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INTRODUCTION

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DURING the period of high economic growth, Indonesia's manufacturing sector had acted as the engine for that growth and had played an important role in offering modern employment opportunities, improving technological capabilities, and promoting non-oil exports. But after the outbreak of the Asian currency crisis in July 1997, the Indonesian economy went into decline, experiencing a free fall in the real economy and bad inflation in 1998. These volatile economic changes were also accompanied by a drastic change in political leadership in May 1998.

Since the crisis began the manufacturing sector has been badly affected by the economic and political difficulties, nevertheless the sector is once again expected to play a central role in economic recovery and development in the future. For this reason it is important and useful to examine the manufacturing sector's past achievements, its current status, and the role it can be expected to play in the future in conjunction with the relevant policies that the government will need to carry out.

The publication of this special issue was first planned in 1998, but as the impact of the Krismon (the Indonesian term for the monetary crisis) widened, the schedule of publication was extended by one year because of the uncertainties arising from the continued economic recession and political turmoil. Even as of mid-2000, the negative effects of the Krismon still persist, and the recent substantial depreciation of rupiah to over Rp 9,000 to the dollar indicates that the prospects for recovery are as yet very fragile. The difficulty of gauging the future course of the economy along with weak statistical data hampered the preparation of the papers for this issue, and the completion of this volume has been due to the strenuous efforts of all the researchers who have written papers for this project.

Issues Confronting the Economy before the Crisis

In its second twenty-five-year plan (1994–2018), the Indonesian government planned to increase the nation's per capita income from the then current level of 1,000 U.S. dollars to 3,500 U.S. dollars so as to successfully join the medium-income group of developing countries. Given the impossibility of increasing rice production in Java, and the possible future exhaustion of oil resources, the engine of economic growth had to be the non-oil export-oriented industrial sector. To suc-

cessfully penetrate world markets, the country's technological capability had to be improved over time, and to achieve this the skilled labor-intensive, capital-intensive, and technology-intensive subsectors had to grow quickly and become core sectors of the economy. But as many studies argued, the pace of diversification was rather slow compared with the overall expansion of manufacturing output, and the technological improvement of the Indonesian manufacturing sector was not capable enough to catch up with the advanced developing countries.

On the other hand, Indonesia has always had an abundance of labor, and two-thirds of urban workers belong to the informal sector.¹ So one of the top priorities of the second twenty-five-year plan was to increase employment opportunities and improve labor conditions. While the unskilled labor-intensive and resource-intensive subsectors had to continue to offer the major share of employment opportunities, the absorption of labor force was not fast enough to keep up with the expanding labor force population which was growing by more than 2 million annually.

Therefore a harmonized pattern of industrialization was badly needed to simultaneously satisfy policy targets such as (1) the improvement of technological capabilities and international competitiveness to increase exports, (2) the increase of employment opportunities and improvement of worker living conditions, and (3) the conservation of the environment and natural resources. Thus even before the economic crisis began, Indonesian industry stood at an important crossroad and had to select an optimum balance of future evolving pattern in order to successfully climb up the technological ladder and effectively utilize its human resources.

Outbreak of the Asian Currency Crisis and the Krismon

The Indonesian economy was already struggling with many problems even before the Krismon. It was suffering from accumulated external debts, stagnant non-oil exports, volatile agricultural output due to unstable climate, insufficient absorption of a growing labor force population, a weak banking sector with poorly performing loans, a frail corporate sector with a high foreign debt and weak risk management, a large population of the poor, frustrated resource-rich regions due to the biased distribution of the fruits of growth, and environmental degradation and depletion of natural resources. Thus from the structural point of view the economy was ill-prepared for the currency crisis that broke out in July 1997. First the Thai baht was heavily attacked and collapsed. The currency crisis immediately spread to Indonesia and then to the Republic of Korea. The Indonesian central bank first tried to keep the exchange rate within the lower end of the band at around Rp 2,400 to the

¹ Takao Fukuchi, "Chiiki keizaigaku teki bunseki to kaihatsu mondai: Jisshō bunseki furēmūwāku no kōchiku—Indoneshia no jirei, Nihon o sankō toshite" [Regional economic analysis and development problems: Construction of framework for empirical studies—Indonesia and Japan as main reference countries], in *Keizai hatten to chiiki keizai kōzō* [Economic development and regional economic structure], ed. Koichi Ohno (Chiba: Institute of Developing Economies, 2000).

dollar but gave up the effort in August. The exchange rate was floated and capital flight increased as the confidence of investors deteriorated. The exchange rate reached Rp 4,700 to the dollar by early December 1997 which left the currency at half its pre-crisis value.

