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## Hidden Hunger

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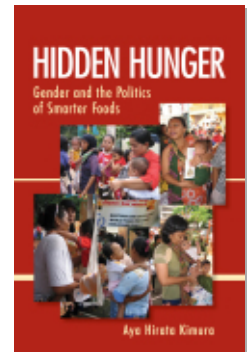
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## **BUILDING A HEALTHY INDONESIA WITH FLOUR, MSG, AND INSTANT NOODLES**

### **Promoting the nation's nutrition (Turut membangun gizi bangsa)**

—Bogasari Flour Mill slogan

### **Wheat flour fortified with vitamins. Built to improve the health of the nation.**

—Sriboga Raturaya Flour Mill slogan

The world's largest flour mill is located in an unlikely place—in Indonesia, whose population is not known for eating bread or pasta. Bogasari Flour Mill, Indonesia's largest milling company, has the world's largest mill, located in Tanjung Priok, the industrial zone filled with warehouses and factories in the northern port of Jakarta. Its state-of-the-art mill, silos, and other equipment are decorated with the well-known Blue Key logo that is frequently seen on supermarket shelves and on billboards in town. Its capacity is enormous, far exceeding mills in the United States or Canada. Although falling far short of Bogasari's dominant presence in the market, five other flour mills in the country also have very modern milling facilities. The one I visited was in the process of installing the latest equipment from Europe.

For a country composed mainly of rice and cassava eaters, the size of Indonesia's flour milling industry is astonishing. It has the largest milling capacity in Southeast Asia, well beyond that of the Philippines, whose people one might imagine using more wheat flour. Indonesia's "traditional cuisine" is as diverse as its several hundred ethnic groups, but the people tend to use rice, cassava, and maize as their staple foods, not wheat. Indeed, Indonesia has virtually no domestic production of wheat, and most of the wheat consumed there is imported.

The story of this disproportionately large industry cannot be told without touching on Suharto's close relationships with many of the key actors in the milling industry and the economic empire that they built up during his New Order regime. For three decades, the milling industry was one of the key cash cows for Suharto and his cronies. Under their guardianship, the milling industry grew tremendously.

In the late 1990s, this powerful industry became a central actor in Indonesia's food policy. Following other developing countries that had mandatory fortification programs, the government decided on a mandatory flour fortification policy. Wheat flour became the first commodity besides iodized salt to be fortified by law in Indonesia. The new regulation required that *all* wheat flour sold in Indonesia—imported or domestic—be fortified with iron, zinc, folic acid, and B vitamins, according to the Indonesian National Standard (SNI).

This wheat flour fortification policy was considered a huge success for micronutrient advocates, who with it finally achieved a public fortification policy in the country. Indonesian nutrition experts had previously tried to establish mandatory fortification, without success. Therefore, when wheat flour fortification finally became the official policy, there was much for nutritional experts to celebrate. There was a big opening ceremony at Sriboga Raturaya Flour Mill for its first fortified product, attended by important industry members and government officials. Reflecting international interest in fortification as a development tool, foreign actors were also jubilant. UNICEF presented a letter of gratitude to the owner of the flour mill, commending him for being the first to comply with the mandatory wheat flour fortification regulation.<sup>1</sup> The US ambassador attended the ceremony at Bogasari Flour Mill.<sup>2</sup> International health experts commended Indonesia for its high awareness of the importance of micronutrients and praised it for becoming a good role model for other developing countries.

The textbook description of fortification is that it adds costs to manufacturing and therefore companies hate to see it imposed on them. The nutrition literature posits the corporate sector as the prime bottleneck for fortification that needs to be attended to by policymakers. In various countries, such literature points out, fortification attempts have been aborted due to industry opposition to the increased costs. Indonesia has had its share of this kind of experience. Other powerful industries in Indonesia successfully resisted the government's attempts to mandate the fortification of their products. Since the flour milling industry in Indonesia was not only economically powerful but also politically well connected, it is worth asking why they did not lobby against a cost-adding food policy, and so became a "victim" of a mandatory fortification program in Indonesia. Was it a heroic act of self-sacrifice for the nation's health as claimed by the industry?

In fact, the Indonesian milling industry has benefited from the wheat flour fortification program. The timing of the policy was interesting; the mandatory fortification requirement started around the time that this previously protected industry was deregulated, and imported wheat flour started to flood the Indonesian market. When the fortification regulation became law, much of the imported flour could not satisfy it, and hence could not be imported.

Of course, if you ask the people who were involved, wheat flour fortification was not meant to be an industry subsidy. It was conceived of as a public health intervention and justified as such. Yet the sheer political connectedness of the flour mill industry in Indonesia makes it natural for a casual observer to conclude that it was a classic case of science and public health objectives distorted by the economic power of the agrofood business. This also resonates with the prevalent model of science in popular writings that takes science to be a mere tool for powerful social actors. In this view, the problem is seen as the existence of a food industry that manipulates nutritional science for economic advantage.

As I traced the history of mandatory fortification and conducted interviews with stakeholders, however, it became clear that wheat flour fortification cannot be dismissed simply as a corporate takeover of science. It was not the milling industry that took the lead in fortification. Policymakers and nutritional experts had laid a good deal of ground work before those in the industry realized that fortification would benefit them as a form of trade barrier. And the experts' efforts go back more than a decade. