

The Effect of Import Quotas on the Level of Local Content of Indonesian Manufactured Products

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ABSTRACT

The Indonesian government's implementation of import quotas for manufacturing raw materials serves as a strategic policy to enhance domestic industrial capacity and increase the Domestic Content Ratio (DCR). This study investigates the effect of import quota policy on DCR levels, aiming to constrain import flows and encourage import substitution industries. Using a conditional input demand function framework, the analysis evaluates DCR changes resulting from import quota implementation. Panel data from manufacturing industry companies between 2007–2013 indicate that import quotas significantly raise DCR by 6.73 percent in affected sectors. Further estimates confirm a notable DCR increase in industries influenced by the policy. However, findings reveal that domestic and imported raw materials are complementary, implying that the import quota policy does not stimulate genuine import substitution industry growth. This limitation arises from the absence of viable domestic alternatives for manufacturing-grade raw materials. Consequently, while import quotas effectively boost DCR, they fall short in fostering import substitution industrialization. Policy implications highlight that import quota effectiveness is restricted by domestic supply constraints, necessitating complementary measures focused on upstream industrial development and improvement of domestic raw material quality.

KEYWORDS DCR, import quota, conditional input demand.



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INTRODUCTION

According to Kumari and Sharma (2022), the government can enforce DCR by setting a certain percentage level of added value or domestic components assembled into a final product. However, to optimize DCR, the difference between domestic input prices and imported input prices is influenced by the availability of imported input substitutions and the structure of the domestic input market (Nguyen et al., 2019; Zhou et al., 2020). This condition can lead to a decrease in the equilibrium level of output and the added value of all industrial sectors (based on domestic and international price evaluations) (Kim & Lee, 2018; Fernandez et al., 2024). Therefore, the government can increase DCR through policy approaches in the input market, including domestic supply assurance, price control, and import restrictions using protective instruments such as tariffs and import quotas (Rahman & Alam, 2021; Mulyani et al., 2023; Li & Chen, 2021).

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According to Ahn and Choi (2023), import quotas—particularly on industrial raw materials—can affect the DCR of manufactured products. This occurs if imported raw materials can be substituted with domestic raw materials (Zhang & Lim, 2021). The increase in DCR is closely linked to the development of import substitution industries (Baldwin et al., 2020). This situation arises when imported raw materials are not highly elastic to domestic counterparts, thereby weakening domestic producers' incentives to produce import substitutes due to competitive pressures (Farooq & Shahbaz, 2019; Ofori & Li, 2024).

Import quotas tend to increase the prices of both domestic and imported goods in the domestic market through supply restrictions and market protection, similar to the price effects generated by tariff barriers (Riker, 2024; Yang, 2024). The implementation of import quotas increases the price of domestic and imported goods in the domestic market through international trade protection mechanisms (Amiti et al., 2019; Boer & Rieth, 2024). Consequently, producers seeking to minimize input costs to achieve optimal production outputs are affected by the introduction of import quotas in optimizing their DCR (Scheifele et al., 2022).

Based on recent studies (Kohli & Narayanan, 2021), the price increase due to import quotas is not necessarily equivalent to that caused by tariffs, as it depends on the nature of imported goods—whether they are substitutes or complements to domestically produced goods (Rizvi et al., 2023). The study also concluded that the distribution of quotas in imperfectly competitive markets (oligopsony) and the characteristics of goods (substitution or complementation) significantly influence the magnitude of price increases (Amiti et al., 2019; Guo & Zhang, 2022).

Regarding imports of raw materials for production, Kreuter & Riccaboni (2023) examined the effects of import quotas and production taxes on producer welfare as a function of import quantity, production costs, and inverse import demand. Their study assumes producers act either as agents of export expansion or as producers of import substitutes (Mazaraki et al., 2021). Cherif & Hasanov (2024) concluded that import quotas expected to encourage import substitution production do not improve producer welfare unless accompanied by production subsidies. Hence, price increases resulting from import quotas are insufficient to offset the shortage of imported raw materials through domestic production of substitutes.

