

China's Trade in Steel Products: Evolution of Policy Goals and Instruments

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Abstract

There is a growing consensus in development economics suggesting that successful economic policies feature a combination or succession of inward- and outward-oriented strategies. This article asks whether the Chinese government is pursuing such a mixed approach, which seeks to both harness opportunities from increased trade and investment and, at the same time, promote the development of domestic industries as well as import substitution. Following China's World Trade Organization accession, most export promotion measures became illegal. Policy makers were thus deprived of an effective tool for steering the international business activities of firms through administering incentive and control mechanisms. Their goal of promoting structural change in industries crippled by large overcapacity, low technology levels and low concentration ratios, was thus greatly complicated. Using the steel industry as an example, the article suggests that differentiated export steering continues to exist. It then goes on to ask under what conditions, in what ways and to what extent authorities are acting to harmonize firms' export behaviour with their long-term industrial development conceptions. The article finds that trade policy is not only product sensitive but dependent on technological sophistication, with high-tech products enjoying more favourable treatment.

Keywords: trade policy, import substitution, export promotion, development economics, steel industry

Introduction

Import substitution (IS) and export promotion (EP) approaches are staples in the debate on proper industrial policy in development economics. The goal of both approaches is to stimulate economic activity, upgrade production technology and ultimately, to increase living standards. To this end, both seek not only to augment the market for domestic manufactures but to accelerate its growth (Grabowski 1994). This, in turn, brings about static (economies of scale) and dynamic (learning curve effects) advantages that improve competitiveness and facilitate long-term growth.

Proponents of IS suggest the cultivation of a national industrial base behind protectionist barriers so that domestic manufactures gradually replace imports on the national market and self-sufficiency is achieved. As tariffs and non-tariff barriers to trade shield the domestic market from import competition, an overvalued currency reduces the price of necessary capital goods imports. Governments then subsidize and organize the production of labour-intensive light industrial goods for final consumption (first round IS) or target capital-intensive heavy industry goods (second round IS). Similar to Rock (1994) and Grabowski (1994), most authors support the idea of a gradual shift towards more sophisticated goods over time.

Under IS, companies face strong incentives to serve domestic rather than international markets, leading some to associate IS with inward-oriented development strategies. Conceptually, IS was based on the structuralist postulate that a strong domestic industrial sector represents a necessary step on the economic development path. It was also inspired by the Prebisch-Singer hypothesis, which claims that developing countries were permanently locked into a state of underdevelopment because of weak (and deteriorating) terms of trade at the hands of exploitative industrialized countries that redrew trade rules to their advantage (Prebisch 1950; Singer 1950). In the first decades following World War II, there was a 'general pessimism with respect to the potential of trade to promote rapid growth. Alternatively, there was general optimism with respect to the capabilities of the state to carry out effective development policy' (Grabowski 1994: 535). It was mostly Latin American governments that embarked on IS strategies to spark economic development and counterbalance the economic clout of the USA on the continent.¹ In retrospect, the Latin American IS experiment has been labelled largely a failure due to welfare losses and the prevalence of low productivity levels. In the 1980s, slow development progress and the failure to cultivate genuinely competitive infant industries led to the abandonment of IS and caused a reversal in policy orientation. Rodrik (2004) argues that while IS has produced some successes, it has also led to complacency, rent seeking and subsidy addiction in government-sponsored industries, generating market failures rather than successes.

Over the years, the international political-economic environment was reshaped by rigid regulations of the World Trade Organization (WTO) to reflect more closely the neoclassical ideal of liberal markets and discourage any deviations from national treatment policy.² In their assistance to

developing countries that had gone into debt and payment crises over the 1980s and 1990s, both the World Bank and the International Monetary Fund demanded the transition to market- and export-oriented policies as a precondition for emergency loans. While Robinson (2009) and Pack (2000) hold that IS strategies in East Asia have been more successful than in Latin America—due mainly to stronger government oversight and stricter punishment for underperforming firms—a World Bank Report (1993) concluded that IS produced inferior results compared to EP after evaluating industrial policy measures in eight Asian countries.

Export-led or outward-looking policies began replacing inward-looking ones in the late 1970s as optimism in states' ability to bring about development waned and confidence in the functioning of markets increased (Hogendorn 1992: 486-497). The reasoning underlying EP was to increase welfare by reaping efficiency gains from (1) organizing international trade along the lines of nations' comparative advantages, (2) augmenting the relevant market and facilitating scale economies by creating incentive neutrality between domestic and export sales, as well as (3) restricting the development of monopolies and other non-competitive market arrangements that thrive in protectionist environments (Krueger 1990: 288-292). Moreover, dynamic advantages are generated from knowledge spill-overs from increased exposure to foreign technologies and interaction with foreign counterparts. Furthermore, increased exports help generate the foreign exchange reserves necessary to import more advanced production equipment, which supports international competitiveness improving products and/or lowering costs.³ Additionally, with regards to administrative guidance and performance-oriented support policies, outward-oriented strategies allow for a more objective evaluation of corporate competitiveness and achievements than IS, where performance has to be measured using less reliable indicators, such as domestic market penetration.

Today, there is general agreement that developing countries have good reason to resort to both IS and EP in their industrialization process; after all, both approaches aim at augmenting the market for (selected) domestic manufactures. As pointed out by Rock (1994: 19), 'virtually all the successful export-led industrializers began to export manufactures within the confines of a state-led ISI strategy'. Numerous authors, such as Krugman (1984), Kubo, DeMelo and Robinson (1986) and Rock (1994) argue that IS has to precede EP for the latter to be successful. Following this line of argument, Grabowski (1994) maintains that developing countries trying EP from the very beginning of their industrialization would

fail since their manufactures could not meet international standards in terms of cost, quality or performance. Instead, he suggests that an initial IS phase should serve to accumulate knowledge and investment in order to improve product characteristics and boost competitiveness. This view, however, has increasingly become subject to criticism. Chu (1997) for example draws attention to the fact that East Asian economies that were widely cited for their successful industrial policies have practiced IS and EP approaches simultaneously and maintains that the distinction between the two concepts is misleading.

Following the examples of South Korea and other late-industrializing countries in broad terms, the Chinese case may appear to conform to the established combination of IS and EP. However, I argue that Chinese foreign trade policy is more complex than a generalized IS-cum-EP concept would suggest. First, reviewing regulation governing the steel trade,⁴ I find policy measures to be sensitive to value-added and technology content. In this regard, I hold that China does not pursue a one-size-fits-all strategy but follows a path of selective, product-specific steering to integrate trade policy into the overall industrial policy framework. Second, taking up the example of the steel industry, I identify relevant policy tools and examine how their use has shifted over time to cater to a new international trade environment defined by WTO regulations and the restrictive terms of China's accession agreement. Over the course of the article, I shed light on the various ways and means available to economic decision makers aiming to influence trade in ways conducive to an overarching industrial policy agenda.

The next section will first introduce the significance of the steel industry to economic development in China and make the case that it is a worthy target for leveraging industrial policy. Second, it will provide an overview of the development dynamics of the Chinese steel industry and present the two hypotheses inspiring the research. Section three identifies actual measures influencing exports and imports respectively. The concluding section will summarize the main findings, identify weaknesses of the current approach and point towards opportunities for further research.

Development Patterns of the Chinese Steel Industry

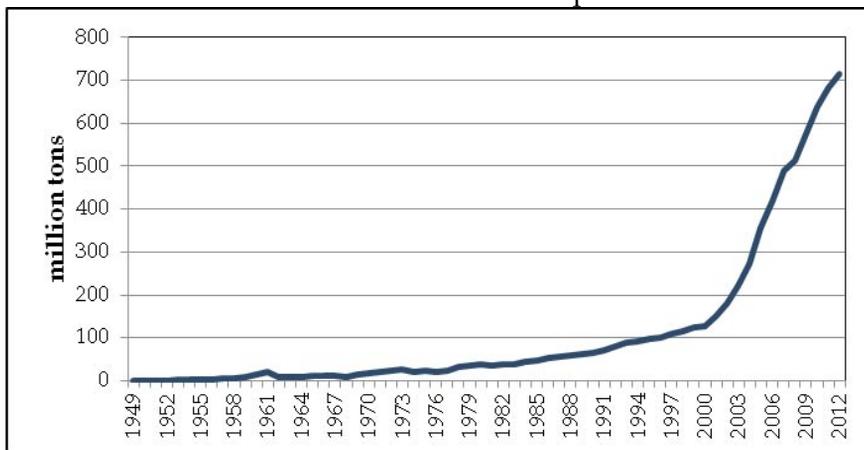
For much of China's post-World War II history, steel has been in short supply as reconstruction, rearmament, industrialization and later urbanization consumed large amounts of the material. Following the example

of the Soviet Union, China sought to kick-off its industrialization by developing heavy industry first. As the young People's Republic (PRC) was a predominantly agrarian country with little industrial backbone, pursuing the Soviet model of heavy industry-led development required substantial cross-sectoral resource transfers. As Lin pointed out (2009), the development strategy underlying the first five-year plans defied China's comparative advantage, which, as a labour-abundant but capital-scarce economy, would suggest a focus on light industry. The late 1950s even witnessed a nationwide mobilization of productive assets toward increasing steel output: the Great Leap Forward. More than any other event following the foundation of the PRC, the Great Leap Forward signified the strategic relevance of steel for national development, the political appreciation of this fact as well as the aspiration to control the steel industry by administrative means of the central command economy. After the onset of the Cold War, international trade, investment and knowledge spill-overs had been limited to exchanges with the former Soviet Union which had supplied China with materials and aided in the construction of several large integrated steel plants, such as the Wuhan Steelworks (Nolan 2001). The Sino-Soviet split of the early 1960s ended this phase and left China politically and economically isolated. The continued political confrontations with foreign powers were reflected in economic strategy as the improvement of defence capabilities assumed priority. Steel, as a material highly relevant for warfare, was attributed strategic value, which removed the industry even further from the economic rationality of free markets. The turmoil of the Cultural Revolution (1966-1976) greatly interrupted the operation of the steel industry while the radicalized political environment complicated any interaction with the outside world (Nolan 2001). As the political environment of the pre-reform era (1949-1978) had ruled out the EP approach, IS remained the sole option. Furthermore, it should be pointed out that due to the large size of its domestic market and frequent supply shortages, China did not face the limitations of narrow markets that existed in many Latin American countries and hence there did not exist an immediate need for export-led development in steel products.

