

Chapter 1

Current Status of the Food Industry in Indonesia

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ABSTRACT

This study assesses the contribution of the food and beverage industry to the Indonesian economy based on firm characteristics. The comparative descriptive statistical method describes a detailed mapping of the firm's character and the main supporting factors, such as processed commodities, firm size, island region, capital ownership, and exporters. The contribution of the food and beverage sub-industry varies; the vegetable and animal oils and fats industry is the largest and most effective. Small and medium firms have the lowest contribution compared to

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large firms. Firms in the Sumatra region have the highest contribution compared to firms in other regions. PMDN firms have a higher contribution than PMA firms. Non-exporting firms have a high average contribution compared to exporting firms. Based on the results, policymakers can concentrate on the potential to increase the contribution of a particular group of firms.

INTRODUCTION

The manufacturing sector is an industry that plays a vital role in the national economy (Attiah, 2019; Banerjee, 2020; Chakravarty & Mitra, 2009; Herman, 2016; Khan & Siddiqi, 2011; Qayyum, Khalid, & Muhammad Usman, 2021; Su & Yao, 2017; Nusratovich, 2019; Sengupta, Sinha, & Dutta, 2019). National Gross Domestic Product (GDP) data for the 2010-2020 period illustrate that the manufacturing sector consistently contributes the most to national GDP compared to other sectors (Statistics Indonesia, 2021a). The performance of manufacturing can provide a contribution share of 19.70 - 22.04 percent, with an average of 20.64 percent per year. In 2020, the manufacturing sector will remain the largest contributor to GDP at 19.88 percent (Figure 1).

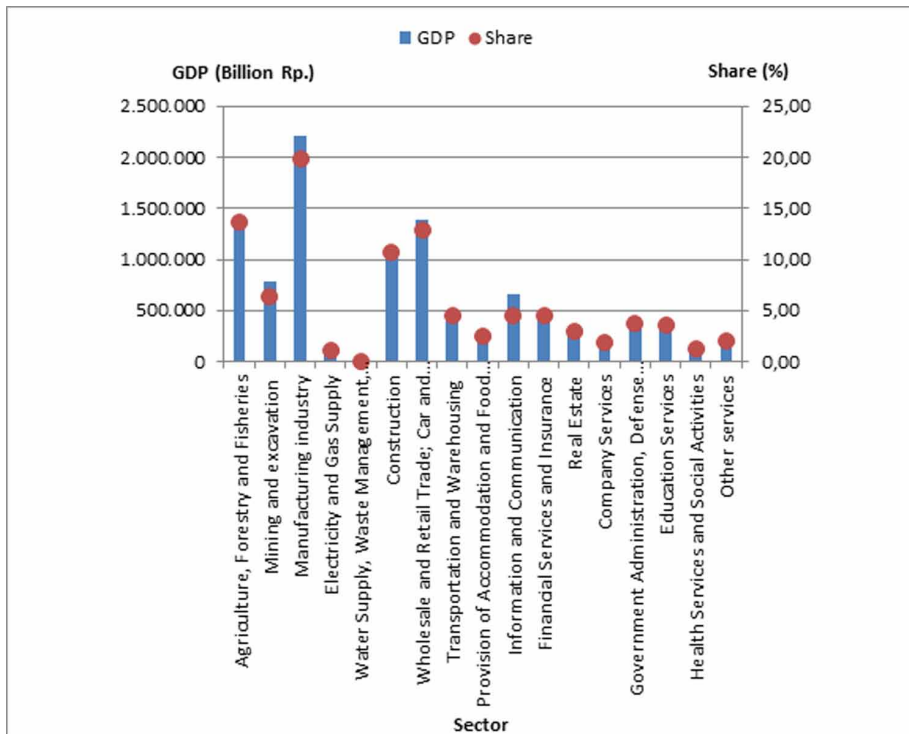
In most developing countries, manufacturing sectors play a significant role in increasing economic development since the primary sectors have a low contribution to speeding up the national economy. To construct economic development, the role of manufacturing and labor-intensive industries are very significant in their contribution to non-mining export, absorbing the surplus manpower, and influencing the emergence of new employments (Wijaya, Kurniawati, & Hutama, 2018; Haraguchi, Cheng, & Smeets, 2017).

