Strategy Analysis on the Development of the Stainless Steel Industry in Taiwan in the Face of the Rise of Steel Plants in Mainland China
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I. Introduction

Although the stainless steel products are included in the early harvest list of the ECFA, which will increase the sales competitiveness of Taiwan’s stainless steel products in China, the homogeneity of the stainless steel industry on both sides of the Taiwan Strait as well as low steel production cost and the prevalence of nickel pig iron in China create quite a challenge facing the stainless steel production in Taiwan. Together with the enormous production, if the ECFA can’t control the opening scale, the existing stainless steel demand in Taiwan will fall prey to China’s giant businesses. In addition, the rise and active globalization strategies of the stainless steel factories in China and South Korea present a threat to the stainless steel industry in Taiwan. Although both sides have signed the ECFA, which includes the hot- and cold-rolled stainless steel in the early harvest list, the stainless steel industry in Taiwan will not benefit from it, and may even immediately suffer losses caused by low-priced stainless steel from China. If the stainless steel companies in Taiwan can’t make the necessary breakthrough, they will not enjoy any gain from the ECFA. How will Taiwan’s stainless steel companies cope with the situation?

II. Trade analysis of cross-strait stainless steel

As China’s economy continues to grow swiftly and its domestic demand market prosers, its stainless steel production also climbed at a striking rate in 2006. China has become the largest stainless steel manufacturing country in the world, substantially affecting the stainless steel quantity exported from Taiwan to China. Figure 1 shows the import data of stainless steel cold- and hot-rolled steel plate coils from Taiwan to China in the past five years. We can see that the imports from Taiwan continue to slide, decreasing by 33%, 40%, 33%, 14% and 9%, respectively, from 2006 to 2010; the decrease in hot-rolled steel plate coils is even more drastic, plummeting from 350 thousand tons in 2005 to 90 thousand tons in 2007, and to merely 19 and 6 thousand tons in 2010 and 2012, respectively. The dramatic difference simply reflects the overproduction problem in China.

The cold-rolled steel plate coils didn’t drop as shockingly as the hot-rolled, but the exports to China also decreased from 380 thousand tons in 2005 to 140 thousand tons in 2009; Taiwan was the largest export country of cold-rolled steel plate coils to China from 2005 to 2007, while Japan
displaced Taiwan as the largest export country of cold-rolled steel plate coils to China in 2008 and 2009. Our export quantity to China declined year by year, from 40% in 2005 to less than 20% in 2012, reflecting the production increase of cold-rolled steel plate coils in China, as well as the rigorous competition of other countries that eats away the potential market.

![Graph](image.png)

**Figure 1. Analysis of the stainless steel import volume from Taiwan to China**

*Data source: Customs of the PROC, Compiled by the IT IS Plan of the Metal Industries Research & Development Centre*

公噸 tons

冷熱軋 cold- and hot-rolled combined

熱軋 hot-rolled

冷軋 cold-rolled

Though the inclusion of stainless steel products in the early harvest list of the ECFA slightly increases the sales competitiveness of Taiwan’s stainless steel products in China, the homogeneity of the stainless steel industry on both sides of the Taiwan Strait, the low steel production cost and the massive production of giant businesses in China will result in the erosion of the demand for Taiwan’s stainless steel industry if the ECFA can’t control the opening scale.

From another perspective, the relationship of the stainless steel products trade volumes and values between Taiwan and China is analyzed based on the import/export data of the customs in Taiwan, as shown in Figures 2 and 3. The same
trends are shown as those found from the customs of the PROC: our export volume to China declines continuously, decreasing by 34% from 2007 (370 thousand tons) to 2008 (245 thousand tons), remaining the same in 2009, and then declining steadily to 103 thousand tons in 2012.

Although the export volume to China was similar in 2008 and 2009, the export value in 2009 was only NT 19 billion dollars, having decreased by over NT 9 billion dollars compared to the export value in 2008; this was chiefly caused by the lowered average stainless steel price in 2009. The export value decreased to a mere NT 11.9 and 9.8 billion dollars in 2011 and 2012, respectively, once again reflecting the overproduction problem in China.

