Enhancing Economic Growth through BMDTP Policy Interventions in the Electronics Industry

Intan Maria Lewiayu Vierke, Syaiful Ahmar, Achmad Sanusi
{intan@kemenperin.go.id}

Politeknik APP Jakarta, Jalan Timbul Jagakarsa, Jakarta Selatan, 12630, Indonesia

Abstract. This study provides an overview of Government Borne Import Duty (BMDTP) utilization in Indonesia's electronics industry, using analytical tools such as Compound Annual Growth Rate (CAGR) and Inter-Industry Trade Index (IIT). The discourse reveals intricate insights into industry dynamics, policy implications, and global market interactions. Initiatives such as the Government Borne Import Duty (BMDTP) policy incentivize domestic industry, improving competitiveness and productivity. The export and import trends show positive growth and high inter-industry trade intensity (IIT), indicating a potential for specialization and consumer benefits. Through rigorous analysis and policy considerations, this study highlights the influence of government, the intricacies of trade, and the prospects for sustainable growth in an evolving global market.

Keywords: Electronics industry, BMDTP, Inter-Industry Trade Index (IIT), CAGR

1 Introduction

As governments around the world use tax incentives to stimulate investment in research and development (R&D) [1], Indonesia is at a crossroads as it seeks to harness the potential of these incentives for its electronics industry [2], [3]. In the context of increased global competition and the Fourth Industrial Revolution, the growth of the electronics sector is of paramount importance. One of the tax incentives offered by the Indonesian government to promote the competitiveness of the industry is the Government Borne Import Duty (BMDTP) [4]. Implementing the Government Borne Import Duty Policy (BMDTP) is emerging as a potential catalyst to support economic growth by addressing industry-specific challenges. This analytical framework seeks to elucidate the dynamics of economic growth in Indonesia's electronics industry through the lens of strategic fiscal incentives [5].

With OECD countries and emerging economic giants such as China, India, Brazil, and Russia using tax incentives to stimulate R&D, Indonesia has an opportunity to improve its competitive position [6]. In the post-financial crisis landscape, expanded R&D tax incentives signal a commitment to strengthening competitiveness and promoting long-term economic growth [7].

Experience highlights the need for optimal use of investment tax incentives in developing countries. Despite low rankings in investment climate surveys and potential excesses, the strategic use of incentives can channel resources to vital sectors, reduce the burden on public spending, and avoid tax burdens (OECD, 2008; World Bank, 2019).

While fiscal packages vary in size, they share a common goal of cushioning the immediate economic impact of disruptions. However, delivering support, particularly to vulnerable firms

ICEBE 2023, September 13-14, Bandar Lampung, Indonesia

DOI 10.4108/eai.13-9-2023.2341215

such as small and medium-sized enterprises, poses significant administrative challenges (O'Reilly et al., 2020) [8]. In such uncertainties, the BMDTP policy emerged as a critical tool for sustaining growth during the pandemic, underscoring its potential to promote economic stability [2].

Indonesia's electronics industry has made notable progress in production and exports, but barriers to competitiveness and regional concentration remain. Dependence on foreign components, exacerbated by high import tariffs, the exchange rate, and labour costs, undermines competitiveness. In addition, market dominance by a few multinational firms raises entry barriers for new players [9].

Recognizing the need to strengthen domestic industries, the government has adopted a two-pronged approach - fiscal and non-fiscal incentives. Central to this strategy is the BMDTP policy, which aims to optimize commodity imports, improve productivity, and boost economic growth. Research by Prabowo & Putra (2015) highlights the policy's potential, albeit with areas of underperformance.

2 Methodology

This study utilize the Compound Annual Growth Rate (CAGR) analysis and the Intra-Industry Trade (IIT) index to gain insights into the dynamics of the electronics industry, specifically within the context of imported raw materials, production, and international trade. Here's how these two analytical approaches can be used in this study:

1. CAGR Analysis: Compound Annual Growth Rate (CAGR) is a valuable tool for understanding a value's average annual growth rate over a specific period. This study uses CAGR to analyze the growth rate of key metrics such as exports, imports, or any other relevant variable. The study quantifies the average annual growth rate of refrigerator exports by calculating the CAGR of refrigerator exports over a certain period. Similarly, the CAGR of imports of refrigerators or other related products can provide insights into the growth of imports. CAGR helps identify trends and growth patterns that might not be evident when looking at raw data [10], [11].
2. Intra-Industry Trade (IIT) Index: The Intra-Industry Trade (IIT) index analyzes the extent of trade occurring within the same industry category, particularly between Indonesia and its trading partners. A higher IIT index would indicate a substantial degree of intra-industry trade [1], [12], implying that Indonesia and its trading partners exchange similar products within the electronics industry. In this study, the IIT index can provide insights into the specialization and competitiveness of the electronics industry in international trade. A high IIT index suggests that Indonesia and its trading partners are involved in substantial intra-industry trade, indicating specialization and the exchange of closely related products, which can have implications for the competitiveness of the electronics sector and its ability to produce and trade value-added products.