The food industry indicated higher total factor productivity growth compared to other industries. Meanwhile, the industry of processing and preserving meat, fish, fruits, vegetables, cooking oil, and fat (ISIC 151) has the highest productivity growth. General evidence shows that technical progress becomes the main factor of TFP growth, followed by scale and technical efficiency change (Widodo, Salim, & Bloch, 2015; Liu, Wang, Yang, Rahman, & Sriboonchitta, 2020).

The increasing trend of economic growth denotes that the Indonesian economy is experiencing an increase in production and expenditure, components that exist in GDP. Indonesia also experienced increased economic growth per capita (Suryahani, Susilowati, & M., 2018). The agricultural sector has proven to restore the economy in the domestic economic crisis. This sector contributes to the national economy and plays an important role in increasing income, creating job opportunities, as a source of foreign exchange, ensuring local food needs, and producing raw materials. In general, the agricultural sector plays a vital role in maintaining food security and

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Figure 1. GDP of the sector and its contribution to national GDP in 2020 (Statistics Indonesia, 2021a), author's calculation



economic stability (Firmansyah, Widodo, Karsinah, & Oktavilia, 2017; Rozaki, 2021; Nugroho et al., 2022; Pawlak & Kołodziejczak, 2020).

Deindustrialization and diminishing economic growth have become one of the main issues caused by the COVID-19 pandemic. One of the sub-sectors of manufacturing believed to be very important and capable of sustaining its expansion is the food and beverage industry (F&B). The growth of the F&B has proven to be stable during the pandemic period because it is one of the efforts to increase endurance in anticipation of the COVID-19 pandemic (Adhiem, 2021). In addition, the F&B sub-sector can consistently provide the highest contribution share increase in national GDP from 5.25% in 2010 to 6.85% in 2020 (an average of 6.05%). The share of this contribution was 28.18% in 2010 and 38.29% in 2020 to the GDP of the manufacturing sector (average of 33.24%) (Table 1). Thus, the F&B sub-sector becomes one of the sub-sectors that drive the national economy and can accelerate national economic recovery.

The tendency in Indonesia during the covid-19 crisis is the availability of imported food, including rice, horticulture, and livestock products. Covid-19 has

affected each food exporting country to reduce food exports to other countries to keep food available. Covid-19 has indicated policyholders to change their strategy to fulfill food availability (Sumekar, Sumarsono, Prasetyo, & Prayoga, 2021; Laborde, Martin, Swinnen, & Vos, 2020; Aday & Aday, 2020).

Table 1. Contribution of industrial sub-sectors to national GDP and manufacturing sector GDP

Manufacture (Non-Migas)		Contribution to national GDP (in percentage)			Contribution to manufacturing sector GDP (in percentage)		
		2010	2020	Mean	2010	2020	Mean
1	Food and Beverages	5.25	6.85	6.05	28.18	38.29	33.24
2	Tobacco Processing	0.98	0.88	0.93	5.26	4.92	5.09
3	Textile and Product textile	1.40	1.21	1.31	7.53	6.76	7.15
4	Leather, Leather Goods, and Footwear	0.29	0.25	0.27	1.54	1.42	1.48
5	Wood, bamboo, and rattan	0.83	0.51	0.67	4.44	2.85	3.64
6	Paper and Paper Goods; Printing and Reproduction of Recorded Media	0.99	0.72	0.85	5.32	4.01	4.66
7	Chemical, Pharmaceutical, and Traditional Medicine	1.67	1.92	1.79	8.94	10.75	9.84
8	Rubber and Plastic	0.97	0.54	0.75	5.22	3.00	4.11
9	Non-Metal Mineral	0.74	0.56	0.65	3.98	3.11	3.55
10	Basic Metal	0.79	0.78	0.79	4.26	4.38	4.32
11	Metal Goods; Computers, Electronic Goods, Optics; and Electrical Equipment	1.90	1.63	1.77	10.22	9.13	9.68
12	Machinery and Equipment	0.35	0.28	0.31	1.86	1.57	1.71
13	Transport Equipment	1.96	1.35	1.65	10.50	7.57	9.03
14	Furniture	0.29	0.25	0.27	1.57	1.40	1.48
15	Other Processing Industries; Repair and Installation Services for Machinery and Equipment	0.22	0.15	0.19	1.18	0.84	1.01
Total of contribution		18.63	17.89	18.26	100	100	100

Sources: Statistics Indonesia (2021a), author's calculation

The descriptive statistical exploration of firm characteristics was carried out to describe the dynamics of the contribution of the F&B group. The firm's characteristics are commodity level, size, island region, type of ownership, and exporter. Information from this study can assist policymakers in designing better sectoral and cost-effective

policies. The implementation of stimulus or incentive policies is being implemented. However, the focus of the policy and the benchmark for the success of the policy can still be optimized. This exploratory study effectively assesses performance and opportunities to increase the potential contribution of the food and beverage industry sub-sector in supporting the national economic recovery.

