	60.0	35.0	90.0	75.0	75.0
Coincidental Index	122.9	123.4	123.8	123.8	124.1	124.7	125.0
Percent Change	0.2	0.4	0.3	0.0	0.2	0.5r	.2p
Diffusion Index	62.0	100.0	100.0	50.0	87.5	100.0	83.3
Lagging Index	108.0	108.0	108.1	108.4	108.4	108.0	108.6
Percent Change	0.5	0.0	0.1	0.3	0.0	-0.4	.6p
Diffusion Index	78.6	64.3	64.3	78.6	50.0	35.7r	80.0

p - Preliminary **r** - Revised (noted only for index levels and one-month percent changes)

Data and Net Contraction for Selected Components of leading Indicators (Jan 98-July 98)						
Jan	Feb	Mar	Apr	May	Jun	Jul
Average workweek, production workers, mfg. (hours)						
41.60	41.60	41.50	41.60	41.70	41.70	41.9p
Manufacturers' new orders, non-defense capital goods (mil. 1992 dol.)						
53352	49976	50023	49297	49743	47641r	51093p
Stock prices, 500 common stocks C (index 1941-43=10)						
1248.77	1246.58	1281.66	1334.76	1332.07	1322.55	1380.99
Interest rate spread, 10-yr Treasury bond less federal funds						
0.09	0.24	0.42	0.44	0.80	1.14	0.80

p - Preliminary r - Revised (noted only for index levels and one-month percent changes)

Data and Net Contraction for Components of the Coincidental and Lagging Indexes (Jan 98-July 98)						
Jan	Feb	Mar	Apr	May	Jun	Jul
Employees on non-agricultural payrolls (thousands)						
127378	127730	127813	128134	128162r	128435r	128745
Industrial production						
132.295	132.483	133.348	133.7	134.001r	134.198r	135.148
Manufacturing and trade sales						
779665	791427	798255	791418r	799412r	805785p	NA

p - Preliminary r - Revised (noted only for index levels and one-month percent changes)

The Trade Deficit

The U.S. trade deficit is soaring to record levels (\$270.4 billion in December of 1998) at the same time that GDP is increasing. Negative net exports (exports less imports) are a drag on domestic production (i.e., GDP equals domestic consumption, investment, and government spending plus exports less imports) and should theoretically be inversely related to many other measures of aggregate economic activity.

Table 1 (below) shows the import and export shares by major U.S. trading partners for goods only (services trade actually shows a surplus). As may be seen, a significant portion of U.S. trade is with Canada and Mexico, the other two members of the North American Free Trade Agreement (NAFTA). The record negative trade deficit in 1998, however, cannot be blamed on Canada and Mexico—associated import growth barely exceeded export growth in 1998.

Table 1: 1998 U.S. Exports and Imports of Goods by Trading Partners

	Share of Exports	% Change	Share of Imports	% Change	Share of Net Exports	% Change
Canada	0.23	0.8	0.18	1.8	0.08	-9.1
Mexico	0.12	8.3	0.10	10.3	0.07	-19.6
Japan	0.09	-12.5	0.13	-1.4	0.23	-11.2
Other Developed	0.25	0.7	0.21	10.7	0.12	-110.6
Developing Asia	0.15	-21.2	0.26	10.0	0.50	-52.3
All Others	0.16	-0.6	0.11	-4.2	0.00	82.7

Sources: BEA, IMF, and TCB calculations based on current dollar amounts

The "Asian crisis" is largely responsible for the widening U.S. import-export gap. Japan, the third largest trading partner, has serious economic problems that have weakened their consumer spending and caused U.S. exports to Japan to fall sharply in 1998. Imports from Japan are also down slightly, which is somewhat surprising because U.S. consumer spending is so strong. The trend in net exports is even more unfavorable in the developing regions of Asia. The largest U.S. trading partners there are China, Korea, Malaysia, Singapore, and Taiwan, most of these partners have not yet recovered from the serious currency devaluations and large drops in their respective stock markets that occurred in late 1997. These problems led to unexpected and significant cutbacks in purchases of U.S. exports by emerging Asian markets.

Exchange Rates

Although most of the trade deficit can be blamed on declines in world demand, part can be explained by exchange rates. From mid-1995 to mid-1998, the international trading value of the U.S. dollar rose over 30 percent, hurting exports and helping imports. The negative effect of higher exchange rates (i.e., the value of the dollar) on the trade balance is easy to understand. Upward moves in exchange rates will depress net exports as these become more expensive for foreign purchasers, and foreign goods and services become cheaper for the U.S.

Each 1 percent rise in exchange rates is associated with a less than 0.3 percent decline in exports and a similar size rise in imports over the next four quarters. Therefore, although the exchange rate has fallen 7 percent since mid-1998, only a minor, positive impact on the U.S. trade deficit can be expected.

Exchange rates, trade balances, domestic production, interest rates, and inflation are interrelated and difficult to untangle. Nonetheless, most economists foresee the trade

deficit widening further this year and next. The general consensus is that it will take more than just a few years of serious economic reform and improvement in Asia to turn the U.S. trade deficit around—an exchange rate correction alone cannot do the job.

The net effect of international trade is that every country has a balance of payments account where deficits or surpluses in merchandise and services trade are matched by positive or negative investment flows (the capital account).

At present, strong consumer spending is a most significant force in the U.S. economy. But this spending growth has increased imports and lowered the personal savings rate. The latter condition has been somewhat balanced by inflows of foreign capital that result from the trade deficit (i.e., many U.S. firms have found new sources of international financing to replace declines in domestic savings).

Just as trade deficits can help finance growth in U.S. capital stock, rising exchange rates have some positive implications. A higher value for the dollar is a sign of relative economic strength, such that recent moves in exchange rates cannot be considered independent of the economic problems in Asia and other emerging markets. Most importantly, a high exchange rate shows worldwide confidence in the U.S. financial and monetary system, and that the dollar is valuable in international transactions. In addition, it can help hold down domestic inflation by increasing foreign competition. In conclusion the U.S. economy is far from closed and isolated—international trade is extremely important for many firms. Nonetheless, domestic demand remains the overriding force, as witnessed by strong GDP growth in 1998 despite a sharp decline in net exports. In the future, global conditions may have a greater effect on the U.S. economy, but are unlikely to cause serious instability in 1999.

Geographic Area

In today's business environment businesses are expanding and growing internationally because of technology and revenue potential. The companies that are in this sector manufacturer and retail their machinery and services worldwide. The same can be said for John Deere, which has a worldwide business operation that not only sells its products and machinery overseas, but also produces many of its products in other countries. The industry competes on a national and international level. Within the top six companies in this sector of capital goods four of the companies are based in the United States, while the other two are based in Finland and England.

The following map shows where the industry conducts business, manufacturers, and production facilities are located.



Long-term Industry Growth

Agricultural Equipment

The United States sales of the two largest categories of farm equipment: farm tractors and combines totaled 135,518 in the 12 months ended December 1998, according to John Deere & Co. This was a year-to-year increase of nearly 10 percent from a total of 123,520 units sold in 1997. The outlook for the next few years remains reasonably bright. Underlying fundamentals, which are tied to the global farm economy, are strong. Grain prices are expected to remain reasonably firm, although below 1997 levels. The expected decline in prices reflects projected declines in exports of grain to the Asian markets. Other factors that influence crop prices are positive, including low inventories worldwide. The low inventories are the result of escalating grain demand in earlier years and crop failures in different parts of the world. As worldwide farm equipment demand has been strong in recent years as a result of low worldwide grain inventories, corresponding high grain prices, and increased acreage of farm plantings in the United States. The increase in acreage planted is partly in response to changes in federal agriculture regulation. Land set-aside programs in which U.S. farmers were paid to keep farmland idle were eliminated in 1996. The return of idle land to active cultivation is stimulating demand for farm equipment. This favorable environment for equipment sales should maintain demand at or near peak levels for several more years.

The one red flag on the horizon for this market segment is that the agricultural equipment industry's fortunes rise and fall with those of its customers. The levels of farm income primarily affect demand for farm equipment. That income, of course, has a great impact on the confidence and ability of farmers to make the significant investments needed to upgrade to new equipment.

Competitive Forces

Barriers of Entry Facing the Industry

The barriers of entry are a critical obstacle that prospective participants in the industry must take into consideration when planning to enter the competitive arena. This competitive force is one of the most important, if not the most important, in determining the characteristics of an industry. The industry in which John Deere participates has several barriers to entry that may prevent or make possible newcomers to jump into the market. Some of these types of barriers to entry are the following:

1. **Capital requirements.** Since the farm and construction machinery industry are capital intensive, the capital requirements needed to set up operations, manufacturing facilities and equipment are immense. When taking into consideration the start-up losses and inventory needed to enter the industry, this obstacle seems insurmountable in this industry.
2. **Brand preferences and customer loyalty.** When a company is looking to enter this industry, it must also take into consideration this important barrier. Many customers in this industry do not purchase equipment very often but count on the lifetime of the equipment they have already purchased in the past. The client support and service is critical in this industry where capital expenditures by clients are few and far apart. A company wanting to enter must be able to demonstrate that their product is substantially better than the competitor. This is a hard goal to accomplish, especially in the farming industry where customers prefer consistency, reliability and stability and trust the products that their grandparents did before them.
3. **Economies of scale.** A potential newcomer must be prepared to endure an onslaught by other competing firms when entering the industry. An overcapacity might occur within the industry forcing established companies to lower their prices. Entering firms will see their potential profits squeezed and even become negative due to the intense price war the industry could face in when adjusting to a new competitor.

Bargaining Power

The collaborative negotiation is a win-win approach to solving problems that was created during a Harvard University project focusing on transnational diplomatic negotiations. At the heart of the negotiating framework is the driving commitment to finding mutually beneficial outcomes for both parties involved in the conflict. Both sides work collaboratively to find solutions that enable both sides to win. This collaborative framework makes sense for business today because it focuses on 2 critical elements fundamental to competitiveness - obtain positive results for the organization and maintaining and enhancing the relationship with the other party. The basic principles of

collaborative negotiations are: 1. Focus on interests, not positions 2. Invent options for mutual gain. 3. Use objective criteria to evaluate the options. This approach is contrary to the traditional competitive negotiating technique, which is focused purely on self-gain. The critical differences between the competitive and collaborative approaches to negotiative approaches to negotiations are discussed.

Power of Suppliers

The primary raw materials used by John Deere are steel and rubber. Due to the huge quantities that Deere deals with switching costs will be higher than expected. Switching suppliers will involve rescheduling inventory and manufacturing timetables to match the schedules of the new suppliers. Thus the suppliers do have some power in this regard. Deere's choices will also be limited to the suppliers who can meet the exact needs of their manufacturing processes, which are highly automated.

Conversely, since Deere consumes large quantities of the suppliers' output, this lends some negotiation power to them and forces the suppliers to attend to Deere's needs and requirements. At the same time consider these volumes in relation to the size of the entire market for steel and rubber in the US. While as an absolute, the numbers are high, when seen relative to the total demand for these raw materials, Deere's consumption turns out to be a fairly small fraction of the total demand. Furthermore, since the rubber and steel industries in the US are relatively consolidated, it does not leave Deere with too many suppliers competing for their contracts.

However, since Deere operates in the global economy it has the option of restructuring it's production scenario and shifting the bulk of it's manufacturing operations into a different country and thus to a different supplier if need be. This again swings power to Deere's end and leaves the suppliers in a weaker position with regard to negotiating strengths. However, both Deere and its suppliers will recognize that implementing such a change will necessitate huge costs and cause a major disruption of day-to-day activities in the manufacturing division. Thus Deere will not be willing to make such a change unless it become inevitable and the gain from such a shift will have to be very large before the company is willing to take action. Also, moving to a different economy would bring additional problems and costs into the picture. For example, Deere is trying to expand and penetrate the markets in Eastern Europe, specifically in Ukraine, but in 1996 the company found it more viable to ship 1049 combines to the Ukraine from the US than to manufacture them locally. One reason for this might be the politics of moving into a new economy and having to deal with the local government and indigenous manufacturers.

Consider that Deere will already be tied to contracts with existing suppliers and until these contracts expire Deere does not have much leeway with regard to switching suppliers because the cost of annulling the contract will be an additional expense in making the shift to a different supplier.

One of the most important attributes of Deere's products is their reliability and durability. These factors depend directly on the standards of the raw material that they use. This

means that Deere relies very heavily on its suppliers to meet their quality standards. Thus before shifting suppliers they will have to spend a lot of time and money in ensuring that the new suppliers meet their needs. This will most likely cause a manufacturing gap, adding further to the cost of making such a shift. Add to this the additional costs of shipping and transportation, and we end up with a lot of inertia in Deere's relationship with its suppliers.

In conclusion one would expect a balance of power and a mutually symbiotic relationship with both Deere and its suppliers relying heavily on each other and willing to go to some lengths to suit the other's needs. However, if one had to make a choice one would conclude that Deere had ended up with the shorter end of the stick and needed its suppliers a little more than the suppliers need Deere.