After being cut off from the world market for a quarter of a century, the Chinese steel industry re-established international connections. At that point, it was not only too small to meet domestic demand but operating hopelessly outdated equipment and producing far below international quality standards (Nolan 2001). In the three decades that followed, the Chinese steel industry has witnessed remarkable growth and dramatic

improvements in production technology and product quality.⁵ Driven by burgeoning demand from nationwide urbanization and industrialization trends, output volumes skyrocketed. After surpassing Japan as the world's leading steel producer in 1996, volumes have continued to expand so that almost half of global steel output in 2012 took place in China (WSA, various years) (Figure 1).⁶ Due to space restraints, this article focuses on the period after China's accession to the WTO in 2001, as this event marked an important step in the reintegration of the Chinese steel industry into the world market. Future research should expand the scope to the first part of the reform era.

FIGURE 1: Chinese Annual Crude Steel Output since 1949



Source: World Steel Association (2012)

Chinese trade policy for the steel sector is oriented along the lines of four 'fundamental principles'. First, companies are urged to draft their strategies to target 'two markets and two resources' as a source of advantage. A common expression in Chinese policy documents, it urges firms to seize opportunities from leveraging procurement and sales both on the home market and abroad (NDRC 2005). Second, meeting domestic demand for steel products takes priority. Third, direct steel exports should be optimized, meaning that exporters should abandon resource-intensive, polluting, low-end goods and focus more on technology-intensive, high-value-added products. Finally, indirect exports should be expanded, indicating that the rising steel demand by export-oriented manufacturing industries should be satisfied, to indirectly expand steel exports (MIIT 2009).

I present two hypotheses that seek to deepen the understanding of trade policies related to steel products. Since it has started to look questionable whether China is pursuing an integrative approach com-

binning inward-and outward-looking elements, this issue drives the first hypothesis. From its inception, the development of the Chinese steel industry was heavily influenced by both inward-oriented policies, characterized by IS, and outward-oriented policies, aiming at EP. IS industrialization had been practiced for many years before China's accession to the WTO, at which point the local steel industry was still in a fairly weak position, crippled by low technological expertise and low quality standards. Considering that the bulk of the mills were confined to making low-and mid-range products by their production technology, it would seem reasonable to restrict imports in the upper market segments. According to the established logic of IS, such an approach would curb supply, drive up price levels and thereby strengthen incentives for companies to update their production technologies and upgrade their product portfolios. The higher profitability associated with high-grade products would have attracted additional investments and accelerated industry-wide upgrading processes. Furthermore, the strong export performance of the Chinese steel industry in the pre-crisis years suggests the existence of export management on the part of government authorities.

H1: Chinese foreign trade policy with regard to steel products relies on both import substitution and export management.

Since industrial policy for the steel sector displays a strong orientation towards fostering technological upgrading (NDRC 2005; MIIT 2009), it stands to reason that corresponding regulation exists in documents governing international trade flows. One major aim of the analysis is to find proof that trade policies share the same commitment to technology as domestically oriented ones. Consequently, the second hypothesis is as follows:

H2: Chinese foreign trade policy with regard to steel products is not uniform but crafted in favour of high-value-added, technology-intensive product categories.

The objective measurement of technical sophistication or technology intensity is difficult and bound to be misleading around the edges. Due to space restraints, here I will not make an attempt at conducting my own analysis but rely on a categorization of products by the China Iron and Steel Association (CISA), China's leading industry association for the steel sector, currently covering the 67 leading steelmakers and more than 80 per cent of annual crude steel output (Mysteel 2011). According to CISA, technology-intensive products include: cold rolled thin and wide strip/sheet, coated or clad sheet, electrical sheet and various

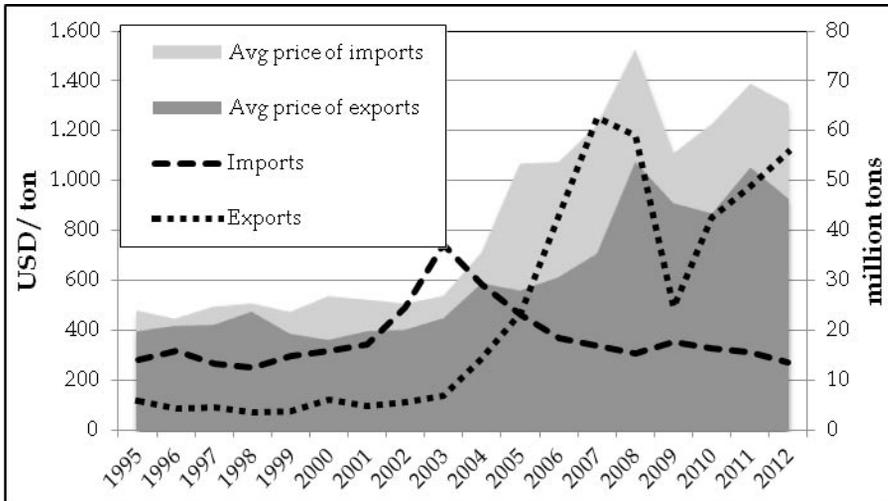
kinds of alloy steel. As for the low-tech segment, this article will focus on basic long products, e.g. rebar, and flat products, e.g. hot rolled strip, made of carbon steel without special surface treatment such as coating or plating (Shan 2010; Zhang 2008).

Regulation of the Steel Trade

Patterns of Foreign Trade in Steel Products

Since joining the WTO in 2001, China has emerged as a leading player in the international steel trade. The rapid increase in both inbound and outbound shipments was brought to a near halt by the global financial crisis. For five years between 2002 and 2012, China could claim the title as the world's largest exporter of steel products (World Steel Association 2012). Since its WTO accession, China has maintained a share of 12 to 15 per cent in overseas traded steel products in value terms. Over the same timeframe, export volumes never accounted for more than 12 per cent of domestic output (WSA 2012).⁷ On the other hand, import quantities have dropped substantially since 2003. However, because the average price per ton of inbound shipments has registered a series of increases, the total import value did not drop. This phenomenon reflects a shift towards imports of higher added value.⁸ As the average sophistication—and price per ton—of export shipments did not increase at the same pace, a significant gap has formed between average import and export quotations (see Figure 2). A pronounced discrepancy in the composition of inbound and outbound trade continues to exist as imports are still made up of technology-intensive wares, such as electrical steel or galvanized sheet, while exports consist of medium-grade products, such as hot rolled sheet or section steel (Shan 2010).

By joining the WTO, the Chinese government has accepted far-reaching constraints on industrial policy prohibiting subsidies to support individual companies, the micro-management of state-owned enterprises as well as certain IS and EP measures. As shown earlier, Chinese steel exports did not experience a major slump but, on the contrary, realized a stellar performance in the years following. Industrial policy makers on the other hand, have suffered a setback since they were deprived of effective tools for steering the international business activities of steel mills. Their attempts to promote structural change in an industry crippled by significant overcapacity, low technology levels and low concentration ratios, was greatly complicated (NDRC 2005; MIIT 2009). If

FIGURE 2: Chinese Foreign Trade in Steel Products in Volume and Value Terms

Source: General Administration of Customs (2012)

WTO regulations are interpreted as giving completely free rein to market forces, this does not hold much promise for domestic upgrading and export control efforts. Opening the pressure valve for surplus production, particularly at the low end of the product spectrum, would have undermined Chinese development strategies (and depressed international steel markets as well). Chinese authorities were thus faced with the difficult decision to either continue using the foreign trade channel for their developmentalist agenda or to give up control and incentive mechanisms and switch to a neutral stance.

As will be shown below, government actors, recognizing the influence of steelmaking on overall economic development and loath to forfeit control of foreign trade flows, have opted for a mixed approach. While major programmes originating in the pre-WTO era were discontinued as a concession to the changed regulatory environment, authorities have been and still are dedicating substantial resources to monitoring and managing the global market interface. Simple calls for limiting imports and promoting exports (SETC 2001a) that were the staple of policy documents of the pre-WTO era have become increasingly rare in recent years.

Import Substitution

Over the past decades, government agencies on various levels have undertaken major efforts to ensure that China could reach self-sufficiency in steel both in terms of quality and quantity. Until the early 1990s, steelmakers received assistance to ramp up production volumes.