There are several studies on the role of the food and beverage industry's contribution to economic growth. Sunetra (Lekuthai, 2007) uses the Input-Output model of 1980, 1990, and 2000. The results of this study provide a sector comparison of the benefits of the F&B for the economy in Thailand as a whole. Its empirical conclusion is that the F&B makes the strongest contribution to the economy in Thailand compared to various leading industries in terms of production drivers, job creation, value-added drivers, and foreign exchange earnings. The export value is still not the highest. Another study by Unnevehr in 2017 concluded that the F&B plays a role in several ways, including; providing a stable source of employment, playing an important role in the local economy, contributing to food system innovation, responding to increasing export demand, contributing to food affordability, address increasingly sophisticated consumer demands, meet social goals (public policy and the role of industry), and look to the future front. This study uses data for the period 1993-2015 that comes from various sources and applies the descriptive statistics method.

DATA

The data used to describe the current descriptive statistics of the F&B are secondary data from the annual Indonesian Large Medium Industry Survey for the 2010-2018 periods, which was prepared by the Central Statistics Agency (Statistics Indonesia, 2021b). The survey sample used is assumed to represent the population of firms in the Indonesian manufacturing industry. In addition, the data only reached 2018, the last year IBS data was released, and the updated year data could not be obtained. The advantage of this IBS survey data because it provides detailed information on all firms. This data provides information on all firms with 20 or more laborers for at least six months and cover more than 20000 firms annually. This survey provides a unique identifier for each firm, which did not change over the 2010–2018 period, and provides an unbalanced panel. This survey contains output and characteristics at the enterprise level, such as commodities processed, number of laborers (firm size), regional area (island), type of capital ownership, and exporters.

Output data is measured as added value in billions of Indonesian rupiah based on constant prices in 2010. Commodities processed are based on the 3-digit International Standard Industrial Classification (ISIC). Firm size is based on the number of laborers; small firms have less than 100 laborers; small-medium enterprises have

between 100 and 199 laborers; medium-sized enterprises have between 200 and 499 laborers; medium-large enterprises have between 500 and 999 laborers; Big firm has more than 1000 workforce. Firm region based on the island; Java-Bali, Sumatra, Kalimantan, Sulawesi, and Maluku-Papua. Based on the type of capital ownership, companies can be classified into Domestic Investment (PMDN), Foreign Investment (PMA), and Non-Facilities. Classification of exporters based on export and non-export characteristics.

Processed Commodities

The classification of processed food and beverage commodities considers firms with the same food and beverage business line according to the 3-digit ISIC. Food industry firms are classified into eight industrial sub-sectors, and beverage industry firms remain in one sub-sector (Table 2). In Table 2, the food industry sub-sectors with the highest average in 2010-2018 are manufacturing other products, representing more than 48%. While the lowest average is the manufacture of dairy products only represents 1%.

However, this industry does not automatically contribute to the highest and lowest output share. The industry with the highest output share is the manufacture of vegetable and animal oil and fat (57%). The lowest output share is the processing and preserving of meat (0.7%). Manufacture of other products only has an output share of 18%. Let's look at the ratio between output share and firm share. The sub-sectors with the top three highest ratios are the manufacture of prepared animal feeds, vegetable and animal oils and fats, and dairy products.

Considering the results of the descriptive statistics of share output and share of firms above, the food industry's highest contributor to the national economic recovery is in the Manufacture of vegetable and animal oil and fat and Manufacture of other products. The output and the firm effect both play a role in the food industry's contribution to economic recovery. These effects have maintained a stable share of the food industry's contribution to economic recovery during the COVID-19 pandemic. However, when considering the results of descriptive statistics on share ratio data, the manufacture of prepared animal feeds, vegetable and animal oils and fats, and dairy products are the most effective and efficient in national economic recovery. According to the beverage industry, there is only one sub-sector group of the beverage industry according to the 3-digit ISIC classification, so the contribution is 100% to the share of the food and beverage industry in the national economic recovery.

