Minerva University

SS144

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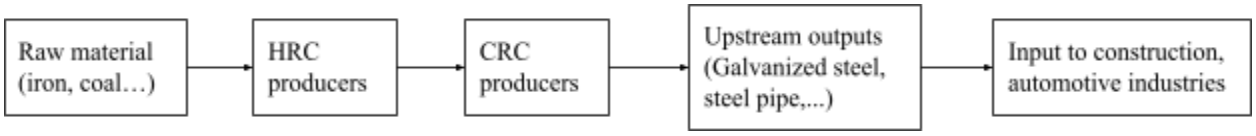
Introduction

Vietnam's steel industry plays a crucial role in its economic development, as it provides key material for important sectors ranging from automotive to construction and public infrastructure. In the first half of 2024, Vietnam's imports of hot-rolled coils (HRC) surged to nearly 6 million tons, representing a 32% increase compared to the same period in 2023 and accounting for 173% of the country's domestic production. This significant rise in imports is primarily driven by insufficient domestic supply, with 74% of HRC imports sourced from China, where prices are notably lower—averaging $560 per ton, which is $30 to $70 cheaper than alternatives from other countries (Vietnam industry and trade newspaper, 2024). Indeed, Vietnam's two major HRC producers, Hoa Phat and Formosa, have officially filed an application for consideration of anti-dumping duties on Chinese HRC steel imports (Vietnam Center for WTO and International Trade VCCI, 2024). While anti-dumping duties may benefit HRC producers, they pose significant risks to downstream industries that take HRC as input material, such as cold-rolled coil (CRC) manufacturers and upstream automotive and construction industries. The decision to implement anti-dumping duties is currently under debate. This essay argues against imposing anti-dumping duties since the benefit of protecting the domestic HRC producers does not justify the cost associated with rising prices for the consumers and other downstream industries, as well as the alignment with the overall macroeconomic development plan in Vietnam.

I investigate the implication of such policy under the lens of microeconomic theory and macroeconomic theory.

Microeconomics

Vietnam's steel supply chain consists of two primary players: HRC producers (Hoa Phat, Formosa) and upstream producers (e.g., cold-rolled coil (CRC) manufacturers and other firms in the automotive and construction industries).



HRC producers benefit from relatively lower input costs (such as raw iron and coal), giving them a lower and flatter marginal cost curve. Additionally, their duopoly structure—with Hoa Phat and Formosa controlling nearly 80% of Vietnam's HRC market share (Mirae Asset, 2021)—provides them with significant market power and pricing flexibility. These producers can capitalize on the decreasing cost of raw materials and pass on higher prices to upstream producers, resulting in an output price much above their marginal cost (Figure 1a).

In contrast, upstream producers face higher input costs, intense monopolistic competition, resulting in a more elastic demand curve (Figure 1b). They also have narrower pricing flexibility because if they attempt to raise prices to cover increased input costs, they risk losing competitiveness against imports that may not be subject to similar cost pressures due to lower HRC input costs. Therefore, despite having flatter marginal cost and average total cost curve due to less investment in advanced raw material production technology, they have a smaller profit margin compared to PRC producers (Figure 1b). [1]

[1] **#systemmapping:** I choose a linearly incrementing segmentation of the steel-production value chain, starting from raw material to final products. This mapping based on input-output function provides useful characteristic that arise from their buyer-supplier relationship, notably how upstream producers take HRC as input and properties such as small profit margin, price and quantity dependent, etc might arise.

