EMPLOYMENT INDUCEMENT OF INDONESIAN AGRICULTURAL EXPORTS

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ABSTRAK

Makalah ini bertujuan untuk mengestimasi kesempatan kerja yang tercipta oleh ekspor pertanian dengan menggunakan data Input-Output Indonesia 1990 dan 1995. Hasil estimasi menunjukkan bahwa meskipun pengganda kesempatan kerja sektor pertanian relatif tinggi, kesempatan kerja yang ditimbulkan oleh ekspor pertanian sangat kecil jika dibandingkan dengan yang ditimbulkan oleh ekspor non-pertanian karena ekspor pertanian sangat rendah. Relatif rendahnya ekpor pertanian dapat dimengerti karena para penentu kebijaksanaan ketika itu agaknya percaya bahwa pertumbuhan ekonomi yang cepat hanya dapat dicapai dengan memacu ekspor non-pertanian, terutama ekspor manufaktur. Karena sektor-sektor pertanian memiliki pengganda kesempatan kerja relatif tinggi dan ternyata lebih tahan terhadap kejutan dari luar, seperti yang terjadi selama krisis ekonomi sejak tahun 1997, maka upaya peningkatan ekpor pertanian seharusnya tidak diabaikan terutama dalam rangka perluasan kesempatan kerja.

Kata Kunci: Kesempatan Kerja, Ekspor Pertanian, Input-Output Indonesia, Pengganda

INTRODUCTION

Background

Economic development in Indonesia over the past decade and a half prior to the current economic crisis attained remarkable success in terms of GDP and exports. The growth of GDP went up from 6.1 percent per annum during 1980-90 periods to 7.6 percent in 1990-95 periods and 7.8 percent in 1996. The striking achievement has been stemmed from convincing diversification of the economy and good performance of manufacturing sector. Manufacturing sector grew at a rate of 10 percent per annum between 1985 and 1995 and contributed to a quarter of the country's GDP. On the average, the growth of merchandise exports was nearly 15 percent per annum during 1986-93, but declined to 8.8 percent in 1996 (ILO, 1999; see also Anwar, 1999).

The impressive performance of exports cannot be isolated from a long sequence of policies beginning in 1980s as a response to a sharp fall in oil revenue. The process began with fiscal and financial policies aimed at reducing the country's dependence on oil revenues and facilitating a greater role of private investment. Devaluation was enacted in 1983 to stimulate non-oil exports. In 1986, the government responded to the collapse of global oil prices with another devaluation. There have been many trade and industrial policies afterwards. Basically, trade and industrial policies after 1986 led to an export-oriented approach and put less emphasis on import substitution strategy. In this regard, the government displaced many non-tariff barriers with import tariffs in confining imports. The most

significant reforms facilitating export expansion was an effective duty exemption and drawback scheme. The impact of trade and investment liberalization had been the significant reduction in both nominal and effective protection rates. Changes in trade, industrial and investment policies stimulated manufacturing export and therefore the share of manufacturing export in total exports significantly increased. (Fane and Phillips, 1991; Fujita and James, 1997).

The structural transformation of the economy that has been lasting since the seventies has resulted in the decline in the share of agricultural GDP. For example, the share of agricultural GDP declined from 17.8% in 1993 to 14.8% in 1997, but it then increased to 17.2% in 1998 due to the decline in the share of non-agricultural GDP caused by the crisis. The fact that agricultural employment increased 13.3% while agricultural DGP increased only 0.22% in the first year of the crisis (1997-1998) indicates that agricultural productivity was declining (Sudaryanto, 1999; Kasryno, 1999, and Tambunan, 1999). The main reason is that the quality of agricultural labors is relatively low since educated labors are being absorbed by non-agricultural sector (Swastika and Kustiari, 1999, Syafaat et al., 1999, and Susilowati et al. 1999; see also Nurmanaf, 1989). In the mean time, labor productivity across villages affects household income more than does the intensity of the labor absorption (Nurmanaf and Susilowati, 1999).

Indonesia needs to develop labor-intensive manufacturing exports for its large pool of unskilled and semiskilled labor. Note that the growth of employment before the crisis has lagged behind that of labor force. The employment growth rate during 1985-95 was 2.3 per year, while the growth rate of labor force was 3.1 percent. SAKERNAS labor force survey data show that the open unemployment rate increased from 2.8 percent per year in 1988 to 4.9 percent in 1996. The economic crisis that has been lasting since the mid of 1997 has made the unemployment worse. Although the economic crisis did not lead to massive open unemployment, the number of people not working and actively looking for work increased by nearly 1 million people between the mid 1997 and the mid 1998 (ILO, 1999).