By employing CAGR analysis and the IIT index, this study offers a comprehensive understanding of the electronics industry's growth trends, trade dynamics, and competitiveness, particularly concerning imported raw materials and finished products. These analytical tools provide quantitative measures that help researchers and policymakers assess the industry's performance, identify areas for improvement, and make informed decisions. This study

introduces a novel approach to comprehensively understand the electronics industry's growth trends, trade dynamics, and competitiveness. This innovation opens up new avenues for research, providing a more nuanced understanding of the intricate relationships within the electronics industry.
This comprehensive analysis, supported by innovative methodologies, advances academic research and offers actionable insights for policymakers. The integration of CAGR and the IIT index equips stakeholders with powerful quantitative measures to accurately gauge the industry's performance. In turn, it facilitates the identification of specific areas for enhancement and enables more informed decision-making in shaping industry policies.

2.1 CAGR Analysis

CAGR stands for Compound Annual Growth Rate [10], and it is a widely used financial metric that provides a smoothed annual growth rate over a specified period, taking into account the compounding effect of growth. CAGR is particularly useful when analyzing investment returns, revenue, sales, or any other metric that experiences fluctuations over time. Mathematically, CAGR is calculated using the following formula:

$$CAGR = \left(\frac{Ending\ Value}{Beginning\ Value}\right)^{\frac{1}{Number\ of\ Years}} - 1$$

The components of the formula represent:

Ending Value: The value at the end of the specified period.
Beginning Value: The value at the beginning of the specified period.
Number of Years: The number of years over which the growth occurred.

CAGR provides a single average growth rate that, if applied annually, would yield the same end value as the actual growth pattern observed over the given period. It considers the effect of compounding, which means that even if growth rates vary significantly from year to year, CAGR provides a smooth and consistent annualized growth rate.

Over multiple years, CAGR analyzes investment returns, revenue growth, and other financial metrics. It's valuable for comparing the growth of different investments or assets and evaluating the long-term performance of businesses or industries.

2.2. The Intra-Industry Trade (IIT)

The Intra-Industry Trade (IIT) index is calculated using trade data for specific industries between two trading partners. It involves the following steps [13], [14]:

1. Gather Trade Data: Obtain data on the exports and imports of specific products within the same industry category for a particular country or region. The products should belong to the same industry but can have variations (e.g., different models, specifications, or qualities).
2. Calculate Total Trade: Sum up the total exports and imports of the chosen products within the industry category for both countries or regions.

3. Calculate Absolute Difference: For each product within the industry, calculate the absolute difference between the value of exports from one country to the other and the value of imports of the same product from that country. Sum up these differences for all products.
4. Calculate Total Trade of Absolute Differences: Sum up the absolute differences calculated in the previous step for all products within the industry.
5. Calculate IIT Index: The IIT index is calculated using the following formula:

   IIT Index = 1 - (Total Trade of Absolute Differences / Total Trade)

   The IIT index will be a value between 0 and 1. A value closer to 1 indicates a higher degree of intra-industry trade, meaning that a substantial portion of trade involves products from the same industry category.
6. Interpretation: A higher IIT index suggests that the trading partners engage in significant intra-industry trade, indicating specialization and mutual exchange of related products. A lower IIT index indicates more inter-industry trade, where countries tend to export products from one industry while importing products from another.

It's important to note that IIT calculations can vary based on the specific industry categories and the granularity of the data available. Additionally, IIT is typically calculated separately for each trading partner, and the results can be compared to assess the level of intra-industry trade between different pairs of countries or regions.

3. Discussion

The industry's dependence on these materials for quality production highlights the importance of well-designed policies to support local manufacturing and maintain competitiveness in the global market.