For countries using DCR as an incentive requirement, its main purpose is to create domestic employment opportunities and strengthen local firms (Kumari & Sharma, 2022). Empirically, Nguyen and Do (2021) analyzed similar trade policies in Southeast Asia, particularly the effect of trade barriers on DCR in the motor vehicle industry (Ahn & Choi, 2023). The implementation of tariffs, import quotas, and Compensatory Export Requirements (CER) significantly increased DCR but led to production inefficiencies, major consumer losses, and large economic rents for domestic importers (Fernandez et al., 2024). Nguyen and Do (2021) recommended reducing effective protection by eliminating CERs and tariffs to lower consumer losses, even though DCR might not reach its maximum level.

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The Indonesian government imposed import quotas on 6,128 HS codes in 2007, which rose to 8,713 HS codes by 2013. One goal of implementing import quotas was to strengthen upstream–downstream linkages within the manufacturing industry. The implementation is expected to affect the government’s efforts to increase DCR. However, import quotas also shift domestic and imported raw material prices, influencing the volume of both and thereby affecting DCR levels.

This study aims to analyze and describe the effect of import quota implementation on the DCR of Indonesian manufacturing products during 2007–2013. The specific objectives are threefold: (1) to estimate the magnitude and significance of import quota effects on DCR levels in affected sectors, (2) to examine whether domestic and imported raw materials exhibit substitutive or complementary relationships in production, and (3) to evaluate the effectiveness of import quota policy in stimulating import substitution industrial development.

The research provides substantial benefits for multiple stakeholders. For policymakers, it offers empirical evidence on the actual effects of import quota policies, informing trade protection instruments and industrial development strategies. For academic researchers, it contributes to theoretical understanding of conditional input demand behavior under trade restrictions and expands the literature on DCR dynamics in developing economies. For the manufacturing industry, the findings provide practical insights into input sourcing strategies and trade policy impacts on production optimization. Moreover, this research offers broader implications for understanding conditions under which import substitution policies succeed or fail, particularly when domestic supply capacity remains limited.

METHOD

This research employs a quantitative approach utilizing panel data from medium and large-scale manufacturing industry companies in Indonesia. The analytical framework integrates microeconomic production theory with trade policy analysis, specifically examining the conditional input demand function under import quota constraints.

Data sources consist of secondary data from the 2007-2013 Large and Medium Industry Survey (Survei Industri Besar Sedang/SIBS) conducted by the Central Statistics Agency (Badan Pusat Statistik/BPS). The research population comprises 30,876 manufacturing companies, generating 103,363 panel observations. Among these, 10,016 data panels represent companies importing raw materials, with 88.03 percent affected by import quota implementation. Complementary data were obtained from Bank Indonesia (exchange rates), Ministry of Industry (sectoral classifications), Ministry of Trade (import quota regulations), and Ministry of Finance (tariff structures).

This research has limited research data, which only focuses on the origin of raw materials, namely whether they come from domestic or imported, without detailing the origin of capital and labor which are also inputs in the production function. According to Mankiw, import demand is a function of producer income (R) and the relative price of

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domestic raw materials (PD) to imported raw materials (PI). The cost of raw materials is also influenced by the exchange rate (E) so that the function of import raw material demand (MI) is:

$$MI = \left(\frac{PI \cdot E}{PD} \right) R\pi \quad (\text{equation 6a})$$

Considering that the demand for imported raw materials is sometimes influenced by the absence of import substitution or other factors so that the company will still import raw materials (MI0) and the producer's preference (m) to continue importing raw materials considering their income (mR), the function of import raw material demand can also be stated as follows:

$$MI = MI0 + mR \quad (\text{equation 6b})$$

The Mankiw import equation is used to estimate aggregate import demand at the country scale. However, this model is also still generally applicable at the micro (corporate) scale.