Figure 2. Analysis of the cross-strait stainless steel products trade volume

Date source: the Customs of the Republic of China, Compiled by the ITIS Plan of the Metal Industries Research & Development Centre

台灣自中國大陸進口量  Import volume from China to Taiwan
台灣對中國大陸出口量  Export volume from Taiwan to China
III. Current situation and trend analysis of the technology and products

In recent years, the continuous innovation of stainless steel production technology in Taiwan has kept lowering the consumption of raw materials and the required energy. With greater emphasis put on energy conservation and environment protection, greater corrosion resistance/ strength and high functionality of the materials, it can be predicted that stainless steel products will develop along the same trends in the future. In the aspect of energy conservation and environment protection, stainless steel products with high corrosion resistance will be developed, which will mainly be applied in the energy industry (e.g. water resources, nuclear energy, etc.) and the semiconductor industry. The stainless steels with greater corrosion-resistance/ strength will be largely applied in building, automobiles/ motorbikes, high strength self-tapping screws, etc. The high functionality will demand the development of stainless steel materials with greater cleanliness, more favorable price/performance ratio and for special purposes, which will be used in the stainless steel super fine wires, precision machinery industry, high valued electronic products and low-nickel stainless steel daily appliances. The
demand for stainless steel is predicted to substantially increase in the future owing to its excellent texture and durability; it is estimated that the output of the materials and related industries will reach NT 60 billion dollars in 2020.

The Twelfth Five-year Development Program of the High-end Equipment Manufacturing Industry printed and distributed by the Ministry of Industry and Information Technology of the PROC has brought a positive driving-force to the current seemingly stagnating stainless steel industry. The businesses are cautiously optimistic about the stainless steel market condition in the later period. From the Twelfth Five-year Development Program of the High-end Equipment Manufacturing Industry just issued, the said industry will gain the momentum of rapid development, which in turn will lead to strong demand for high-value steel grades, including stainless steel.

The Twelfth Five-year Development Program of the Rail Transit Equipment Industry points out that over 30 cities will construct 85 rail transit lines by 2015 according to the approved Urban Rail Transit Construction Plan in China; the total length will reach more than 2700 kilometers. It is predicted that over 1000 motor train units and more than 5000 high-power AC driven electric freight locomotives and diesel locomotives will be in demand during the twelfth five-year period; the passenger and freight vehicles, communication signals, large track maintenance machines and other equipment will also be in great demand.

The rail transit equipment industry has great demand for stainless steel because rail transit vehicles are largely made of stainless steel and aluminum alloy. Besides the traction beam, sleeper beam, center sill and other components under great stress which are still made of low-alloy steel, other parts of the stainless steel vehicles adopt stainless steel. The calculations based on the middle-sized B Type metro vehicles (19m long, 2.9m wide and 3.8m tall) total 25 tons of the steel consumption in the all-steel vehicle and 23 tons of the steel consumption in the stainless steel vehicle (including 7 tons of stainless steel) according to the steel consumption features of various vehicle types. Therefore, the rapid development of the rail transit equipment industry will enhance the stainless steel demand and support the smooth operation of the stainless steel industry. The current situation and trend analysis of the stainless steel technology and products in China and Taiwan show that the cross-strait stainless steel industry will develop with high added-value and applications in more extensive fields.
IV. Suggestions on the industrial development strategies

1. Tightly monitoring and controlling the import volume and price to prevent dumping in the domestic market at unreasonable low prices

The steel industry is always highly valued by the government because it is one of the important basic industries in Taiwan, and provides important raw materials to support the development of downstream industries. Taking the ECFA recently signed by the both sides as the example, we can see that the government thinks highly of the influences of the ECFA on domestic steel companies. The signature of the ECFA has brought advantages as well as disadvantages. The main advantage is the prevention of Taiwanese products being marginalized in the global trade market, and the guarantee of a fair competitive environment. Moreover, the import tariff of Taiwanese products into China will be eliminated in the future, which will favor product imports from Taiwan due to the lower relative import cost from Taiwan. This will also encourage Taiwanese businessmen to increase the purchase quantity of steel products from Taiwan, reducing the steel purchases of Taiwanese businessmen in China.