In early December President Soeharto suddenly announced ten-days rest and cancelled his planned foreign visit for reasons of health which caused the rupiah to fall sharply to Rp 6,000 to the dollar. Thereafter the Krismon changed from a monetary crisis to a crisis of confidence in the national leadership. The Krismon impact extended to the real sector which caused an economic free fall bringing volatile inflation and massive unemployment. Thus the political instability directly affected the whole economy, which in turn gave rise to social movements demanding political reform. The negative spiral of political and economic collapse reached its nadir when Soeharto's government, which had ruled for thirty-two years, collapsed in May 1998, and the rupiah tumbled to Rp 16,000 to the dollar in June. The social and economic turmoil began to stabilize gradually only during the second half of 1998.

Summary of Each Paper

There are many important questions about Indonesia's manufacturing sector. How far had the sector developed and diversified, and what was its actual status before the crisis? How and to what degree were the different subsectors influenced or damaged by the Krismon? What were the main factors accounting for the contrasting effects exerted on different subsectors? What role can be expected of the manufacturing sector in promoting economic recovery? Considering the great diversity of these problems, it was decided when planning this project to take up these issues through a collaboration of Indonesian and Japanese scholars with expertise in different disciplines. Thus the content and approach of each paper in this special issue is quite diverse in terms of methodologies (econometric models and analysis, intensity of field work, literature surveyed) and perspectives (export competitiveness, subsector analysis, small and medium-sized enterprises). This diversity is a manifestation of the complexity and vastness of the development issues concerning the Indonesian manufacturing sector, and we hope that the academic discussion presented in this special issue can serve as a step toward understanding the reality of Indonesia and provide further intellectual communication between Indonesia and the rest of the world. The remainder of this introduction will briefly summarize each paper in this special issue.

Thee Kian Wie: "The Impact of the Economic Crisis on Indonesia's Manufacturing Sector" first surveys the trends in the pre-crisis period until 1997, then examines the impact of the crisis on various components of the manufacturing sector, such as production, the number of large and medium-sized enterprises, employment in these enterprises, the level of capacity utilization in these enterprises, trends

in small and cottage enterprises, investment, exports, and performance. Through the reforms and deregulation of the early 1990s, manufacturing exports grew by 27 per cent during 1989–93. But during 1994–97 the growth rate dropped to 7 per cent mainly due to the stagnation of labor-intensive and resource-intensive exports. The factors for this decline and the need to develop limited technological capabilities were already topics of intensive discussion before the Krismon hit Indonesia. Although there has been a slight recovery since 1999, according to Thee, this has been mainly due to increased consumer demand.

Thee's study found that the Krismon had the following major impacts on the manufacturing sector: (a) Industrial output decreased by 12.9 per cent in 1998, and the transport equipment and machinery, the cement and nonmetal mineral, and the iron and steel subsectors suffered most. (b) Between 1996 and 1998, the number of large and medium-sized enterprises decreased by 2,500 (–11 per cent); employment decreased by 680,000 workers (–16 per cent); capacity utilization decreased from 78 per cent to 72 per cent; and the number of small and cottage industries decreased by around 670,000 (–23 per cent). (c) From 1997 to 1998, capital goods imports decreased from \$9.3 billion to \$5.8 billion (–38 per cent); approved domestic investment decreased from Rp 79 trillion to Rp 45 trillion (–43 per cent); and approved foreign direct investment decreased from \$23 billion to \$8 billion (–64 per cent). (d) Although the exchange rate depreciated greatly, manufactured exports stayed almost constant: \$35.0 billion in 1997 and \$34.6 billion in 1998. (e) The survey of about 1,200 firms by the World Bank–BAPPENAS-BPS revealed that the impact of the crisis on the performance of firms was mixed: domestic market-oriented firms suffered greater than export-oriented and foreign-affiliated firms; the number of Java-based firms declined the most; the number of highly leveraged firms and firms with foreign currency liabilities experienced a smaller decline because most of these firms were export-oriented; the major causes for the reduction in the output of firms were the decrease in domestic demand, the increase in the cost of imported materials, and the higher cost of capital. Thee emphasized the importance of bank and corporate debt restructuring and the increase of manufactured exports for recovery in the short term, while enhanced industrial technology capabilities would be needed for the sustainable long-run development of the manufacturing sector.