Based on this, the next step is to identify the probability of the company importing raw materials (ProbMI). This study groups producers into two conditions, namely producers who do not import raw materials, the DCR level is equal to one ($DCR = 1$) and producers who import raw materials, the DCR level is less than one ($0 < DCR < 1$). Kee, Nicita, and Olarreaga who researched the elasticity of import demand and trade distortion due to tariffs using the variables of endowment, productivity (LabProd), production capacity utilization ratio (Utility), and export proportion (PropExp) to proxy the value of output (Y) as a revenue proxy (R). Productivity can be calculated by calculating income divided by the number of workers. This is also in line with the research of Boddin, Raff, and Trofimenko, 2015 which shows that export-oriented products tend to increase the import of raw materials to increase the competitiveness (quality) of products. However, producers need to calculate the ratio of import cost expense (ImCostRatio) by weighting import costs to revenue (Y). An excessively high ratio of import expense will increase the company's financial risk because import costs are greatly influenced by currency rates and the global market climate.

Markusen and Venables show a two-way relationship between foreign capital ownership (ForOwn) and import demand. This is because generally foreign investors organize production activities in a multinational manner. The product is distributed to companies in its network or other buyers around the world to be assembled. Therefore, the determination of the location of foreign capital companies also considers transportation costs as an implication of import and export activities. This is in line with the opinion of Glatte who shows that agglomeration can affect import decisions. The agglomeration in question is the presence of factories in industrial estates (DEstate) and accessibility to logistics infrastructure such as ports (DPort). This factor can be a control variable (dummy) to select the probability of producers in importing raw materials. Based on these empirical references, the selection equation that determines the probability of producers importing is as follows:

$$ProbMI = ProbMI (ImCostRatio, ImPrice, LabProd, PropExp, ForOwn, Utility, DEstate, DPort). \quad (\text{equation 7})$$

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The selection equation will group the producers who import so that the DCR is $0 < DCR < 1$. Furthermore, it is necessary to identify producers who import and are affected by the imposition of import quotas. Before the implementation of the import quota (MI), imported raw materials were abundant so that the condition could be declared $MI > QM$. After the implementation of the import quota, the producer will face two conditions based on the volume of its imported raw materials (MI) and domestic raw materials (MD) compared to the import quota ($\bar{Q}\bar{M}$), namely:

1. Domestic raw materials can be substituted for imported raw materials

$$MI > QM \text{ so } \bar{M}^{**} = \bar{Q}\bar{M} \text{ and } M^{**} > M^* \text{ so that } DCR^{**} > DCR^* \dots\dots\dots \text{(equation 8a)}$$

$$I \quad I \quad I \quad D \quad D$$

The substitution condition occurs if the import raw material after the implementation of the import quota ($\bar{M}^{**}$) is the same as the import quota ($\bar{Q}\bar{M}$) set by the Government where the domestic raw materials after the implementation of import quotas (M^{**}) is greater than before (M^*).

$$D \quad D$$

2. Domestic raw materials are a complement to imported raw materials

$$MI > QM \text{ so } \bar{M}^{**} = \bar{Q}\bar{M} \text{ and } M^{**} \leq M^* \text{ so that } DCR^{**} \leq DCR^* \dots\dots\dots \text{(equation 8b)}$$

$$I \quad I \quad I \quad D \quad D$$

The complement condition occurs if the imported raw materials after the implementation of the import quota ($\bar{M}^{**}$) are the same as the import quota ($\bar{Q}\bar{M}$) set by the Government where the domestic raw materials after the implementation of the import quota (M^{**}) is smaller or equal to the previous (M^*). DD