Being the worst in Asia, the Indonesian economic crisis has resulted from many factors as follows (see Tarmidi, 1998). First, the exchange rates of foreign currencies were extremely high. Second, domestic currency (rupiah) was overvalued because of the low rates of rupiah depreciation in 1988-1996 periods (5.8% in 1991 and 2.4% in 1993). Third, foreign debt has been extremely high. Fourth, the country's export promotion policy, which was highly based on the development of imported-input-based industries, is another factor. Being highly dependent on imported inputs, the industries have been vulnerable to external shocks, particularly to the shocks in foreign exchange rates. Not to mention that the question of

governance, unfortunate political juncture, and a flawed banking system are the other factors contributing to the crisis (World Bank, 1998).

The extremely high exchange rates of foreign currencies obviously have made imported inputs for manufacturing products expensive. Therefore, manufacturing exports have declined and agricultural exports become more competitive. From the year of 1997 to 1998, non-agricultural GDP experienced a contraction of 21.7% while agricultural GDP increased 0.22%. To prevent the economy from being vulnerable to external shocks, Sudaryanto et al. (1999) suggested that the economic development strategy should be implemented by repositioning agricultural sector to be the prime mover in the economy. Based on the paradigm of large spectrum intersectoral linkages, Simatupang (1998) has recommended that the emphasis of development and the priority of government investments should be placed on the sectors of food crops and estate crops.

Since exports might determine domestic production and ultimately employment opportunities, information on the inducement of exports on employment would be useful for policy consideration. Fujita and James (1997) have estimated the employment effects of the rapid growth in manufactured exports in 1980-1990 period, but they did not discussed the employment effects of agricultural exports in details. That they have devoted their discussion on the employment effects of manufactured exports is understood since most of the outward-oriented policies during the time were concentrated on manufactured exports. To provide supplementary information to their findings, this paper is aimed at estimating the employment effects of agricultural exports.

Objective

The only objective of this paper is to estimate the employment effects of agricultural exports based on the data available in Indonesian Input-Output Tables 1990 and 1995. Since the objective is to estimate the employment effects of agricultural exports in general, the 19-sector Input-Output Tables published by the Agency of Indonesian Statistics (BPS) have been aggregated further to be 9 sectors in the estimation.

ANALYTICAL METHOD

Input-output (I-O) framework can be used to estimate the effects of final demand on employment creation. Let the balance equation in Leontief interindustry accounting framework be:

$$X = A^d X + F^d + E \qquad (1)$$

where X, A^d , F^d , and E are respectively an output vector, a domestic input coefficient matrix, a domestic final demand vector, and a vector of exports. Assuming that X is an endogenous variable, we may rewrite equation (1) as:

$$X = (I - A^d)^{-1} (F^d + E) \qquad (2)$$

where $(I - A^d)^{-1}$ denotes the inversion of domestic input coefficient matrix. Let R^d be the Leontief inverse matrix $(I - A^d)^{-1}$, and L denote the diagonal matrix of employment coefficients. By multiplying both sides of equation (2) by L, we obtain:

$$W = LX = LR^d F^d + LR^d E \qquad (3)$$

where W is a vector of employment. The second term on the right hand side of equation (3) captures the effects of exports on employment. Therefore, the employment created by exports of sector i, denoted by W_i^e , can be computed from:

$$W_i^e = L R^d E_i \qquad (4)$$

Fujita and James (1997) defined the transpose of E_i = (0,…,0, e_i ,0,…,0) as a vector of exports from sector i so that the effects of exports from other sectors can be excluded in the use of equation (4).

RESULTS

That the Indonesian trade policies during the period under study continued promoting manufacturing exports and were bias against agricultural sectors can be seen in Table 1. The increase of exports of non-agro industrial sector was the highest among all economic sectors. The export share of non-agro industries, for example, that was lower than that of mining sector in 1990, became the highest among all sectors in 1995. That the trade policy was bias towards non-agricultural sectors can also be seen from the decrease in exports of agricultural sectors, particularly the export of food crops, estate crops, and livestock sectors.