Table 1. Top Ten (10) Imported Raw Materials in Total BMDTP Realisation 2008 – 2021

HS Code	Description	Value in USD	
		Import	Import duty
7210.70.11	Flat-rolled, 600 mm or more in width, less than 0.6% carbon, and 1.5 mm or less in thickness	24.131.118	3.124.855
3902.30.90	Polypropylene in neither dispersion nor granular form	10.989.304	1.046.595
7212.40.12	Flat-rolled, width less than 600 mm, carbon less than 0.6%	4.547.923	634.789
7210.49.11	Rolled deck, width 600 mm or more. carbon less than 0.6 %, thickness not exceeding 1.2 mm	4.393.683	557.169
7212.40.19	Rolled deck, width less than 600 mm, carbon less than 0.6 %	4.165.903	422.550

7210.49.12	Rolled deck, width 600 mm or more. carbon less than 0.6 %, thickness not exceeding 1.2 mm	3.283.530	419.482
3901.10.99	Polymer of ethylene (Polyethylene), specific gravity less than 0.94	2.689.780	415.382
8608.00.20	Electromechanical equipment	5.418.630	263.789
3902.10.40	Polypropylene in granulated form	1.728.687	172.294
8501.40.11	Other AC motors, single-phase	1.667.382	166.062
	Other	6.926.718	704.015
		69.942.657	7.926.983

Source: PT. Surveyor Indonesia

Table 1 shows the primary imported raw materials that play a vital role in the operations of the Indonesian electronics industry. These materials are categorized based on their respective Harmonised System (HS) codes, accompanied by comprehensive descriptions of their characteristics. Each raw material is identified by its HS code, a standardized classification system for goods in international trade. The descriptions associated with these codes provide a clear understanding of the nature and purpose of each imported material. This value reflects the economic importance of these materials and their contribution to the electronics industry supply chain.

The import value represents the financial expenditure of sourcing these materials from international markets. The import duty means the additional charge levied by the government on these imports, affecting the electronics industry's overall cost structure. These imported raw materials are essential for various electronics production, assembly, and manufacturing stages. They are important because they form the basis of electronic components and products, enabling the industry to function smoothly and provide innovative technological solutions. The materials listed in the table fall under the purview of the BMDTP policy. This instrument aims to promote industrial growth and competitiveness and involves the government subsidizing or covering import duties on certain raw materials, ultimately reducing production costs for domestic industries. The values shown in the table underline the financial impact of importing these materials. Import duties contribute to the overall cost structure of the electronics industry, affecting product pricing and competitiveness. A strategic approach to managing these costs can significantly impact the industry's ability to compete domestically and globally. The data highlights the need for a well-designed policy framework to ensure the sustainable growth of the electronics sector. Balancing incentives such as the BMDTP with other economic considerations, such as budget constraints and international market dynamics, is essential to foster a competitive environment for domestic industries.

In HS code: 7210.70.11 (Flat-rolled, of a width of 600 mm or more, containing less than 0,6 % carbon and of a thickness of 1,5 mm or less) with import value: USD 24.131.118 and import duty: USD 3,124,855, refers to flat-rolled materials that meet specific size, carbon content and thickness criteria. These materials are critical in manufacturing various components, including

plates and panels. The substantial import value of over $24 million indicates that a significant amount of these materials are being brought into the country for industrial use. The import duty of approximately $3.1 million implies the financial burden of importing these materials. Reducing this duty through policy measures such as the BMDTP can potentially lead to cost savings for manufacturers and improve the competitiveness of locally manufactured electronic products.

Polypropylene (HS Code: 3902.30.90) is versatile in various industries, including electronics. It's used in components such as housings, packaging, and insulation. The nearly $11 million import value reflects the significant demand for this material in the electronics sector. The import duty of around USD 1 million adds a vital cost component to the industry's supply chain. A policy that reduces this duty can help reduce production costs and improve the affordability of domestically manufactured electronic products.

Similar to the first product HS Code: 7212.40.12 (Flat-rolled products, less than 600 mm wide, carbon content less than 0.6%), this entry covers flat-rolled materials, but with specific width and carbon content criteria. These materials are essential for the production of smaller components in electronic devices. The import value of over $4.5 million indicates the industry's reliance on these materials. The import duty of approximately $634,789 adds to the cost of production. Implementing policies that reduce this duty can help reduce manufacturing costs and improve the competitiveness of the electronics industry.