After the signing of the ECFA, it is inevitable that the steel product importation will be completely open step by step. The proprietors are more concerned about the impact of the massive entry of steel products from China on the domestic steel market. The government has been dealing with ECFA-related issues with caution. The Industrial Development Bureau and other government departments will also reinforce the management and monitoring of low-grade imported steels to reduce the impact on the proprietors to the lowest extent.

2. Establishing long-term cooperation relationship with upstream nickel raw materials manufacturers to guarantee stable source supply and develop new processes in order to achieve the goal of cost reduction

The rising demand for nickel alloy in the global market has led to the short supply of raw materials and dramatic rise in price. In order to resolve this problem, the domestic manufacturers should actively seek cooperative partnerships with upstream raw materials suppliers to ensure the stable supply of goods. As China will still use a large quantity of lateritic nickel ores in the future, the manufacturers are encouraged to innovate and develop relevant processes in order to achieve the goal of cost reduction.
3. Researching and developing niche products and adjusting the product structure

The manufacturers are encouraged to research and develop high added-value products to avoid the price competition of low-priced products, through the development of niche products such as special alloy steel, high pressure line steel and other high-grade steel, as well as the development of key technologies. On the other hand, the stainless steel product structure can be adjusted appropriately, which may involve reinforcing the development of 200 series and 400 series products to reduce the dependence on nickel, thus avoiding the fluctuation in the price of stainless steel.

4. Continuously developing the deep processing business of stainless steel

As far as the industry chain is concerned, the deep processing industry of stainless steel is interdependent and competitive with the downstream products enterprises. The steel production enterprises can establish stable, long-term alliance relationships with downstream enterprises through highly processed steel products, which will help to facilitate the development of new products, improve the quality and expand the market in the stainless steel industry, increase the value of the steel products towards the downstream and effectively improve the market competitiveness of the products.

V. Conclusion

Years of effort made by the proprietors and the government have established a stainless steel industry of considerable scale in Taiwan, which has transformed itself from the reliance on imports to an export orientation, and possessing considerable competitiveness in the international market. The domestic demand decreases due to industrial relocation, while exports face pressure by international trade protectionism. These two factors do not seem problematic when the global economy is in good shape, but will have to be seriously dealt with when manufacturers face a management crisis in a deteriorating economy.

The stainless steel consumption in China has entered the high growth stage, with its annual demand increasing considerably. The competitive and interactive relationship between both sides has profound influence on the long-term competitiveness of relevant manufacturers. However, the issues regarding domestic demand, the competition and cooperation between both sides and trade
protectionism can’t be controlled by proprietors themselves; rather they should be coped with by the government or trade associations. What manufacturers can do is to integrate relevant resources and capabilities, and try to improve the international competitiveness of the stainless steel industry through measures such as: mergers and acquisitions, alliance integration, development of niche products and supply-demand structure adjustment, as well as actively seeking diverse export markets.

The research and development technology in Taiwan is very mature. Although our ordinary goods are losing their edge in the competition with China, we should grasp the great opportunities offered by the newly released “energy conservation, emission reduction and new materials” and other related issues of China’s Twelfth Five-year Plan. These emerging application fields, including: high speed railway, urban rail transit, marine engineering and offshore oil exploitation, large and special-purpose ships and naval vessels, automobiles, clean energy, etc., will become the key development directions in the near future. If the Taiwanese manufacturers can win the business opportunities of stainless steel during China’s Twelfth Five-year Plan, the future will be as bright as it can be.