Not only were the export shares of food crop, estate crop, and livestock sectors decreasing, but also very small during the period under study. The export shares of fishing and forestry sectors were also small but the their export values remained increasing. Computed from the Table 1, the total exports of all agricultural sectors (food crop, estate crop, livestock, fishery and forestry sectors) declined from Rp 2.108 billion in 1990 to Rp 1.983 billion in 1995. In other words, the export share of agricultural sectors in total exports declined from 2.58 % in 1990 to 1.62 % in 1995. The decline was particularly due to the decline in export shares of food crop, estate crop, and livestock sectors (see column 6 of Table 1).

Table 1. Export Shares and Changes by Sectors (Rp million)

	1990		1995		Changes (%) [c]
	Exports [a]	Shares (%) [b]	Exports [a]	Shares (%) [b]	
Food Crop	190.8	0.23	120.2	0.10	-37.0
Estate Crop	1,424.0	1.75	1,239.5	1.01	-13.0
Livestock	43.9	0.05	43.1	0.04	-1.8
Fishing	351.0	0.43	425.5	0.35	21.2
Forestry	98.4	0.12	154.3	0.13	56.8
Agro-industries	4,674.4	5.73	6,520.4	5.33	39.5
Non-agro industries	25,277.0	31.00	52,749.4	43.11	108.7
Mining	34,136.8	41.87	29,234.6	23.89	-14.4
Services	15,335.6	18.82	31,872.6	26.04	107.8
T o t a l	81,531.9	100	122,359.6	100	50.1

[a] At 1995 constant prices; [b] Shares in the economy; [c] Changes from 1990 to 1995.

The declines in exports of food crop, estate crop, and livestock sectors resulted in the declines in export-induced employment in the three sectors (see Table 3). Note that the declines in export-induced employment were not entirely caused by the declines in exports from each sector but to some extent were also caused by the declines in employment multipliers, both direct and indirect employment multipliers (Table 2).

Table 2. Direct, Indirect, and Total Employment Multipliers.

Sectors	1990			1995		
	Direct	Indirect	Total	Direct	Indirect	Total
Rice	0.828	0.047	0.875	0.503	0.031	0.534
Other food crops	1.388	0.057	1.445	0.744	0.028	0.772
Estate Crops	0.585	0.080	0.665	0.240	0.036	0.276
Livestock	0.489	0.239	0.728	0.210	0.156	0.366
Fishery	0.276	0.085	0.361	0.131	0.036	0.167
Forestry	0.206	0.046	0.252	0.090	0.029	0.119
Agro-industries	0.530	0.554	1.084	0.232	0.245	0.477
Non-agro industries	0.189	0.189	0.378	0.078	0.289	0.367

It is worthwhile to note that although the employment multipliers of all sectors were decreasing, the employment multipliers of rice, other food crops, and agro-industry sectors were still relatively high as compared with those of other sectors. That the declines in employment multipliers had significant effects on export-induced employment can be clearly seen from the case of fishing sector. Although the exports of fishing sector increased 21.2 % from the year of 1990 to 1995, the export-induced employment in the sector was decreasing (Table 3). The decrease was due to the declines in its employment multiplier. Similar case was also true for mining sector. The declines in employment multipliers even occurred in all

sectors of the economy. This indicates that the economy was in an attempt to use employment more efficiently.

Table 3. Ratios of Exports to Export-Related Employment.

Sectors	Export-related employment (1000 people) [a] 1990	Export-related employment (1000 people) [a] 1995	Changes (%) [b]	Exports values to related employment ratios [c] 1990	Exports values to related employment ratios [c] 1995
Food Crop	96 (1.2)	93 (0.5)	-3	2.0	1.3
Estate Crop	619 (7.5)	342 (1.9)	-45	2.3	3.6
Livestock	21 (0.3)	16 (0.1)	-24	2.1	2.7
Fishery	83 (1.0)	71 (0.3)	-14	4.3	6.0
Forestry	16 (0.2)	18 (0.1)	13	6.1	8.4
Agro-industries	1,458 (17.6)	3,113 (17.0)	113	3.2	2.1
Non-agro industries	2,406 (29.0)	7,680 (41.9)	219	10.6	6.9
Mining	1,816 (21.9)	1,138 (6.2)	-37	18.8	25.7
Services	1,765 (21.3)	5,877 (32.0)	233	8.7	5.4
T o t a l	8,280 (100)	18,348 (100)	122	9.8	6.7

[a] Figures in parentheses are the shares in the economy;
[b] Percentage increases in 1990-1995 period;
[c] Million rupiahs per worker per year in 1995 constant prices.