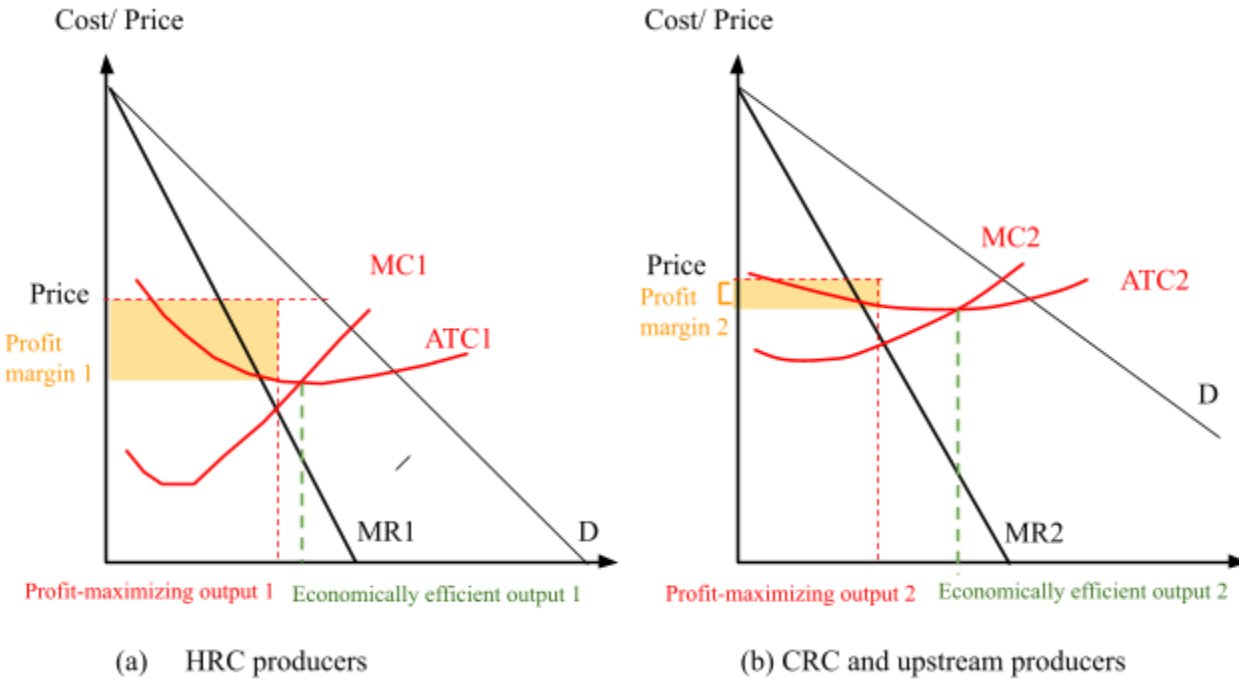


Figure 1. Marginal cost and marginal revenue of HRC producers and upstream producers. The profit-maximizing output is where marginal cost and marginal revenue are equal. At profit-maximizing equilibrium, HRC producers can operate at a higher output due to lower costs, while downstream industries face higher costs and lower output.