Then the focus shifted towards improving quality and upgrading technology. Government patronage in the form of direct subsidies, policy loans, tax benefits or preferential access to vital inputs, energy, water, transportation infrastructure, etc. have undoubtedly helped to realize the spectacular expansion of steelmaking operations that has gradually displaced imports (Taube and in der Heiden 2010). The Development Programme for the Iron and Steel Industry during the 12th Five-Year Programme clearly demands that companies significantly improve product quality to meet the demand of major downstream industries and key national construction projects. Mass production should be realized in product segments with relatively high import shares, e.g. high-strength high-toughness steel for cars and various types of silicon steel, to achieve self-sufficiency ratios in excess of 90 per cent. In the fields of corrosion-resistant steel for shipbuilding, sheet for low-temperature pressure vessels, steel for wheels and bearings for high-speed trains, tubes for high-pressure boilers and other high-value-added products, 80 per cent of market demand should be satisfied from Chinese sources (MIIT 2011: 3.3.1).

Table 1 in the Appendix shows that IS has been largely achieved in almost all broad product categories. It is obvious that the reliance on imports has consistently been negligible in the low-tech categories, such as rod, bar and section products. As discussed earlier, capacity expansion took hold first and progressed fastest in the basic low-value-added segments. Three reasons can be identified to explain why these goods constitute a logical starting point for IS: (1) they are rather unsophisticated and thus easy to make; (2) they sell at comparatively low average prices per ton. In the case of imports, this implies that a fairly large transportation and tariff cost component would have to be added on top of a fairly low sales price; and (3) demand volumes for these products are exceptionally large in China, with most orders coming from the construction industry. Consequently, in terms of sales volume, these products have long constituted the largest individual market segments from the early days of steel development in China until the present day.

Noticeable is the marked reduction in the import penetration in coated sheet and electric sheet. Still these two technology-intensive areas have the largest gap between domestic demand and production capabilities. It is remarkable that self-sufficiency in cold rolled thin sheet and coated sheet was expanded over the last five years. These products are widely used in downstream manufacturing, such as the motor vehicles and household appliances industries, which have registered dynamic out-

put increases over the same time. Motor vehicles are up 150 per cent, refrigerators, 75 per cent and washing machines, 106 per cent (NBS, various years).

After establishing that a certain degree of IS in steel should be regarded as a necessary condition to support national development, I now turn to analyse IS policies in the larger context of technological upgrading. The two objectives of technological upgrading and IS were major elements of China's industrial policy for the steel industry and went hand in hand before the country's WTO accession. In the 1980s, ill-equipped and unable to meet the quality demands of its customers, Chinese steelmakers were slow to prevent strong import dependence in many high-value-added product categories. Government agencies reacted with normative calls and practical measures to remedy this situation. As such, the substitution of imported steel products was actively pursued before China's WTO accession.

During the 1980s and 1990s, the Chinese government **set up dedicated steel companies** to reduce import penetration for specific products it deemed important for national development. One such example was the shortage of high quality seamless pipes with applications in oil well drilling and pipeline construction that inspired the foundation of Tianjin Pipe Group Corporation. The pronounced import dependence was considered an obstacle to the development of China's fledgling petroleum industry. Hence the strategic decision was made to set up a local pipe supplier.⁹ To achieve self-sufficiency in this product segment, the establishment of Tianjin Pipe was designated a key project in the 8th Five-Year-Plan. The goal was met and the reliance on imports dropped sharply, from 90 per cent in 1993, the year before Tianjin Pipe began operating, to about 20 per cent in 2004. Today, Tianjin Steel Pipe Group, located in Tianjin's Economic and Technological Development Area, is a leading supplier of corrosion-resistant steel pipes, both to the domestic and the international market (Dewey and LeBoeuf 2007: 58).

In 1987, a **steel import substitution policy**¹⁰ was introduced to encourage major export-oriented downstream industries, such as machinery, automotives and appliances, to replace steel imports with domestically sourced materials. Strong growth in these sectors had driven up demand for high-value-added, high-quality steel products, which had to be supplied from the world market. Aiming to stimulate the modernization of the steel sector, the government seized this opportunity to promote modernization in the small, high-end-segment of the steel market. A few dozen large state-owned steel producers were

selected to participate in a programme that refunded the full 17 per cent of value added tax (VAT) paid on domestic sales, once the final goods containing the steel products were exported. Thanks to these special VAT rebates, mills could lower their prices and expand their market shares in the important mid- to high-end product segment. In this way, companies like Baosteel managed to step up their production of stainless steel, hot-dipped galvanized sheets and other technology-intensive steel products widely used in the production of goods sold in the global market (Dewey and LeBoeuf 2007).

According to the State Bureau of Metallurgical Industry, 27 steelmakers participated in the Import Substitution Programme in 1999. Under the terms of the programme, these companies delivered 3 million tons of steel to the export manufacturing industry (Asia Pulse 2010). Following China's WTO accession, the programme was scaled back since it was not only in violation of WTO regulations but had also become obsolete considering the rapid development of the domestic steel industry. When the IS scheme was finally abolished in July 2005, basic self-sufficiency had been achieved across most product categories. It was reported that the programme had successfully substituted Chinese steel for imports and absorbed an estimated 30 million tons of domestic steel production. In total, the companies entitled to participate in the scheme had benefited from a combined tax exemption of RMB 12 billion. Statistics indicate that the import share of domestically consumed steel declined substantially while the policy was in place. In this way it looks to have brought about a significant benefit to Chinese steel mills (Dewey and LeBoeuf 2007).

In another attempt to enlarge the market shares of domestic mills vis-à-vis import competition, the **Programme for Industrial Structural Adjustment during the 10th Five-Year Plan**, released in 2001 as a supplement to the 10th Five-Year Plan, calls for an active IS strategy. The programme spells out in detail the central government's vision for the future development of several industrial sectors, including the steel industry. In the section titled 'Guiding Thoughts and Basic Principles', the programme urges steelmakers to develop the relatively large number of technology-intensive, high-value-added products that thus far had to be imported and increase their market shares in these areas (SETC 2001b). At the time, most Chinese steel mills did not possess the advanced technologies and production expertise to comply. Consequently, the programme called for more international cooperation to tap modern technology and speed up development. Consequently,

Chinese companies were encouraged to utilize foreign funds, resources, technologies and scientific management experience to strengthen their competitiveness (SETC 2001b).

As late as 1999, the central government enforced an **import ban on steel products that could be produced inside China**. Additionally, total imports were limited to a mere 7 million tons. Furthermore, imports were governed by an import licensing programme and substantial import tariffs (SETC 1999). Regulations in Hebei Province, China's steel production heartland, continued to prohibit imports of products that could be made locally until the country's WTO entry (Hebei Province 2000).

The three programmes presented here are proof of the government's determination to improve technological capabilities at local mills to drive up their market shares and reduce import dependence in steel. After 2001, formal programmes were either discontinued or scaled back to meet WTO obligations that demanded the termination of subsidies linked to the use of domestic over imported goods (WTO n.d.: Art. 3). With regard to IS, the regulations also stipulate that import approvals must not be connected to the existence of domestic suppliers and that no specific performance requirements can be maintained. At the same time, calls for domestic companies to improve their market position in the face of foreign competition both at home and abroad remain frequent and explicit.

Even though calls from the central government agencies to strengthen IS have stopped in recent years, documents of several provincial and local governments indicate that they remain in favour of this approach. Shandong Province is a case in point. Provincial authorities formally asked companies to upgrade their product portfolio to better meet the steel demand of several industries, such as the automotive, home appliance, shipping container, construction and equipment manufacturing industries. In a first step, enterprises should focus their efforts on the development of high-grade hot rolled thin sheet, cold rolled thin sheet, galvanized sheet, colour coated sheet and other products needed in the market. In general, mills should strive to replace imports where domestic production falls short of meeting demand (Shandong Province 2006). Three years later, in 2009, Shandong Province again endorsed IS in its 2009 Adjustment and Revitalization Programme for the Iron and Steel Industry. A passage encouraging companies to enhance their innovativeness, accelerate the introduction of advanced technologies and increase technology content particularly invites companies to focus attention on key steel products in order to supplant imports.

References to IS need not be limited to indicative calls but may also affect actual projects. This can be demonstrated in the case of Hanzhong Steel, located in Shaanxi Province. In the spring of 2005, provincial authorities gave the green light for an extensive technology renovation project the company was planning. Founded during the 4th Five-Year Plan period and reaching an annual crude steel capacity of 1.5 million tons by the time it filed its application documents in 2005, the company urgently needed to upgrade its production processes. In its approval statement, the provincial development and reform commission elaborated that the construction of a planned rolling mill for certain flat products should serve to reduce imports by 1.5 million tons annually (Shaanxi Province 2005).