Although the employment multipliers of all sectors were declining during the period under study, the export-induced employment of forestry, agro-industry, non-agro industry, and service sectors were increasing because the declines of the employment multipliers were more than offset by the high increases in exports of the sectors. It is also shown in Table 3 that the highest increases in the total export-induced employment stemmed from the exports of agro industry, non-agro industry and service sectors. The increases in employment induced by exports of the three sectors were 113 % by agro industrial exports, 219 % by non-agro industrial exports, and 233 % by service exports.

How the export-related employment of each sector was distributed both inside and outside the sector itself is presented in Table 4. It is depicted that food crop and estate crop sectors created the lowest percentages of export-induced employment outside the sectors themselves; each was less than 10%. Among all agricultural sectors, livestock sector created the highest percentage (25-32%) of export-induced employment outside the sector itself, but the export values of this sector was the lowest and so was its total export-induced employment. Fishing and forestry sectors created the same percentage (18-22%) of export-induced employment outside the sectors. In line with the difference in export values between the two sectors, the total employment induced by fishery exports was much higher than that by forestry exports.

Table 4. Distribution of Export-Related Employment Inside and Outside Each Exporting Sector Itself.

Employment Sectors	1990			1995		
	Inside (%)	Outside (%)	Total (x1000 people)	Inside (%)	Outside (%)	Total (x1000 people)
1. Food Crops	98.5	1.5	96.2	98.5	1.5	92.7
2. Estate Crops	92.2	7.8	619.2	90.2	9.8	342.4
3. Livestock	68.4	31.6	20.9	75.2	24.8	15.7
4. Fishery	81.7	18.3	82.9	79.8	20.2	71.3
5. Forestry	82.1	17.9	16.2	77.6	22.4	18.3
6. Agro-industries	54.7	45.3	1,458.4	54.7	45.3	3,112.6
7. Other industries	70.9	29.1	2,405.5	71.4	28.6	7,680.5
8. Mining	59.8	40.2	1,816.1	67.9	32.1	1,137.6
9. Services	84.7	15.3	1,765.1	79.8	20.2	5,876.9

Among the nine economic sectors, agro industrial and non-agro industrial sectors created the highest percentage (respectively 45% and 29 %) of export-induced employment outside the sectors. A detail estimation, which is not presented here, shows that most of the employment induced by agro industrial exports outside the sector were in food crop sector (31%), estate crop sector (6%) and in service sector (5%). On the other hand, most of the employment induced by non-agro industrial exports outside the sector were in service sector (18%), estate crop sector (4%), and in forestry sector (3%).

CONCLUSIONS

The purpose of this paper is to estimate the export-related employment created by all agricultural sectors by making use of the data available in Indonesian Input-Output Tables 1990 and 1995. The method of estimation in this paper follows the previous one carried out by Fujita and James (1997) who estimated the export-related employment of the rapid growth of manufactured sectors. Since this paper particularly concentrates on estimating the export-related employment of agricultural sectors, the estimation results might be considered as the supplementary information to those reported by Fujita and James (1997).

It is depicted in this paper that the export-related employment of agricultural exports as a whole was very small as compared to those of non-agricultural exports because export values of agricultural sectors were smaller than those of non-agricultural sectors. That the export values of all agricultural sectors were small is understood for it was believed that rapid economic growth could only be achieved through non-agricultural exports, especially manufacture exports.

With respect to the employment multipliers, all sectors indeed tended to have decreasing employment multipliers but the decreasing rates of the multipliers were higher in agricultural sectors than in non-agricultural sectors. Nevertheless, employment multipliers of agricultural sectors in general remained higher than those of non-agricultural sectors. The decreasing rates of employment multipliers imply that all sectors in general, and agricultural sectors in particular (but food crops sector) tended to improve efficiency by increasing labor productivity. Aside from food crops sector, such sectors as agro-industries, non-agro industries, mining, and service sectors were having decreasing labor productivity or decreasing ratio of export values to export related employment.

In spite of having relatively small export-related employment, agricultural exports should be increased in the future for two reasons. Firstly, agricultural sectors have relatively high employment multipliers. Secondly, during the economic crisis beginning in 1997, agricultural sectors have proved to have great power of endurance under the external shocks. Hence, in increasing employment opportunities, attempts to increase agricultural exports should not be overlooked.

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