Power of Buyers

Like the consumer goods industry, the capital goods industry are hearing more and more customers demand value for their money. These demands, however, are expressed somewhat differently in the capital goods industries. Capital goods customers measure value in the terms of return on their investment.

Maximizing investment returns is not simply a matter of paying low prices for purchase equipment. Returns on investment are also influenced by efficiency of the equipment in performing its job. Customers will often pay higher prices for more reliable equipment that has fewer breakdowns, provides more output per day, or requires less downtime for routine maintenance than competing brands. In essence it all comes down to the old adage that the time is money.

Agricultural Equipment

As identified by Deere itself, the buyers of its agricultural equipment are farmers, large and small, including commercial or customer harvesters and bailing operations. Since the farm commodities market is fairly defensive it will not be affected very much by a downturn in the economy. Thus, the demand for Deere's products is relatively constant with regards to the economy as a whole.

However, since the agricultural economy is so heavily dependent on the weather, it is very cyclical and as was seen in 1996 and the recent farm crisis, the demand for Deere's products varies a lot depending on weather conditions.

The demands of the equipment customers require depend on topographical features and farm sizes. For example, in Argentina the farm sizes are very large but in countries in south Asia, the farm sizes are very small and do not require large machines for high volumes.

In agricultural equipment there is very little product differentiation and so this gives a lot of power to buyers, they can purchase their competitor's products, making it necessary for Deere to minimize costs and look for ways to differentiate their products. Another

important aspect of this industry is that the individual demand for agricultural equipment is fairly limited; therefore, the buyers do not have much power to influence the prices of the products. Although, the buyers have limited power to control the prices of necessary equipment due to constant demand, they can gain substantial bargaining influence in negotiating the prices of heavy and advanced equipment; as they possess the capability to defer the purchase of heavy equipment till favorable industry growth outlook or reasonable pricing scenarios.

Strategic Problems and Issues in the Industry

Opportunities:

- **International Expansion**

Deere's ability to quickly move into newer emerging markets has been one of their strengths in the past, and their current policy of expansion and the political changes in Asia and Eastern Europe have provided a number of new markets for them to compete in. With the break-up of the former Soviet Union in particular, Deere has found some promising new markets such as the Ukraine and Russia, which up till this period, have been closed to them.

- **Consolidation**

Consolidations also play a huge role in the capital goods industry. In the recent years a high number of capital goods companies have consolidated or merged in order to be able to expand geographically, gain strength in terms of market share relative to a company's competition and gain efficiencies of scale.

- **Effects of Westernization and Urbanization**

Lastly, there is a two-factor phenomenon occurring on a worldwide basis, career aspirations and higher income levels. In relation to career aspirations and opportunities, a higher number of people are migrating from rural areas to urban areas. This is generally known as urbanization and leads to a reduced workforce in farms and the agricultural industry. Consequently, more efficient machinery is needed to offset the effects of this lower workforce and a relative increase in arable land. In terms of higher income levels, the world in general has benefited from a greater level of wealth. It is possible that as the level of wealth in any specific country increases, the dietary requirements of society tend to be more "westernized". The more "western" a country's diet becomes, the more meat is necessary to supply the citizen's demands. This is of benefit to the agricultural equipment industry because more grain needs to be produced to feed the livestock.

- **Internet Activity**

Although it would be ludicrous to expect to make sales of tractors online, Deere can use the Internet effectively to provide information about their existing products as well as to develop a system for receiving and processing orders for parts. Additionally, Deere's product base is typically spread out very thin with customers often residing away from the metropolitan hubs and the Internet can be an excellent way for transferring information to these customers. This information can consist of presentation tools to help their sales personnel or feedback for the customer, with videoconferencing tools obviating the need for personal visits in some cases, resulting in a sizable cost reduction.

Threats:

- **International Expansion**

Along with the opportunity of international expansion come additional threats. The first of these is that in diverting its attention to newer markets, Deere will be forced to lessen its concentration on more established markets such as the U.S. and will run the risk of losing market share to more active competitors within them.

The second threat associated with their policy of expansion is that it will in some cases be a risky proposition for Deere to enter a new market because in many of these markets, farming practices are very different, as are political regulations, and industry cost structures. Going up against firms that have already learnt to survive in these markets will be much more difficult for Deere than it will for them to expand their product base within the U.S. and the firm stands the dual risk of losing market share within its established markets without successfully entrenching themselves in the new ones.

- **Social Issues**

By moving their manufacturing and assembly operations to other countries, Deere runs the risk of negative response within the U.S. because of the jobs that will be lost as well as the lax labor laws that some of these other countries might have. Firms that have tried to avail of less expensive labor in foreign markets, have in the past faced a lot of erosion in brand value and have had to invest considerably in publicity to restore their image.

- **Economy, interest rates, and government regulations**

Industries such as construction are very sensitive to changes in the economy and any downturn would result in a dramatic reduction in the demand for new houses and therefore also of construction equipment. Similarly, government regulations and even weather conditions can severely affect the level of demand for Deere's products.

- **Cyclical Industry**

In general, the capital goods industry is heavily dependant on the state of the economy. As the economy rises, so does the capital goods industry. The agricultural equipment sector is a part of the capital goods industry and thus, is a highly cyclical business. The performance of this sector usually lags that of the U.S. and global economies. Since making general economic projections is very difficult, a company in this industry must decide between a short-term peak opportunity and long-term survival. Businesses have to be able to adjust to the cyclical state of demand. Thus, the best performing companies develop the ability to adjust employment levels and overhead costs in line with market fluctuations.

- **U.S. Dollar Strength**

Currency fluctuations are very important for the capital goods (agricultural equipment) industry. U.S. based companies are also beginning to take advantage of the strong U.S. dollar to relocate manufacturing jobs to Asian countries, where relatively low-cost labor is available. The devaluation of the local currencies versus the U.S. dollar means that the labor costs for producing in these overseas markets has effectively been lowered. This situation can be of detriment if a U.S. producer and exporter is faced with a stronger dollar, thus making its products more expensive in the international marketplace relative to foreign competing goods. Thus, although the costs of production might decrease with an increase in the dollar value, there will be a larger proportionate decrease in the buying power of customers and so an increase in the exchange value of the U.S. dollar is a threat to John Deere. Conversely, a decrease in dollar value would increase buying power of customers outside the U.S. more than it would the costs of production and Deere would benefit from such a change.

Internal Analysis

John Deere's Strategy

Mission Statement

Who Are We?

John Deere has grown and prospered through a long-standing partnership with the world's most productive farmers. Today, John Deere is a global company with several equipment operations and complementary service businesses. These businesses are closely interrelated, providing the company with significant growth opportunities and other synergistic benefits.

Where Are We Going?

Deere is committed to providing Genuine Value to the company's stakeholders, including our customers, dealers, shareholders, employees and communities. In support of that commitment, Deere aspires to:

- Grow and pursue leadership positions in each of our businesses.
- Extend our preeminent leadership position in the agricultural equipment market worldwide.
- Create new opportunities to leverage the John Deere brand globally.

How Will We Get There?

By pursuing the broader corporate goals of profitable growth and continuous improvement, each of the company's businesses is expected to:

- Achieve world-class performance by attaining a strong competitive position in target markets.
- Exceed customer expectations for quality and value.
- Earn in excess of the cost of capital over a business cycle.

By growing profitably and continuously improving, each of the company's businesses will benefit from and contribute to John Deere's unique intangible assets:

- Our distinguished brand.
- Our heritage of integrity and teamwork.
- Our advanced skills.
- The special relationships that have long existed between the company and our employees, customers, dealers and other business partners around the world.

How Will We Measure Our Performance?

Each business will make a positive contribution to the corporation's objectives in the pursuit of creating Genuine Value for our stakeholders. Our "scorecard" includes:

- Human Resources - Employee Satisfaction, Training
- Customer Focus - Loyalty, Market Leadership

- Business Processes - Productivity, Quality, Cost, Environment
- Business Results - Return on Assets, Sales Growth

Performance Measures

When analyzing the stock performance of John Deere, the company was doing exceptionally well as their stock prices would indicate. Even though the company had a 3 for 1 stock split in 1995, John Deere managed to bring their stock price back to the same levels as before the stock split.

The recession in the agriculture sector in late 1996 fiscal year affected John Deere's stock performance by cutting the stock price from approximately \$58 in early 1997 to approximately \$33 by the end of 1998. This effect was due to decreased sales to Deere's customers who could not purchase the same levels of products due to the decrease commodity prices.

Even during the recessionary period, John Deere was able to maintain the same levels of increases in their sales volume. The strategy that John Deere used to accomplish these increases was by moving into international markets and shifting their operations into countries where labor costs are relatively low.

Looking at the company's return on equity over the last few years, we can conclude that John Deere is financially very strong as their return on equity increased from 23.15% in 1997 to 25.04% in 1998. The reason for this increase was because the company repurchased a large amount of outstanding common stock. Another important indicator that shows the company is financially sound is by analyzing their earnings per share. In the last five years, the earnings per share have almost doubled, going from 2.33 in 1994 to 4.40 in 1998. This is extremely beneficial for the stockholders.

Company History:

History

John Deere was born in Rutland, Vermont, February 7, 1804. He spent his boyhood and young adulthood in Middlebury, Vermont, where he received a common school education and served a four-year apprenticeship learning the blacksmith's trade.

In 1825, he began his career as a journeyman blacksmith and soon gained considerable fame for his careful workmanship and ingenuity. His highly polished hayforks and shovels especially were in great demand throughout western Vermont. But business conditions in Vermont became depressed in the mid-1830s, and the future looked gloomy

for the ambitious young blacksmith. Many natives of Vermont emigrated to the West, and the tales of golden opportunity that filtered back to Vermont so stirred John Deere's enthusiasm that he decided to dispose of his business and join the pioneers. He left his wife and family, who were to join him later, and set out with a bundle of tools and a small amount of cash. After traveling many weeks by canal boat, lake boat, and stagecoach, he reached the village of Grand Detour, Illinois, which had been settled by Leonard Andrus and others from his native Vermont. The need for a blacksmith was so great that two days after his arrival in 1836 he had built a forge and was busy serving the community.

There was much to be done — shoeing horses and oxen, and repairing the plows and other equipment for the pioneer farmers. From them he learned of the serious problem they encountered in trying to farm the fertile soil of the Midwest. The cast-iron plows they had brought with them from the East were designed for the light, sandy New England soil. The rich midwestern soil clung to the plow bottoms and every few steps it was necessary to scrape the soil from the plow. Plowing was a slow and laborious task. Many pioneers were discouraged and were considering moving on, or heading back east. John Deere studied the problem and became convinced that a plow with a highly polished and properly shaped moldboard and share ought to scour itself as it turned the furrow slice. He fashioned such a plow in 1837, using the steel from a broken saw blade, and successfully tested it on the farm of Lewis Crandall near Grand Detour.

Deere's steel plow proved to be the answer pioneer farmers needed for successful farming in what was then "the West." But his contribution to the growth of American agriculture far exceeded just the development of a successful steel plow.

It was the practice of that day for blacksmiths to build tools on order for customers. But John Deere went into the business of manufacturing plows before he had orders for them. He would produce a supply of plows and then take them to the country to be sold — an entirely new approach to manufacturing and selling in those early pioneer days, and one that quickly spread the word of John Deere's "self-polishers."

There were many problems involved in attempting to operate a manufacturing business on the frontier: few banks, poor transportation, and a scarcity of steel, among others. John Deere's first plows had to be produced with whatever pieces of steel he could locate. In 1843, he arranged for a shipment of special rolled steel from England. This steel had to be shipped across the Atlantic Ocean by steamship, up the Mississippi and Illinois Rivers by packet boat, and overland by wagon 40 miles to the little plow factory in Grand Detour.

In 1846, the first slab of cast plow steel ever rolled in the United States was made for John Deere and shipped from Pittsburgh to Moline, Illinois, where it was ready for use in the factory Deere opened there in 1848 to take advantage of the water power and transportation offered by the Mississippi River.

Ten years after he developed his first plow, John Deere was producing 1,000 plows a year. In those early years of his business, Deere laid down several precepts that have been followed faithfully since then by the company he founded. Among them was his insistence on high standards of quality. John Deere vowed: "I will never put my name on a plow that does not have in it the best that is in me."

One of his early partners chided him for constantly making changes in design. His partner said his work was unnecessary because the farmers had to take whatever they produced. Deere replied: "No, they don't have to take what we produce. If we don't improve our product, somebody else will." Deere & Company has continued throughout its history to place a strong emphasis on product development and improvement. It has consistently devoted a higher share of its income to product research and development than most other companies in its industries.

In 1868, Deere's business was incorporated under the name Deere & Company. The following year John Deere's son, Charles, who was later to succeed him as president, was elected vice president and treasurer.

Charles Deere was an outstanding businessman who established marketing centers, called branch houses, to serve the network of independent retail dealers. By the time of Charles Deere's death in 1907, the company was making a wide range of steel plows, cultivators, corn and cotton planters, and other implements.