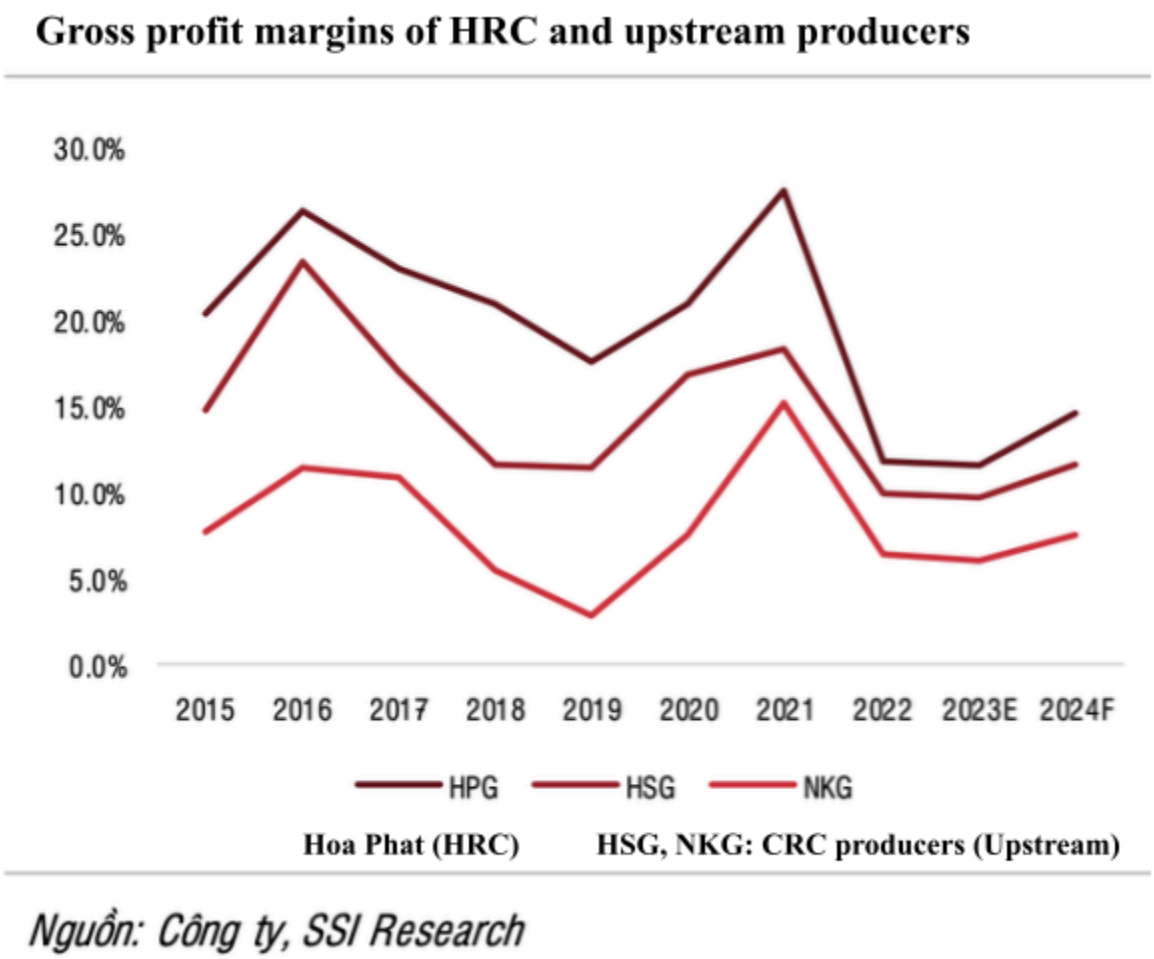


Figure 2. Gross profit margins of HRC producers and Upstream producers. HRC producers have higher gross profit margin than Upstream producers (CafeF.vn, 2024)

Given this dynamic, the anti-dumping application by HRC producers has been strongly criticized by CRC producers. With the estimated dumping margin for Chinese HRC at only 1.26%—below the 2% threshold outlined by Vietnam's Foreign Trade Management Law (Vietnam Center for WTO and International Trade, 2024)—CRC producers argue that imposing duties would unfairly inflate their costs. They emphasized that the consumption demand for HRC

in Vietnam is currently between 10 million and over 13 million tons per year, while the production capacity of Hoa Phat and Formosa is only 8.2 million tons/year, forcing upstream producers to import the remaining 70% of their demanded HRC (Vietnam Center for WTO and International Trade VCCI, 2024). As a result, upstream producers are often forced to operate at a lower output than what would be economically efficient, as their profit-maximizing output is constrained by the availability of HRC rather than being determined solely by market demand for their finished products. As seen in Figure 1b, the result is a large gap between upstream producers' profit-maximizing output and the economically efficient output that could be achieved if they had adequate access to HRC.

Given the inadequate supply, imposing anti-dumping duties would likely lead to increased prices and reduced quantity for both imported and domestic HRC, which would further squeeze their already small profit margin until bankruptcy and mass-scale job loss (Figure 3)[2].

[2] **#ss144-marketsandtools:** I accurately identified and justified demand and supply forces for this specific steel making market, by first segmenting the market into downstream players and upstream players. By separately modeling the demand and supply curve of these 2 types of players, I emphasized how the supply of upstream players are dependent on the output of the downstream players, thus shedding light on the consequences of anti-dumping policy that will further limit the supply of HRC input for these downstream layers. Both demand and supply forces are justified by whether the producers are competing in duopoly or monopolistic market, and how their market power affect their ability to set price.