FIRM SIZE

Table 3 shows that food firms with a workforce of less than 100 represent more than 73% of the Indonesian food industry. However, they account for less than 13% of output. On the other hand, large enterprises (laborer number >1000) represent less than 3% of the total number of enterprises. They account for more than 26% of the output share. From these results, there is consistency that the highest number of firm sizes does not guarantee the highest output share and vice versa. It indicates that the highest contributors to the food industry in the national economic recovery are large firms, followed by medium and small firms. Small firms may use a high proportion of manual labor to produce small output and vice versa. This is in line with the results of descriptive statistics on share ratio data so that large firms are the most effective and efficient in contributing to national economic recovery, while small firms are the opposite.

Table 2. Characteristics of the food and beverage industry by 3-digit ISIC sub-sector

Sub-sectors (ISIC 3-digit)	Food Industry								
	Number of firms				The industrial output [Rp. trillion]				Ratio of Share
	2010	2018	Mean	Share	2010	2018	Mean	Share	
F-[101]	64	111	84	1.4	2.66	19.28	6.16	0.7	0.5
F-[102]	695	1127	1061	17.4	18.40	90.84	49.10	5.6	0.3
F-[103]	245	265	245	4.0	3.44	8.44	4.93	0.6	0.1
F-[104]	638	1173	850	13.9	245.43	842.35	498.64	57.0	4.1
F-[105]	51	92	62	1.0	10.20	53.30	19.04	2.2	2.1
F-[106]	717	660	729	11.9	37.74	91.33	63.39	7.2	0.6
F-[107]	2747	3192	2963	48.5	94.18	397.93	160.60	18.3	0.4
F-[108]	91	155	117	1.9	32.71	111.37	73.43	8.4	4.4
Total	5248	6775	6110	100.0	444.76	1,614.84	875.29	100.0	1.0
Sub-sectors (ISIC 3-digit)	Beverage Industry								
	Number of firms				The industrial output [Rp. trillion]				Ratio of Share
	2010	2018	Mean	Share	2010	2018	Mean	Share	
B-[110]	328	583	425	100.0	15.46	68.75	29.88	100.0	1.0
Total	328	583	425	100.0	15.46	68.75	29.88	100.0	1.0

Sources: Statistics Indonesia (2021b), author's calculation

Notes: F-[101] Processing and preserving of meat; F-[102] Processing and preserving of fish, crustacean, and mollusks; F-[103] Processing and preserving of fruit and vegetables; F-[104] Manufacture of vegetable and animal oils and fats; F-[105] Manufacture of dairy products; F-[106] Manufacture of grain mill products, starches, and starch products; F-[107] Manufacture of other products; F-[108] Manufacture of prepared animal feeds; B-[110] Manufacture of beverages.

In general, the trend in the descriptive statistics for the beverage industry is similar to the results for the descriptive statistics for the food industry, although some are slightly different. Beverage small firms (laborer <100) represent more than 67% of the Indonesian beverage industry. Large firms (laborer >1000) represent 1.8% of the total number of firms. However, both of them account for 17% of output. On the other hand, medium-sized firms (number of laborers 200-499), representing 11.7% of the total number of enterprises, can contribute more than 31% output share. Based on the results of descriptive statistics on share output and share of firms, the highest contributors to the beverage industry in the national economic recovery are medium-sized firms. Medium-sized firms may optimize the proportion of labor and increase capital. When viewed from a share ratio, firms in the beverage industry also show the same trend of results as firms in the food industry.

Island Region

The island region considers the geographical position of a firm in the archipelago. This position concerns transportation and logistics costs for product distribution and marketing. In Table 4, food firms in the Java-Bali region illustrate more than (> 70%) of the total Indonesian food industry firms. This region contributes more than 38% of the share of output. Meanwhile, the largest average share of output is in Sumatra (44.7%), followed by Java-Bali (38.5%). Food firms in the Maluku-Papua region have a small contribution because of the small proportion of firms in its location (<1%). In addition, this may happen because this area is far from the center of government, so they are less touched by government policies or product marketing not optimal. Based on these results, the highest contributors to the food industry's national economic recovery are firms in the Sumatra and Java-Bali regions. However, when viewed in terms of the ratio of output share to the share of the number of firms, firms in the Kalimantan region have the highest ratio, followed by Sumatra than Maluku-Papua. This shows that firms in this region are very effective and efficient in contributing to the recovery of the national economy.