Furthermore, the impact of import quota on DCR can be calculated based on the conditional input demand function equation in equation 3. This study added dummy variables as a control based on research conducted by Vandenbussche and Zarnic. According to Vandenbussche and Zarnic, a characteristic of a company that can affect input demand is the size of the company (*SizeCo*), characteristics of the industrial sector, and labor productivity. In addition, there is also a dummy characteristic of the industrial sector that is classified based on the International Standards of Industrial Classification (ISIC) Revision 3. Intensive Labor Sector (*DLabIntens*) namely the food-beverage industry, tobacco, textiles and textile products, leather and leather goods, footwear, and furniture and forest products. Resource intensive sector (*DResIntens*) namely the plastic, rubber, metal and metal goods, non-metallic minerals, building materials, etc. industry sectors. Capital intensive sector (*DCapIntens*) namely the chemical sector, precision industry, machinery and components, and electronics. Labor productivity has been represented by the wage variable (*Wage*) and the cost of capital is approached by the variable of the cost of electricity consumption per unit of output (*ElCostUnit*) on the

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equation ... In addition, the dummy quota variable (*DQuota*) to show the conditions of the difference in DCR before and after the implementation of the import quota. The equation of the effect of import quota on DCR is:

$$DCR_{it} = \alpha + \beta_1 DQuota_{it} + \beta_2 PQ_{it} + \beta_3 Wage_{it} + \beta_4 ElCostUnit_{it} + \beta_5 Y_{it} + \beta_6 SizeCo_{it} + \beta_7 DLabIntens_{it} + \beta_8 DResIntens_{it} + \beta_9 DCapIntens_{it} + \epsilon_{it} \quad (\text{equation 9})$$

The estimation of the research model to answer the research problem was carried out by two estimation methods, namely Ordinary Least Square (OLS) and Heckman Two Step to obtain unbiased estimation results. In the OLS method, all research samples were regressed simultaneously in one stage.

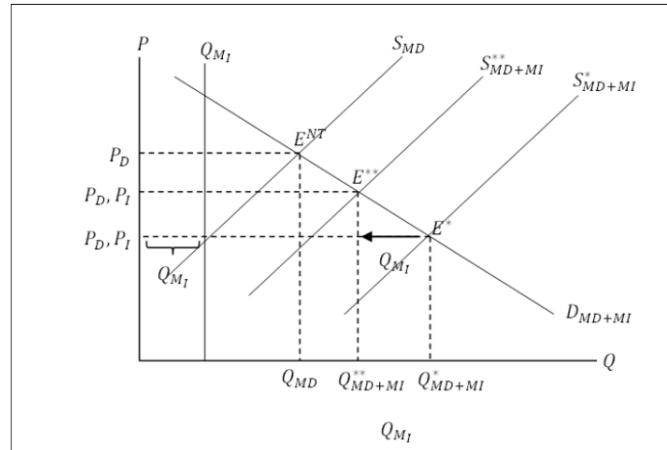
The subject of the study is a medium and large-scale manufacturing industry company in Indonesia. The data of the subject of this study comes from the data of the 2007-2013 Large and Medium Industry Survey (SIBS) from the Central Statistics Agency (BPS). The subjects of the study were 30,876 companies that produced 103,363 panel data. The amount of data from companies that import raw materials is as many as 10,016 data panels where 88.03 percent of the data is affected by the implementation of import quotas. Other research data sources come from Bank Indonesia, the Ministry of Industry, the Ministry of Trade, and the Ministry of Finance.

RESULTS AND DISCUSSION

According to Krugman, Obstfeld, and Melitz, import quotas are direct restrictions on an item that can be imported. The implementation of import quotas has a direct impact on the quantity of raw materials, namely reducing the supply of imported raw materials so that it can increase the demand for domestic raw materials if they are substitutes. Then, the import quota caused an increase in the price of imported raw materials and domestic raw materials in countries that implemented it.

Assuming that the country that implements the import, quota is a large importer, and the quota is distributed in a perfectly competitive market, when the quota is imposed, there will be a deficit supply of imported raw materials in the domestic market. With the original price level (price at the time of free trade) before the import quota takes effect, there will be excess demand which causes an increase in prices (prices after the implementation of the quota). The price increase will then have an impact on declining demand in the domestic market so that import supply also decreases.

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Graph 1 Market Balance on the Enforcement of Import Quotas Source: Krugman, Obstfeld, and Melitz; 2014

The shift in equilibrium (E) from E* to E** was due to import quotas (QM) with a higher price level, both the price of PD domestic raw materials and the price of PI imported raw materials. The quantity of imported raw materials at point E** is smaller than at point E*, so it can be assumed that domestic raw materials can substitute imported raw materials. The effect of import quotas on the balance of domestic and import raw material use depends on the volume of quotas set by the Government. The size or size of the influence of import quotas on prices and welfare depends on the size of the country's economy. Countries with large economies will have a significant impact on world prices, and vice versa. For importing countries, the largest portion of welfare will be enjoyed by producers. The price increase is also expected to increase output, company population, employment, profit, and income (Suranovic).

Producers who are assumed to behave in minimizing production costs (C) which consists of capital cost/rental rate (r), labor wages (w), domestic raw material prices (PD), and import raw material prices (PI) to produce maximum output (Y) will make decisions on the use of input quantities based on the price of the input (Varian, 2010). If the input consists of capital (K), labor (L), domestic raw materials (MD), and imported raw materials (MI), then the function of the input request is:

$$\min C = rK + wL + P_D MD + P_I MI \quad (\text{Equation 1})$$

$D \quad I$

Taking into account the limitations of the following production functions:

$$Y_0 = (K, L, MD, MI) \quad (\text{Equation 2})$$

So that the conditional input demand function becomes:

$$K^* = (r, w, P_D, P_I, Y_0) \quad (\text{Equation 3a})$$

$D \quad I$

$$L^* = (r, w, P_D, P_I, Y_0) \quad (\text{Equation 3b})$$

$D \quad I$

$$M^* = M(r, w, P_D, P_I, Y_0) \quad (\text{Equation 3c})$$

$D \quad D \quad I$

$$M^* = M(r, w, P_D, P_I, Y_0) \quad (\text{3d equation})$$

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$I \quad D \quad I$

The equation follows the assumption of constant return to scale and producers are in a perfectly competitive market so that they act as price takers. In addition, domestic raw materials

MD is assumed to be able to substitute imported raw materials for MI.

The implementation of import quotas causes the quantity of imported raw materials (MI) that can be used to be limited to a maximum of Q_{MI} so that the impact of the implementation of import quotas on input demand is reduced as follows:

$$K^{**} = (Q_M, PQ, PQ, w, r, YQ) \quad (\text{Equation 4a})$$

$I \quad D \quad I$

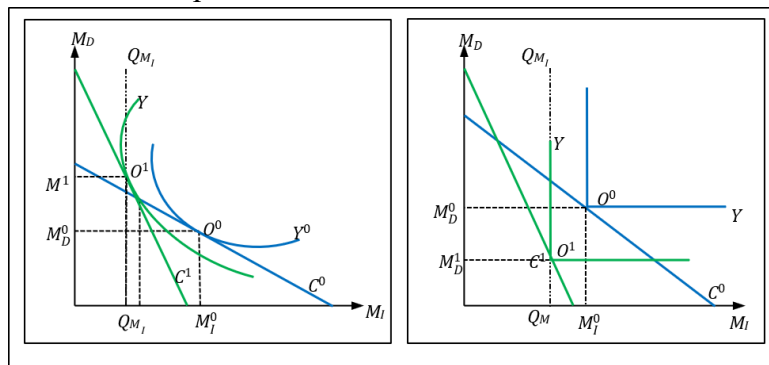
$$L^{**} = (Q_M, PQ, PQ, w, r, YQ) \quad (\text{Equation 4b})$$

$I \quad D \quad I$

$$M^{**} = M(Q_M, PQ, PQ, w, r, YQ) \quad (\text{Equation 4c})$$

$D \quad I \quad D \quad I$

The shift in the isoquant curve if the implementation of import quotas will increase the price of domestic and imported raw materials is:



Graph 2 The Effect of Import Quota on DCR Source: adaptation of Jehle and Reny

The graph shows that import quotas can shift the balance of domestic and imported raw material usage. The combination of domestic and imported raw materials can be expressed in the ratio, namely DCR. The government can use DCR as a measuring tool to see the depth of the industrial structure so that it can be used as a basis for the formulation of protection policies for industrial development (Grossman). DCR is a function of the combination of the volume of use of domestic raw materials and imported raw materials by considering all input costs as follows:

$$DCR = 1 - \frac{M_I(r, w, P_D^Q, P_I^Q, Y)}{M(r, w, P_D^Q, P_I^Q, Y)} \quad \text{..... (Persamaan 5a)}$$

so that the function of DCR before import quota (DCR*) is:

$$DCR^* = DCR(r, w, P_D^Q, P_I^Q, Y) \quad \text{..... (Persamaan 5b)}$$

and the function of DCR after import quota (DCR**) is:

$$DCR^{**} = DCR(Q_M, r, w, P_D^Q, P_I^Q, Y) \quad \text{..... (Persamaan 5c)}$$

Discussions

The empirical estimation results, presented in Table 1, demonstrate that import quota implementation generates a statistically significant positive effect on DCR among

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manufacturing sectors affected by the policy. Specifically, the quota dummy variable (DQuota) indicates a 6.73 percent increase in DCR for companies subject to import restrictions, significant at the 1% level. This finding aligns with theoretical predictions that supply constraints on imported inputs elevate their relative prices, potentially incentivizing greater utilization of domestic alternatives.

However, the price elasticity estimates reveal a paradoxical pattern inconsistent with the substitution hypothesis. The coefficient on domestic raw material price (P_D) is positive and significant, indicating that increases in domestic input prices are associated with higher DCR levels. Conversely, the coefficient on imported raw material price (P_I) is negative and significant, demonstrating that increases in imported input prices lead to decreased DCR. This counterintuitive result contradicts the expected behavior under substitution and instead suggests a complementary relationship between domestic and imported raw materials.

This complementarity finding carries profound implications for understanding the actual functioning of Indonesian manufacturing production processes. Rather than serving as interchangeable alternatives, domestic and imported raw materials appear to fulfill distinct, mutually dependent roles in production. The empirical evidence indicates two simultaneous mechanisms: (1) when imported raw material prices rise due to quota-induced scarcity, producers cannot adequately substitute with domestic materials, leading to reduced overall raw material usage and consequently lower DCR despite the absolute increase in domestic input prices; and (2) when output levels increase, demand for both domestic and imported materials rises proportionally, driving up domestic prices while maintaining or increasing DCR through the scale effect.

The sectoral analysis reveals differential policy impacts across industrial classifications based on factor intensity. The labor-intensive sector, comprising 60.08 percent of the sample and including food-beverage, tobacco, textiles, leather goods, footwear, and furniture industries, demonstrates positive and statistically significant responsiveness to import quota policy. This sector's higher sensitivity likely reflects its greater flexibility in adjusting input compositions and its orientation toward processing imported materials for export markets under buyer-specified arrangements. In contrast, capital-intensive sectors (chemicals, precision machinery, electronics) and resource-intensive sectors (plastics, rubber, metals, non-metallic minerals) exhibit statistically insignificant responses to import quotas, suggesting that these industries face greater constraints in substituting domestic for imported inputs due to stringent quality specifications and technological requirements.

Control variables provide additional insights into DCR determinants. Labor productivity, measured through wage levels, shows no significant impact on DCR, indicating that skill levels and labor quality do not substantially influence raw material sourcing decisions. Similarly, production capacity utilization rates fail to demonstrate significant effects, suggesting that DCR is relatively stable across varying operational intensities. The electricity cost per unit of output, used as a proxy for capital costs, likewise exhibits no significant relationship with DCR, implying that energy-intensive

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versus non-energy-intensive production modes do not systematically differ in their domestic content ratios.