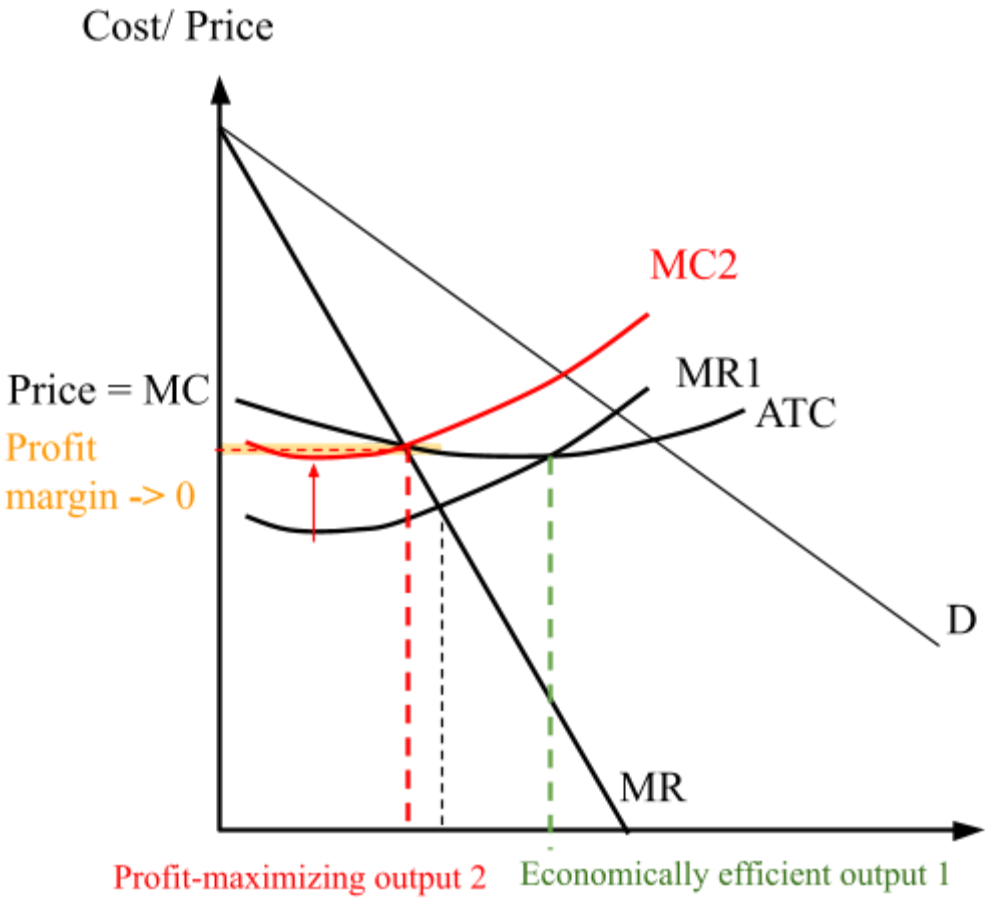


Figure 3. The demand-supply changes of CROC and upstream producers after increasing HRC input price. Marginal cost curve shifts upwards, resulting in a new intersection between marginal cost and marginal revenue curve. The average total cost evaluated at that quantity will determine the price. The new profit-maximizing output and price gradually squeeze profit margin down to 0.

Macroeconomics [3]

[3] **#levelofanalysis:** I analyzed micro and macro interactions of HRC and upstream producers to support my policy recommendation. Behavior at the firm level is supported by the differences in market power and profit margin of 2 types of players. By modeling 2 scenarios where anti-dumping duties both create flashback to upstream producers, I detailed the feedbackloop from macroeconomics to microeconomics level and vice versa: reducing long-run output or increasing output prices of upstream producers will in

Using AD/AS model, I will compare the shift in supply and demand of the upstream steel market under the two scenarios: imposing and not imposing anti-dumping duties.

Impose anti-dumping duties:

In the case of imposing anti-dumping duties and raising input prices for cold-rolled coil (CRC) and other industries like construction and automotive, the Short-Run Aggregate Supply (SRAS) will shift to the left [4] (Figure 4). In the short run, wages and some contracts are fixed, so firms cannot easily adjust other costs to offset the higher input prices. As a result, the economy will experience both inflation (higher prices) and reduced output (economic slowdown).

This scenario creates two potential paths:

Scenario 1: If inflation expectations cause consumers to spend less and demand higher wages, the Aggregate Demand (AD) curve shifts left, further compounding the economic contraction.

Scenario 2: The government implements expansionary policies to shift the AD curve right, restoring output to its initial Long-Run Aggregate Supply (LRAS) level but at the cost of higher prices and inflation.

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turn erode their profit margin, thus further reducing their competitiveness and create a feedback loop where the ending is bankruptcy, large-scale market exit and job loss.

[4] The SRAS curve represents the total supply of goods and services in an economy at different price levels, assuming constant input prices in the short run. Increasing input cost will increase the marginal costs of production for firms in upstream industries. This makes it more expensive for firms to produce the same level of output in the short run.