CISA continues to voice support for displacing imports by domestic production. In February 2008, its chairman, Zhang Xiaogang (CISA n.d. (b)) urged companies to actively promote the replacement of imports by domestic production (Zhang 2008). In February of 2009, while speaking at a CISA conference, he reiterated his remarks, firmly endorsing IS (Zhang 2009). In February 2010, CISA chairman Deng Qilin (CISA n.d. (a)) called upon steel companies to promote product development in order to (1) meet urgent demand from national key development projects, (2) satisfy the demand of downstream industries to support growing exports and (3) to displace imports of like products wherever possible (Deng 2010). Overall, it seems that the rather blunt language of the past has been replaced by far more specific statements. As recently as July 2010, Shan Shanghua, secretary general of CISA, demanded that research activities relating to the manufacturing of corrosion-resistant, high-strength steel plate for application in oil tankers should be intensified to break the monopoly of foreign suppliers. Furthermore, Chinese steel mills should strive to displace imports of heavy plate used in the manufacturing of equipment for hydropower stations with domestically produced materials (Shan 2010; CISA 2010). In a press statement issued by CISA earlier the same year, the organization praised Baosteel and Wuhan Steel for their innovativeness and research breakthroughs that led to proprietary intellectual property rights relating to high-grade, grain-oriented silicon steel commonly used for making large-scale super-high-pressure transformers of 500 kilovolts and more. Both companies were commended for their efforts to expand production volumes to replace imports of like products (CISA 2010).

While these appeals have no binding effect and are purely indicative in nature, they communicate to steel companies and the wider public that IS continues to be desirable. Besides praising successful cases of

import displacements, CISA also found more concrete ways by which to guide individual companies to contribute to IS. In this regard, CISA is distributing information concerning steel imports to its member companies, which include the 67 largest and most advanced steel mills from across the country. According to CISA's own announcement, the reports disseminated on a regular basis contain information on product types, quality specifications and trade flows that may serve as a guideline for companies (Deng 2010).

Trade Measures Targeting Exports

In reviewing the instruments applied by Chinese government agencies to influence export patterns, it is necessary to distinguish between measures restraining and promoting exports. While Chinese industrial policy makers have a large arsenal of export-restricting tools at their disposal, this paper will only present those instruments that have been employed in governing steel exports. I first introduce the measures by giving a brief outline of their operating mechanism. Next their relevance and contribution to the implementation of industrial policy will be presented.

Export restrictions

Since the beginning of the reform era, the Chinese government has reserved the right to supervise and influence the magnitude and composition of the flow of goods leaving the country. In der Heiden and Taube (2011) have outlined in detail some of the instruments employed to curb the exportation of steel-relevant raw materials and semi-finished products. They have illustrated that central ministries and commissions, with the Ministry of Industry and Information Technology (MIIT), the National Development and Reform Commission (NDRC), the Ministry of Finance (MOF), the General Administration of Customs (GAC) and the State Administration of Taxation (SAT) as key players, are actively managing the regulatory environment that shapes companies' incentives to export. In the case of steel-relevant commodities, a major rationale for export barriers was the bottling up of materials in the domestic market. The resulting oversupply, combined with the undersupply in overseas markets, opened a price gap that provided a cost advantage to Chinese downstream producers vis-à-vis the foreign competition. Furthermore, this practice supported the policy objectives of streamlining industry structure, upgrading production technologies and improving environmental performance by pushing small, polluting and low-quality producers out of business.

Export licenses, quotas and duties are the most important instruments in the government's toolbox and have been employed to direct shipments according to policy priorities and macroeconomic situations. In der Heiden and Taube (2011) have shown that export restrictions have been tightened as authorities have tried to curb the outflow of resource-intensive and polluting products. In a flexible reaction to changing circumstances, authorities relaxed—if not reversed—export restrictions during the economic downturn following the global financial crisis so as to accommodate ailing steelmakers.

Hot rolled strip exports were first subjected to restrictions in the form of export duties in May 2007. Following the stepwise reduction and eventual abolition of VAT rebates, authorities imposed a 5 per cent tax on exports. In all, the elimination of VAT rebates initially set at 13 per cent and the introduction of export duties reduced export margins by 18 per cent with a depressing effect on exports volumes. As in the case of VAT rebates described earlier, the government's stance on exports became more favourable in the face of the world economic crisis: export duties were scrapped in December 2008 to ease the burden on export trade.

Export promotion

In the process of reviewing a sizable number of official documents governing foreign trade, several EP programmes were identified. In its 'New and Full Subsidy Notification' to the WTO (2006), the Chinese government made no mention of programmes administered by local governments or privileged treatment by financial institutions. In reply to criticism from several of its trading partners, the authorities have stated that insufficient information was available to provide complete information on local programmes (WTO, various years). While this may or may not be the case, the fact remains that due to a lack of transparency, it is difficult to identify export subsidy schemes administered by lower levels of government. Such programmes are maintained based on internal administrative measures and relevant information is likely not publicized.

In an attempt to ease the promotion of technology-intensive products of various industries, in 2000 the Chinese government compiled two lists to classify technology-intensive products. The first list, the **Catalogue of High and New Technology Products**, targeted the domestic market and was intended to speed up the development of high-tech industries, encourage the creation of high-tech products, direct investments towards high-tech activities and increase the competitiveness of domestic high-

tech products. It contained several steel products, such as high-speed heavy rail, large H-section and anti-fingerprint galvanized sheet. The second list, designated **Catalogue of High and New Technology Products for Export** contained a separate set of technically sophisticated products and served as the basis for EP measures, helping authorities to manage, upgrade and expand high-tech exports (MOFTEC et al. 2000). In 2003 and 2006, the latter catalogue was expanded and numerous steel products were added. The most recent version, which was still in force at the time of writing in June 2011, heavily features coated products, such as tinplate and galvanized sheet in various dimensions. The catalogue also lists stainless steel sheet, alloy steel products and special steels, such as gear steel and spring steel (MOFTEC et al. 2006).

Comparing the two catalogues, there is little overlap except in coated products. The fact that the steel products contained in both catalogues differ does not necessarily contradict the idea that foreign trade related policy measures are in sync with an overarching industrial restructuring framework since different patterns of demand and competition may dictate the promotion of different kinds of high-value-added steel products at home and abroad. It can thus be argued that the promotion of high-tech exports is considered an end in itself and pursued independently from general efforts to upgrade the product portfolios of Chinese firms. However, in late 2009, the Ministry of Science and Technology announced its intention to merge the two catalogues to end the dichotomy (MOST 2009).

In 2005, eight central ministries and administrations jointly launched a **programme to build up and promote famous export brands**. This decision was inspired by the strong promotion effect developed country brands have on the success of their international sales, not least in China, and based on the experience of Chinese exporting companies. While Chinese branded products had become successful in the domestic market, almost none were known outside China when the programme was drafted in 2004. Furthermore, relatively low quality levels, weak innovative capacity and the absence of established brands had been found to impede export performance. Consequently, establishing the 'Key Export Brands to be Cultivated and Developed by the Ministry of Commerce' (hereafter referred to as export brands) set out to support Chinese companies in exploring international markets and expanding exports through the building up of famous exports brands (MOFCOM et al. 2005). To achieve this aim, the initiating document introduced a comprehensive set of preferential policy measures, several of which are discussed briefly below. Because

the document does not target specific industries but looks at Chinese exports from a very broad perspective, not all of the measures listed are applicable to steel mills. Consequently, the focus will be narrowed down to cite measures applicable for the steel sector.

Exporters participating in the pilot programme were encouraged and supported to upgrade their technologies and innovative capacities, to improve their international marketing abilities and to expand exports of products with their own export brands. It was envisioned that over the five years (until 2010), the share of exporting companies with proprietary brands and the proportion of exports with proprietary brands should both double from their 2005 levels to reach 40 per cent and 20 per cent respectively (MOFCOM et al. 2005). While all exporting companies were encouraged to meet the basic preconditions for managing proprietary brands by, for example, registering trademarks overseas, undergoing quality and environmental certification or setting up international sales networks and after sales services, a small number of major companies were chosen for the formation of successful export brands in a signature project. The 'Export Brand Development Fund' was set up specifically to support enterprises in the formation of proprietary brands and the development of famous export brands (MOFCOM et al. 2005).

Companies selected for participation could benefit from numerous advantages. They were: (1) granted preferential allocation of import and export quotas; (2) preferred in government procurement activities in all areas and at all levels of public administration; (3) supported in enhancing research and development activities and improving innovative capabilities; (4) assisted in the procurement of advanced technology and key equipment; (5) helped to continuously increase technology content and value added of famous export brand products; (6) granted preferential access to subsidized loans from both the Technology Renovation Project and the Research and Development Fund for Export Products; (7) supported in the establishment of state-level technology centres; (8) given access to the Foreign Trade Development Fund; and (9) encouraged to present themselves at domestic and international trade fairs, conduct advertising in overseas target markets and establish overseas operations for marketing and after sales services (MOFCOM et al. 2005).

Furthermore, the Administration of Quality Supervision, Inspection and Quarantine gives priority to the exemption of famous export brands from inspection if companies can meet certain conditions. The General Administration of Customs provides a channel to ease and speed up customs procedures. Banks and insurance companies are encouraged

by the government to ease access to financing and insurance services. The China Export Credit Insurance Company is encouraged to treat famous export brand companies as 'key clients', develop customized service offerings to cater to their individual needs, grant discounts on relevant fees and give priority to providing value-added services. Chinese embassies and consulates overseas should provide further support by conducting research on industries and markets and communicating relevant information to famous export brand companies. If one of these firms plans to launch sales in a particular foreign market, local embassies and consulates should offer guidance and help. They should also seize every opportunity to promote the famous export brand.