In summary, the top 3 commodities and their respective import values and tariffs reflect the financial impact of importing raw materials for the electronics industry. These materials are an integral part of the production processes, and the associated costs impact the industry's competitiveness. Strategic policy measures such as the BMDTP can help to reduce the financial burden, improve cost efficiency, and contribute to the overall growth and competitiveness of the electronics sector.

Polypropylene and polyethylene are significant materials used by PT Panasonic, PT Sanken, and PT Sharp in producing Household Refrigerators (AC). PT Asia Electric, PT Hartono Istana Teknologi, PT Panasonic Manufacture, PT Sanken Argadwija, and PT Sharp Electronics Indonesia import rolled iron and steel as raw materials for refrigerators. From 2008 to 2021, these companies' total value of flat-rolled imports was US$40,522,156 or 57.94 per cent of total raw material imports, with import duties paid by the government amounting to US$5,158,845. Of the five rolled products, rolled products with a maximum thickness of 1.55 mm were refrigerator manufacturers' most imported raw materials, accounting for 34.5 percent of total imported raw materials. Several key points can be highlighted from the given data:

1. Import Dependency and Usage in Production: Several prominent companies, including PT Asia Electric, PT Hartono Istana Teknologi, PT Panasonic Manufacture, PT Sanken Argadwija, and PT Sharp Electronics Indonesia, rely on imported raw materials for their refrigerator production. Rolled iron and steel are crucial components, particularly those with a maximum thickness of 1.55 mm, constituting 34.5% of imported raw materials. This indicates that these materials are pivotal in determining the quality and structure of the manufactured refrigerators and AC units.

2. Total Import Value and Duties: From 2008 to 2021, the full value of flat-rolled imports by the mentioned companies amounted to US$ 40,522,156, which accounted for a substantial 57.94% of total raw material imports. Correspondingly, the import duties borne by the government for these imports reached US$ 5,158,845. This signifies the financial impact of import duties on the overall cost structure of the refrigerator and AC manufacturing sector. During the BMDTP period, the import value of polypropylene totaled US$ 17,075,153, accounting for 24.4% of the total import value of raw materials. Meanwhile, the import duties borne by the government were US$ 1,800,333, making up 22.71% of the total BMDTP.

The report suggests that the role of BMDTP in reducing production costs might not be the most significant factor; however, it contributes to making the goods more competitive against imported alternatives. The positive trend in export performance by electronics companies utilizing BMDTP showcases the potential benefits of such fiscal incentives in boosting export activities. The analysis focuses on the refrigerator and AC industry due to the considerable BMDTP realization within this sector. However, the data's time series is limited from 2014 to 2021. This data underscores the crucial role of imported materials, mainly rolled iron and steel, polypropylene, and polyethylene, in producing household refrigerators and AC units. The data also emphasizes the financial impact of import duties and the potential benefits of fiscal incentives like BMDTP on the competitiveness and export performance of the industry. The industry's dependence on these materials for quality production highlights the importance of well-designed policies to support local manufacturing and maintain competitiveness in the global market.

4. Result

The refrigerators discussed are those produced by PT Asia Electric, PT Hartono Istana Teknologi, PT Panasonic Manufacture, PT Sanken Argadwija, and PT Sharp Electronics with less than 230 liters capacity. The export performance of the refrigerator industry over eight months, as shown in Figure 1, shows a positive trend, although the variability of export value explained by time is only 38.08 percent. This figure shows that the development of exports of refrigerators will show slow growth over time. In 7 years, the growth of refrigerator exports based on CAGR was 2.4 percent.

As depicted in Figure 1, the export performance of this segment exhibits a positive trajectory, indicating an encouraging trend in the global market. However, the moderate variability of export value explained by time at 38.08 percent implies that while there is growth, it is accompanied by certain fluctuations. This suggests that the expansion of refrigerator exports will likely be gradual over time, aligning with the 2.4 percent Compound Annual Growth Rate (CAGR) observed over the seven years. This performance signifies both opportunities and challenges for the industry, warranting a strategic approach to sustain and enhance export growth. The data presented in Figure 1 highlights the central role of trade policy and market dynamics in shaping the industry's export trajectory. As export value fluctuates over time, stakeholders must identify the underlying drivers of these fluctuations. This analysis can pave the way for informed decision-making, allowing industry players to respond proactively to

changing market conditions. Moreover, the moderate variability suggests that a multi-faceted approach is essential to exploit the export potential fully. Collaborative efforts between companies, policymakers, and industry associations can play a crucial role in maintaining steady growth, mitigating the impact of market uncertainties, and promoting a resilient export-oriented strategy for the refrigeration industry.