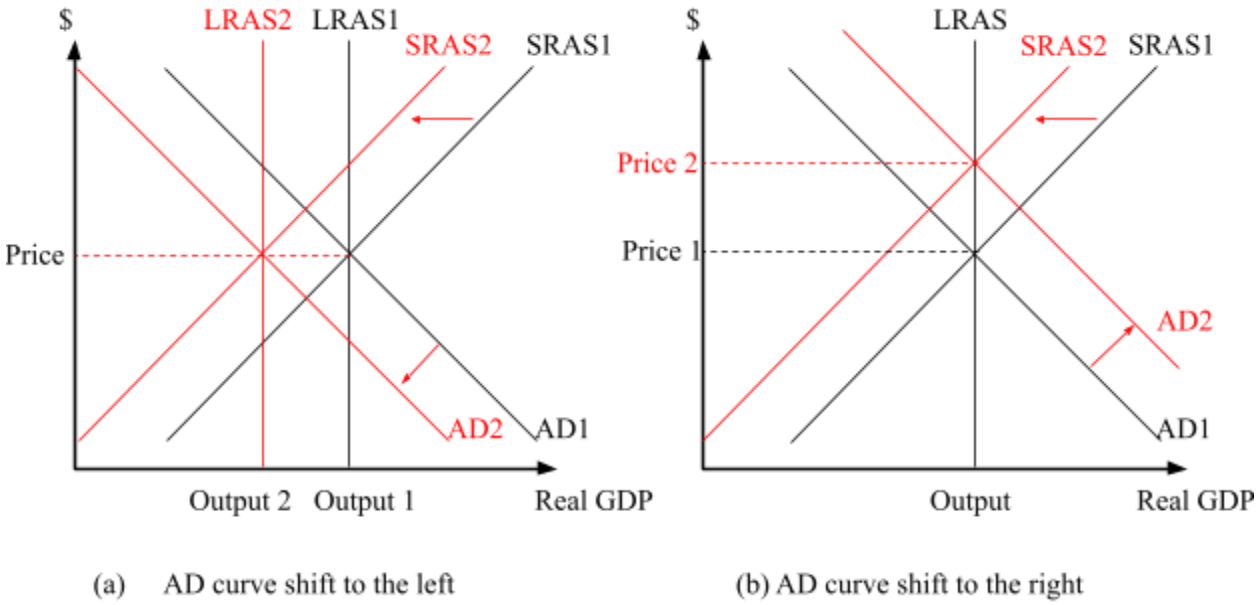

Figure 4. AD/AS models under 2 scenarios. (a) SRAS and AD curves shift left, resulting in a new equilibrium with lower output and unchanged prices. (b) SRAS shifts left, but government intervention shifts AD right, restoring output at the expense of inflation: the resulting price is higher than the initial price equilibrium. [5]

In scenario 1, the leftward shift in LRAS reflects the long-term declines in investment, labor force participation, and productivity of upstream industries when many upstream producers exit the market to seek better opportunities abroad or in other sectors. In scenario 2, the AD adjustment pushes the output level back to the LRAS at the cost of inflation as prices increase. Both scenarios are undesirable because the amount of job loss in the upstream market, especially

[5] **#dataviz:** I intensively use multiple types of model visualization ranging from micro-level firm's supply and demand dynamics, macro-level AD/AS, to the welfare changes of trade and anti-dumping duties. For each model, I create visualization for both HRC producers and upstream producers for meaningful comparison. To intensively support my recommendation of not imposing anti-dumping duties, I also create comparative visualization in the case of imposing vs not imposing and explain difference in market outcome using insights about equilibrium price, real GPD, etc derived from the visualization.

construction, is tremendous; and if the Vietnamese galvanized steel and steel pipe industry reduces output or increases prices, it will have a severe impact on attracting foreign direct investment (FDI) and public investment in social housing and infrastructure.

The loss of consumer and producer surplus due to higher prices exceeds the gains enjoyed by protecting domestic producers, resulting in net welfare loss for society.

Not impose anti-dumping duties:

In the short run, a lower input price of HRC will reduce the production costs for upstream industries, enabling them to produce more at a lower cost, thus shifting the SRAS curve to the right (Figure 5). This in turn boosts demand across various industries, especially construction where demand is highly elastic (exclusively true in the Vietnam context). In the medium term, upstream businesses may invest in new technology, hire more workers, and improve efficiency. This increase in output generates higher incomes for workers, which, in turn, boosts consumer spending and shifts the AD curve to the right. The economy moves to a new equilibrium point with increased output and lower price levels. Furthermore, decreasing input prices helps improve the upstream industry's profit margin and competitiveness in the global market. An increase in export volume can attract foreign investment, technological transfer, global partnerships, and market diversification. Therefore, in the long run, as these industries reinvest in capital,

technology, and labor productivity, the Long-Run Aggregate Supply (LRAS) curve shifts to the right.[6] [7]