Haryo Aswicahyono and Mari Pangestu: “Indonesia’s Recovery: Exports and Regaining Competitiveness” concentrates on evaluating the competitive power of Indonesia’s manufacturing sector, and analyzes the trends before and after the Krismon. The paper first looked at the volume and value of non-oil exports during 1991–99. It then undertook a formal RCA (revealed comparative advantage) and trade map analysis (1986–96), and a CMS (constant market share) analysis (1986–96) of exports and imports for the pre-crisis period, and it showed the commodity

effect, country effect, and competitiveness effect by subsector. The paper finishes with a discussion of Indonesia's future export competitiveness and the necessary policies for realizing sustainable development of manufactured exports. All the observations and analyses were based on the detailed decomposition of the manufacturing sector into ISIC three-digit subsectors or adequate subgroups.

As indicated above, this is an empirical study which provides a survey and analysis of Indonesia's export competitiveness before and after the crisis. The growth rate of export declined between 1995 and 1997 before the crisis occurred, and the reasons for this decline have been the topic of much discussion. Aswicahyono and Pangestu pointed out the effects of some important cyclical factors and the decline of oil prices. Also they performed subsectoral RCA and CMS analyses to clarify the long-term structural trends of the industrial sector. The weighted RCA index declined rapidly between 1986 and 1996. In particular, the RCA of five highly competitive industries (wood and wood products, apparel, petroleum refining, non-ferrous metals, and tobacco which make up 44 per cent of Indonesia's total exports) declined. Meanwhile natural resource-intensive industries and unskilled labor-intensive industries flourished between 1987 and 1992, but lost competitiveness during 1992-96. Only capital-intensive industries and human capital-intensive industries continued to grow during 1992-96, although they had only just started to grow and their shares were still quite small. These, according to Aswicahyono and Pangestu, were the basic trends before the Krismon.

Two important consequences of the Krismon pointed out in this study are: (1) a big decline in real wages due to rapid inflation, although nominal wages have been increasing recently, and (2) a collapse of corporate investment. How will these constraining factors influence the future comparative advantage and the country's export structure? The two authors argue that in the short run exports will not be the main engine for recovery due to their reliance on imported inputs, therefore the existing sources of competitiveness will have to be utilized effectively until the more pressing medium-term issues can be dealt with. The most crucial of these medium-term issues is technological capability. Indonesia will need to build a broad and substantial base of human capital like the East Asian newly industrialized economies. For that purpose, the authors stress the important roles of education and foreign direct investment.

Takao Fukuchi: "Econometric Analysis of the Effects of Krismon Shocks on Indonesia's Industrial Subsectors" analyzes the effect of the Krismon on the industrial sector by employing monthly time-series data (January 1996-December 1998), and by constructing a monthly econometric model which divides the manufacturing sector into nine ISIC subsectors. After observing the trends of major economic variables, Fukuchi divided the whole Krismon period (July 1997-December 1998) into three subperiods: the bandwagon subperiod (August-December 1997), the free

