



STEEL

AN INDUSTRY STUDY

Things you will learn from this whitepaper:

1. How does the advancement of technology affect the steel industry?
2. What are the current challenges facing the steel industry?
3. What is the expected demand for steel services in the immediate future?
4. How has firm consolidation affected the industry's landscape?

This whitepaper will have special interest to:

1. Attorneys consulting with steel firms considering mergers or acquisitions.
2. Judges presiding over business disputes & litigation cases.
3. Business mediators & arbitrators.
4. Financial & income tax advisors.
5. Those concerned with the valuation of steel firms.

Notice & Disclaimer

In a forensic accounting setting, the purpose of an industry analysis is to allow a comparison of the subject company to its industry. This comparison is vital to assess the strengths and weaknesses of the subject company, as well as its industry and company specific risks.

The following study contains a brief, selected analysis of the specified industry. It is based upon a review of current economic statistics, articles in the financial press, reviews found in current business periodicals and information posted on numerous internet sites. It does not purport to be all-inclusive or to contain all of the information which a prospective investor or lender may require. Projections and opinions are based upon information provided by third parties. We make no representations or assurances that this information is complete or accurate. Neither Mark S. Gottlieb, CPA, PC nor any of its officers, employees, or representatives make any representation as to the accuracy of completeness of this report or its contents, nor shall any of the foregoing have any liability resulting from the use of the information contained herein or otherwise supplied.

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Industry Overview



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According to the AISI (American Iron and Steel Institute), the U.S. steel industry is a \$50 billion enterprise, with additional downstream processing pushing this value closer to \$75 billion. The industry employs approximately 154,000 people nationwide. There are more than 1,200 firms operating in all but a few states, although the number of integrated mills (producing steel in basic oxygen furnaces) has always been relatively small and currently numbers around 20.

The number of steel products is very high and distributors typically specialize in the types of steel they carry. A large distributor—which typically has sales of \$50 million—may handle as many as 85,000 different products, according to First Research. According to Gale Group, nearly 90 percent of the 975 North American centers listed by *Purchasing* magazine have annual sales under \$100 million.

In addition to product vending, steel firms may also sell processing services, which customize products. Steel products include structural items like I-beams and rails, as well as “form” items such as bars, strips, sheets, spikes, plates, rods, nails and tubes. Given this wide array of offerings, most distributors specialize in the types of steel they carry.

Because of its durability, steel is most frequently used in the automotive and construction industries, with construction being the larger client market. The health of these industries has direct and significant bearing on the health of the steel industry. Today, steel is one of the most common materials in the world and serves as a major component in buildings, tools, bridges, skyscrapers, automobiles and appliances. Modern steel is generally identified by grades defined by various standards organizations.

As one of the largest energy consumers in the manufacturing sector, the steel industry accounts for 2 to 3 percent of annual U.S. energy consumption. About half of steel facilities conduct energy-management activities and the industry has invested more than \$7 billion in environmental controls to date. Ohio, Indiana, Pennsylvania, Illinois and Michigan have the highest steel shipments.

Operations

Once iron is discovered and examined in the earth, it is generally categorized for either surface or subsurface mining. The ore is extracted by mining syndicates, then shipped to metals services centers and mills, where pricing is determined largely by availability.

The steel industry consists of two types of mills: ore-based, or “integrated” mills, and electric arc furnace, or “scrap-based” mills. Operations in these facilities often include:

- Cutting-to-length
- Slitting
- Shearing
- Roll forming
- Shape correction and surface improvement
- Blanking
- Tempering
- Plate burning



- Stamping

While many mills handle a broad spectrum of metals, others deal exclusively in iron and steel. According to the Steel Service Center Institute (SSCI), almost 45 percent of domestically produced stainless steel and a full 30 percent of carbon industrial steel is purchased and distributed through metals service centers dealing exclusively in steel.

Customers are typically invoiced in their preferred unit of measure, whether it is pieces, pounds, hundred weight, lot, kilo, or any of several other measures. Steel producers must also accommodate labeling and packaging requirements specific to each customer, as well as any handling needs pertinent to an order. Detailed certification and mill test reports are commonly provided.