In 1911, under Deere & Company's third president, farm equipment companies were brought into the Deere organization, establishing the company as a full-line manufacturer of farm equipment. In 1918, the company purchased the Waterloo Gasoline Traction Engine Company in Waterloo, Iowa, and tractors became an important part of the John Deere line.

Charles Deere Wiman, a great-grandson of John Deere, took over direction of the company in 1928. During the period when modern agriculture was developing, his strong emphasis on engineering and product development resulted in rapid growth. Despite the depression that gripped the nation in the 1930s, the company achieved \$100 million in gross sales for the first time in its history in 1937, the year of its centennial celebration. During World War II, Wiman and wartime president Burton Peek continued the emphasis on product design, putting the company in a strong position competitively in the postwar market. Before Wiman's death in 1955, the company was firmly established as one of the nation's 100 largest manufacturing businesses. William Butterworth, six non-competing

Under the leadership of William A. Hewitt, who headed the company from 1955 to 1982, the John Deere organization experienced one of its greatest periods of growth. Manufacturing and marketing operations were established worldwide, and Deere became the leading producer of farm equipment in the world, as well as a major producer of construction and forestry equipment, and lawn care products.

Robert A. Hanson, who had served the company as president and chief operating officer, succeeded Hewitt as chief executive officer in 1982 and guided the company through one of its most difficult economic periods. Under his leadership, the company emerged as a more dynamic, flexible organization, better able to react to growing worldwide competition. The company rose from the turbulence of the 1980s to post record sales and earnings in the last three years of the decade.

Hans W. Becherer was elected chairman in 1990, succeeding Hanson, with whom he had served as president and chief executive officer. Becherer had been closely involved in the management actions that were so successful in establishing the company on the new foundations demanded by the 1980s and beyond. Like Hanson, Becherer has invested much of his long career in developing the company's international operations.

Important dates

Originally incorporated in 1868, as Deere & Company. Co. was incorporated in Delaware Apr. 25, 1958, as John Deere-Delaware Co. Name changed to Deere & Company (Del.) on Aug. 1, 1958, on merger of Deere & Company (Ill.) and subsidiaries, Deere Manufacturing Company, John Deere Killefer Company and John Deere Van Brunt Company. Deere & Company (Ill.) was incorporated in Illinois Mar. 6, 1911, under title of American Implement Co.; name changed to Deere & Company (Ill.) Apr. 7, 1911. John Deere originally established the business in 1837, and from time to time scope of business has been broadened through expansion of facilities and organization and acquisition of other units in the agricultural equipment field, including wholesale distributing houses. In 1911, the acquisition of six implement companies established Deere as a full-line manufacturer of farm equipment.

- In 1956, manufacturing and marketing operations expand into Mexico and Germany.
- In 1958, Co.'s industrial equipment division was officially established. Also, John Deere Credit Company was established.
- In 1963, Co. entered into the lawns and grounds care business.
- In 1969, Co. entered the insurance business with the formation of the John Deere Insurance Group.
- In 1984, the credit business expanded with the acquisition of Farm Plan, which offered revolving credit for agricultural input purchases.
- In 1985, Heritage National Healthplan began offering managed health care plans to other companies.
- In 1987, Co. entered the golf and turf equipment market.

- In 1988, John Deere Credit, a subsidiary of Co., diversified into recreational vehicle and marine markets.
- In 1988, a worldwide parts division was established to increase sales of repair parts to owners of both John Deere and other makes of equipment.
- In 1991, John Deere Insurance began offering long-haul liability insurance to small trucking firms.
- In 1992, the John Deere Family Health Center was created to help control the quality and the cost of health care for employees, retirees and their dependents.
- In 1994, John Deere Specialty Managers was established to serve specialized markets for property/casualty insurance.
- In Aug. 1994, Co. acquired Textron's Homelite division, a producer of hand-held and walk-behind power products for both homeowner and commercial markets.
- In 1996, Co. acquired 40% of Sunstate Equipment Company. Terms of the transaction were not disclosed.
- In May 1997, Co. acquired the assets of Maschinenfabrik Kemper GmbH for \$36 million. Kemper is a leading European producer of specialized corn headers for self-propelled forage harvesters, based in Stadtlohn, Germany.
- In May 1997, Deere & Co. also agreed to invest \$13 million over the next few years to reach a 60 percent ownership interest in a combine factory in China.
- In Dec. 1997, Co. invested \$39 million for a 49 percent interest in Cameco Industries, Inc., primarily a manufacturer of sugarcane harvesters and forestry equipment located in Thibodaux, Louisiana. In Oct. 1998, Co. acquired the remaining 51% of Cameco that it did not already own.

In March 1999, Co. acquired the remaining 50% of the shares of InterAg Technologies Inc. In Jan. 1998, Co. and Springfield Remanufacturing Corp. formed a joint venture. The new joint venture is called ReGen Technologies and is located at the Springfield Remanufacturing Corp headquarters facility in Springfield, MO. ReGen Technologies will operate as a rebuilder of diesel engines for Co.'s agricultural and construction equipment divisions. The joint venture is a 50/50 partnership.

Administrative Systems

John Deere has made many recent changes in their senior management team. The current team, under Hans W. Becherer, brings several key John Deere veterans together with recent recruits. The following is a list of the current John Deere team members as of December 31, 1998.

Corporate

Chairman/CEO	Hans W. Becherer
President of Worldwide AG Division	Robert W. Lane
President of Worldwide Power Systems Division	Ferdinand F. Leroy
President of Worldwide Construction Division	Pierre E. Leroy
President of Worldwide Comm./Consumer Division	Fred F Korndorf
President Financial Services Division	Michael P. Orr
President of Insurance Group	Wayne R. Ashenberg
President of Health Care	John J. Jenkins
President of Credit	Jon D. Volkert
Senior Vice President and Managing Director	David S. Evertt
Senior Vice President/Worldwide Parts/Corp. Admin	Joseph W. England
Senior Vice President/ CFO	Nathan J. Jones
Senior Vice President/ AG Division/ Managing Director	Robert W. Lane
Senior Vice President/Engineering/Techn. / Human Resources	John K. Lawson
Senior Vice President/ Secretary And General Counsel	Frank S. Cottrell
Vice President Industrial Relations	G. Bart Bontems
Vice President Government Affairs	Wade P. Clarke
Vice President Human Resources	Mertroe B. Hornbuckle
Vice President of Quality	Will R. Hubbard
Vice President of Communications	Curtis G. Linke
Vice President Supply Management	R. David Nelson
Vice President and Controller	James S. Robertson
Vice President Engineering	Robert J. Wismer

Backgrounds

- Mr. John R. Block, President of Food Distributors International (formerly the National-American Wholesale Grocers' Association) since 1986. Prior to this position he was the United States Secretary of Agriculture. Director of Deere and Company since 1986; Chair of Audit Review Committee and member of Executive and Pension Plan Oversight Committee. Director of Archer-Daniels-Midland Company and Hormel Foods Corporation. Age 62.
- Mr. Leonard A. Hadley, Chairman and Chief Executive Officer of Maytag Corporation (appliances) since 1992; prior to this position he was the President and Chief Operating Officer. Director of Deere and Company since 1994;

- member of Audit Review and Pensions Plan Oversight Committees. Director of Maytag Corporation Norwest Bank Iowa, N.A. and Snap-on Incorporated. Age 64.
- Mr. Samuel C. Johnson, Chairman of S.C. Johnson and Son, Inc. (home care and specialty products) since 1988. Director of Deere and Company since 1973; member of Committee on Compensation and Corporate Governance Committee. Director of H.J. Heinz Company, Johnson Worldwide Associates, Inc. and Mobil Corporation/. Age 70.
 - Mr. Arthur L. Kelly, Managing Partner of KEL Enterprises L.P. (holding and investment partnership) since 1983. Director of Deere and Company since 1993; Chair of Pension Plan Oversight Committee and member of Audit Review and Executive Committees. Director of Bayerische Motoren Werke (BMW) A.G., Nalco Thyssen Industries A.G. Age 61.
 - Mr. William A. Schreyer, Chairman Emeritus of Merrill Lynch and Co., Inc. (securities and investment banking) since 1993; prior to this position Chairman of Merrill Lynch and Co., Inc. Director of Deere and Company since 1994; Chair of Corporate Governance Committee and member of Committee on Compensation, Special Subcommittee of Committee on Compensation and Executive Committee. Director of Callaway Golf Company, Iridium World Communications Ltd. And Scherring-Plough Corporation. Age 70.
 - Mr. Hans W. Becherer, Chairman and Chief Executive Officer of Deere and Company since 1990; prior thereto, President. Director of Deere and Company since 1986; Chair of Executive Committee. Director of AlliedSignal Inc., The Chase Manhattan Corporation and Scherring-Plough Corporation. Age 63.
 - Mr. Antonio Madero B. Chairman, President and Chief Executive Officer of SANLUIS Corporation, S.A. de C.V. (automotive components manufacturing and mining) since 1979. Director of Deere and Company since 1997; member of Audit Review Committee and Pension Plan Oversight Committee. Director of Federal-Mogul Corporation, a variety of corporations in Mexico and a member of the International Advisory Council of The Chase Manhattan Corporation. Age 61.
 - Mr. John R. Stafford Chairman, President and Chief Executive Officer of American Home Products Corporation (pharmaceuticals, consumer health care and agricultural products) since 1986. Director of Deere and Company since 1997; member of Committee on Compensation, Special Subcommittee of Committee on Compensation and Corporate Governance Committee. Director of AlliedSignal Inc., American Home Products Corporation, Bell Atlantic Corporation and The Chase Manhattan Corporation. Age 61.
 - Mr. John R. Walter, President and Chief Operating Officer of AT&T Corp. (telecommunications) from November 1996 to July 1997; prior thereto, Chairman

and Chief Executive Officer of R.R. Donnelley and Sons Company (print and digital information management, reproduction and distribution). Director of Deere and Company since 1991; Chair of Committee on Compensation and member of Special Subcommittee of Committee on Compensation, Corporate Governance and Executive Committees. Director of Abbott Laboratories, Celestica Inc., LaSalle Partners Incorporated and Prime Capital Corporation. Age 51.

- Mr. Bernard L. Hardiek, President of Worldwide Agricultural Equipment Division since May 1995; Executive Vice President 1994-1995; prior thereto, Senior Vice President. Age 58.
- Mr. Pierre E. Leroy, President of Worldwide Construction Equipment Division since January 1996; Senior Vice President and Chief Financial Officer 1994-1996; prior thereto, Vice President and Treasurer. Age 50.
- Mr. Fred F. Korndorf, President of Worldwide Commercial and Consumer Equipment Division and Deere Power Systems Group since January 1996; President of Worldwide Industrial Equipment Division 1995-1996; prior thereto, Senior Vice President. Age 49.
- Mr. Joseph W. England, Senior Vice President since 1981. Age 58.

Corporate Environment:

John Deere offers a friendly, comfortable environment, good pay and benefits, plus lots of opportunity. Tradition is important. A strong sense of ethics, integrity, and service prevail. Employees take great pride in working for Deere.

Employees are rewarded for individual and team contributions. Diversity of opinions and backgrounds are valued. Deere recognizes that employee collaboration, ingenuity, and dedication are keys to success!

Deere has a positive image and a solid reputation - as an employer, civic supporter, and technological leader. The company has been featured in *100 Best Companies to Work for in America*, and normally ranks as the most admired company among its peers in Fortune magazine's annual corporate reputations survey. Employee talent is one of the reasons John Deere was ranked second in Fortune magazine's 1999 list of most-admired companies in the industrial and farm equipment category.

"Our vision is to create a corporate environment that promotes mutual respect, acceptance, cooperation, and productivity among people from varied backgrounds." Hans W. Becherer, CEO

Marketing

In the United States and Canada, the Equipment Operations for John Deere, excluding certain consumer product lines, distribute equipment and service parts through one agricultural equipment sales and administration office supported by seven agricultural equipment sales branches, one construction equipment sales and administration office and one commercial and consumer equipment sales and administration office (collectively called sales branches). In addition, the Equipment Operations operate a centralized parts distribution warehouse in coordination with several regional parts depots in the United States and Canada and have an agreement with a third party to operate a high-volume parts warehouse in Indiana.

The sales branches in the United States and Canada market John Deere products at approximately 3,400 dealer locations, all of which are independently owned. Of these dealers, 1,685 sell agricultural equipment, while 420 sell construction equipment. Smaller construction equipment is sold by nearly all of the construction equipment dealers and larger construction equipment, forestry equipment and a line of light construction equipment are sold by most of these dealers. Commercial and consumer equipment is sold by most John Deere agricultural equipment dealers, a few construction equipment dealers, and about 1,300 commercial and consumer equipment dealers, many of whom also handle competitive brands and dissimilar lines of products. In addition, the Sabre, Homelite, Green Machine and Scott's TM product lines are sold through independent dealers and various general and mass merchandisers.

Outside North America, John Deere agricultural equipment is sold to distributors and dealers for resale in over 110 countries by sales branches located in five European countries: South Africa, Mexico, Argentina, Uruguay, and Australia. Associated companies in Brazil and China sell these equipment resales through export sales branches in Europe and the United States, and. Commercial and consumer equipment sales overseas occur primarily in Europe and Australia.