fall subperiod (January–July 1998), and the stagnation subperiod (August–December 1998). One significant feature of the Krismon was the substantial political instability that occurred in the second subperiod which caused great economic turmoil. The exchange rate in particular recorded two big drops, in January and June 1998, which cannot be properly explained economically because they were mainly caused by noneconomic disturbance. Therefore, Fukuchi estimated an exchange rate function using data up to the end of the first subperiod based on five important economic variables. He then calculated the prediction errors of the exchange rate in the second and third subperiods, and defined them as the noneconomic disturbance (NEDIS). Thus the main part of this paper was to analyze econometrically the trends of production indices for manufacturing subsectors based on economic indices as well as on the noneconomic disturbance constructed above. After observing the trends, Fukuchi classified the subsectors into three groups: (1) the agriculture-related industry, (2) the light industry, and (3) the capital goods industry. The first group was damaged but quickly recovered and reached its all-time highest level of output in December 1998. The second group showed volatile changes and its level of production in December 1998 was 11 per cent below the pre-Krismon level. The third group had flourished before the Krismon, but was damaged very badly by the crisis, and its level of production in December 1998 was only half that of the pre-Krismon level. Thus the Krismon produced sharp contrasts. Some subsectors benefited from the big depreciation of the rupiah and the quick expansion of exports, while others suffered greatly from supply side factors (shortages of imported materials and limited financing capacity) and also from demand side factors (collapse of domestic demand). Fukuchi estimated the equations to explain the monthly trends of production indices for subsectors (January 1996–December 1998), and pointed out the major contributing factors. He also presented the results of projections until December 1999 and showed the continuation of the Krismon's contrasting effects on different subsectors. Following his analysis of this two-sided effect of the crisis, Fukuchi stressed the importance of further diversification of the manufacturing sector beyond the present short-term crisis management in order to secure the sustainable development of Indonesia's manufacturing sector.

Iwan Jaya Azis: "The Nonlinear General Equilibrium Impact of the Financial Crisis and the Downfall of Manufacturing" employs a nonlinear CGE (computable general equilibrium) model to present a comprehensive analysis of the negative impact of the Krismon on income distribution and the manufacturing sector. The paper provides a description of social indicators and presents an impact analysis. Many social indicators show the serious damage caused by the Krismon. Open unemployment in urban areas increased by 21 per cent from 2.5 million in 1997 to 3.1 million in 1998; real wages decreased by 26.7 per cent from the second quarter of 1997 to the second quarter of 1998; and the health morbidity rate increased over

time, although the fear of a sharp drop in enrollment rates at primary and secondary schools proved unfounded.

The focus of this paper is mainly on the use of a CGE model based on the extension of the social accounting matrix. The impact of the Krismon on this matrix was estimated at the macroeconomic level and the manufacturing subsector levels, and it was also estimated on the income, assets, and expenditures of eight different types of households in urban and rural areas. One of the features of the CGE model used by Azis is the endogenous treatment of prices and its nonlinearity. The household sector distributes wealth into narrow money, time deposits, and equity, while the supply of money is modeled through a money multiplier and high-powered money. The real sector resembles the class of common CGE models. The model depicts the vicious circle structure of the crisis by an interesting circular causality: from confidence deterioration to capital outflow, then to exchange rate collapse, stagnant investment, severe recession, and again to confidence deterioration. The impact of this circle expands through four repercussions, and results in the overall downfall of the economy. The paper shows the different negative effects of the Krismon on households, and summarizes the effects by calculating the Gini coefficient. It shows clearly that the Krismon induced a big fall in the macroeconomy, and also exerted a skewed negative impact on different households: there was a fall of approximately 60 per cent for urban high-income and urban low-income households, 40 per cent for rural low-income households, and 30 per cent for rural high-income households. The paper showed clearly that the manufacturing sector was greatly damaged by the collapse of demand because of the fall in household income.

Anggito Abimanyu: “Impact of Agriculture Trade and Subsidy Policy on the Macroeconomy, Distribution, and Environment in Indonesia” is interested in finding a good combination of policies to revitalize the agricultural sector and agroindustry with special attention to the impact of the crisis on household consumption and the environment. He selected import tariff cuts and government subsidies as two policies, and calculated the overall economic and social impact of these policies based on simulation experiments using a CGE (computable general equilibrium) model specifically designed for the Indonesian economy.