Based on descriptive statistics, trends in the number of firms and share of beverage industry output show the same results. The largest number of firms and the highest output share in the Java-Bali region, representing 70% and 86%, respectively. Meanwhile, the smallest number of firms and the lowest output share in the Maluku-Papua, representing 2.8% and 0.4%, respectively. The beverage industry in the Maluku-Papua region is consistent with the food industry, which has a small contribution because of the small proportion of firms in its location. Based on the results of statistics descriptive of the shared output and share of the firm, the highest contributors to the beverage industry in the national economic recovery are

Table 3. Characteristics of the food and beverage industry by firm size

<i>Firm size (laborers)</i>	Food Industry								
	Number of firms				The industrial output [Rp. trillion]				<i>Ratio of Share</i>
	2010	2018	Mean	<i>Share</i>	2010	2018	Mean	<i>Share</i>	
F-[20-99]	4024	4729	4508	73.8	48.90	212.94	110.59	12.6	0.2
F-[100-199]	578	1062	789	12.9	112.29	375.84	195.96	22.4	1.7
F-[200-499]	355	613	462	7.6	99.36	397.64	184.10	21.0	2.8
F-[500-999]	167	213	196	3.2	72.83	343.36	153.97	17.6	5.5
F-[>1000]	124	158	155	2.5	111.37	285.06	230.66	26.4	10.4
Total	5248	6775	6110	100.0	444.76	1,614.84	875.29	100.0	1.0
	Beverage Industry								
<i>Firm size (laborers)</i>	Number of firms				The industrial output [Rp. trillion]				<i>Ratio of Share</i>
	2010	2018	Mean	<i>Share</i>	2010	2018	Mean	<i>Share</i>	
	B-[20-99]	231	382	286	67.2	3.32	12.28	5.08	17.0
B-[100-199]	46	81	64	15.1	2.74	7.46	4.11	13.8	0.9
B-[200-499]	37	78	50	11.7	6.00	21.86	9.50	31.8	2.7
B-[500-999]	11	27	18	4.2	2.24	11.05	5.92	19.8	4.8
B-[>1000]	3	15	8	1.8	1.16	16.10	5.26	17.6	9.5
Total	328	583	425	100.0	15.46	68.75	29.88	100.0	1.0

Sources: Statistics Indonesia (2021b), author's calculation

firms in the Java-Bali region. The highest ratio in terms of the ratio of output share to the number of firm's shares is also in the Java-Bali region. This illustrates that beverage industry firms in the Java-Bali region are very effective and efficient in contributing to the national economic recovery.

Urbanization can promote productivity and economic opportunities and increase income. Due to positive externalities in the form of agglomeration, urban areas are generally economically more competitive and productive compared to rural. Urban areas create opportunities for the establishment of localization economies through the clustering of related activities. In contrast, urbanization economies may emerge in dense urban areas where the transaction cost of conducting business is lower and knowledge spillover opportunities are high. Businesses within such economies tend to be more economically productive, as demonstrated by a faster rate of growth in GRDP than in rural areas, with the benefits of agglomeration (Pangarso, Suharyadi, & Rijanta, 2020; Nguyen, 2018; Turok, 2017; Tadjoeiddin & Mercer-Blackman, 2018).

The empirical results show that the effect of specialization and diversity on firm-level technical efficiency is positive and negative, respectively. This indicates that specialization is more favorable than diversity to stimulate enterprise-level technical efficiency. Competition has positive indications, indicating that areas with high levels of competition tend to be more conducive to accelerating enterprise-level technical efficiency. In terms of firm location, both urban and industrial complexes are positive, indicating that firms in these areas experience higher technical efficiency (Widodo et al., 2015).

Generally, many manufacturing industries agglomerated in the coastal region with a proliferation of Special Economic Zones (SEZs) to attract export-oriented industries. Coastal areas often experience high industrial growth for obvious reasons of topography, access to infrastructure, supply, high market demand, and waste disposal into the sea (Fariha, Buchori, & Sejati, 2021; Priyanto, 2010)

