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THE ROLE OF STEEL MANUFACTURING IN THE GLOBAL ECONOMY

A REPORT FOR THE WORLD STEEL ASSOCIATION

MAY 2019

worldsteel ASSOCIATION

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EXECUTIVE SUMMARY

This report, commissioned by the World Steel Association and prepared by Oxford Economics, looks at the role of the worldwide steel industry in today's international economy. Our study is unusual in being truly global, whereas most economic impact studies focus on the impact on a single country, or (at most) group of countries. Consequently, there is no import-related "leakage", as in a traditional study, as imports are cancelled out by exports at the global level.

This report is also noteworthy because it quantifies the share of key customer-sector activities that can justifiably be described as "facilitated by" the steel sector. This again sets it apart from "standard" economic impact studies, which do not attempt to measure these wider impacts.

THE GLOBAL STEEL INDUSTRY IS HIGHLY PRODUCTIVE

The steel industry is active in all parts of the world, transforming iron ore into a range of products that are sold for a total annual value of US $2.5 trillion. The industry employed more than six million people around the world in 2017, and the "added value" of its production processes totalled almost US $500 billion. This figure comprises the industry's employment costs, capital costs, and net profits, and is the standard way of allocating global or national output (GDP) between sectors.

Dividing this by the total number of workers, we find that the steel industry's productivity per worker exceeds US $80,000—three times the average across all sectors of the global economy.

IT HAS A FAR-REACHING SUPPLY CHAIN …

For every two jobs in the steel sector, 13 more jobs are supported throughout its global supply chain. In total, some 40 million people work within this supply chain.

But this is only one way in which the steel industry punches above its weight. It also has an unusually large global supply chain. This study calculates that, for every $1 of value that is added by work within the steel industry itself, a further $2.50 of value-added activity is supported across other sectors of the global economy, as a result of purchases of raw materials, goods, energy, and services.

We also find that for every two jobs in the steel sector, 13 more jobs are supported throughout its supply chain—meaning that, in total, some 40 million people work within the steel industry's global supply chain, generating over US $1.2 trillion of added value. This economic activity extends across multiple sectors and countries, far beyond the major steel-producing locations.

… AND ENABLES HIGH-VALUE ACTIVITY ACROSS MANY SECTORS

Steel is also a key input in the work of many other industrial sectors, which produce items essential to the functioning of the wider economy—including hand tools and complex factory machinery; lorries, trains, and aircraft; and countless items used by individuals in their everyday lives, from cutlery to cars. Steel is also used in the construction of homes and other buildings, bridges, pylons, and transmitters.

Therefore, to capture the full impact of the global steel industry, this study also analyses the use of steel in seven other key industries,[1] to estimate what value-share of these sectors' work is attributable to steel, *over and above* the simple value of the steel embedded in their products. We do this using both a "narrow" and a "broad" approach, to reflect different interpretations of the share of customer work that is made possible by the use of steel. These narrow and broad measures can be regarded as imposing minimum and maximum values on the share of customer activity that may be attributed to the use of steel.

3.8%

Share of annual global GDP accounted for by the steel industry, according to our narrow view.

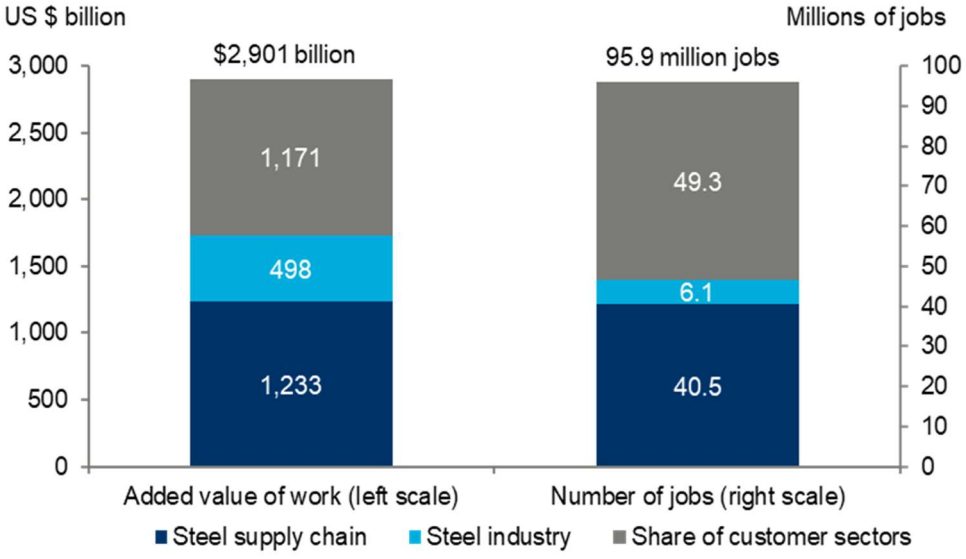
On this basis, steel's contribution was worth US $2.9 trillion in 2017, and supported 96 million jobs.

Narrow (minimum) approach

Our "narrow" approach assumes that the share of work facilitated by steel equates to the share of steel in each customer's total purchases of external inputs. By this metric, we estimate that the steel industry facilitated a further US $1.2 trillion of value-added output in 2017, and supported an additional 49 million jobs around the world.

Combining this finding with our earlier results, we calculate that the total value-added contribution either supported or facilitated by steel in 2017 was US $2.9 trillion (see Fig. 1). Equivalent to 3.8 percent of global GDP that year, this activity is estimated to have supported a total of 96 million jobs.

Fig. 1. Narrow measure of steel's global "value chain"



Source: Oxford Economics

By country of activity, China accounts for 36 percent of the steel industry's annual contribution to global GDP, the US for 11 percent, and Japan for nine percent. China also accounts for 36 percent of global jobs supported or facilitated by steel manufacturing, followed by India with 30 percent.

[1] The seven industries comprise the manufacture of metal products, mechanical machinery, electrical machinery, motor vehicles, other transport equipment, and domestic appliances, plus the construction industry.

Broad (maximum) approach

Our narrow approach may well understate the true economic importance of the global steel industry, however. Most production carried out by each customer sector would not be possible without the use of steel or an alternative material performing much the same function (for example, non-ferrous metals such as aluminium in motor vehicles). Therefore, we have also modelled a "broad" approach, which assumes that the steel industry's share of customer sector outputs equates to steel's share of this smaller group of essential external inputs, rather than all external inputs (as for our narrow approach).

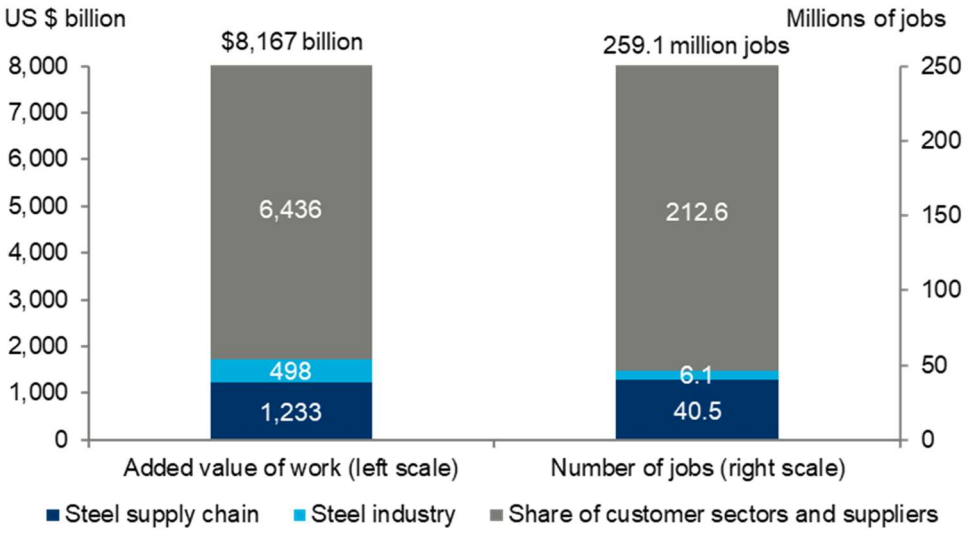
10.7%

Share of annual global GDP accounted for by the steel industry, according to our broad view.

On this basis, steel's contribution was worth US $8.2 trillion in 2017, and supported 259 million jobs.

On this basis, we estimate the value-added output facilitated by the use of steel in 2017 was US $6.4 trillion, with an associated 213 million jobs in the customer sectors and their (non-steel) supply chains. Combining this finding with our earlier results, we calculate that the total value-added contribution of the steel industry was US $8.2 trillion—equivalent to 10.7 percent of global GDP that year—and that it supported 259 million jobs (Fig. 2).

Fig. 2. Broad measure of steel's global "value chain"



Source: Oxford Economics

Under this broad approach, we find that China accounts for some 31 percent of steel's value-added contribution, the US for 11 percent, and Japan for 10 percent. But the pattern of steel-related employment by country is quite different, with China accounting for 45 percent of the global total, followed by India with 16 percent.