Abimanyu begins by stressing the important role of the agricultural sector in the economic crisis and recovery periods. He then summarizes the past research on the impact of international trade and trade liberalization on the environment and says that, although the impact has been ambiguous, it is important to take their effects on the environment into consideration when discussing policies for revitalizing the agricultural sector. He also stresses the importance of the impact on the distributional side of the economy. To clarify the overall impact of suitable policies, Abimanyu employed a CGE model, which has been dubbed INDORANI, to imple-

ment comparative-static simulations. The model included simulation equations which described groups of variables or relationships: the demand of producers for intermediate goods, primary inputs, and investment goods; commodity supplies; household consumption demand; export demand; government expenditure; output values and cost identities; market clearing conditions; and other macro indicators and price variables. INDORANI contained sixty-eight industries, seventy-three commodities, seven occupational groups, and ten income classes. After explaining the basic mechanism and equations, Abimanyu explained the results of his simulation experiments and presented the results of four simulations: (1) crisis simulation to specify the baseline, (2) import tariff cut by 10 per cent, (3) increase of fertilizer subsidy by 10 per cent, (4) combination of increasing subsidy to poor farmers and tariff cut. Three policy simulations, (2)–(4), increased GDP, real consumption, employment, and price levels, and also damaged competitiveness, but they produced different effects on exports and governmental revenues and expenditures. Also the effects of the simulations on sectors, occupational groups, and income classes were very different. Subsidy increases benefited large manufacturing in the area of output and employment; this was especially true for fertilizer, pesticide, and other agriculture-related subsectors. On the other hand, tariff cuts benefited small manufacturing. Subsidy increases also mainly benefited higher-income classes. Thus Abimanyu stressed the importance of targeting poor farmers. According to him, environmental damage comes mainly from domestic activities, while international trade has little effect. Finally he stressed the importance of such simulation experiments for providing an overall assessment of policy effects, while also stressing the importance of properly understanding merits and limits of simulations.

Yuri Sato: “How Did the Crisis Affect Small and Medium-Sized Enterprises? From a Field Study of the Metal-Working Industry in Java” concentrates on an analysis of the impact of the Krismon on small and medium-sized enterprises (SMEs) based on field studies Sato conducted during the crisis. The impact on the SMEs is hard to assess in a comprehensive way because the government’s annual industrial statistics only cover large and medium-sized enterprises. The paper first reviews the limited available statistics and studies related to SMEs during the crisis period and then presents the author’s field study results on such aspects as the impact on SME performance, factors affecting this performance, and SMEs’ responses to the crisis. Sato’s field studies were conducted in several selected locations in Java which included Metropolitan Jakarta, local cities, and a rural cluster. The author conducted intensive interviews with fifty owners of SMEs, all engaged in metal-working and machinery component manufacturing. This industry was the worst-hit subsector during the Krismon, and 65 per cent of the interviewees reported that the performance of their companies had been adversely affected. But the study also found that the performance of SMEs in this subsector showed a wide variation, ranging

from those making no profits and halting production to those enjoying a jump in turnover several times higher than before the crisis. The paper examined a number of possible factors for explaining the varying performance: market orientation, size, location, linkages, and debt exposure of the SMEs. It found that the most significant factors were market orientation and linkages. The best-performing SMEs were successful in switching or shifting products to export-oriented or government-related projects. Increasing demand for import substitution and inferior goods were other positive market factors. In shifting products, the SMEs effectively utilized their existing linkages with wholesalers-cum-putters-out who were capable of finding markets. On the other hand, SMEs which had linkages with specific assemblers and user-factories were mostly negatively affected. The young SMEs that had just started to grow as subcontractors in the urban industrial agglomeration were a latter case. Thus the study indicated that the linkages in which SMEs were embedded very much influenced SME performance during the crisis. Interestingly, SME responses for survival varied by individual enterprise and were not dependent on the degree of suffering or on size. This study demonstrated heterogeneity in SME crisis survival even within the same subsector, indicating that it is dangerous to perceive SMEs as either uniformly “flourishing” or “seriously suffering.”