Table 4. Characteristics of the food and beverage industry by island regions

<i>Island regions</i>	Food Industry								
	Number of firms				The industrial output [Rp. trillion]				<i>Ratio of Share</i>
	2010	2018	Mean	<i>Share</i>	2010	2018	Mean	<i>Share</i>	
F-[Java-Bali]	3887	4401	4304	70.4	164.04	753.72	337.29	38.5	0.6
F-[Sumatera]	967	1491	1189	19.5	210.28	608.64	391.10	44.7	2.3
F-[Kalimantan]	129	388	231	3.8	44.72	189.34	96.21	11.0	2.9
F-[Sulawesi]	235	436	333	5.4	22.78	52.30	41.60	4.8	0.9
F-[Maluku-Papua]	30	59	53	0.9	2.94	10.84	9.08	1.0	1.2
Total	5248	6775	6110	100.0	444.76	1,614.84	875.29	100.0	1.0
<i>Island regions</i>	Beverage Industry								
	Number of firms				The industrial output [Rp. trillion]				<i>Ratio of Share</i>
	2010	2018	Mean	<i>Share</i>	2010	2018	Mean	<i>Share</i>	
B-[Java-Bali]	231	396	295	69.4	13.28	60.55	25.75	86.2	1.2
B-[Sumatera]	55	103	72	17.0	1.56	6.00	2.94	9.8	0.6
B-[Kalimantan]	14	36	22	5.2	0.16	0.81	0.38	1.3	0.2
B-[Sulawesi]	17	30	24	5.6	0.36	1.19	0.70	2.3	0.4
B-[Maluku-Papua]	11	18	12	2.8	0.10	0.21	0.11	0.4	0.1
Total	328	583	425	100.0	15.46	68.75	29.88	100.0	1.0

Sources: Statistics Indonesia (2021b), author's calculation

Type of Ownership

The type of ownership classification refers to the participation of domestic investment (PMDN), namely private or state-owned firms, and foreign investment (PMA). Firms that are members of PMDN and PMA ownership are firms that invest using facilities from the government and are registered. The investments that do not use the facilities are non-facility firms or Non-facilities, which according to the Presidential Decree No. 22 of 1986 is a firm that is not subject to and does not get facilities based on Law no. 1 in conjunction with Law no. 11 of 1970 concerning Foreign Investment and Law no. 12 of 1970 concerning Domestic Investment. This law has been replaced by Law no. 25 of 2007 concerning Investment, which means that the permit is issued directly by the Department/Agency in charge. Based on Table 5, 22% of food firms are PMDN, 5% are PMA, and the others are non-Facilities. PMDNs can contribute the highest share of output (47%), although the number of PMDNs is 22%.

Meanwhile, non-facility contributes the smallest share of output, even though it has more than 72% of firms. Based on the results of descriptive statistics on output share and number of firms share, the highest contributor to the food industry in the national economic recovery is PMDN. However, in terms of the ratio of output share to the share of the number of firms, PMA firms have the highest ratio. This shows

Table 5. Characteristics of the food and beverage industry by type of ownership

Type of Ownership	Food Industry								
	Number of firms				The industrial output [Rp. trillion]				Ratio of Share
	2010	2018	Mean	Share	2010	2018	Mean	Share	
F-[PMDN]	895	2252	1335	21.7	238.54	824.12	410.91	46.9	2.1
F-[PMA]	234	510	323	5.3	116.92	383.80	234.16	26.8	5.1
F-[Non-Facilities]	4119	4013	4452	72.9	89.30	406.91	230.22	26.3	0.4
Total	5248	6775	6110	100.0	444.76	1,614.84	875.29	100.0	1.0
Type of Ownership	Beverage Industry								
	Number of firms				The industrial output [Rp. trillion]				Ratio of Share
	2010	2018	Mean	Share	2010	2018	Mean	Share	
B-[PMDN]	109	286	166	39.0	5.27	29.96	9.73	32.6	0.8
B-[PMA]	26	53	37	8.7	5.76	18.18	9.31	31.2	3.6
B-[Non-Facilities]	193	244	222	52.2	4.43	20.61	10.84	36.3	0.7
Total	328	583	425	100.0	15.46	68.75	29.88	100.0	1.0

Sources: Statistics Indonesia (2021b), author's calculation

that PMA is more effective and efficient in contributing to the national economic recovery.

Based on descriptive statistical analysis, trends in the number of firms and share of beverage industry output are as follows. The largest number of firms and the highest output share is owned by non-Facilities (52.2% and 36.3%, respectively). Meanwhile, PMA has the fewest number of firms and the lowest share of output (8.7% and 31.2%, respectively). The beverage firm owned by PMDN has a firm share of 39% and an output share of 32.6%. The share of output in the three owners is almost balanced so that the contributors to the beverage industry in the national economic recovery are also balanced. However, firms owned by PMA are more competitive because fewer firms exist. When viewed in terms of the ratio of output share to the share of the number of firms, PMA has the highest ratio. These results also indicate that each group requires a different policy. The choice of stimulus policy in the beverage industry in accelerating the national economic recovery is to focus on FDI firms. The number of firms is small but produces a high share of output.