Considering the comprehensive nature of this programme, we can expect that participating companies may benefit substantially. Like all the EP measures presented here, the 'famous export brand' policy has a strong bias towards technology-intensive products and could thus serve to advance upgrading in the steel industry in accordance with general industrial policy. Research has revealed that at least one steel mill, Tianjin Steel Pipe Company, has been accepted into the national programme (MOFCOM 2005a). At this stage it is not possible to determine how successful attempts at establishing famous export brands have been.

The initiating document of the Famous Export Brand programme specifically called for lower level governments to implement similar programmes and launch their own famous export brands. The city of Ma'anshan, located in Anhui Province and home to Ma'anshan Iron and Steel Group, one of China's largest steelmakers, is such a case. As late as July 2008, the municipal government released the initiating document for the local version of the famous export brand programme. While the document largely echoes the original text drafted at the central government level, citing the same motivations and expressing the same expectations, the scope of support measures announced is smaller. The assistance measures to be mobilized by local authorities, however, include a one-time cash reward and fiscal support channelled through a special fund to create famous export brands. Authorities have pledged assistance to companies pursuing activities such as applying for international certifications, trademark registrations, marketing campaigns or participation in Chinese and overseas trade fairs. Since technological upgrading plays a major role in the programme's concept, with regard to the procurement of advanced technologies and equipment, the government of Ma'anshan promises to endorse applications of local

projects to support funds administered at the provincial or national level. In the same vein, companies admitted into the local programme will be recommended for acceptance into the provincial and national programmes. Ma'anshan Iron and Steel Group, one of China's leading steelmakers with 17.2 million tons of crude steel output in 2012, was among the first six companies accepted into the programme in the first selection round (Ma'anshan City 2008). After the regular two-year participation period had expired at the end of 2010, the company was re-admitted for another two years. In this way, Ma'anshan Iron and Steel Group was eligible for the support measures until the end of 2012 (Ma'anshan City 2011).

The Chinese government has sought to offset negative effects of the domestic VAT to exporters. As in der Heiden and Taube (2011) have illustrated, **VAT rebates** have been provided selectively on certain product groups and in line with general industrial policy. Complementing export restriction measures, VAT rebates were eliminated for low-value-added, polluting or resource-intensive goods. On the other hand, they were maintained or raised for technology-intensive, high-value-added products. In der Heiden and Taube (2011) have shown that VAT rebates are frequently adjusted to support industrial policy objectives—namely enhancing/ diminishing the international competitiveness of goods endorsed/ discouraged by government authorities—but also serve to shore up exports as a whole in the face of demand shocks. Finally, the tool was determined to be employed to accommodate the demands of foreign trade groups clamouring for defensive action from their governments against a flood of Chinese imports.

Furthermore, the provision of **export insurance by the state-owned China Export & Credit Insurance Corporation** (Sinasure) may be regarded as an additional mechanism creating export incentives by lowering the risks associated with international sales. Sinasure, established in late 2001, is the official export and credit insurance company in China and has a service network covering the whole country. In 2008, the last year for which data is available, the sum insured totalled USD 62.8 billion and covered 3.4 per cent of Chinese exports. According to its official website:

Sinasure is mandated, in accordance with the Chinese government's diplomatic, international trade, industrial, fiscal and financial policies, to promote Chinese exports and investments, especially exports of high-tech or high value-added capital goods, by means of offering export credit insurance against non-payment risks, and providing services in financing, information and receivables management. (Sinasure 2011)

As stated in its company profile, Sinosure's mission is to promote the export of Chinese goods, first and foremost in the high-value-added and high-tech segment, in accordance with government policies including industrial policy. In its 2008 annual report, Sinosure claims to support the development of key industries, contribute to the upgrade of trade and focus on promoting exports of high- and new-tech products as defined by the Chinese in the Catalogue of Chinese High-tech Export Products (Sinosure 2009). With regard to the steel industry, Sinosure has confirmed that black metal smelting and rolling processing are among a set of twenty industries serviced. In a nutshell, there is little doubt that Sinosure serves to support the implementation of industrial policy objectives specifically by assuming commercial export credit risks and thus facilitating high-tech exports (WTO 2008).

The Ministry of Commerce (MOFCOM) and the MOF have established the **Export Credit Insurance Assistance and Development Fund** to improve access to and reduce the costs of insurance services (MOFCOM 2005b). In 2006, both ministries called (1) to further enhance the effectiveness of the programme, (2) to widely distribute information concerning its benefits, (3) to motivate more enterprises to take advantage of preferential terms and (4) to find and solve problems in its implementation (MOFCOM and MOF 2006). Provincial authorities have also made use of the programme to stimulate local export activities. In Jiangsu Province, the scheme is jointly operated by the department of finance, the economic and trade department and the Jiangsu branch of Sinosure acting as a co-organizer. According to an official statement, the Nanjing branch of Sinosure reports accepted projects to the provincial government twice a year. This should serve as an indication of the close relationship between public administration and Sinosure's local business units (Jiangsu Province 2003). As a result, export credit insurance fees are heavily subsidized: enterprises associated with the provincial government are even entitled to a 50 per cent discount and provincial authorities have urged lower administrative levels to take corresponding measures in their jurisdictions (Jiangsu Province 2003). In 2006, the discount on insurance fees for exporting firms associated with the provincial government of Jiangsu was reduced to 30 per cent. However, this discount could be increased by an additional 10 per cent if exports were destined for emerging markets.¹¹

As pointed out earlier, Sinosure's services are also an important component of the comprehensive support package for companies taking part in the Famous Export Brands programme. In order to best integrate

Sinosure into government dealings with supported companies, effective coordination mechanisms have been established on all administrative levels. These mechanisms then allow Sinosure to facilitate contact with target companies in the programme, collect information on their individual needs and explore how export credit insurance could contribute to their development. In Jiangsu Province, the departments of finance and foreign trade and economic cooperation jointly work out specific policy measures to best apply export credit insurance support to individual companies. This implies that Sinosure's insurance fees are subsidized by local authorities. Companies in the brand programme receive special attention and are regarded as 'key clients' by Sinosure. As such, the latter works out customized service offerings and treats the needs of brand companies with great care and on an individual basis. Furthermore, the insurer assists companies in establishing risk management systems and provides them with risk analyses on overseas target markets. As far as fees are concerned, Sinosure offers a special discount of 10 per cent on its regular fees for client companies assigned to it by central and provincial governments. Due to space restraints, it is not possible to elaborate further on the close relationship between Sinosure, the authorities and target companies. However, from this brief outline it is clear that Sinosure is tightly involved or even co-opted in a system aimed at supporting the firms selected for the Famous Brand Programme (MOFCOM and Sinosure 2005; MOFCOM and Jiangsu Province 2006).

Export tax credits

To attract foreign direct investment, China maintained separate enterprise income tax laws for foreign invested enterprises (FIEs) until 2008. This allowed FIEs to benefit from tax refunds contingent upon exports. The regulations encouraged exports by offering export-oriented companies that reinvested their profits to expand production in China a refund of the proportion of the enterprise income tax paid on the reinvested amount (WTO 2006). In a similar fashion, FIEs exporting more than 70 per cent of their annual production value were eligible for an enterprise income tax rate of 15 per cent, about half the regular rate. Furthermore, FIEs already enjoying a reduced tax rate, for example, due to their location in special economic zones or economic and technology development zones, were taxed at only 10 per cent.¹²

Since foreign investment in the steel industry was tightly restricted and subject to a case-by-case approval process, Chinese authorities had a free hand in directing investment projects towards the high-value-

added product segments. According to the Development Policy for the Iron and Steel Industry, promulgated in 2005, foreign investors had to possess advanced technological capabilities and their own intellectual property to receive approval (NDRC 2005). Consequently, with regard to the steel industry, the preferential tax arrangements for FIEs were limited to a relatively small group of companies engaged in technology-intensive manufacturing.

Several Chinese provinces operate special **export support funds** allocated in the provincial budget. All schemes identified in the course of the research for this paper are limited to companies registered inside the respective provinces, engage in the production of either high-value-added products or technology-intensive products.

Liaoning Province launched an Export Development Support Fund in August 2001 (Liaoning Province 2001). The fund is supposed to help reach strategic export targets specified in the 10th Five-Year Plan of Liaoning Province and encourage local enterprises to further expand their export activities. All projects eligible for funding must stimulate export growth as well as strengthen and consolidate the position of Liaoning companies in international markets. Key products, key enterprises and goods from key regions are targeted. More precisely, funding projects should serve (1) to encourage the export of major 'backbone' products with a large impact on economic development, (2) to consolidate existing international market shares, (3) to defend and develop exports to important customers, (4) to encourage the formation of scale advantages in exports, and (5) to encourage the export of famous, high-quality and branded products. If all the conditions can be met, the participating company can receive a six-month loan (or a 12-month loan under certain conditions) with privileged conditions handed out through financial institutions commissioned by the government.

To create export incentives, the government of Hunan Province handed out **prizes based on export performance**. These were awarded to local companies that registered exceptionally strong export growth in the preceding year. The programme was launched in 2005 and discontinued in 2008 (Hunan Province 2005).