John Deere has concentrated its agriculture segment into several divisions:

- *Tractors* that include models ranging from 20 horsepower series up to 425 horsepower series.
- *Combines* that includes the 50 series combine and the draper platforms.

Promotion and Place:

Place:

John Deere distributes their agriculture products primarily through its 468 dealer distribution centers that are located all over the United States. In addition to the distribution centers in the United States, John Deere has 86 international centers. John Deere's customers can buy the smaller tractors and lawn care equipment through discount merchandise stores such as Wal-Mart and K-Mart and secondarily to home supply centers such as Home Depot and Lowe's. Through these large distribution channels, John Deere is able to make their products accessible to nearly everyone in the United States, and is rapidly expanding to international markets.

Wal-Mart has emerged as an industry leader among retail outlets, as it operates over 1900 stores nationwide. Their strategy has been relatively straight forward, as they continually reduce their prices in order to increase net sales. These massive price reductions are forcing suppliers to cut down their own costs through improved operations. This is becoming a constant and necessary process for suppliers in related industries.

K-Mart is another retail chain that has widespread distribution power, as it is currently operating over 800 stores nationwide. Although Target is roughly half the size of Wal-Mart, but this fact in no way suggests that K-Mart can not catch up in the near future. A way that K-mart is gaining ground is by increasing it's advertising in the television market and by keeping its prices at competitive levels in comparison to Wal-Mart's.

Home Depot is currently the world's largest home-improvement retailer, operating over 800 stores in the United States. In 1998, net sales reached 30.2 billion dollars, with an estimated 180,000 employees. Home Depot expects to be operating over 1600 stores in the United States by the year 2004. John Deere is able to sell many of its smaller tractors and lawn and garden equipment through this distribution channel.

Lowe's is another nationwide distributor of home improvement products, as they operate nearly 500 stores in 26 different states. Although, they are not as large as their counterpart Home Depot, Lowe's reported an impressive 10 billion dollars in net sales during 1988. Lowe's employs over 65,000 people, and was listed in Fortune Magazine as one of the top 100 companies to work for in America last year.

Promotion:

Promotion, which is defined as the process by which individuals, groups, or organization communicate with an audience to facilitate exchanges, varies significantly from industry to industry. Within the agriculture industry, promotional activities have increased because of the recession. The reason is that to continue its sales from year to year John Deere has had to increase its marketing activities to sell the more products.

Case and New Holland, which recently merged, has made an initiative to conserve its capital this year and plans on making considerable investments in promoting their new company and their product lines. However, as the industry expands to international markets, promotion will become a much more important factor.

Product and Price:

Since there are a large variety of products produced by Deere and the competition within the agricultural equipment sector, we will concentrate on tractor and combine products and pricing.

- **Tractors**

These are several prices found in John Deere distributor dealers.

1998 John Deere 4200 This is a 4 wheel-drive, hydrostatic loader with 28 horsepower.	\$18,600
1996 John Deere 955 4 wheel-drive, 72-inch deck loader with 33 horsepower.	\$16,500
1998 John Deere 4300 This is a loader, backhoe with 4 wheel-drive and 33 horsepower.	\$24,000
1998 John Deere 855 A superb 4-wheel-drive, hydrostatic, 60-inch mower deck loader valve with 24 horsepower	\$14,700
1996 John Deere 5300 4 wheel-drive loader with 50 horsepower	\$27,500
1985 John Deere 950 A 4 wheel-drive, 27 horsepower with gear drive.	\$9,500

- **Competition**

The following are comparison prices for New Holland (Case) line of tractors:

1998 New Holland 4 wheel-drive loader with 24 horsepower	\$14,900
1997 New Holland 4 wheel-drive loader with 20 horsepower	\$14,000

- **Combines**

Due to the vast array of specifications and different customization options available, it is more appropriate to estimate a range of values for the combines. The range found for new combines offered by John Deere for the 1998-1999 periods was that of \$190,000 and \$210,000 and for Case was between \$180,000 to \$200,000.

Product Design

Agricultural Equipment and Accessories

The following are the innovations in the John Deere line of products as a response to changes and expectations in the industry.

ProGator

The John Deere ProGator® utility vehicle combines modern styling and operator-friendly features with rugged durability and sheer power. Available in 23.5-hp diesel and 26-hp gas versions, this vehicle has the strength and versatility needed to tackle the toughest jobs on or off the golf course.

A 5-speed, fully synchronized transmission lets the customer keep going without stopping to change gears. The front and rear suspension of the ProGator® vehicle feature dual leaf spring suspension instead of coils, taking the bumps and jolts out of gravel roads and unforeseen mounds. Hydrostatic steering provides for precision control and a tight turning radius of only 33 inches. The cargo box is solid steel and, combined with a hydraulic power lift, lets you dump loads cleanly and accurately.

The ProGator® has a wide stance, giving it excellent stability. A walk-through operator platform makes getting on and off the machine easy. Comfortable, high-back seats; easy-to-reach controls; and smooth steering increase operator comfort and productivity.

JD Map Software

Exclusive JDmap software, part of every GreenStar combine yield-mapping system, helps analyze yield results in three different formats. A dot-region map shows that your combine recorded every two seconds (shown above). The easy-to-read color maps portray side-by-side yield data and give the consumer a sound basis for creating a plan that varies crop inputs based on site-specific needs.

JDmap software automatically draws field boundaries around all yield sites while it's calculating harvest data. It also gives the flexibility to alter these boundaries or create new ones to adjust for wooded areas, grassed waterways, or other field-specific variables.

Vantage Point Network

The Vantage Point Network, easy-to-use information system serving agriculture and the farming community. Traditional record keeping and data management can be accomplished more efficiently, more effectively, and faster than ever before. Farmers and their professional advisers can harvest valuable insight for farm management decisions by using VantagePoint Network, a fully-secured cyberspace storage bin for the vast amount of data generated by their own individual production operations.

The VantagePoint web site offers weather reports as well as easy access to current market reports, both U.S. and foreign. A sophisticated search engine will help the customers find agricultural information on the Web; plus reference material on crop protection products will help insure proper use and application of farm chemicals. VantagePoint offers

services that include a complete online crop management system with grain-storage and sales-tracking capability.

E-Gator Electric Utility Vehicle

Designed for customers concerned with operation sound levels and exhaust emissions, the E-Gator Electric Utility Vehicle creates another version of the popular light-duty utility vehicle. It accelerates faster, climbs hills better, and performs evenly until recharge. Through the use of a separately excited controller, the E-Gator has several unique features: over speed control, roll away control, dynamic braking, speed control, key-off control, half-speed in reverse, anti-roll back, diagnostics, and regeneration. Additionally, it maximizes the commonality of parts and operational features with the regular Gator models.

Combines

The 50 Series lineup comprises four new cylinder/walker combines, the 9450, 9550, Sidehill 9550, and 9650; a new CTS (cylinder tine separation) Combine, the 9650 CTS; and two new STS Combines, the 9650 STS and 9750 STS, featuring new patented John Deere single tine-separation system. In addition to new combines, John Deere also has introduced performance improvements to its 900 Series header equipment, and added a new line of draper platforms, the 900D Series.

Furthermore, with the new 50 Series cab, operators have a choice of temperature control. They can adjust cab temperature manually, or they can dial in their desired temperature using the new ClimaTrak™ automatic-temperature-control system. The ClimaTrak system maintains the preferred temperature, regardless of how conditions may change outside of the cab.

Improved combine controls also promote operator comfort and contribute to greater efficiency. The armrest control console, for example, has been redesigned to give the operator more convenient access to frequently used controls. This new CommandTouch™ console features new soft-touch controls. Helpful indicator lights alert the operator when a particular function is engaged. In addition, the controls are backlit to improve efficiency and convenience when harvesting at night.

Other cab improvements include a new multifunction hydrostatic lever. It's been reshaped to fit an operator's hand more comfortably and it features a new thermoplastic elastomer material that provides a softer, more comfortable feel. What's more, controls for the unloading system and most reel and header functions, including the new Active Header Height Control system, are located on the hydrostatic lever. The multifunction lever provides the operator with easier, more accurate control over changing harvest conditions.

The new CommandTouch corner post controls offer several enhancements. A new triple-display tachometer lets the operator monitor three functions simultaneously, providing a

better picture of combine performance. A new VisionTrak™ performance monitor also helps optimize combine performance by allowing the operator to continuously monitor both cleaning shoe and separator losses, individually or combined. The VisionTrak monitor displays tailings volume, too, the result of an innovative laser-based sensor system available for the first time with the 50 Series Combines.

John Deere has introduced several new header-control features with the 50 Series Combines. A new header-height-resume (HHR) system, standard, enables the operator to select any one of three preset header-height positions using the active header-height control buttons located on the multifunction hydro lever.

With HHR, operators can easily adjust header height to match varying crop conditions. For example, they can cut low to the ground to harvest more down crop, and return to normal cutting height with the push of a button. Header performance can be further enhanced with optional header-height sensing, or by adding the John Deere Contour-Master™ lateral-tilt system. These features provide grain-saving advantages on rolling ground, uneven fields, and side hills.

A new, patented harvesting concept - named Single Tine Separation (STS) - tops the new developments from John Deere. The STS concept traces its roots to the CTS Combine, a machine developed by John Deere specifically for the unique challenges of rice harvesting. Introduced in 1991, the CTS feature a cylinder/concave for threshing and twin tine-separator system that performs separation. The CTS quickly earned praise from rice growers for its exceptional material handling, grain-saving performance, and increased capacity. In 1994, John Deere began targeting the CTS Combine to other areas with tough-to-separate crops, such as high-yielding barley.

A number of unique features were developed for the STS Combines. A new Feed Accelerator and Stone Trap System, for example, it provides excellent feeding performance in all crops and conditions. The feed accelerator features 10 serrated bars that sweep material from the feeder house and disperse it evenly into the feeding section of the threshing/separator module. An integrated stone protection and rejection system provides a similar level of stone protection available on John Deere walker and CTS combines.

To provide optimum grain quality, the STS Combines feature unique threshing elements that gently thresh and help convey material to the separating section. These threshing elements are made of an advanced austempered carbonic iron casting that provides excellent abrasion resistance and extra-long wear life. Separator tines that comb crop material over separator grates achieve separation of threshed grain.

The STS Combines also feature an entirely new cleaning system. Called the DynaFlo™ system, it was designed to closely match cleaning capacity with the STS Combines' increased material loads. DynaFlo cleaning is highly efficient and provides convenient adjustments.

Series 8000 Tractors

The enhancements John Deere is introducing in its new 165- to 235-hp 8000/8000T TEN Series Tractors go far to enhance its power. The new tractors offer features designed to take operators to an even higher level of productivity while retaining the same styling, turning radius, and visibility of the current 8000s. The new 8000 TEN Series Tractors also feature the new Hitch Slip Command.

Old Tractor Renovation

John Deere dealers throughout North America will host tractor renovation clinics through the year 2000. The clinics will include courses on preventative maintenance and how to bring older tractors up to current standards of comfort, convenience and reliability.

The "Dress Up a Deere Friend™" clinics will include information useful for any row crop tractor, but will particularly focus on John Deere 30, 40 and 50 Series models. Features that have been improved over the last two decades include lighting, electrical systems, air conditioning, cab comfort, and safety features such as convenient handles and steps.

The clinics will include programs on preventative maintenance as well as detailed demonstrations on how to rejuvenate older model tractors with such upgrades as:

- New lighting
- Safety handles
- Front fenders
- Larger, better steps
- Modern air conditioning
- New air-suspension seating
- Electrical improvements, including power strip convenience outlets and 7 pin connectors
- Inside mirrors
- Rear windshield wiper
- Improved sound system, including stereo radio and new speakers
- Hydraulic control valves made compatible with modern equipment
- New cab upholstery kits

If extensive engine repairs are needed, dealers are able to overhaul the current engine or install a RemanSelect™ engine. RemanSelect™ engines are completely remanufactured to exact specifications using genuine John Deere replacement parts and manufacturing processes. RemanSelect™ engines carry a one-year, unlimited hour warranty and are available through John Deere dealers.