EXPORTER

Export capabilities are classified into three groups; export, not export, and none. The none group is a firm that does not fill in export data, so it does not need to be analyzed even though statistics are still displayed. Firms that export represents less than 10% of the total number of firms and account for more than 18% of the output. Firms that do not export represent more than 56% of the total and account for around 30.5% share of output. The number of firms that do not export has the largest number of firms, although the contribution of the share of output is smaller than “none” firms. This shows that non-exporting firms are not as productive as other groups of firms. When viewed in terms of the ratio of output share to share of the number of firms, export firms have the highest ratio, which means that export firms are very effective and efficient in contributing to national economic recovery (Kilavuz & Topcu, 2012; Kalaitzi & Chamberlain, 2020).

Based on the results in Table 6, the trend of beverage industry firms is in line with the results obtained in the food industry. Based on the statistics descriptive of the share of output and share of the firm, the highest contributor to the beverage industry in the national economic recovery is the “none” firm. However, when viewed in terms of the share of output to the share of the number of firms, exporter firms have the highest ratio of share. This means that the “export” beverage industry is very effective and efficient in contributing to the recovery of the national economy.

In the dairy industry, GDP per capita positively affects the volume of imports of dairy cow’s milk. Dairy cow’s milk exports also positively and significantly impact

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imports. In Indonesia, the increase in imports of dairy cow's milk is in line with the increase in exports of dairy cow's milk. Indonesian milk exports are in the form of raw materials such as milk, cream, etc. In contrast, imported milk tends to be processed, such as whey, butter, fresh cheese, casein, processed cheese, powdered cheese, buttermilk, yogurt, and others. The export and import trade balance will change along with the demand and supply of dairy cow's milk (Budiraharjo, Raharjo, & Solikhin, 2021; Susanty et al., 2019).

Economic growth can be affected by several factors, including household consumption, exports, inflation, and the labor force. This fact makes the theme of economic growth still interesting to analyze, especially using Indonesian data. Export growth positively and significantly affect economic growth (Paksi, 2021; Supartoyo, Tatum, & Sendouw, 2013; Bashir & Susetyo, 2018; Kurniasih, 2019).

Table 6. Characteristics of the food and beverage industry by exporter

Exporting?	Food Industry								
	Number of firms				The industrial output [Rp. trillion]				Ratio of Share
	2010	2018	Mean	Share	2010	2018	Mean	Share	
<i>F-Yes</i>	360	540	490	8.0	75.92	233.18	158.83	18.1	2.3
<i>F-No</i>	3251	3698	3445	56.4	144.76	461.33	266.91	30.5	0.5
<i>F-None</i>	1637	2537	2175	35.6	224.08	920.33	449.55	51.4	1.4
Total	5248	6775	6110	100.0	444.76	1,614.84	875.29	100.0	1.0
Exporting?	Beverage Industry								
	Number of firms				The industrial output [Rp. trillion]				Ratio of Share
	2010	2018	Mean	Share	2010	2018	Mean	Share	
<i>B-Yes</i>	9	17	14	3.2	0.75	3.63	2.62	8.8	2.7
<i>B-No</i>	187	283	216	50.7	4.96	17.85	8.09	27.1	0.5
<i>B-None</i>	132	283	196	46.1	9.75	47.27	19.17	64.1	1.4
Total	328	583	425	100.0	15.46	68.75	29.88	100.0	1.0

Sources: Statistics Indonesia (2021b), author's calculation

SOLUTIONS AND POLICY RECOMMENDATIONS

Stimulus policies must be realized in more detail and optimally. Identification of firms that contribute to the sub-sector of the food and beverage industry by the group of firm characteristics is a challenge for various policies. Different firm characteristics

can help stakeholders or policymakers to concentrate on stimulus policies only for certain industry groups.