Industry Technology

Steel's major component is iron, with carbon serving as the primary alloying material. Although the overall carbon portion of steel is generally less than one percent, it is a necessary ingredient to prevent iron atoms from sliding past one another. Steel may contain other alloying materials such as silicon and manganese. It may also contain impurities like sulfur or phosphorus.

Steel first became a mass-produced good with the introduction of the Bessemer process in the mid-1800s. Although this process proved effective, steel became simpler and cheaper to produce with the advent of basic oxygen steelmaking 100 years later. This procedure sees oxygen fed to a furnace, limiting impurities and increasing the quality of the end product.

As scientific and manufacturing technologies improve, the industry benefits greatly. Most grades of steel manufactured today—particularly high-strength steels that are lighter and more versatile—were not available twenty years ago. Because steel manufacture requires enormous electrical output, most mills are located in areas where electrical supply is both cheap and abundant.

Technically, steel is 100 percent recyclable, and it does not lose any inherent physical properties through the recycling process. Because it has always been cheaper to recycle steel than to mine iron ore and alloy it with carbon to form “new” steel, the industry has been actively recycling for more than 150 years. Recycling reduces the annual energy consumption of the industry by about 75 percent, or enough to power 18 million homes for one year.

Electric arc furnaces have become the most common method of reprocessing steel, as well as other scrap metal. These furnaces can also be used for converting pig iron to steel, but this demands an even greater output of electricity.

Away from the batching floor, steel firms require unique software in order to gauge and designate inventory. Dimension, form, diameter, shape and density of metals are all data engaged and extrapolated by such programs. Software is also relied upon to identify which raw materials are necessary in filling orders, and to optimize metal cutting operations toward the minimization of waste.

In addition, industry-specific software may be relied upon for:



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- Automated optimization of remnant inventory
- Conversion of multiple units of measure
- Streamlining of heat, lot, and serial tracking
- Automatic printing of mill test reports

Programs record and evaluate detailed information on chemical, metallurgical and physical properties of steel. Tracking inventory up and down the supply chain is automated, as metal processors and service centers must be able to trace the origin and path of an inventory tag from its purchase order receipt to the customer's delivery ticket.

Workforce

The U.S. Department of Labor, Bureau of Labor Statistics reports that the steel industry's 154,000 workers comprise an annual payroll of roughly \$7 billion. Educational levels vary among workers, though a college degree is not required for many positions. A large share of workers claim technical training or certification, and the workforce is highly unionized.

Recent Trends

According to the U.S. Bureau of the Census, the domestic steel industry lost over 61 percent of its employees and 58 percent of its facilities from 1980 to 1994. This deterioration is generally accredited to a combination of new technologies, foreign competition and loss of market share to other materials.

Amid this difficult stretch, steel was hit hardest in the early 1990s, producing a run of mergers and acquisitions never before seen in the metals services sector. One prominent case saw Metals USA merge with Apollo Management, a private firm, in 2005. The following year, Reliance Steel & Aluminum purchased the remaining shares of American Steel, its subsidiary company. By 2007, there were less than half as many metals service centers as a decade before.

From the mid-1990s to 2001 a large number of U.S. steel firms collapsed. Among those that did not engage in merger activities, almost all reorganized internal operations or reduced raw material stocks and production capacities. A number of steelmakers had resorted to Chapter 11 bankruptcy protection by 2003.

As the economy began to warm again at the end of the 20th century, steel firms benefited appreciably. Statistics offered by the AISI report that U.S. steel mills shipped just over 9 million net tons at the close of 2003, an industry record. Steel shipments remained relatively level over the next few years, while aluminum shipments rose modestly. Since 2001, improved operating results combined with rising outputs and prices have driven revenue growth. In addition, falling per ton costs have led to improved margins.

Competitive Landscape



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The domestic steel industry is much more competitive today than twenty years ago. According to Datamonitor Research, industry streamlining alongside a dynamic “building” economy have placed firms in a stronger position than at any time in recent history.

This trend is best observed in improved operating results and hence, improved margins. Demand has risen from the strong growth of client domestic markets, as well as the rapidly expanding Chinese economy. According to Gale Group, producers have struggled to meet this surge in demand, resulting in market undersupply, and ultimately major price increases for iron and steel products.