Financial Analysis

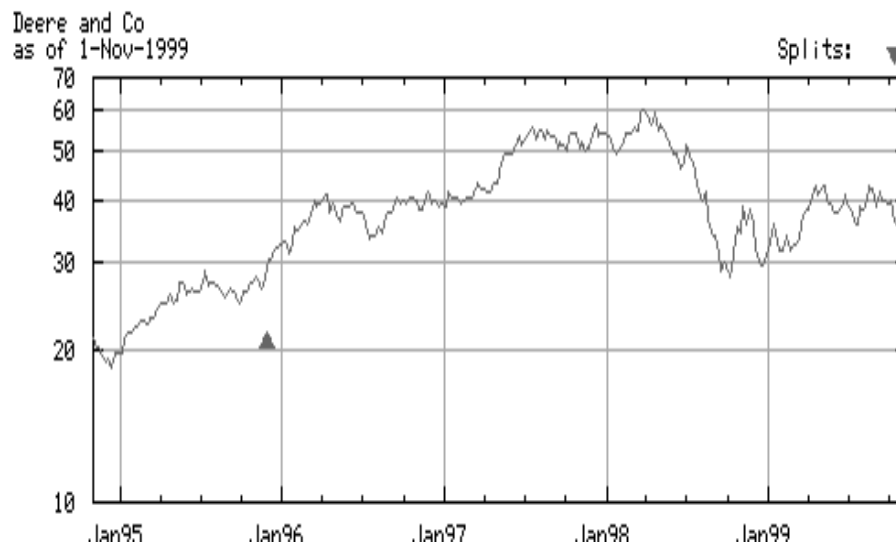
Stock Price

The first two years Deere Company had strong sales and earnings due to the Asian and European economic boost, moreover, as the Soviet Union broke up, it gave Deere the opportunity to enter the huge Central Asian agricultural market. Since Deere was experiencing extremely high equity returns, the management declared a 3 to 1 stock split in late 1995. Even after the stock split, Deere continually grew and in the coming two years it stock price caught up to what it was before the split.

However, due to the crash of Asian economies and the sudden decrease in the U.S. grain and wheat exports, the demand for agricultural equipment drastically went down. In turn, all this affected Deere's sales heavily and thus, their stock prices fell from \$ 58.25 at the end of 1997 to \$ 32.875 at the end of 1998. Since, then Deere has been struggling to make a come back. Recently, their new strategy to move to European and Latin markets has improved the performance of their stock. Now that Asian markets are starting to rebound, it is reinforcing Deere's position in the capital markets. On November 3, 1999 Merrill Lynch has upgraded the Deere's stock from market neutral to accumulate. Another interesting fact to notice is that Insiders have been buying large blocks of Deere stock, which demonstrates Deere's future potential.

Below is the historical data for Deere's stock price

Date	Stock Price	Stock Splits	Dividends
December 1994	\$ 66.25	No	\$ 2.22 per share
December 1995	\$ 35.25	3 to 1 Stock Split	\$ 1.90 per share
December 1996	\$ 40.50	No	\$ 0.80 per share
December 1997	\$ 58.25	No	\$ 0.82 per share
December 1998	\$ 32.875	No	\$ 0.88 per share
November 4, 1999	\$ 38.56	No	\$ 0.88 per share (expected)





Source: www.bloomberg.com

Short Term Liquidity

Short-term liquidity is determining whether a company can pay current liabilities as they come due. When working with these ratios, the two most common accounts used are current assets and current liabilities. The ratios used to analyze the short-term liquidity consist of the current ratio, quick ratio, accounts receivable turnover, days' sales in receivables, and inventory turnover. These ratios are broken down further in the following pages.

Current Ratio

Current Assets / Current Liabilities

Since the current assets and current liabilities, in principle, converted to cash over the following twelve months, the current ratio is a measure of short-term liquidity. To a creditor, particularly a short-term creditor, such as a supplier, the higher the current ratio, the better. To the firm, a higher current ratio indicates the liquidity of the firm, but it also may indicate an inefficient use of cash and other short-term investments. Absent some extraordinary circumstances, we would expect to see a current ratio of at least 1, because a current ratio of less than 1 would mean that the networking capital (current assets - current liabilities) is negative. This would be unusual in a healthy firm like John Deere, at least for most type of businesses.

Long Term Solvency

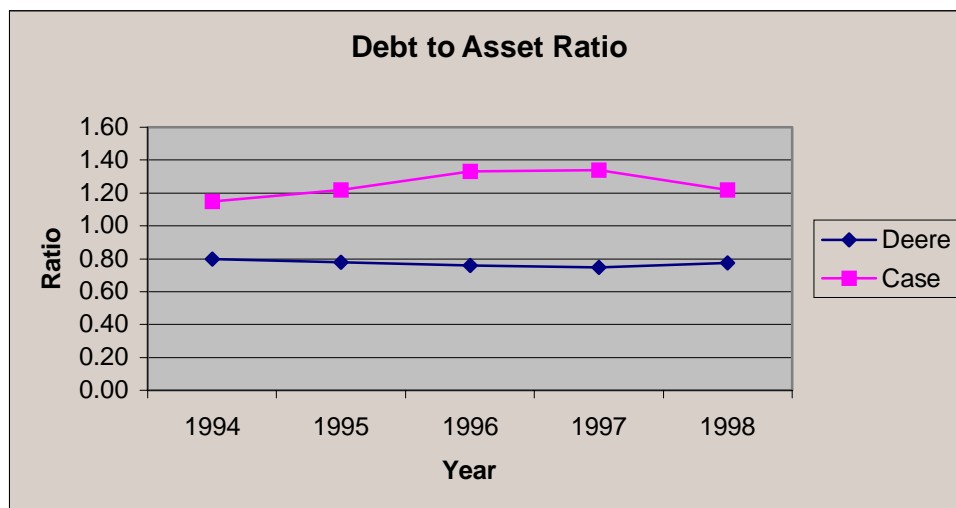
Long-term solvency ratios are intended to address the firm's long-run ability to meet its obligations, or, more generally, its financial leverage. The ratios serve the purpose of deciding whether the company will be a going concern or will it avoid bankruptcy. The ratios used to figure the long-term solvency of a company are debt to asset ratio, debt to equity ratio, long-term debt ratio, and times interest earned. These ratios can be viewed in further detail in the next few pages.

Debt to Asset Ratio

Total Liabilities/ Total Assets

Both creditors and investors are interested in the portion of the total assets creditors contribute. Higher levels of debt financing mean that a company has a higher risk of not meeting fixed interest and principal payments. This could force a company into bankruptcy, in which creditors and investors could lose part or all of their investment. Additionally, this ratio shows how much the borrowed funds are being used to finance the companies operations. The higher the ratio, the more the company is using debt to finance their assets. This increases risk; investors may be more hesitant if the ratio is high.

Year	Total Assets	Total Liabilities	Deere	Case
1994	12781200	10223300	0.80	1.15
1995	13847400	10762000	0.78	1.22
1996	14652700	11095500	0.76	1.33
1997	16319800	12172600	0.75	1.34
1998	18001500	13921700	0.77	1.22



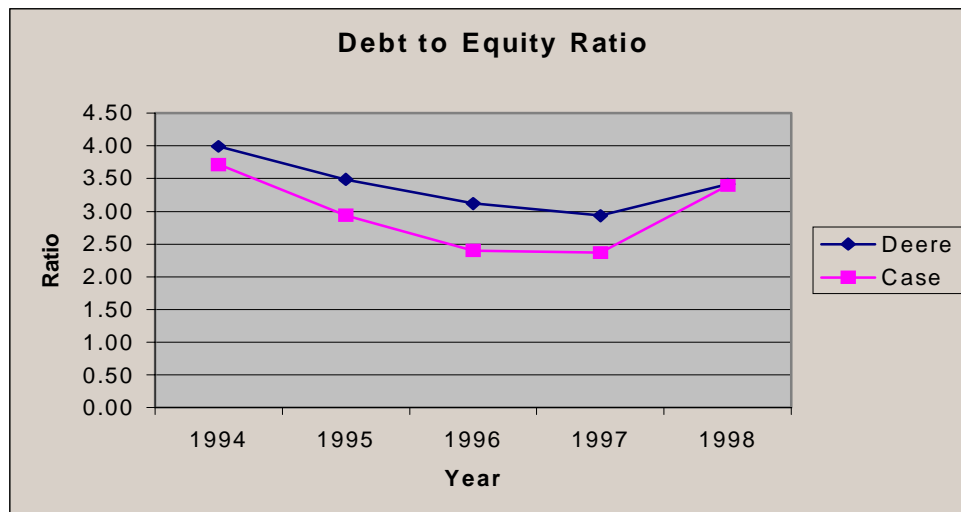
Looking at the Deere's debt to asset ratio for the past five years, we can conclude that the company was doing extremely well in the first three years and using their earnings to reinvest in the company rather than using leverage. This might explain the decline in the debt to asset ratio from 1994 to 1997. However, as the worldwide demand for agricultural goods declined between 1997 and 1998, Deere's retained earnings went down as a result of flat sales. So, Deere has to use more leverage to finance their expansion projects and to revive their lost position.

Year	Total Liabilities	Total Equity	Deere	Case
1994	10223300	2557900	4.00	3.72
1995	10762000	3085400	3.49	2.94
1996	11095500	3557200	3.12	2.4
1997	12172600	4147200	2.94	2.37
1998	13921700	4079800	3.41	3.4

Debt to Equity Ratio

Total Liabilities / Total Stockholders Equity

This debt ratio is another measure of how much the creditors are providing funds for assets as to how much the owners are contributing. The first four years there was a substantial decrease in the debt to equity ratio due to the Deere's increased use of retained earnings to finance its operations. Because of the farm crisis the sales have remained flat, so the company had to rely on increased debt in order to finance its expansion. Another reason leading to the increase is that Deere purchased back some of its outstanding shares, thus reducing the stockholders equity.

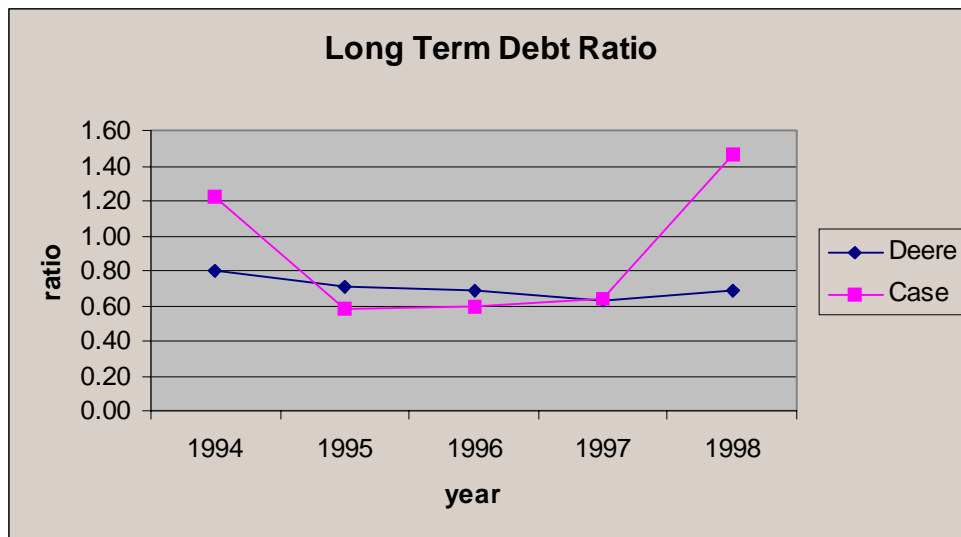


Long-Term Debt Ratio

Long-term Debt / Total Stockholders Equity

This ratio compares the long-term debt to the equity value in the company. Frequently, financial analysts are more concerned with the firm's long-term debts than its short-term liabilities because the short-term debt will be constantly changing. Also, a firm's accounts payable may be more of a reflection of trade practice than debt management policy.

	Long-term Debt	Total Equity	Deere	Case
1994	2053900	2557900	0.80	1.22
1995	2175800	3085400	0.71	0.58
1996	2425400	3557200	0.68	0.59
1997	2622800	4147200	0.63	0.64
1998	2791700	4079800	0.68	1.46



The long-term debt ratio has been declining from 1994 to 1997 due to the firm's increased reliance on retained earnings rather than long term debt instruments. However due to decreased earnings in 1997 and 1998 due to farm crisis has forced the company to increase the use of long term debt financing. The increase in the ratio can also be attributed to the fact that Deere has repurchased some of its common stock in the past couple of years.

Times Interest Earned

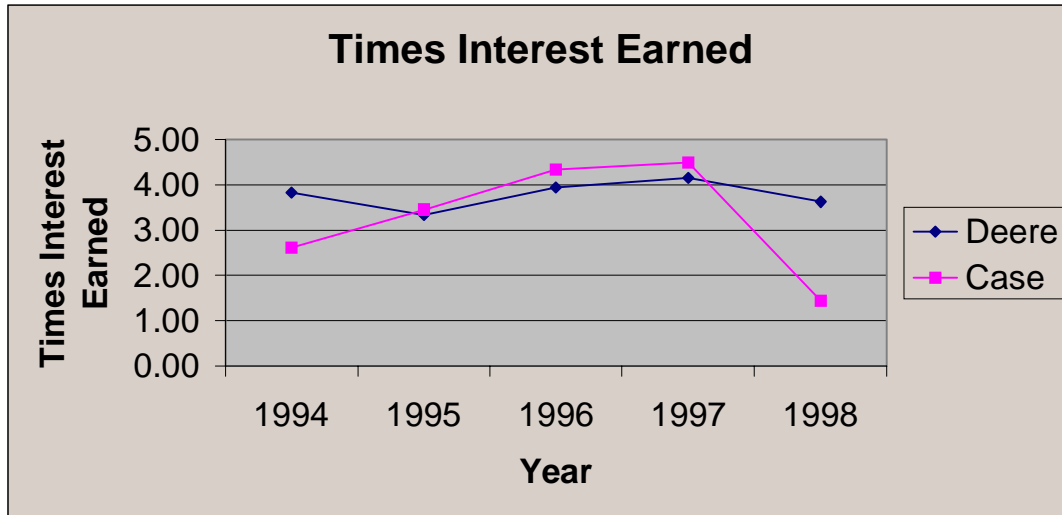
EBIT / Interest Expense

Fixed interest payments on debt are an obligation the companies must meet each year. Creditors want to know the firm's ability to pay annual interest charges.