Conclusion

The analysis of policies employed by Chinese authorities to influence the volume and composition of exports has confirmed that trade policy is formulated to support the overarching industrial policy framework

aimed at developing and upgrading the steel industry. In 2010, the State Council demanded that regulations governing imports and exports of steel products be crafted to conform and contribute to several general objectives. Specifically, foreign trade policies should aim (1) to ensure sufficient supplies to satisfy domestic demand, (2) to promote energy conservation and pollution reduction, (3) to control total production capacities, and (4) to help eliminate outdated, obsolete capacities (GOSC 2010).

While ample evidence was found for an active EP strategy, solid references to IS policies have been elusive for much of the period under review. While government documents and state-sponsored industry associations spell out objectives for import substitution, this research did not locate concrete information on related support or enforcement mechanisms. The review of policy measures has suggested that this is the result of a fairly recent policy shift, since it was shown that China used to pursue a more balanced approach before 2001. IS industrialization had been practiced for many years before China's accession to the WTO, but most official programmes were phased out prior to 2001 or were scaled down to become practically irrelevant. Two reasons may be identified for this phenomenon. First, the general restrictions on trade policy and the additional obligations spelled out in China's accession agreement severely narrowed the policy space and called for far-reaching cutbacks of state intervention. Second, and more importantly, the Chinese steel industry has expanded in terms of both quantity and quality to meet (and exceed) domestic demand in almost every product segment. The increase of self-sufficiency over the past decade suggests a waning need for IS. The pronounced emphasis on EP, which is given expression by a number of promotional schemes, can be interpreted as an attempt by policy makers to drive technological upgrading and improve the international competitiveness of Chinese firms. This finding, to some extent, invalidates the idea that the abolition of IS was driven by China's WTO accession.

Strong evidence was found to support the second hypothesis. Chinese trade policy targeting steel products is clearly crafted in favour of high-value-added, technology-intensive product categories. During the review of trade policy measures aimed at restraining steel product exports—either directly by administrative order or indirectly by undermining their competitiveness on world markets—it has become clear that technology-intensive, finished products have been less affected. However, this has to take into account a gradual tightening of standards

that has narrowed the range of products qualifying *de facto* as technology-intensive. While practically all kinds of galvanized sheet or stainless sheet were considered high-value-added and technology-intensive five years ago, modern conceptions will grant this attribute only to wide diameter sheets while relegating narrow diameter products to mid-tech status. In 2008 and 2010, VAT rebates were lowered for certain narrow diameter galvanized sheet and stainless strip.

Nevertheless, technological sophistication should not be regarded as the only guideline for product-sensitive export restrictions and promotions. In 2009, as the steel industry and its export businesses were hit by the global economic downturn, government measures to ease export restraints also covered rather basic steel products, such as hot rolled strip. This suggests that changes of the macro environment also play a significant role and can lead to a relaxing of the general dichotomy between more and less favourable treatment for high- and low-tech exports respectively. It is also conceivable that pressure from escalating trade disputes targeting Chinese exports of certain technology-intensive products, such as various kinds of seamless and welded pipes, has contributed to a reduction in VAT rebates.

Drawing lessons from the case of the Chinese steel industry to aid development economists or political decision makers in other late industrializing countries is difficult. While the Chinese steel sector was bound to practice IS for the better part of three decades in the pre-reform era, economic opening in late 1978 for the first time provided decision makers with the opportunity to choose IS, EP or both. Since domestic steel demand far outstripped production capacities over the first two decades of the post-reform era, an export-led strategy clearly was not in the best interest of national development. Practicing development-oriented governance, successive leadership generations crafted industrial policies to ensure that domestic demand could be met. Safeguarding an ample supply for national development objectives consistently took precedence over commercial ambitions to expand exports.¹³ A key lesson to draw from this episode would be that development-minded governments should prioritize the domestic steel supply over exports, as long as domestic supply shortages persist.

Due to the continental dimensions of its national territory, its extraordinarily large population and the relatively low level of development at the onset of reforms, steel market volumes have been immense. Furthermore, thanks to 30 years of rapid and unabated economic growth, industrial planners for the steel industry were in the fortunate position

of not having to worry about how to expand markets. The combination of these two critical success factors implied that international trade would not need to take centre-stage as both static and dynamic advantages could be exploited from serving the home market alone. Putting developmental considerations above commercial ones, driving up exports across the board has not been as high a priority. This is a stark departure from the harsh realities confronting the much smaller and less populous developing Latin American countries. However, the unique dimensions of the Chinese steel market do not imply that its development does not hold lessons for other countries.

Logic has it that not even the Chinese steel industry can benefit from high economic and demand growth indefinitely. As steelmakers have greatly expanded their technological capabilities and advanced into more and more specialized product segments, it was realized that the domestic market is, in fact, too small and growing too slowly. For years, industrial policies and corporate strategies have aimed to upgrade technologies and fill the few remaining white spots in product portfolios. The consequence was a torrent of fixed asset investments which have led to the formation of overcapacities that have first engulfed the lower rungs of the product spectrum but gradually went on to plague even some of the most sophisticated product categories, e.g. certain types of silicon steel. The urge of the Development Programme for the Iron and Steel Industry during the 12th Five-Year Programme, to crowd out imports and achieve self-sufficiency rates in excess of 90 per cent have to be understood in this context. However, the absence of evidence for concrete IS policies suggests that the opportunity costs of practicing IS have become prohibitively high. A return to the IS practices of the past would not be feasible for other developing countries, especially as many are benefiting from assistance programmes financed by the United States, the European Union, the World Bank or the International Monetary Fund, where trade protectionism is ruled out.

A major lesson that can be learned from the present case is that trade policy should be closely integrated into a general industrial policy framework. In the Chinese case, both have been mutually supportive with favourable outcomes. A second and related lesson pertains to product-specific policies, which have proven highly effective in the Chinese context. Here, it has become visible in the field of export restrictions rather than promotion. Faced with a severe overcapacity crisis in the lower rungs of the steel market, the Chinese government has chosen to restrict exports and thus accelerate the necessary indus-

try restructuring and consolidation. By bottling up raw materials and semi-finished products inside the home market, authorities indirectly lowered input costs of downstream processing industries and indirectly subsidized their technological upgrading.

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NOTES

- 1 Dressed as an infant industry argument, IS approaches were at the core of Alexander Hamilton's Report on Manufactures to the US Congress in 1791 and Friedrich List's National System in 19th century Germany. Baer (1972) and Chang (2002) have argued that all of today's industrialized countries had IS episodes in their histories.
- 2 'National treatment' stipulates that imported and domestically produced goods must be treated equally. Discrimination against imports through non-tariff barriers is thus ruled out.
- 3 Amsden (2001) even argued that the productivity increases which underlie successful economic development in developing countries mainly originate from obtaining, understanding and applying advanced foreign technologies.
- 4 While the scope of this article is limited to the review and evaluation of industrial policy strategies targeting the steel industry, it should be pointed out that governing the latter should not be regarded as an end in itself. Instead, developing and guiding the steel industry may well be considered an intermediate objective, aimed at supporting the strengthening of downstream industries. As a supplier of vital products to the newly defined set of pillar industries, including renewable energy generation or new vehicle propulsion systems, the steel sector is set to play an important-if secondary-role over the coming five years until 2016 (NPC 2011).
- 5 The Chinese steel sector accounts for a relatively large share of employment, gross industrial output value and capital investments. Employment has oscillated around 3 million formal employees between 1991 and 2011 and steel mills have gained importance as employers in the manufacturing sector, with the proportion of jobs increasing from 5.6 to 8.8 per cent over the same time. Key output indicators, such as gross industrial output value and value added, have also risen in recent years, with steel smelting and rolling accounting for 8 to 10 per cent of the manufacturing total sector in 2011 (NBS, various years).
- 6 The dramatic cutbacks in most other countries around the world certainly contributed to this situation.
- 7 In 2011, Japan and South Korea exported 38 and 42 per cent respectively (WSA 2012).
- 8 Imports in 2009-and to some extent also in 2008 and 2010-were elevated due to large inflows of steel products from South Korea, Russia and Ukraine. Under the influence of the world economic crisis, the won, ruble and hryvnia have all depreciated relative to the Chinese yuan, strengthening the competitiveness of their respective steel products on the Chinese-and world-markets.

- 9 Xinhua, 25 Dec. 2004. 'Model for the Reform of State-owned Enterprises–Tianjin Pipe Group: From Creating to Producing'. Available from: http://news.xinhuanet.com/newscenter/2004-12/25/content_2378799.htm, accessed 4 May 2013.
- 10 In 2002, the former State Economic and Trade Commission, together with other central government agencies, announced that the 'Steel Import Substitution Policy' would be renamed the 'Special Steel for Processing Exports Policy'.
- 11 North America, the European Union, Japan, Hong Kong, Macau, Taiwan and bonded areas inside China were explicitly excluded. An additional 10 per cent was granted for agricultural exports or exports of large-size electronic devices, ships or manufacturing equipment.
- 12 MOF, 1994, Detailed Implementation Rules of the Income Tax Law of the People's Republic of China of Foreign Investment Enterprises and Foreign Enterprises.
- 13 In this respect, it is highly relevant that the bulk of steel production, albeit with a decreasing proportion, rested in the hands of state-owned companies. In fact, in 2012 for the first time in post-World War II history, the output of non-state-owned mills exceeded that of state-owned mills.