The export proportion variable (PropExp) reveals a significant negative coefficient, indicating that export-oriented manufacturers maintain lower DCR levels. This finding is particularly pronounced in labor-intensive sectors where producers frequently operate under Original Equipment Manufacturer (OEM) arrangements, processing imported raw materials according to buyer specifications with minimal domestic content beyond labor services. These companies function primarily as assembly and processing units within global value chains, importing materials from principals and re-exporting finished products, thereby structurally limiting their potential for domestic raw material incorporation.

Location factors demonstrate significant influence on import behavior patterns. Companies situated in industrial estates (DEstate) and those with proximity to port facilities (DPort) exhibit significantly higher probabilities of importing raw materials, controlling for other factors. This agglomeration effect, consistent with Glatte's findings, reflects the importance of logistics infrastructure and transportation cost considerations in import decisions. Foreign ownership (ForOwn) similarly correlates positively with import intensity, supporting Markusen and Venables' (1998) observation that multinational corporations organize production networks globally, utilizing imported inputs from affiliated suppliers.

Company size (SizeCo) emerges as a significant determinant of DCR patterns, with larger manufacturers demonstrating different input sourcing strategies compared to medium-scale producers. Larger firms typically possess superior bargaining power with suppliers, greater access to international procurement channels, and more sophisticated supply chain management capabilities, enabling them to optimize input sourcing across domestic and international markets more effectively.

Policy Implications and Industrial Development Challenges

The central finding that domestic and imported raw materials exhibit complementary rather than substitutive relationships fundamentally undermines the theoretical foundation of import quota policy as an instrument for stimulating import substitution industrialization. The policy succeeds in mechanically increasing DCR percentages through supply restriction and price manipulation, but fails to achieve the deeper structural objective of fostering domestic raw material industries capable of genuinely replacing imported inputs.

This failure stems from fundamental supply-side constraints in the Indonesian economy. Manufacturing-grade raw materials, particularly those meeting international quality standards for industrial processing, remain scarce in domestic markets. Producers continue importing despite substantially increased costs because viable domestic alternatives simply do not exist for many critical inputs. The complementarity relationship suggests that domestic materials fulfill auxiliary or complementary functions (packaging, basic components, low-specification inputs) while imported materials

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provide core inputs requiring specific technical characteristics, purity levels, or consistency standards unattainable from domestic sources.

The research findings align with Gervais and Lapan's theoretical conclusion that import quotas alone cannot stimulate import substitution production without accompanying supply-side interventions. The price increases induced by quotas prove insufficient to overcome the fundamental barriers to domestic raw material development, including technological gaps, quality control limitations, scale economies in production, and investment requirements for upgrading domestic supply chains.

For the labor-intensive sector's positive response to import quotas, this primarily reflects compositional changes rather than genuine substitution. These industries, often operating under contract manufacturing arrangements, adjust their production mix toward products with higher domestic content ratios or reduce output of import-intensive product lines, rather than substituting domestic for imported materials within existing product specifications.

CONCLUSION

The empirical findings indicate that Indonesia's import quota policy between 2007 and 2013 successfully increased the Domestic Content Ratio (DCR) in the manufacturing sector by 6.73 percent, primarily through quota-induced price changes that altered optimal output balances. However, the policy did not promote genuine import substitution industrialization because domestic and imported raw materials were complementary rather than substitutive, as evidenced by the observation that higher domestic prices raised DCR while higher import prices lowered it. This dynamic limited manufacturers' ability to replace restricted imports with local alternatives, particularly in capital- and resource-intensive industries reliant on specialized imported inputs, while only labor-intensive sectors saw notable benefits. The uneven sectoral impacts underscore the structural weaknesses of Indonesia's upstream industries, especially their inability to supply manufacturing-grade materials of comparable quality. For future research, it is recommended to analyze the specific supply-side barriers—technological gaps, quality deficiencies, and investment constraints—that hinder domestic input development. Employing a mixed-methods design that integrates quantitative modeling with qualitative case studies could offer deeper insight into production linkages and input complementarity. Additionally, exploring complementary policy measures such as targeted production subsidies, research and development investments, and quality infrastructure initiatives would help design more effective strategies for sustainable import substitution beyond short-term DCR gains.

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