Times interest earned shows how many times the company earned interest expense with current income. It is also known as interest coverage ratio. The average range of interest coverage ratios for most U.S. non-financial businesses is between 2.0 and 3.0 times. A

higher ratio is more favorable, but if the ratio decreases then it reflects that the company is increasing their use of debt.

EBIT	Interest expense	Deere	Case
1161000	303000	3.83	2.61
1312800	392400	3.35	3.45
1587100	402200	3.95	4.34
1755100	422200	4.16	4.49
1883700	519400	3.63	1.44



As we can see from the graph, Deere's times interest earned ratio fluctuates between 3.5 and 4.25 over the five years. It decreases in 1998 due to the fact that Deere is relying more on financial leverage to finance their expansion plans.

Profitability

Profitability ratios are intended to measure how efficiently the firm uses its assets and how efficiently the firm manages its operations. The ratios used to evaluate profitability are profit margin, fixed asset turnover, total asset turnover, return on assets, return on equity, and earnings per share. These ratios are reproduced in further detail in the next pages.

Profit Margin

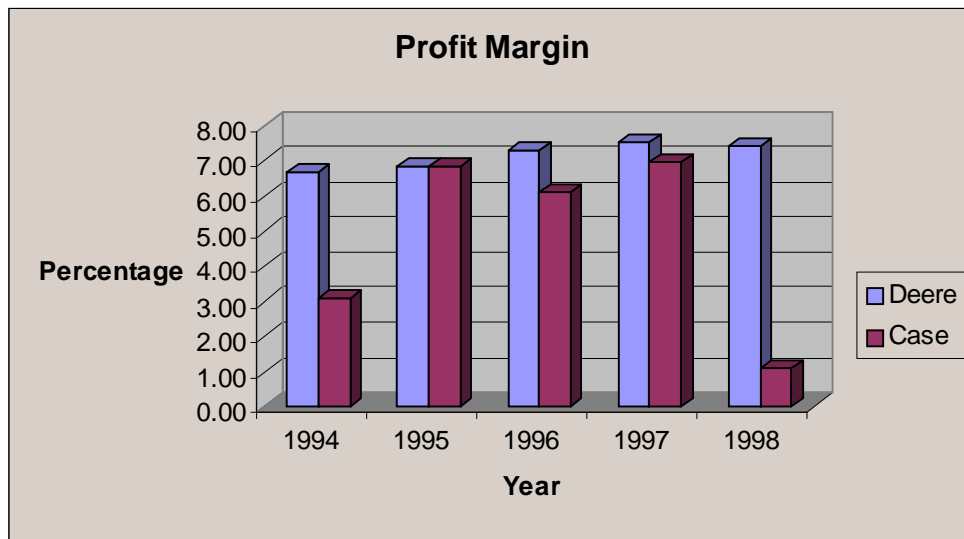
Net Income / Sales

Profit margin is the amount per dollar of sales that contribute to net income. For this ratio, we have to again look at the industry because it will vary by industry.

Year	Net Income	Sales	Deere	Case
1994	603600	9029800	6.68	3.07
1995	706100	10290500	6.86	6.83

1996	817300	11229400	7.28	6.11
1997	960100	12791400	7.51	6.95
1998	1021400	13821500	7.39	1.12

Profit margin during the period from 1994 to 1997 rose from 6.68% to 7.51%. But decreased slightly in 1998 to 7.39% due to the decline in demand for agricultural equipment.

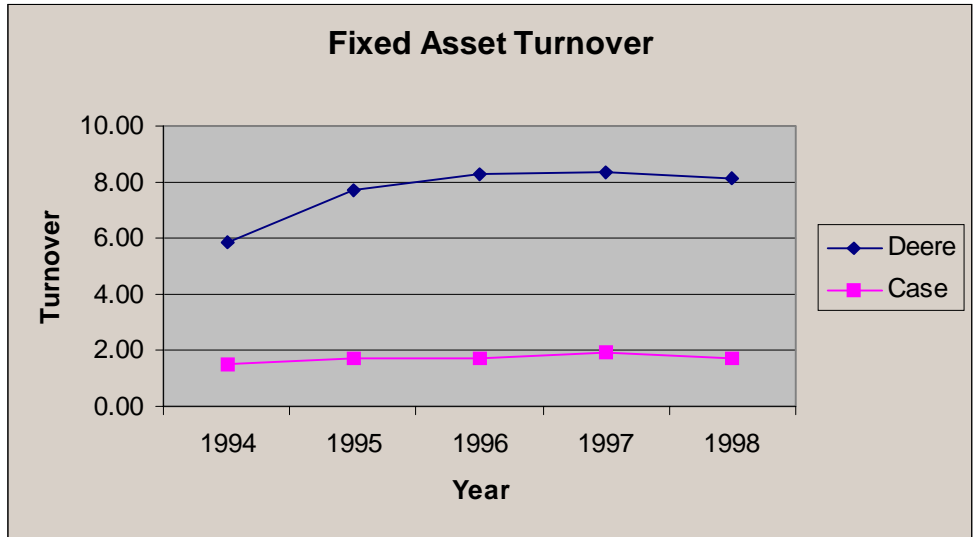


Fixed Asset Turnover

Sales / Net Fixed Assets

Fixed asset turnover measures the efficiency of plant and equipment. For every dollar invested in fixed assets, the ratio is the dollar amount of sales. This ratio is dependent on the type of company it is. Looking at the graph below, we can interpret that Deere is efficiently utilizing its fixed assets at a fairly constant rate.

Sales	Net Fixed Assets	Deere	Case
9029800	1,533,600	5.89	1.48
10290500	1,335,600	7.70	1.69
11229400	1,351,700	8.31	1.68
12791400	1,524,100	8.39	1.94
13821500	1,700,300	8.13	1.74

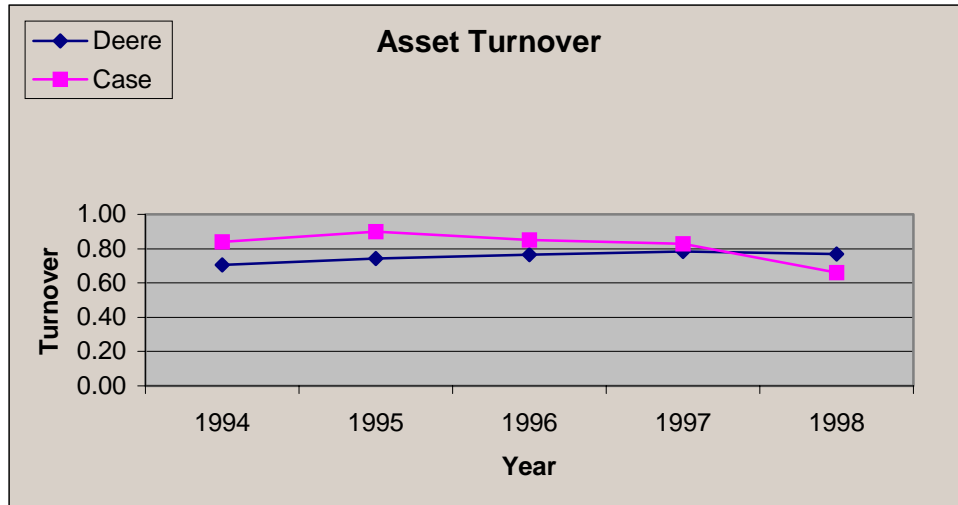


Total Asset Turnover

Sales / Total Assets

This measures whether the company is efficient in its investment in all assets in order to generate sales. This turnover is how much money of sales is for every dollar of investment in assets. Deere's assets have been growing at a proportional rate whereas in 1998 its sales grew at a decreasing rate; therefore, there was a reverse of trend in the last year.

Year	Sales	Total Assets	Deere	Case
1994	9029800	12781200	0.71	0.84
1995	10290500	13847400	0.74	0.9
1996	11229400	14652700	0.77	0.85
1997	12791400	16319800	0.78	0.83
1998	13821500	18001500	0.77	0.66

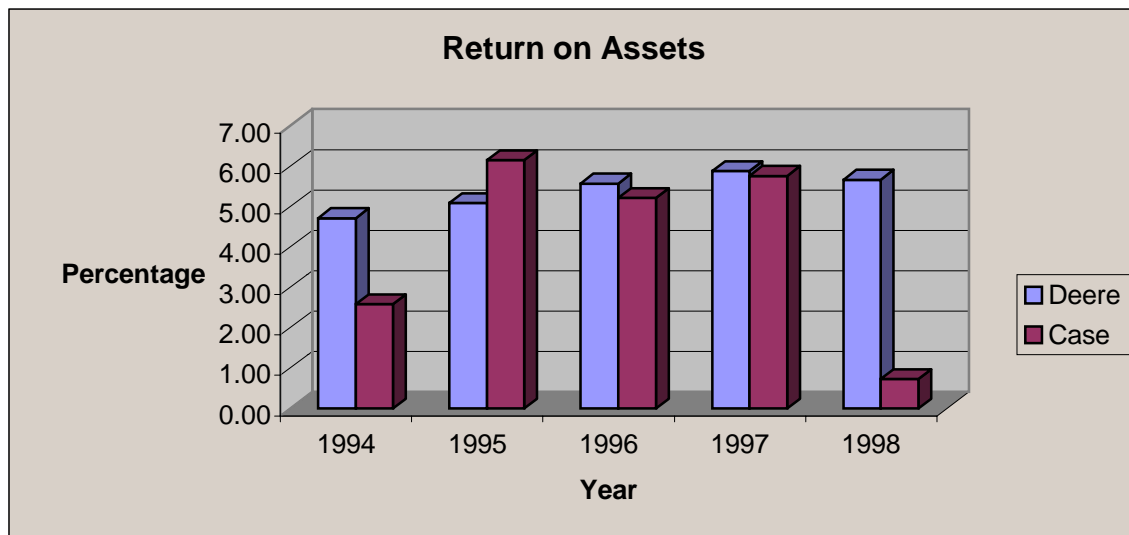


Return on Assets (ROA)

Net Income / Total Assets

This return measures the amount the company earns on each dollar of investment. Looking at the graph below, we can state that Deere's return on assets increased slightly for the first four years due to increase in sales all over the world. It dropped minutely in the last year; the factor that could have influenced this change could be the depressed earnings.

Year	Net Income	Total Assets	Deere	Case
1994	603600	12781200	4.72	2.59
1995	706100	13847400	5.10	6.16
1996	817300	14652700	5.58	5.22
1997	960100	16319800	5.88	5.77
1998	1021400	18001500	5.67	0.73

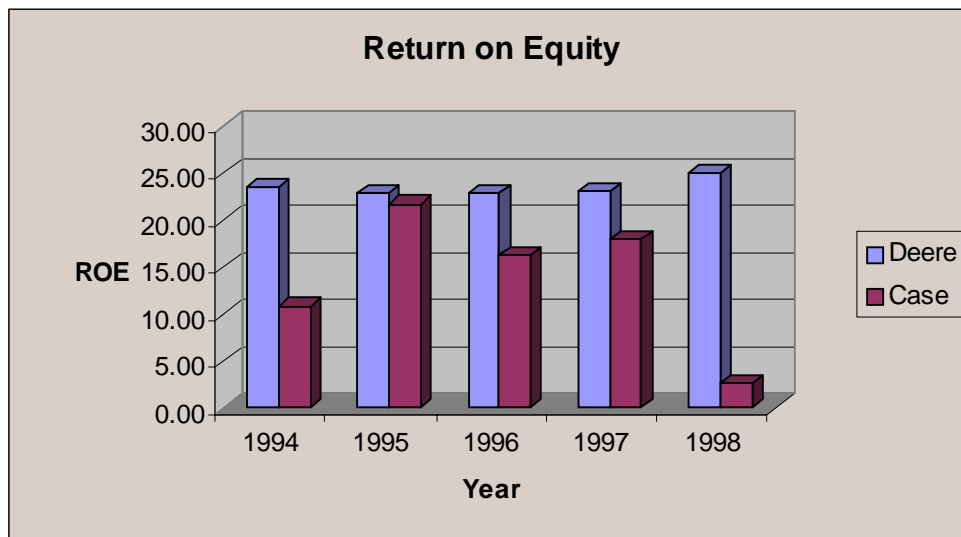


Return on Equity (ROE)

Net Income – Preferred Dividends / Total Stockholders Equity

Return on equity shows the return on the owner’s investment in the company. As you can see below, return on equity stayed steady for the first four years. In the last year, Deere’s return on equity jumped up from 23.15% to 25.04% because they bought back a large share of stocks outstanding.