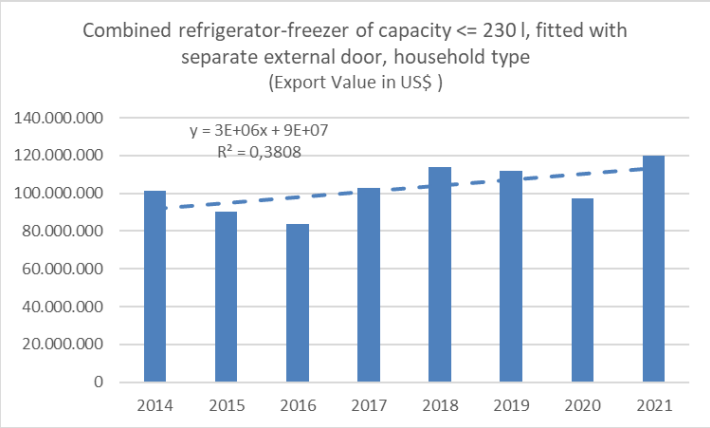

Fig 1. Combined refrigerator-freezers of capacity ≤ 230 litres, with separate external door, household type (export value in US$)

Figure 2 shows the evolution of imports of refrigerators with capacities below 230 l. In terms of value, imports of refrigerators are still far below the value of exports. However, over seven years, the CAGR for imports of refrigerators is 13.84%. On the other hand, Figure 2 shows that the linear relationship between time and import value can explain 87.33 percent of the variability in refrigerator imports, which means that refrigerator imports are growing relatively fast over time.

Imports and exports of refrigerators show a relatively high inter-industry trade index (IIT) of 0.884; a high IIT indicates that the intensity of trade between Indonesia and partner countries where trade in reactive refrigerators is dense is relatively high. Intra-industry trade allows the refrigeration industry to deepen product specialization while providing consumers greater choice and corresponding benefits.

Figure 2 provides a comprehensive overview of the import dynamics of refrigerators with capacities below 230 liters. Although imports lag behind exports in terms of value, the critical insight is the remarkable growth trajectory of imports over seven years, reflected in the compound annual growth rate (CAGR) of 13.84 percent. This growth trend underlines the increasing demand for these refrigerators in the domestic market. Furthermore, the linear relationship shown in the graph, which explains 87.33 percent of the variability in import values over time, indicates a robust correlation between the two factors. This suggests that imports of refrigerators are expanding rapidly, possibly due to changing consumer preferences, technological advances, or changes in market dynamics.

The relatively high inter-industry trade index (IIT) of 0.884 observed for both imports and exports of refrigerators reveals a vibrant trade landscape between Indonesia and its partner countries. This high IIT indicates a substantial trade intensity within this industry segment, highlighting solid interconnectivity between Indonesian manufacturers and their international counterparts. The existence of dense trade in reactive refrigerators, characterized by this high IIT, reflects the importance of intra-industry trade. Intra-industry trade facilitates the exchange of goods and promotes a more specialized production process, allowing for product variety, quality improvements, and consumer benefits. This analysis underlines the potential of the industry to create a win-win scenario, enabling both increased economic activity and greater consumer choice through the deeper specialization that intra-industry trade promotes.

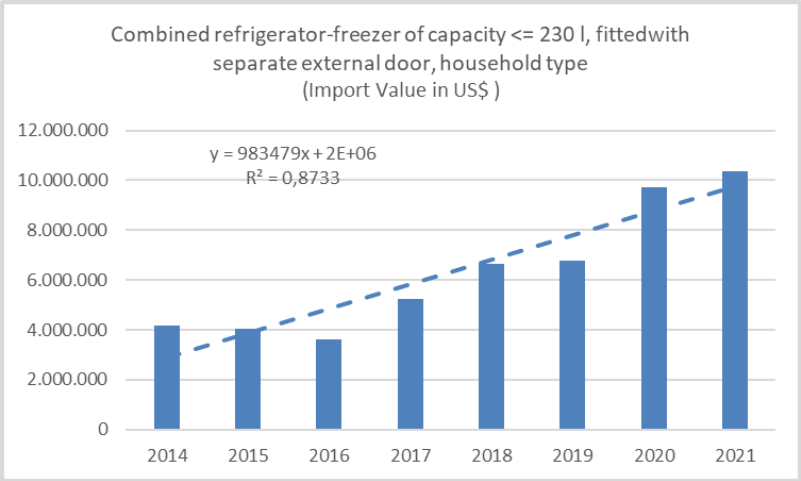

Fig 2. Combined refrigerator-freezers of capacity ≤ 230 liters, with separate external doors, by household type (import value in US$)