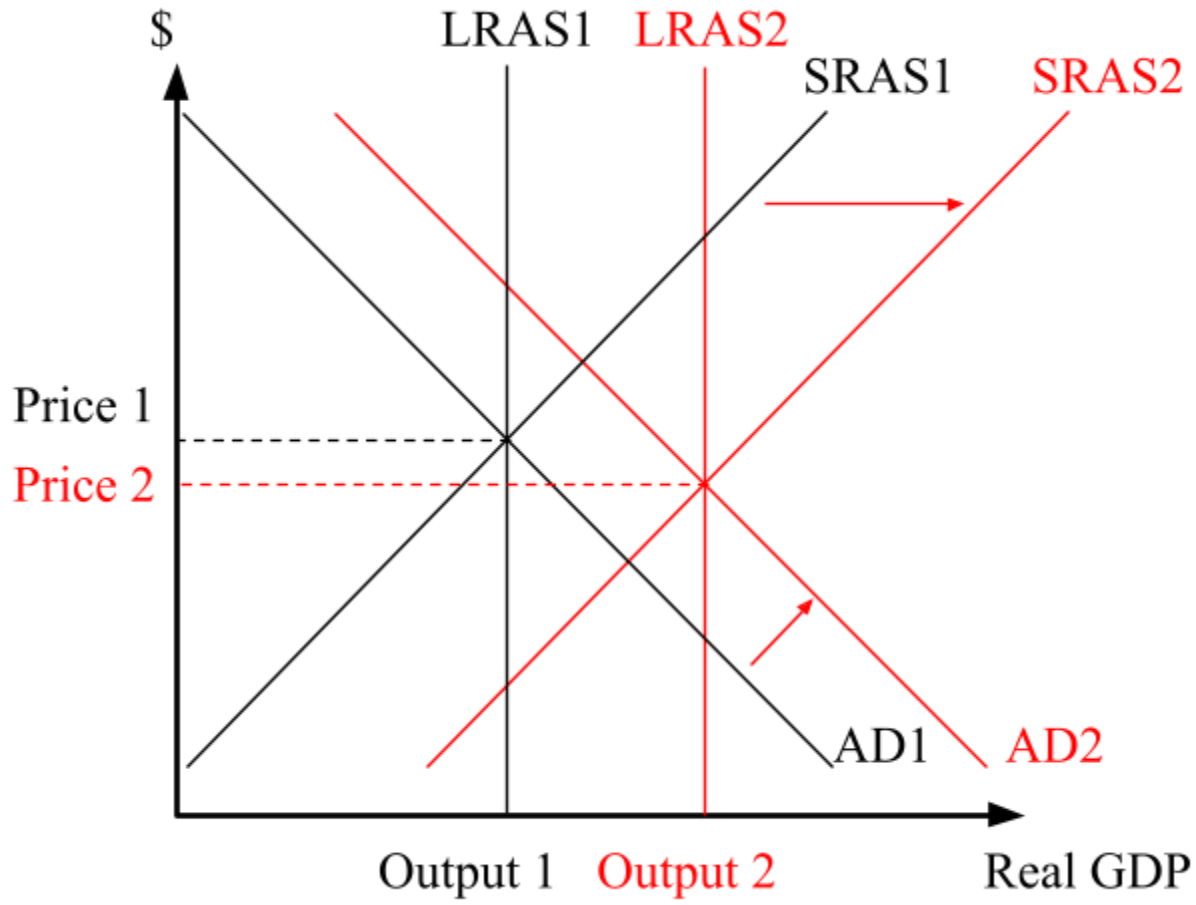

Figure 5. AD/AS model indicates the upward shift in both SRAS, AD and LRAS curves when not imposing anti-dumping duties. The new equilibrium price will depend on the magnitude of the shift in aggregate demand and short run aggregate supply, though for demonstration purpose, it is set to be lower than the

[6] This shift indicates an increase in the potential output of the economy, reflecting improvements in overall productivity and efficiency.

[7] **#ss144-marketsandtools:** Under macroeconomics lens, I explained the aggregate demand supply dynamics under various scenarios to explain why not imposing anti-dumping duties will lead to greater economic development. The changes in aggregate demand and supply are well justified using specific properties belong to this steel market.

old equilibrium, reflecting the fundamental changes in market structure with more players, larger output and technological investment.

Societal welfare of trade

To understand the welfare implications of trade and anti-dumping duties, let's consider both cases when Vietnam does not import and when we impose anti-dumping duties on Chinese HRC.