Year	Net Income - Preferred Dividends	Total Equity	Deere	Case
1994	603600	2557900	23.60	10.84
1995	706100	3085400	22.89	21.71
1996	817300	3557200	22.98	16.23
1997	960100	4147200	23.15	18.03
1998	1021400	4079800	25.04	2.7

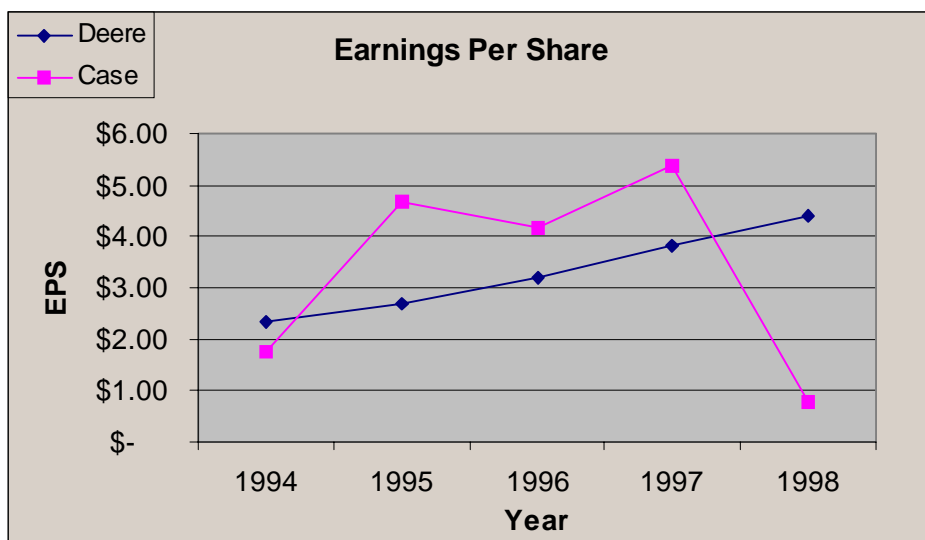


Earnings Per Share

Net Income – Preferred Dividends / Average Number of Common Stock Outstanding

Earnings per share show what owners are eligible to get per each share of common stock they own.

Year	Net Income - Preferred Dividends	Total shares outstanding	Deere	Case
1994	603600	259500	\$ 2.33	\$ 1.74
1995	706100	262000	\$ 2.70	\$ 4.67
1996	817300	257300	\$ 3.18	\$ 4.17
1997	960100	250300	\$ 3.84	\$ 5.36
1998	1021400	232300	\$ 4.40	\$ 0.78



Despite the flat sales during 1997 and 1998, the earnings per share have been continuously increasing for the last five years. Earnings during the first three years can be explained by the increasing sales across the globe. However, decreasing the number of shares outstanding has brought about the growth of earnings per share for the last two years. It is obvious that Deere has repurchased some of the shares from the investors.

Operations:

Overview of the company's primary business and principal products:

John Deere is the world's leading producer of agricultural equipment and a major producer of industrial equipment for the construction, forestry, and public works markets, lawn and grounds care products for homeowners and commercial users, engines and other power train components, and replacement parts for its own products and those of other manufacturers.

John Deere is the world leader in agricultural equipment is the leading supplier of construction equipment and is the North American market leader in forestry equipment. John Deere offers North America's broadest line of mowers and wide variety of other outdoor power products for both homeowners and commercial lawn and grounds care markets. John Deere engines and other power train products, sold to the original equipment manufacturer market through the Deere Power Systems Group, are founded in mobile and stationary power applications throughout the world.

Operating Groups

John Deere and its subsidiaries have operations, which are categorized into six business segments.

The worldwide agricultural equipment segment manufactures and distributes a full line of farm equipment-- including tractors; combine, cotton, and sugarcane; tillage, seeding and soil preparation machinery; sprayers; hay and forage equipment; materials handling equipment; and integrated precision farming technology.

The worldwide construction equipment segment, formerly the worldwide industrial equipment segment, manufactures and distributes a broad range of machines used in construction, earthmoving and forestry-- including backhoe loaders; crawler dozers and loaders; four-wheel-drive loaders; excavators; scrapers; motor graders; log skidders; and forestry harvesters. This segment also includes the manufacture and distribution of engines and drive train components for the original equipment manufacturer (OEM) market.

The worldwide commercial and consumer equipment segment manufactures and distributes equipment for commercial and residential uses-- including small tractors for lawn, garden, commercial and utility purposes; riding and walk-behind mowers; golf course equipment; snowblowers; hand-held products such as chain saws, string trimmers and leaf blowers; skid-steer loaders; utility vehicles; and other outdoor power products.

The credit segment, which mainly operates in the United States and Canada, primarily finances sales and leases by John Deere dealers of new and used equipment and sales by non-Deere dealers of recreational products. In addition, it provides wholesale financing to dealers of the foregoing equipment and finances retail revolving charge accounts.

The insurance segment issues policies in the United States primarily for general and specialized lines of commercial property and casualty insurance; group accident and health insurance for employees of participating John Deere dealers and disability insurance for employees of John Deere.

The health care segment provides health management programs and related administrative services in the United States to John Deere and commercial clients.

The Agricultural Equipment

Sales of agricultural equipment, particularly in the United States and Canada, are affected by total farm cash receipts, which reflect levels of farm commodity prices, acreage planted, crop yields and government payments. Sales are also influenced by general economic conditions, farm land prices, farmers' debt levels, interest rates, agricultural trends and the levels of costs associated with farming. Weather and climatic conditions can also affect buying decisions of equipment purchasers.

Innovations to machinery and technology also influence buying. Many farmers to control soil erosion and lower production costs have adopted reduced tillage practices. John Deere has responded to this shift by delivering leading edge planters, drills and tillage equipment. Additionally, Co. has developed a precision farming approach using advanced technology and satellite positioning that should enable farmers to better control input costs and yields and to improve environmental management.

Large, cost-efficient, highly mechanized agricultural operations account for an important share of total United States farm output. The large-size agricultural equipment used on such farms has been particularly important to John Deere. A large proportion of the Equipment Operations' total agricultural equipment sales in the United States is comprised of tractors over 100 horsepower, self-propelled combines and self-propelled cotton pickers.

Seasonal patterns in retail demand for agricultural equipment result in substantial variations in the volume and mix of products sold to retail customers during various times of the year. Seasonal demand must be estimated in advance, and equipment must be manufactured in anticipation of such demand in order to achieve efficient utilization of manpower and facilities throughout the year. For certain equipment, Co. offers early order discounts to retail customers. Production schedules are based, in part, on these early order programs. The Equipment Operations incur substantial seasonal indebtedness with related interest expense to finance production and inventory of equipment, and to finance sales to dealers in advance of seasonal demand. The Equipment Operations often encourage early retail sales decisions for both new and used equipment, by waiving retail finance charges or offering low-rate financing, during off-season periods and in early order promotions.

An important part of the competition within the agricultural equipment industry during the past decade has come from a diverse variety of short-line and specialty manufacturers with differing manufacturing and marketing methods. Because of industry conditions, especially acquisitions of short-line and specialty manufacturers by large integrated competitors, the competitive environment is undergoing significant change.

In addition to the agricultural equipment manufactured by the Equipment Operations, John Deere outside the United States and Canada purchases a number of agricultural products from other manufacturers for resale.

The Agricultural Equipment operating groups encompass the following products:

- Tractors – (20 horsepower series up to the 425 horsepower series, spray ready caps, autoquad II™ transmissions, and TLS suspensions).
John Deere manufactures a portion of its tractors in its United States facilities and a portion of its tractors in its foreign facilities. These facilities are located in: Bruchsal, Germany; Horizontina, Brazil; Mannheim, Germany; Chihuahua, Mexico; Nigel South Africa; Saltillo, Mexico; and Waterloo, Iowa.
- Combines – (50 Series Combines and 900D Draper platforms).

The companies facilities that manufacture combines are located in: Bruchsal, Germany; East Moline, Illinois; Jiamusi, China; Rosario, Argentina, and in Zweibrucken, Germany.

- Cotton Harvesting Products – (cotton pickers and cotton strippers).
John Deere assembles and/ or manufactures its cotton pickers and cotton strippers at its United States and overseas facilities. These facilities are located in: Des Moines, Iowa and Jiamusi, China.
- Hay and Forage Products – (round balers, square balers, harvesters, windrowers, conditioners, rotary mowers, rakes, and tedders).
The company manufactures its hay and forage products in the United States and in its overseas facilities. These facilities are located in: Arc-les-Gray, France; Ottumwa, Iowa; Stadtlohn, Germany; Welland, Ontario, Canada; and Zweibrucken, Germany.
- Sprayers – (hand-held sprayers and special-crop sprayers).
The company manufactures and assembles its sprayers only in its United States facilities. These facilities are located in: Des Moines, Iowa and Thibodaux, Louisiana.
- Planting and Seeding Products – (planters and various types of drills)
The company manufactures and assembles its planters and various types of drills in its United States and overseas facilities. These facilities are located in: Des Moines, Iowa; Horizontina, Brazil; and Moline, Illinois.
- Tillage Products – (tillage tools and tandem and offset disks).
The company manufactures and assembles its tillage tools and tandem and offset disks in its United States and overseas facilities. These facilities are located in: Des Moines, Iowa; Monterrey, Mexico; and Rosario, Argentina.

Many of John Deere's products are marketed with the greenstar system, JDMap TM software, and stellar support TM included with the product.

The agricultural equipment operating groups have sales branches located in the United States and overseas. The locations in the United States include: Atlanta, Georgia; Columbus, Ohio; Dallas, Texas; Minneapolis, Minnesota; Reno, Nevada; Grimsby, Ontario, Canada. The company's overseas branches are located in: Beijing, China; Brisbane, Australia; Madrid, Spain; Mannheim, Germany; Milan, Italy; Monterrey, Mexico; Montevideo, Uruguay; Nigel, South Africa; Nottingham, England; Ormes, France; and Rosario, Argentina.

Properties

John Deere's principal properties in the United States and overseas as of December 31, 1998 were as follows:

In the United States and Canada, the Equipment Operations own and operate 19 factory locations, which contain approximately 30.0 million square feet of floor space. Six of the factories are devoted primarily to the manufacture of agricultural equipment, eight to commercial and consumer equipment, two to construction equipment, one to engines, one to hydraulics and power train components, and one to power train components manufactured mostly for OEM markets. The equipment operations own and operate tractor factories in Germany, Mexico, the Netherlands and South Africa; engine factories in France, Mexico, and Argentina; a component factory in Spain; an axle facility in Mexico; and commercial and consumer facilities in Germany, Mexico, and the Netherlands and South Africa; engine factories in France, Mexico, and Argentina; a component factory in Spain; an axle facility in Mexico; and commercial and consumer facilities in Germany, Mexico, and the Netherlands. These overseas facilities contain approximately 7.9 million square feet of floor space. The equipment operations have financial interests in other manufacturing organizations, which include agricultural equipment manufacturers in Brazil, China and the United States and a joint venture that builds construction excavators in the United States.

John Deere's facilities are well maintained, in good operating condition and are suitable for their present purposes. These facilities, together with planned capital expenditures, are expected to meet John Deere's manufacturing needs in the foreseeable future.

Currency Factors

Approximately 80% of the company's business is conducted in U.S. dollars (including both domestic sales, U.S. dollar denominated export sales, primarily to certain Latin American markets, Asian sales and the majority of European sales). John Deere's non-U.S. dollars denominated sales are made principally by subsidiaries in Europe, Canada, Japan, Latin America and Mexico. Mexico reverted to a hyperinflationary status for accounting purposes in 1997; therefore, translation adjustments, related to Mexican net monetary assets, are included as a component of net (loss) earnings. Mexico is not considered hyperinflationary as of January 1, 1999. This change in Mexico's hyperinflationary status is not expected to have a material effect on the John Deere's financial results.

Euro Conversion

On January 1, 1999, certain member countries of the European Union established fixed conversion rates between their existing currencies and the European Union's common currency (the "Euro"). The company is well advanced in the process of identification, implementation and testing of its systems to adopt the euro currency in its operations. The transition period for this change is January 1, 1999 through January 1, 2002. The company's affected suppliers, distribution network and financial institutions have been

contacted and to date the currency change has not had a significant impact on these relationships. The cost of information systems modifications, effects on product pricing and purchase contracts, and the impact on foreign currency financial instruments, including derivatives, are not expected to be material.

Exposure to Foreign Market Risk

John Deere uses a variety of derivative financial instruments to manage its foreign currency and interest rate exposures. The company does not speculate on interest rates or foreign currency rates. Instead, it uses derivatives when implementing its risk management strategies to reduce the possible effects of these exposures. With respect to foreign currency exposures, John Deere is most vulnerable to changes in rates between the United States dollar and the following exchange rates:

- The U.S. dollar / Japanese yen
- The U.S. dollar / Canadian dollar
- The U.S. dollar / German duetschmark
- The U.S. dollar / Mexican peso

John Deere principally uses forward and option contracts to reduce risks arising from firm commitments, inter-company sales transactions and inter-company receivable and payable balances/ The company generally uses interest rate swaps to fix certain of its variable rate debt. In addition it manages credit risk related to these derivative contracts through credit approvals, exposure limits and threshold amount and other monitoring procedures.