REFERENCES

- Amsden, Alice 2001. *The Rise of 'The Rest': Challenges to the West from Late-Industrializing Economies*, Oxford University Press, 2001.
- Asia Pulse 2000. 'China achieves steel import substitution plan' 20 March.
- Baer, Werner 1972. 'Import Substitution and Industrialization in Latin America: Experiences and Interpretations'. *Latin American Research Review* 7(1): 95-122.
- Chang, Ha-Joon 2002. *Kicking Away the Ladder. Development Strategy in Historical Perspective*. London: Anthem Press.
- China Iron and Steel Association (CISA) n. d. (a) Resume of Comrade Deng Qilin. Available from: <http://www.chinaisa.org.cn/index.php?id=270>, accessed 10 May 2013.
- CISA n. d. (b) Resumé of Comrade Zhang Xiaogang. Available from: <http://www.chinaisa.org.cn/index.php?id=461>, accessed 10 May 2013.
- CISA 2010. Press release for the first news conference of CISA in 2010 (9 Feb.). Available from: <http://www.chinaisa.org.cn/news.php?id=2159858>, accessed 8 May 2013.
- Chu, Wan-wen 1997. 'The East Asian Miracle and the Theoretical Analysis of Industrial Policy: A Review', Mimeograph, Academia Sinica Taipei. Available from: <http://idv.sinica.edu.tw/wwchu/SURVEY.pdf>, accessed 31 July 2013.
- Deng, Qilin 2010. Jiakuai jiegou tiaozheng zhuanbian fazhan fangshi cujin gangtie gongye kechixu jiankang fazhan [Accelerate structural adjustments, reorient the development model and promote sustainable and healthy development in the iron and steel industry] Speech at the 2010 Conference of the Executive Council of CISA, 5 Feb. Available from: <http://www.chinaisa.org.cn/gxportal/DispatchAction.do?efFormEname=ECTM40&key=UzANMlkyUDEBYA11AGcDYIM3A2BWMltsBDZSZ1A3Um8EFwpFDBdSYgobDkkCFQFj>, accessed 31 July 2013.
- Dewey and LeBoeuf LLP 2007. China's State-Directed Expansion in Oil Country Tubular Goods: A Case Study. Report prepared for IPSCO. New York: Dewey and LeBoeuf.
- General Administration of Customs 2012. Haiguan tongji zixun wang [Customs statistics consulting network] Available from: http://www.chinacustomsstat.com/Aspx/1/NewData/Trade_Index.aspx, accessed 31 July 2013.
- General Office of the State Council (GOSC) 2010. Guanyu jinyibu jiada jieneng jianpai lidu jiakuai gangtie gongye jiegou tiaozheng de ruogan yijian [Several opinions concerning further strengthening energy conservation and emissions reduction efforts

- and accelerating the structural adjustment of the iron and steel industry], GuoBanFa No. 34. Available from: http://www.gov.cn/zwgk/2010-06/17/content_1629386.htm, accessed 31 July 2013.
- Grabowski, Richard 1994. 'Import substitution, export promotion, and the state in economic development'. *The Journal of Developing Areas* 28(4): 535-554.
- Hebei Province (General Office of the People's Government) 2000. Guanyu qingli zhengdun xiao gangtie chang de tongzhi [Notice concerning the rectification of small iron and steel plants], 10 March.
- Hogendorn, Jan 1992. *Economic Development*. New York: Harper Collins Publishers.
- Hunan Province (Department of Finance and Department of Commerce) 2005. Guanyu yinfa 'Hunan sheng waimao chukou fazhan zijin guanli (zanxing) banfa' de tongzhi [Notice concerning the promulgation of the preliminary measures of Hunan province for the administration of foreign trade and export development funds].
- in der Heiden, Peter and Markus Taube 2011. 'China's Iron and Steel Industry at the Global Market Interface: Structural Developments and Industrial Policy Interventions'. *The Copenhagen Journal of Asian Studies* 29(2): 110-142.
- Jiangsu Province 2003. Guanyu jinyibu zhichi kaifangxing jingji fazhan ruogan zhengce de yijian [Several opinions of the People's Government of Jiangsu Province on further supporting the development of economic opening]. *SuZhengFa* 43, 15 May.
- Krueger, Anne 1990. 'Trade Policy as an Input to Development'. *American Economic Review* 80(5): 288-292.
- Krugman, Peter 1984. 'Import Protection as Export Promotion: International Competition in the Presence of Oligopoly and Economics of Scale'. In Henryk Kierzkoushi (ed.), *Monopolistic Competition in International Trade*. New York: Oxford University Press, pp. 180-193.
- Kubo, Yuji, Jaime DeMelo and Sherman Robinson 1986. 'Trade Strategies and Growth Episodes'. In Hollis Chenery, Sherman Robinson and Moshe Syrquin (eds.), *Industrialization and Growth: A Comparative Study*. New York: Oxford University Press, pp. 148-187.
- Liaoning Province 2001. Guanyu jianli Liaoning sheng chukou fazhan fuchi zijin de tongzhi [Notice concerning the set-up of the Export Development Support Fund of Liaoning Province], LiaoZhengFa No. 34, 15 Aug. Available from: http://www.ln.gov.cn/zfxx/zfwj/szfwj/200801/t20080124_160599.html, accessed 31 July.
- Lin, Yifu 2009. *Economic Development and Transition: Thought, Strategy and Viability*. Cambridge, UK: Cambridge University Press.
- Ma'anshan City (Department of Commerce) 2008. Guanyu Ma'anshanshi 6 jia qiye ronghuo Ma'anshan chukou mingpai chenghao de gongshi [Notice concerning the award of the title famous brand for export of Ma'anshan to six companies], 26 Dec. Available from: <http://www.mofcom.gov.cn/aarticle/difang/anhui/200812/20081205978833.html>, accessed 31 July 2013.
- Ma'anshan City (Department of Commerce) 2011. Guanyu shouyu "Magang"pai deng 8 ge pinpai wei Ma'anshanshi 2011-2012 nian chukou mingpai chenghao de tongzhi [Notice of the People's Government of Ma'anshan City Concerning Awarding the Ma'anshan Steel Brand and Eight Other Brands the Title Famous Brand for Export of Ma'anshan], *MaZhengMi*, No. 1, 6 Jan. Available from: <http://zwgk.mas.gov.cn/?index/view/234631>, accessed 31 July 2013.
- Ministry of Commerce (MOFCOM) 2005a. Report No. 3, Beijing: MOFCOM.
- MOFCOM 2005b. Guanyu tiaozheng chukou xinyong baoxian fuchi fazhan zijin zhengce de tongzhi [Notice concerning the restructuring of export credit insurance assistance development fund policy], *ShangGuiFa*, No. 61.
- MOFCOM and Jiangsu Province 2006. Guanyu liyong chukou xinyong baoxian fuchi

- wosheng chukou mingpai fazhan de shishi yijian [Implementation guidelines concerning employing export credit insurance in supporting the development of famous export brands of Jiangsu Province], *SuWaiJingMaoCai*, No. 849, 13 Nov.
- MOFCOM and Ministry of Finance 2006. 2006 nian chukou xinyong baoxian fuchi fazhan zijin zhengce de tongzhi [Notice of MOFCOM and MOF concerning the export credit insurance assistance development fund policy in 2006], *ShangCaiFa*, No. 455, 14 Sept.
- MOFCOM and Sinosure 2005. Guanyu liyong chukou xinyong baoxian fuchi chukou mingpai fazhan de tongzhi [Notice concerning employing export credit insurance support in supporting the development of famous export brands], *ShangMaoFa* 2005, No. 332, (24.06.2005).
- MOFCOM et al. 2005. Guanyu yinfa 'guanyu fuchi chukou mingpai fazhan de zhidao yijian' de tongzhi [Notice concerning the promulgation of the 'Guiding opinions on supporting the development of famous export brands']. *ShangMaoFa*, No. 124.
- MOFCOM et al. various years. Zhongguo gaoxin jishu chanpin chukou mulu [China catalogue of high and new technology products for export].
- Ministry of Foreign Trade and Economic Cooperation et al. (MOFTEC) 2006. Zhongguo gaoxin jishu chanpin chukou mulu [Catalogue of high and new technology products for export]. GaoKeFajiZi No. 16. Available from: http://www.most.gov.cn/fggw/zfwj/zfwj2006/200512/t20051220_55439.htm, accessed 31 July 2013.
- Ministry of Foreign Trade and Economic Cooperation et al. (MOFTEC) 1999. Zhongguo gaoxin jishu chanpin chukou mulu [Catalogue of high and new technology products for export]. GaoKeFaJiZi No. 565. Available from: <http://law.people.com.cn/showdetail.action?id=2600049>, accessed 31 July 2013.
- Ministry of Industry and Information Technology (MIIT) 2009. Gangtie chanye tiaozheng he zhenxing guihua [Adjustment and revitalization programme for the iron and steel industry]. Available from: http://www.gov.cn/zwggk/2009-03/20/content_1264318.htm, accessed 31 May 2013).
- MIIT 2011. Gangtie chanye "Shi Er Wu" fazhan guihua [Development Programme for the Iron and Steel Industry during the 12th Five-Year Programme]. Available from: http://www.gov.cn/zwggk/2011-11/07/content_1987459.htm, accessed 31 May 2013.
- Ministry of Science and Technology (MOST) 2009. Guanyu bianzhi 'Zhongguo gaoxin jishu chanpin mulu' de tongzhi [Notice concerning the drafting of the 'Catalogue for high and new technology products'] .GuoKeBanJi No. 61. Available from: http://www.most.gov.cn/tztg/200910/t20091009_73551.htm, accessed 31 July 2013.
- Mysteel 2011. Crude steel output of key large and medium-sized iron & steel enterprises of China in Jan-Dec 2010, 26 Feb.
- National Bureau of Statistics (NBS) various years. *China Statistical Yearbook*. Beijing: NBS.
- National Development and Reform Commission (NDRC) 2005. Gangtie chanye fazhan zhengce [Iron and Steel Industry Development Policy] Order No. 35. Available from: http://www.sdpc.gov.cn/zcfb/zcfbl/zcfbl2005/t20050719_52618.htm, accessed 31 July 2013.
- National People's Congress (NPC) 2011. Zhonghua renmin gongheguo guomin jingji he shehui fazhan di shi er ge wu nian guihua (gangyao) [Twelfth national five-year programme for economic and social development of the People's Republic of China]. Available from: <http://www.ndrc.gov.cn/fzgh/ghwb/gjjh/P020110919592208575015.pdf>, accessed 31 July 2013.
- Nolan, Peter 2001. *China and the Global Business Revolution*. New York: Palgrave.
- Pack, Howard 2000. 'Industrial Policy: Growth Elixir or Poison?' *World Bank Research Observer* 15(1): 47-68.