Based on the conclusion of this study, the practical implications that can be recommended for increasing the contribution of the food and beverage industry to the national economic recovery are as follows. **First**, the government must provide rewards or incentives to firms that have the potential to make a large and effective contribution to the national economic recovery, namely firms in the food industry sub-sector of vegetable and animal oil and fat; firms with >1000 laborers; located in Sumatra and Java-Bali; owned by a domestic investment firm (PMDN); and export-oriented firms. **Second**, the government should provide increased capitalization and subsidies to firms that tend to contribute less, namely small firms with 20–99 and 100–199 laborers; PMDN, located in the Maluku-Papua and Sulawesi regions; and not export firms to try to increase productivity. **Third**, the government must implement revitalize inefficient machines and technological changes in small-contributing firms by considering and paying attention to the specific behavior of firms in each group of characteristics of the food and beverage industry firms based on this research. **Finally**, policymakers or stakeholders must have a very strong commitment to implementing policies and achieving the desired targets, accompanied by management commitment to improving firm performance.

CONCLUSION

The conclusions of this study are outlined as follows. **First**, the stimulus policy taking into account the specific behavior of firms in the food and beverage sub-sector that contributes greatly and effectively needs to be prioritized. The findings illustrate that the manufacture of oils and fats from vegetables and animals [104] has the largest share of contribution and is also effective in contributing to national economic recovery. Thus, the policy of providing stimulus to the industry [104] is the right step. **Second**, there are only a few large firms, but the output share is high. On the contrary, many small firms only contribute a small output share. This finding shows that each character has a different contribution tendency and variability. Therefore, focusing the stimulus policy on large firms is a good step because it will reduce implementation efforts and costs. Focus on firms that are few will be more facilitated and cost-effective. **Third**, firms in Sumatra and Java-Bali have a high share of firms. Therefore, focusing the stimulus policy only on firms in the Sumatra and Java-Bali regions is a wise move because it will accelerate economic recovery. **Fourth**, PMDN firms have a large share of output compared to others, so they are responsible and contribute to economic recovery. The most effective and efficient PMA firm in contributing. Therefore, policymakers must concentrate on PMDN

firms as a first step before venturing into PMA and non-facilities. **Fifth**, the number of export-oriented firms is small, but the share of output is high, so the output ratio to the firm's share is quite large. Therefore, policymakers should concentrate on export-oriented firms because it is an effective and efficient measure in accelerating the national economic recovery.

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KEY TERMS AND DEFINITIONS

Commodity: This can be defined as objects of economic value. In its broadest meaning, the word “commodity” can be used to describe any traded good, usually used for goods rather than services, but can be applied to both (Appadurai, 2014; Bain, 2013).

Economic contribution: Business or industrial events that add value to the performance of countries, which is reflected on their gross domestic products (GDP), index standard of living, industrialization, and production of goods. The industrialized countries have numerous and sophisticated ways that contribute to their economies. Economic contributions of an industry sector are often vital information in the policy-making process (Mosweunyane, 2019; Pelkki & Sherman, 2020).

Exporter: Indonesian food and beverages firm that ship goods from the Indonesian custom area to the custom area of other countries. Usually, export process starts from an offer of a party followed by the agreement from another party in a sales contract process.

Firm characteristic: are defined as a firm internal environment that is comprised of firm’s demographics and management characteristics that are part of the firm’s operating environment. Firm size, leverage, firm age, revenue growth, asset growth, and turnover are all examples of firm characteristics (Zou and Stan, 1998; Ashiq et al., 2022; Salah, 2018; Mutende et al., 2017).

Firm size: firm scale measured in number of employees. It usually categorized in small, medium and large firm.

Food and beverages industry: is all companies involved in processing raw food materials, packaging, and distributing them. This includes fresh, prepared foods as well as packaged foods, and alcoholic and nonalcoholic beverages.

Industrial Cluster: A geographic concentration of interconnected firms, suppliers, and institutions in a particular field. It has the potential to affect competition by increasing the productivity of the companies in the clusters, driving innovation, and stimulating new businesses in the specific field (Christiansen, 2014).

Industrial sub-sector: The International Standard Industrial Classification of All Economic Activities (ISIC) is the international reference classification of productive activities. Its main purpose is to provide a set of activity categories that can be utilized for the collection and reporting of statistics according to such activities (United Nations-Statistical Division, 2008).

Type of ownership: This refers to the participation of domestic investment (PMDN) and foreign investment (PMA). PMDN is an investment activity to run a business in the territory of Indonesia, which is carried out by domestic investors by relying on domestic capital. PMA is the formation of business capital in Indonesia aimed at foreign investors, using foreign capital fully or partially with domestic investors.