Legal Issues

John Deere is subject to various unresolved legal actions, which arise, in the normal course of its business, the most prevalent of which relate to product liability, retail credit, software, and patent and trademark matters. Although it is not possible to predict with certainty of the outcome of these unresolved legal actions or the range of possible loss, the company believes these unresolved legal actions will not have a material effect on its financial position or results of operations.

On February 3, 1997, the environmental protection agency (EPA) entered into an agreement with Ford Motor Co. and John Deere to resolve air emissions warranty claims under the Clean Air Act for certain motor homes. The claim involved the failure of components on Ford built engines installed on chassis by Deere, which were subsequently used to manufacture motor homes by a number of other companies. Under the terms of the agreement, Ford and Deere will share the cost of reimbursement to the owners.

Patents and Trademarks

John Deere owns a significant number of patents, licenses and trademarks, which have been obtained over a period of years. The company believes that, in the aggregate, the rights under these patents, licenses and trademarks are generally important to its

operations, but does not consider that any patent, license, trademark or group of them (other than its house trademark) is of material importance in relation to John Deere's business.

John Deere holds numerous design and utility patents and trademarks covering a wide variety of products. An integral part of the company's strength is the ability to capitalize on these patents.

John Deere's trademarks include:

- Homelite / registered trademark
- Counterparts / registered trademark
- Ztrak / registered trademark
- Deere / registered trademark
- Greenstar / registered trademark
- Deere & Company / registered trademark
- Powertech / registered trademark
- Sabre / registered trademark
- JD Vision / registered trademark
- Pathfinder / registered trademark
- John Deere / registered trademark
- Powergard / registered trademark
- Vantagepoint / registered trademark
- Deere run / registered trademark
- Nothing Runs Like A Deere / registered trademark
- Seed Star / registered trademark

These trademarks, which are registered in the United States and in numerous foreign countries, are widely recognized throughout North America, Latin America and Europe. Registered trademarks, along with brands are important to the success of the company. In some cases, patents and trademarks are the key to a company's success in the business world. They can create a competitive advantage over the company's competitors. Take for example, that Case and New Holland (John Deere's main competitor) have a total of 468 patents and trademarks, while John Deere has 166 trademarks and patents. John Deere aggressively monitors and protects Deere, Homelite, and Greenstar. These trademarks are essential to John Deere's success and continuing operation in the industry.

The issue of trademarks is a very important aspect of a business as John Deere found out when Caterpillar filed a lawsuit against John Deere in August 1996. The lawsuit was a patent infringement suit in which Caterpillar felt John Deere had copied Caterpillar's rubber track design in their new line of track-type tractors. The federal judge found that John Deere had not copied Caterpillar designs. In response to the judgment, John Deere said, "they were very pleased with the judgment and that its own technology has helped it gain a leading position in the rubber track product category.

Research and Development

John Deere makes large expenditures for engineering and research to improve the quality and performance of its products, and to develop new products. Such expenditures were \$444 million, or 3.7 percent of net sales of equipment in 1998, and \$412 million, or 3.7 percent in 1997.

Innovations to machinery and technology influence buying. Many farmers to control soil erosion and lower production costs have adopted reduced tillage practices. John Deere has responded to this shift by delivering leading edge planters, drills and tillage equipment. Additionally, the Company has developed a precision farming approach using advanced technology and satellite positioning that should enable farmers to better control input costs and yields and to improve environmental management.

The company has put much effort into improving quality, based on teams of specialist engineers called "master process professionals" who advise on reducing defects. In the past 10 years Deere has spent some DM300m at Mannheim improving machinery and re-organizing product flow. The time taken to fulfill a specific order has been cut to four weeks from about three months a decade ago.

In recent times the star of Deere's R&D efforts has been the GreenStar project, which deals with precision-farming tools. These tools give one the ability to treat each area of each field differently. By geo-referencing field information one can begin to make decisions based on sound agronomic, economic, and environmental data. The Greenstar system uses Global Position System technology in seeding and fertilizing operations that make the tasks more cost-effective and maximize crop yield. Within the complete system of GreenStar controlled equipment, which includes tractors and other implements, is the John Deere model 1900 commodity air cart used for air seeding and fertilizing operations. Air carts have been around for more than two decades, but this particular model is noteworthy because it is capable of computer-controlled, future map-based feeding and seeding operations

In August 1999, Deere rolled out a new combine line that includes two "unique" models. Deere spokespersons don't use the words rotor or rotary to describe these machines. Instead, they identify their technology as single tine separation, or STS. "Its patented design and unique features make it superior to conventional rotary concepts," says Don Yarbrough of Deere's Harvester Works. The STS combines offer engineering not found on any other harvester on the market.

Deere has also developed a revolutionary new communication network called the Vantage Point Network. The network is a low-cost, easy-to-use information system serving agriculture and the farming community. Traditional record keeping and data management can be accomplished more efficiently, more effectively, and faster. Farmers and their professional advisers can harvest valuable insight for farm management decisions by using VantagePoint Network, a fully-secured cyberspace storage bin for the vast amount of data generated by their own individual production operations.

The VantagePoint web site offers weather reports as well as easy access to current market reports, both U.S. and foreign. Agricultural news will keep the customer up-to-date plus chat rooms and discussion groups let users discuss ideas and find out what other people are thinking. And users can have their own email account. A sophisticated search engine will help them find agricultural information on the Web; plus reference material on crop protection products will help insure proper use and application of farm chemicals. VantagePoint offers services that include a complete online crop management system with grain-storage and sales-tracking capability. Customers can also use VantagePoint to create field maps and generate a wide variety of management reports.

Strategic Issues and Problems:

Strengths

- **Brand Recognition**

As one of the best known and most widely respected brands in the industry, Deere enjoys several advantages over its competitors, such as when negotiating credit issues with their dealers.

- **Customer loyalty**

A consequence of Deere's excellent reputation and their thoroughness in following up with customers and purchases, as well as their timely responses to complaints has been the growth in customer loyalty. This makes it more than likely that a customer who has purchased a Deere product in the past will return to them for future purchases as well.

- **Research and Development**

Deere's efforts to provide cutting edge technology for their products has helped them to develop their technical competence into a strategic strength. By improving their products and ensuring that they are environmentally sound, the company attracts positive attention from public newsgroups, which further enhance its image in the market.

- **Product Diversification**

With a broad spectrum of product offerings, Deere is able to compete in numerous market divisions and can thus offset slower periods in one division with another. Furthermore, their diversified operations also present them with a number of opportunities to enter new markets.

- **Employee Benefits**

Deere is comprised of not only their manufacturing divisions but also their health care and credit divisions, which in addition to helping out customers, also cater to the needs of Deere's own employees. By servicing the needs of their employees effectively, Deere continues to be an excellent firm to work for and is able to keep their employees highly motivated and keep employee turnover low.

Weaknesses

- **International Expansion**

While concentrating on international emerging markets can be an opportunity, it can also be a weakness because it involves substantial capital investment in each new market with the setting up of new assembly lines and plants.

- **Information Technology**

As Deere continues to expand the requirements of their IT infrastructure and network become more complex and with expansion into other countries the need for an efficient and high-speed network grows. The implementation of a complex enterprise-wide information system will be one of the large expenses that Deere will have to incur. Deere's extensive network will also necessitate a loss of flexibility, which smaller, local competitors might enjoy.

- **Consolidations**

One of the greatest threats to Deere is the current trend of consolidation. While Deere tries to concentrate on penetrating new markets, some of its competitors are focusing on mergers and acquisitions to reposition themselves in the industry and prove more of a threat to Deere. A point in case is the recent merger of Case and New Holland. While each firm individually was sizably smaller than Deere, the result of the merger is a firm that matches Deere in most respects and in fact has an asset base that is larger than Deere's.

- **Distribution**

One of Deere's weaknesses as of now is its inferior distribution network. Caterpillar, one of Deere's closest competitors in the construction industry has a superior setup and can guarantee that any replacement part will be delivered to the customer within 48 hours. With assertions like that to compete against, Deere will have to invest considerable resources into their own distribution channels.

SWOT Analysis:

SWOT ANALYSIS

Strengths & Weaknesses		Opportunities	Threats
			<ul style="list-style-type: none"> • International expansion. • Consolidation. • Effects of Urbanization and “Westernization”. • Internet activity.
S T R E N T H S	<ul style="list-style-type: none"> • Brand recognition. • Customer loyalty. • Research & Development. • Product diversification. • Employee benefits. 	Options	Options
		<ol style="list-style-type: none"> 1. Use brand recognition to enter foreign markets. 2. Consolidate to improve relative strength vis-à-vis the competition. 	<ol style="list-style-type: none"> 3. Address international labor rights issues. 4. Decrease dependence on agricultural equipment sector. 5. Environmental concerns in international markets.
W E A K N E S S E S	<ul style="list-style-type: none"> • International expansion. • Information technology. • Consolidations. • Distribution. 	Options	Options
		<ol style="list-style-type: none"> 6. Achieve product diversification through consolidation. 7. Improve intranet efficiency. 8. Use Internet to take advantage of online markets. 	<ol style="list-style-type: none"> 9. International expansion to decrease imposed U.S. regulations. 10. Develop ability to adjust employment levels and overhead costs.

Strategic Options

Option #1

John Deere should be able to use their brand recognition to enter new international markets with less difficulty than their competitors. The reason for this is that they have been in this business for a long period and their name is associated with quality, value and reliability.

Option # 2

John Deere should acquire other similar companies to increase their relative size to the competition in order to achieve greater leverage in their marketing efforts and gain economies of scale.

Option # 3

John Deere needs to take extra care in regards to its international labor policies and its human rights monitoring. By doing this the company can reduce the chances of consumer and media backlash, which could lead to loss of sales and hurt their reputation.

Option # 4

John Deere needs to decrease their dependence on the agricultural equipment segment of their business. They should shift their focus from the agricultural sector to other parts of their business, thereby diversifying their overall risk.

Option # 5

John Deere needs to maintain their level of environmental awareness on a worldwide basis. Because of the globalization phenomenon and increased perception of a global community, society expresses its concerns over any adverse environmental affects of company's actions in any part of the globe. Pertaining to John Deere it can hurt their reputation, sales and consequently, lose their grip on the consumer base.

Option # 6

John Deere should follow the trend of consolidation in the capital goods industry to diversify their product line. By taking advantage from the lessons learnt from pervious consolidations in the industry, John Deere should be able to consolidate more efficiently. Therefore, through learning from other companies past experiences John Deere does not have to go through the entire learning curve.

Option # 7

John Deere has a vast scope of operations all over the world; therefore, they need a highly efficient intranet. So they can communicate and exchange files easily across international lines in no time. This can in turn increase John Deere's response time to customer complaints and quicker solutions to worldwide offices. They should also develop user- friendly GUI (Graphical User Interface) software to minimize training expenses of their employees.

Option # 8

The possibilities the Internet offers can also be exploited and used by John Deere. The options range from ordering replacement parts through the Internet and used for customer service and monitoring such as having a customer suggestions for product improvements. Another area, which can be improved upon with the use of the Internet, is the quality of service rendered by John Deere. The customer, through online questionnaires, can receive added service and product value.

Option #9

John Deere should work to improve their distribution channels domestically and internationally in order to meet the potential future demand. They can achieve this by focusing on customer needs and applying Six-Sigma precepts when analyzing the distribution chain.

Option #10

The capital goods industry is very cyclical. The agriculture equipment sector is a heavily capital intensive industry that usually lags the general level of the economy. The ability to which John Deere is able to react to sudden changes in the economic outlook will determine the level of success the company will have in the future. Accurately adjusting employment levels within the company and controlling overhead costs will give John Deere a competitive edge in the international arena.

Recommendations

Short-term

John Deere should start reducing its short-term debt so that the company will have more capital in order to stay competitive in the markets of the future. The uses of this capital can be used to maintain its hold on the agriculture market by increased spending in product development and process innovations. The ways that John Deere can decrease their short-term debt is by issuing more stocks and using the proceeds. This plan will not be easy to accomplish because it will undertake a lot of financial reorganization. Though the positives of this plan are John Deere can improve the financial stability of the company and increase their cash flows in the near future.

John Deere should also concentrate its efforts on the Internet market, in order to precedent in the industry and offer increased availability to its customers, where Deere's competitors are not equally established.

Long-term

John Deere should try to establish a strong base in the Asian markets; so it can benefit the company in the coming years. The reason for this is that Asian markets are modernizing, expanding their infrastructure and production capacities. To accommodate these tasks, the Asian economies will require modern and efficient products. This will in turn increase demand for agriculture equipment and increase the presence of John Deere in these developing markets.

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