The inter-industry trade index (IIT) in Figure 3 of 0.884 for refrigerator imports and exports suggests a relatively strong trade relationship between Indonesia and its partner countries in the refrigerator industry. This high IIT value indicates that the intensity of trade in refrigerators between Indonesia and its trading partners is substantial. In other words, the trade traffic of reactive refrigerators with separate external doors is dense and robust. A high IIT reflects the exchange of similar products within a particular industry between trading partners. In the context of refrigerators, a high IIT suggests a notable degree of specialization, complementary production capabilities, or supply chain integration within the refrigerator industry. This can lead to mutually beneficial trade relationships where various countries focus on specific aspects of refrigerator production, resulting in more efficient and specialized production processes.

Intra-industry trade, as observed in the refrigerator industry, has several benefits. Firstly, it allows for the deepening of product specialization. Countries can focus on producing specific refrigerators or components, contributing to higher overall product quality and domain. Secondly, consumers benefit from a broader range of choices. The availability of diverse refrigerator models and features from various countries enriches consumer options, leading to

greater consumer satisfaction. The data reveals a significant trade imbalance in the temperature control equipment sector.

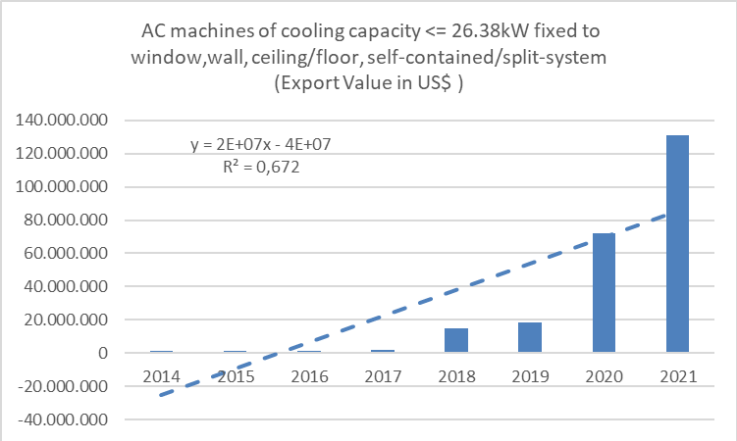

Fig 3. AC units with cooling capacity ≤ 26.38kW, window, wall, ceiling/floor mounted, self-contained/split (export value in US$)

Indonesia's cumulative imports of temperature control machines were eleven times higher than its exports, amounting to US$2.74 billion. This trade gap indicates that Indonesia heavily relies on imported temperature control machines to meet domestic demand, which may affect the country's trade balance and self-sufficiency. During the same period, Indonesia's cumulative imports of temperature control equipment were 11 times the value of its exports at US$2.74 billion. However, as shown in Figure 4, the linear trend shows a growth of only 1.8 percent (CAGR), and the variability between import value and time is also low at 23.43 percent. Imports of temperature control machines come from the ASEAN countries of Malaysia, Thailand, and Vietnam, as well as from non-ASEAN countries such as China.

The inter-industry trade index (IIT) of 0.884 for imports and exports of refrigerators suggests a relatively strong trade relationship between Indonesia and its partner countries in the refrigerator industry. This high IIT value indicates that the intensity of trade in refrigerators between Indonesia and its trading partners is substantial. In other words, trade-in reactive refrigerators, i.e., those with separate external doors, are dense and robust. A high IIT reflects the exchange of similar products within a given industry between trading partners. In the context of refrigerators, a high IIT suggests a notable degree of specialization, complementary production capabilities, or supply chain integration within the refrigerator industry, which can lead to mutually beneficial trade relationships where countries focus on specific aspects of refrigerator production, resulting in more efficient and specialized production processes.

Intra-industry trade, as observed in the refrigerator industry, has several benefits. First, it allows product specialization to deepen and shows that different countries can focus on producing specific types of refrigerators or components, contributing to higher overall product quality and specialization. Second, consumers benefit from greater choice. The availability of different

refrigerator models and features from other countries enriches consumer options, leading to greater consumer satisfaction.