- Prebisch, Raul 1950. *The economic development of Latin America and its principal problems*, Lake Success, NY: United Nations.
- Robinson, James A. 2009. 'Industrial Policy and Development.' Paper presented at the 2009 World Bank ABCDE Conference, 22-24 June, Seoul.
- Rock, Michael T. 1994. 'Transitional democracies and the shift to export-led industrialization: Lessons from Thailand' *Studies in Comparative International Development* 29(1): 18-37.
- Rodrik, Dani 2004. 'Industrial Policy for the Twenty-First Century.' CEPR Discussion Paper 4767. London: Centre for Economic Policy Research.
- Shan, Shanguhua 2010. Jiakuai jiegou tiaozheng zhuanbian fazhan fangshi nuli shixian woguo gangtie gongye kexue fazhan [Accelerate the structural adjustment, reorient the development model and diligently work towards realizing the scientific outlook on development in the domestic iron and steel industry] Report at the third conference of the eighth Executive Council of the China Iron and Steel Association, 2 Aug. Available from: <http://www.chinaisa.org.cn/gxportal/DispatchAction.do?efFormEname=ECTM40&key=B2QKNQtgUDECYwYxYzhQMqF1VzZhQMqF1VzQDZ1tsXmwBNgdIVmMBEgtEXkVSYldGAUZQRwVn>, accessed 31 July 2013.
- Shandong Province 2006. Jiakuai gangtie gongye jiegou tiaozheng de zhidao yijian [Guiding opinions concerning the acceleration of restructuring the iron and steel industry]. LuZhengBanFa No. 118, 28 Dec.
- Shandong Province 2009. Shandongsheng gangtie gongye tiaozheng zhenxing guihua [Adjustment and Revitalization Programme for the Iron and Steel Industry of Shandong Province]. LuZhengFa, No. 45, 21 April.
- Shaanxi Province 2005. Guanyu Hanzhong Gangtie Youxian Gongsi jiegou tiaozheng peitao jishu gaizao xiangmu de pifu [Approval of the Development and Reform Commission of Shaanxi Province Concerning the Supplementary Technology Renovation Project of Hanzhong Iron and Steel Co., Ltd.], ShaanFaGaiGongYe, No. 195, (21.03.2005).
- Shijing Weilai 2012. 2012 nian gangtie hangye fengxian fenxi baogao, Beijing: Shijing Weilai.
- Singer, Hans 1950. The distributions of gains between investing and borrowing countries. *American Economic Review* 40: 473-485.
- Sinosure 2009. Annual Report 2008. Beijing: Sinosure.
- Sinosure 2011. Company Profile. Available from: <http://www.sinosure.com.cn/sinosure/english/Company%20Profile.html>, accessed 1 May 2013.
- State Council 1991. Zhonghua renmin gongheguo waishang touzi qiye he waiguo qiye suodeshuifa shishi xize [Detailed Rules for the Implementation of the Income Tax Law of the People's Republic of China for Enterprises with Foreign Investment and Foreign Enterprises] Order No. 85. Available from: <http://www.china.com.cn/chinese/MATERIAL/241084.htm>, accessed 31 July 2013.
- State Council 2003. Zhonghua renmin gongheguo jinchukou guanshui tiaoli [Regulations for import and export duties of the People's Republic of China] Order No. 392. Available from: http://www.gov.cn/zwggk/2005-05/23/content_180.htm, accessed 31 July 2013.
- State Economic and Trade Commission (SETC) 1999. Guanyu zuohao gangtie gongye zongliang kongzhi gongzuo de tongzhi [Notice concerning doing a good job in controlling total production capacities in the iron and steel industry] GuoJingMaoYunXing No. 29. Available from: <http://policy.mofcom.gov.cn/blank/claw!fetch.action?id=G000073115&industrycode=509425;C03210;C03220&secondcode=511004;120007>, accessed 31 July 2013.
- SETC 2001a. Guanyu Yinfa 2001nian gangtie zongliang tiaokong mubiao he shishi

- yaodian de tongzhi [Notice Concerning Promulgation of Important Aspects for the Implementation of Adjusting and Controlling Total Production Capacities in the Iron and Steel Industry in 2001] GuoJingMaoYunXing No. 46. Available from: <http://law.people.com.cn/showdetail.action?id=2561979>, accessed 31 July 2013.
- SETC 2001b. Guanyu Fabu "Shi-wu" gongye jiegou tiaozheng guihua gangyao' de tongzhi [Notice Concerning the Publication of the Outline of the Program for Industrial Structural Adjustment during the Tenth Five Year Plan] GuoJingMaoHangYe No. 1125. Available from: http://www.gov.cn/gongbao/content/2002/content_61660.htm, accessed 31 July 2013.
- Taube, Markus and Peter in der Heiden 2010. *China Steel Inc. – State-owned and state-run?* Marburg: Metropolis.
- World Bank (ed.) 1993. *The East Asian Miracle*. Washington, DC: The World Bank Press.
- World Steel Association (WSA) (ed.) 2012. *World Steel Yearbook*. Brussels: World Steel Association.
- World Trade Organization (WTO) 2006. *New and Full Notification Pursuant to Article XVI:1 of the GATT 1994 and Article 25 of the SCM Agreement of the People's Republic of China*. Document-symbol G/SCM/N/123/CHN. Available from: https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S009DP.aspx?language=E&CatalogueIdList=29992,11721,521,73571,61766,59602,67305,97140,104493,105001&CurrentCatalogueIdIndex=5&FullTextSearch=, accessed 31 July 2013.
- WTO 2008. *Trade Policy Review–Report by the Secretariat: China*, Document-symbol: WT/TPR/S/199. Available from: http://www.wto.org/english/tratop_e/tpr_e/s199-00_e.doc, accessed 31 July 2013.
- WTO various years. *Notifications of the People's Republic of China on Export subsidies*. Geneva: WTO.
- WTO 1994. *Subsidies and Countervailing Measures in WTO 1994. Agreement establishing the World Trade Organization, Annex 1A Multilateral Agreements on Trade in Goods*, pp. 229-272 . Available from: http://www.wto.org/english/docs_e/legal_e/24-scm.pdf, accessed 31 July 2013.
- Zhang, Xiaogang 2008. Work report presented at the 2008 extended executive council meeting of the China Iron and Steel Association, 18 Feb.
- Zhang, Xiaogang 2009. Work report presented at the 2009 extended executive council meeting of the China Iron and Steel Association, 20 Feb.

APPENDIX

TABLE 1: Degree of Self-sufficiency in Various Steel Product Categories (in %)

	2007	2008	2009	2010	2011
Railway steel products	96.33	98.12	94.89	95.48	96.17
Large sections	95.73	95.99	96.03	95.36	97.43
Small & medium sections	99.80	99.83	99.92	99.92	99.84
Bar products	99.05	98.98	99.46	99.37	99.35
Rebar	99.95	99.97	99.95	99.96	99.97
Wire rod	99.18	99.31	99.47	99.37	99.45
Super heavy plate	97.63	98.41	98.76	99.21	99.14
Medium plate	97.54	98.12	98.28	98.52	98.28
HR thin sheet/strip	95.54	96.64	91.58	97.43	98.59
CR thin sheet/strip	87.62	89.03	88.55	91.82	92.74
HR narrow strip	99.58	99.64	99.80	99.72	99.74
CR narrow strip	92.67	94.51	95.79	96.12	97.08
Coated/plated sheet/strip	74.19	77.26	84.56	84.76	87.83
Clad sheet	89.57	75.67	91.34	86.13	47.26
Silicon steel sheet/strip	79.11	80.40	84.05	85.07	86.27
Seamless tubes and pipes	96.50	96.22	98.16	98.84	98.82
Welded tubes	98.77	97.56	99.04	99.26	99.29
Steel products overall	96.75%	97.14%	97.43%	97.87%	98.16%

Note: HR = hot rolled, CR = cold rolled

Source: Shijing Weilai 2012