Another factor benefiting domestic steel firms is the pervasive and rising concern that sustained U.S. economic growth and long-term prosperity is adversely affected by declining industrial competitiveness. State and Federal legislators, in a bipartisan agenda, have instated a variety of programs and policies directed toward improving U.S. industrial competitiveness over the past 20 years.

In addition to challenges from competing firms, steel producers must engage a unique set of challenges, including:

- The relative inflexibility of rules governing the industry’s labor force
- Stringent environmental requirements
- The costs of pensions and other benefits for retired workers
- Inherent high capital expenditures associated with integrated functions

The American Iron & Steel Institute (AISI)

The American Iron and Steel Institute serves as the voice of the North American steel industry in the public policy arena, advancing the case for steel in the marketplace as the preferred material of choice. For over a century, AISI has also played a prominent role in the development and application of new steels and steelmaking technology. AISI is comprised of 32 member companies—including integrated and electric furnace steelmakers—and 125 associate and affiliate members who are suppliers to or customers of the steel industry. AISI’s member companies represent approximately 75 percent of both U.S. and North American steel capacity.

According to its website, the AISI’s stated goals include:

- Providing high-quality, value-added products to a wide array of customers
- Leading the world in innovation and technology in the production of steel
- Producing steel in a safe and environmentally friendly manner
- Increasing the market for North American Steel in both traditional and innovative applications

Marketplace Websites



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In the past decade, several marketplace websites have emerged, most attempting to serve as an open forum for the steel industry. Such websites facilitate direct negotiations among members, expediting the penetration of new markets. In joining, firms seek to increase productivity, minimize transaction costs and more effectively cover broad markets. Larger sites, such as www.steelboss.com, enable buyers and suppliers direct real-time contact with other network members.

The Global Steel Industry

According to Datamonitor Industry Market Research, the global steel market reached a value of \$822.2 billion in 2004. Asia Pacific Steel, the world's leader in steel production, claims an output of 890 million metric tons annually, or half the global total. The global industry is highly fragmented, with the top four firms controlling less than 8 percent of the market. In terms of both value and volume, the market's largest sector is crude steel, which accounted for 58.1 percent of the market value share in 2004.

Mirroring the U.S. industry's trend, global steel experienced a heavy decline prior to 2002, followed by rapid growth to date. Much of this growth is due to an upsurge in demand from the rapidly expanding Chinese market. As in the U.S. market, heavy demand and undersupply produced large price increases for global steel through 2005, but as production levels increased and demand began to stabilize, steel prices came down.

Datamonitor anticipates that the global steel market will have a value of \$1.076 trillion in 2009, a 31 percent increase from 2004 levels. A full 33 percent of the world's steel is currently produced in China.

Industry Outlook

As a service industry, the relative health of the U.S. steel sector owes much to the greater disposition of the U.S. economy in any given moment. Both domestic and global demand for steel products should continue to grow as demand for commercial construction, steel's largest client, rises over the next decade.

On the domestic front, replacement of many industrial facilities has been delayed for years, while other structures need extensive remodeling. According to the Encyclopedia of American Industries, construction of healthcare facilities and residential homes for the elderly will be necessary to meet the requirements of an aging population. In fast-growing areas like the South and West, roads and municipal buildings are currently needed. Replacing and renovating schools in particular has begun to energize the market.

The recycling of existing steel caches should also provide the industry with substantial business in the years to come. Currently, about 75 percent of U.S. steel produced annually is recycled material, and this percentage is expected to rise as global demand for steel continues to swell. The generally held belief that a healthy domestic steel industry is vital to both economic competitiveness and national security should also carry the industry.



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As of early 2007, consolidation among firms seems to have leveled. Few domestic outfits are attractive to international firms, due to the high costs of pensions and benefits owed retired workers. Looking forward, most firms will focus on finding ways to streamline operations in order to increase margins. Finally, the recent emergence of foreign mills has provided greater purchasing options of raw materials while simultaneously blunting inventory costs. If these costs remain tenable and the economy continues to experience growth, the near future for the domestic steel industry appears bright.



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