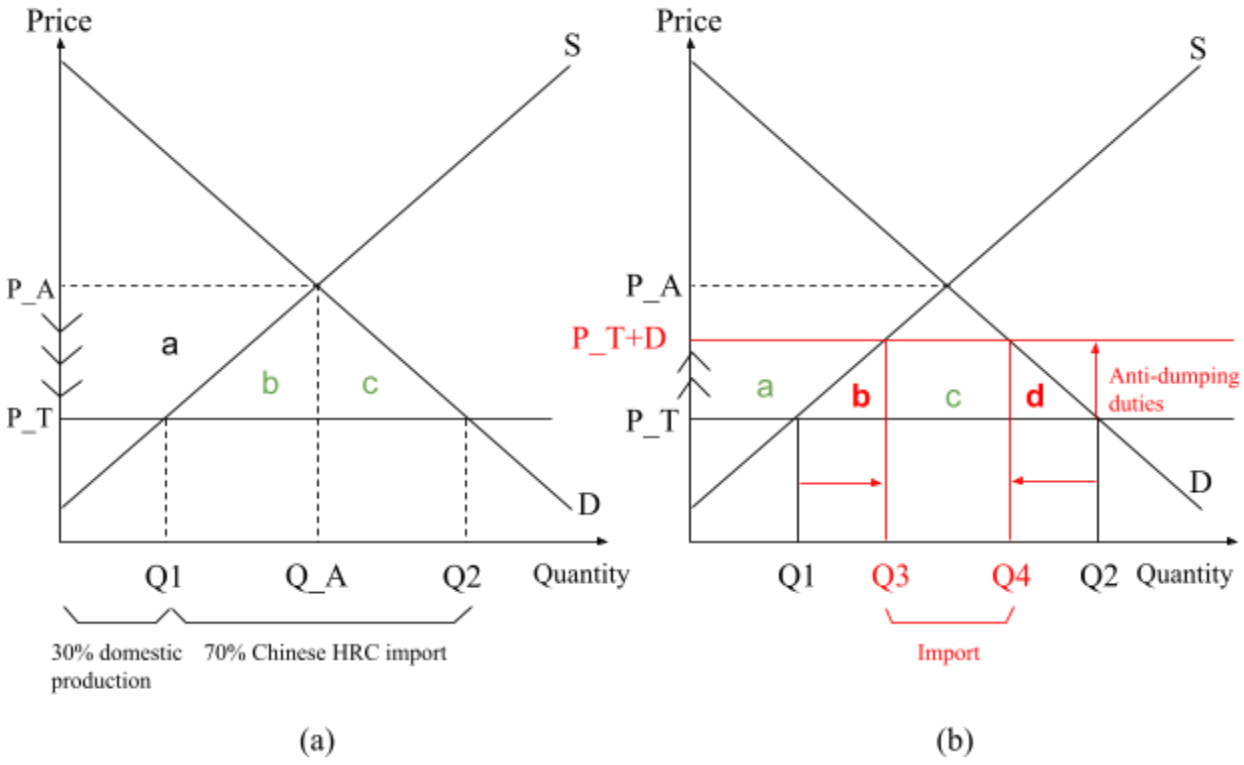

Figure 6: Welfare changes in free trade scenario and anti-dumping duties scenario.

(a) The welfare gains from free trade: In autarky equilibrium, P_A is the price of locally produced HRC with quantity Q_A. After importing HRC from China, price

of HRC is P_T. Domestic quantity falls to Q1 and total quantity increases to Q2. Producer surplus falls by the area "a". Consumer surplus gains "a+b+c". The net welfare gain is "b+c"

(b). The welfare loss from imposing anti-dumping duties: The price of HRC increases to P_T+D. Domestic quantity increases to Q3 and import quantity decreases to (Q4-Q3). Total quantity decreases to Q4. Producer surplus gains by the area "a". Consumer surplus falls by the area "a+b+c+d". Government revenue gains "c". The net welfare loss is "b+d".

Here, Vietnam is a price taker in the world market. When the economy enabled free trade, upstream producers no longer faced supply shortages and gained access to cheaper HRC. With a lower price, domestic producers have to decrease their quantity, thus losing a producer surplus. However, this created a positive net welfare gain for the economy due to increasing consumer surplus.

When Vietnam imposes anti-dumping duties, HRC producers with more market power may push the price up to a level equal to the former price plus the amount of anti-dumping duties. The entire price increase will be captured by the increase in producer surplus. However, consumers and upstream producers will have to take higher prices (P_T+D) and a lower quantity (Q4). This results in a net welfare loss, which consists of areas "b" and "d".[8]

[8] "b" represents the cost of resources of HRC producers trying to expand production in the higher-cost domestic market instead of importing from low-cost Chinese producers. On the other hand, area "d" is the consumer deadweight cost of the tariff due to a shift in consumption to higher-priced products in place of former cheaper imported HRC.