Assessing the Current Stage of Recovery

In 1999 the growth rate of real GDP was a positive 0.3 per cent after a -13.0 per cent in 1998, meaning that the real GDP started to increase from 1999. However, the GDP tends to underestimate the economic fall because a decrease in imports results in an increase in GDP (= consumption + investment + export - import). If imports mainly consist of finished goods which directly compete with domestic products, then a decrease in imports implies an increase in domestic output in which case the GDP statistics work well to measure the level of economic activity and employment. But in Indonesia three-fourths of imports are raw materials, intermediate goods, and capital goods which do not compete with domestic products but nevertheless are important to support future economic development. So a decrease in imports is not a good sign. The contribution of imports (share of imports multiplied by their growth rate) was -1.7 per cent in 1998 and -14.3 per cent in 1999. Absorption (consumption + investment + export) decreased by 14.7 per cent in 1998 and 14.0 per cent in 1999. In other words, absorption decreased by almost 30 per cent in two years. The population growth rate is currently around 1.5 per cent, and the age cohort of the younger generations is relatively big. Given that the population between ten to fourteen years of age was 22.58 million in 1996, the annual increase of the economically active population will be quite big in the near future. These figures show that the recovery of absorption to the pre-crisis level will take time. On a per capita basis, if the GDP growth rate is 4-5 per cent annually, it will take about eight to ten years for recovery.

In the fourth quarter of 1999 the growth rates of fixed capital formation and imports in the real GDP statistics showed a return to positive growth after a duration of negative growth since the start of the Krismon. This may be a sign that the economy has entered into a new phase of recovery. The recovery of industrialization in the near future, however, is clouded by at least two uncertainties. The first is the instability of the rupiah which can fluctuate as much as 20 to 30 per cent in a few months. Such fluctuations will significantly retard any sustainable course of recovery in the real sector and hamper industrialists in planning their production and investment. The government needs to put priority on maintaining political stability, a primary factor affecting the rupiah at the moment. The second uncertainty relates to the restructuring of corporate assets. The recapitalization of the banking sector is nearing completion by the middle of 2000. The next major problem is corporate restructuring along with debt disposal. As the IBRA (Indonesian Bank Restructuring Agency) proceeds with the recovery of loan assets from domestic debtors and the sale of assets submitted by bank shareholders (cum business group owners) who received huge amounts of liquidity-assistance loan from the central bank during the crisis, the ownership of corporate assets, including giant manufacturing companies under the leading conglomerates of the Soeharto era, is going to change drastically. This fact indicates that the process of corporate restructuring is being influenced substantially by the historic transformation of political regime in Indonesia. The ongoing process of change in ownership and its impact on industrial performance are major sources of uncertainty. Given these uncertainties, the recovery of Indonesia's industrial sector is unlikely to move straight ahead in the short term.

Future Prospects, Policy Priorities, and the Expected Role of the Manufacturing Sector

The priorities and policies called for at the macro level and the expected role of the manufacturing sector need to be examined within different time frames.

Over the short term of one to three years great social miseries like poverty and unemployment will persist, and the Indonesian government will have to maintain its efforts on short-term social safety net programs. Political stability is one of the crucial factors for stabilizing the exchange rate and restoring the confidence of investors. In the manufacturing sector, export promotion and the resultant output expansion are important for securing job opportunities and increasing employment. Such efforts have to be based on the currently existing comparative advantage structure, so resource-intensive and labor-intensive subsectors will be expected to take up the task. It is difficult to expect any quick recovery of the modern heavy and chemical manufacturing sector considering the slow recovery of imports and investment.

In the medium term of five to ten years, the capital-intensive and skilled labor-

intensive subsectors can be expected to develop as improving political stability will increase investor confidence in the economy and bring back foreign and domestic investment. The renewal of infrastructure can be gradually implemented as the government's fiscal position improves. The subsectoral shares of light and heavy industries can be expected to recover to their pre-crisis levels, and once again the manufacturing sector will further diversify and become the engine of growth. At this stage inter-firm linkages can be developed driven by market forces between upstream and downstream manufacturers, large and small industries, and urban and rural enterprises, which should provide the supporting base of industry.

Over the long run of the next twenty years, Indonesia must renew its efforts to realize a diversified and harmonized industrial structure and penetrate the world export market. To achieve this objective the country must climb up the ladder of technology by improving its industrial technology capabilities and its competitiveness in other technologies, and widen its manufacturing base through the cultivation of supporting industries. Such development needs the development of human capital through various educational and training institutions. In addition, the betterment of environment and natural resources and land preservation will be an important component of comprehensive economic and social development. Here human resource development will be a most useful vehicle for establishing a harmonized process of industrialization not only by providing the necessary technological knowledge, but also by inspiring the people's wide social concern and active participation.