The data also reveal a significant trade imbalance in the temperature control equipment sector. Indonesia's cumulative imports of temperature control equipment were eleven times higher than its exports, amounting to US$2.74 billion. This trade gap indicates that Indonesia relies heavily on imported temperature control equipment to meet domestic demand, which may affect the country's trade balance and self-sufficiency.

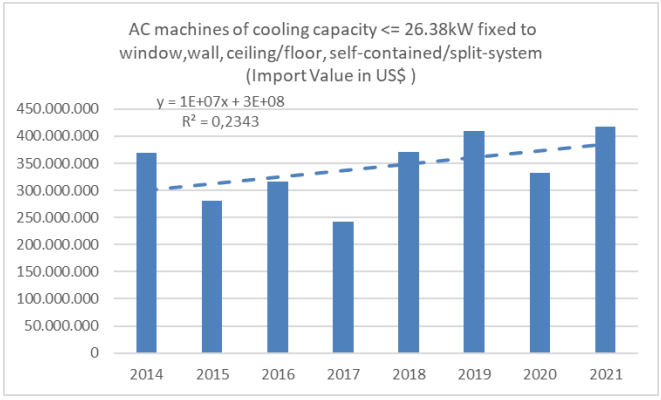

Fig 4. AC machines with cooling capacity ≤ 26.38kW, window, wall, ceiling/floor, self-contained/split (import value in US$)

The trade intensity of temperature control machines between Indonesia and partner countries is also relatively high, as indicated by the intra-industry trade index 0.838. The data shows a significant disparity between Indonesia's cumulative imports and exports of temperature control equipment, with imports being 11 times the value of exports at around US$2.74 billion. This discrepancy indicates a trade imbalance, with the country heavily reliant on foreign suppliers to meet domestic demand for temperature control equipment.

Figure 4 shows that the linear growth trend of imports of temperature control equipment is relatively modest, with a compound annual growth rate (CAGR) of only 1.8 percent. This condition suggests a slow increase in the value of imports over the period. In addition, the low variability between import value and time (23.43 percent) indicates a relatively stable and consistent pattern of import growth over the years observed. Temperature control equipment imports mainly from ASEAN countries (Malaysia, Thailand, Vietnam) and China, and the diversity of import sources highlights the interconnectedness of Indonesia's trade in temperature control equipment with both neighboring countries and global markets. The high intra-industry trade index (IIT) of 0.838 indicates a relatively strong trade relationship in temperature control equipment between Indonesia and its partner countries. Trade in these machines is dense, and similar products are exchanged significantly within this industry between Indonesia and its trading partners. The significant gap between imports and exports highlights the potential for Indonesia to increase domestic production and competitiveness in the temperature control equipment industry. The relatively low growth rate of imports suggests that there may be room

for local production to capture a larger domestic market share and potentially expand into international markets.

With high export growth indicators and intra-industry trade index, the refrigeration and temperature control machinery industry can be considered as an industry with competitiveness in international trade. Such industrial conditions must be maintained in international competition. The role of government policy is necessary to support this existence. So far, the competitiveness of products has been determined by quality, delivery, and price. However, in the case of consumer electronics, quality and delivery are currently relatively equal. What is different, and what determines the competitiveness of an item, is only the price. So, the necessary government policy is to keep production costs low through fiscal stimulus.

5. Conclusions and Suggestions

In conclusion, this study sheds light on various facets of Indonesia's electronics industry. Analyzing export and import dynamics and applying metrics like Compound Annual Growth Rate (CAGR) and Inter-Industry Trade Index (IIT) have provided valuable insights into the industry's performance and its interaction with global markets. Although gradual, the positive growth trends in refrigerator and AC machine exports emphasize the sector's potential for sustained expansion. Conversely, the rapid growth of refrigerator and cooling machines (AC) imports indicates evolving consumer demands and market dynamics.

The study's key findings highlight the significance of policy interventions to enhance the competitiveness of domestic industries. The relatively high IIT values for imports and exports underline the potential for intra-industry trade to deepen product specialization and diversification, ultimately benefiting consumers and supporting economic growth. Policymakers could consider measures to reduce production costs, such as well-designed fiscal incentives, which could bolster the industry's global competitiveness. However, it's important to note that this assertion warrants a deeper and more detailed analysis to substantiate this claim. Further investigation is needed to ascertain the precise impact of BMDTP on production costs and to identify other potentially influential factors in this context. This additional analysis will provide a more comprehensive understanding of the dynamics at play in cost reduction within the relevant industry.