Discussing policy effectiveness [9]

In the short term, not protecting domestic producers prevents significant consumer welfare losses and avoids spillover effects in upstream industries like job losses, bankruptcies, and inflation. This conclusion is supported by various historical examples demonstrate where the imposition of anti-dumping duties can have detrimental effects on entire industries. One notable instance is the U.S. silicon and magnesium industry in the early 2000s, where anti-dumping measures led to increased input costs for downstream industries reliant on these minerals, such as electronics and solar panel manufacturing (Huang et al., 2024). Similarly, in the European Union, anti-dumping duties on Chinese solar panels aimed to protect local manufacturers but ultimately resulted in higher prices for consumers and reduced competitiveness for European solar energy companies in the global market (Chen, 2014).

Moreover, Vietnam is forecasted to gradually decrease interest rates despite currently experiencing inflationary pressures, with a projected increase to 4% - 4.5% in 2024 due to factors like global energy prices and domestic production costs (Quang Minh, n.d.). The price-controlling policy for steel aligns with the plan to boost consumer aggregate demand by boosting consumer spending on real estate (Xinhua, n.d.). Lower HRC prices also benefit the government's ambitious public investment plan to build 100,000 social housing units in 2025 (VNA, 2024), thus improving access for lower-income households who are most in need of social housing.

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[9] **#economicpublicpolicies:** I discussed the effectiveness of the policy to not imposing anti-dumping duties on microeconomics level, macroeconomics level and the societal welfare level (detailing both gain and loss to consumer and producer surplus). I carefully analyzed historical policies regarding anti-dumping cases. I also includes specific contexts about Vietnam's current economics plan (interest rate, inflation…) to discuss the alignment between the policy and the long-term goal. I also discuss the risks associated with the policy and accomppanying policies to counter the risks and ensure sustainable implementation of the policy.

However, the high-order effects reveal potential side effects of intense foreign competition. In the long term, as cheaper HRC imports continue to dominate, price wars could further erode profit margins and depress demand for domestic HRC. This could potentially lead to job losses and underinvestment in domestic firms like Hoa Phat, which could erode Vietnam's long-term domestic industry over time.

Behavior economics

Behavioral economics could shed light on these dynamics. Consumers often rely on availability and anchoring heuristics when accessing product references. After domestic HRC producers lose market shares to Chinese imports, they could substantially lose customer trust in the long term, even if quality differences are negligible. Loss aversion may also make consumers resistant to future price increases. By the time protective measures are needed to eliminate cheap HRC imports, domestic producers may still struggle to regain market share without slashing prices as customers adjust their willingness-to-pay price level even in the absence of actual cheap product substitutes from China. [10]

Behavioral responses among producers are equally significant. With the absence of anti-dumping duties, smaller domestic HRC producers may exit the market, leading to industry consolidation to the hands of solely Hoa Phat and Formosa. Paradoxically, when there is no longer cheap HRC import from China, the domestic duopoly market could result in higher

[10] **#behavioraleconomics:** I explain psychological reasoning to explain the risks associated with long term customer preference for domestic HRC producers. I detailed some of the biases and heuristics such as anchoring bias, availability heuristic and loss aversion to explain why a loss of market share in the short term might lead to long-term change of customer preference, even in the absence of explicit reasons such as the availabiltiy of cheap HRC import.

long-term prices due to reduced competition, counteracting the initial benefits of cheaper imports.

Given all of the potential risks above, there must be accompanying policies to not only protect but also to guide the domestic HRC industry towards innovation and cheaper production in the long term.

Protectionist and market-enhancing policies

Instead of anti-dumping duties, limiting import quotas can shield domestic producers from excessive foreign competition while still creating price-reduction pressure. Subsidies for essential raw materials, such as coal and iron can lower production costs and encourage domestic HRC producers to reinvest in technological upgrades, aligning with Solow growth theory's emphasis on capital deepening for long-term productivity.

To further encourage sustainable growth of the domestic HRC industry, governments could offer green tax incentives for HRC producers that successfully adopt energy-efficient technologies and renewable energy integration. By leveraging the growing global demand for low-carbon steel, Vietnam can give domestic HRC producers competitive advantages that the high-carbon-footprint HRC imports from China do not have, thus supporting a transition to a competition based on sustainability rather than price alone and reducing risks of a price war between domestic and foreign producers.

Conclusion

By combining free trade principles with incentives for innovation and sustainability, Vietnam can build a resilient HRC industry capable of competing globally while supporting domestic economic stability and long-term growth. This approach ensures that the benefits of cheaper inputs for upstream industries do not come with the cost of over-reliance on imports.

Word count: 1710 words

AI statement: I use ChatGPT to paraphrase and check for grammatical error

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