Suggested strategies include leveraging the insights from the CAGR and IIT analyses to formulate targeted policies that promote technological advancements, research and development, and skill enhancement within the electronics industry. These efforts could help consolidate the industry's position in the global market, foster innovation, and stimulate economic growth. Moreover, maintaining a balanced trade environment and strategic policy interventions can create a conducive atmosphere for domestic industries to thrive, ultimately contributing to the broader goal of sustainable economic development.

References

[1] R. M. Putri, A. Rifin, and Erwidodo, “Analisis Perdagangan Intra Industri Regional Comprehensive Economic Partnership (Rcep) Pada Produk Pertanian,” *Bul. Ilm. Litbang Perdagang.*, vol. 15, no. 2, pp. 181–208, 2021, doi: 10.30908/bilp.v15i2.570.

[2] I. M. L. Vierke, D. Budhi, A. Sanusi, and S. Ahmar, "Analysis of Fiscal Incentive Policies in The Electronic Industries Using Regulatory Impact Analysis (RIA)," *JSRET*, vol. 2, no. 1, pp. 288–306, 2023.

[3] N. Laili, “Analisis Daya Saing Dan Faktor-Faktor Yang Mempengaruhi Ekspor Produk Alas Kaki Indonesia Ke Amerika Serikat Ditinjau Dalam Perspektif Ekonomi Islam,” *J. Ilm. Ekon. Islam*, vol. 7, no. 2, pp. 1019–1029, 2021, doi: 10.29040/jiei.v7i2.2385.

[4] E. S. Irianto, H. Rosdiana, S. Sunaryo, M. R. Tambunan, and I. Inayati, “Konstruksi Ulang Kebijakan Fasilitas Bea Masuk Untuk Meningkatkan Produktivitas Industri Galangan Kapal di Indonesia,” *IPTEK J. Proc. Ser.*, vol. 3, no. 5, 2017, doi: 10.12962/j23546026.y2017i5.3134.

[5] L. Almamalik and P. P. Ganesha, “ANALYSIS OF BEA MASUK DITANGGUNG PEMERINTAH (BMDTP) IMPACT ON,” no. October, 2020.

[6] P. Injuries and R. Board, "Regulatory Impact Analysis," pp. 128–129, 2015, doi: 10.1787/gov_glance-2015-39-en.

[7] I. Guceri and L. Liu, "Effectiveness of Fiscal Incentives for R&D," *Am. Econ. J. Econ. Policy*, vol. 11, no. 1, pp. 266–291, 2019.

[8] P. O'Reilly, S. Perret, and K. Van Dender, "Tax and Fiscal Policy in Response to the Coronavirus Crisis: Strengthening Confidence and Resilience," *Intertax*, vol. 48, no. May, pp. 736–742, 2020.

[9] H. Prabowo and H. Putra, “Analisis Dampak Pemanfaatan Kebijakan Bea Masuk Ditanggung Pemerintah (Bmdtp) Terhadap Produktivitas Sektor Industri Tertentu,” pp. 113–123, 2015.

[10] S. Becker, A. Berg, S. Kohli, and A. Thiel, "Sporting goods 2021: The next normal for an industry in flux," *Mckinsey.Com*, no. Exhibit 1, pp. 1–12, 2021, [Online]. Available: https://www.mckinsey.com/industries/retail/our-insights/sporting-goods-2021-the-next-normal-for-an-industry-in-flux.

[11] M. Baishya, "an Analysis of Trend and Pattern of Fiscal Policy in Northeast India With Special Reference To Assam," *Int. J. Soc. Sci. Econ. Res.*, vol. 08, no. 01, pp. 84–94, 2023, doi: 10.46609/ijsser.2023.v08i01.005.

[12] L. Hellvin, "Vertical intra-industry trade between China and OECD countries," *OECD Work. Pap.*, vol. 114, no. 4, no 73, p. 37 p., 1996.

[13] O. Havrylyshyn and E. Civan, "Intra-industry trade among developing countries," *J. Dev. Econ.*, vol. 18, no. 2–3, pp. 253–271, 1985, doi: 10.1016/0304-3878(85)90057-4.

[14] L. Yuliati, “Intra-Industry Trade sebagai Alternatif dalam Mengatasi Dampak Krisis Global di Indonesia,” *Trikonomika*, vol. 11, no. 1, pp. 96–110, 2012.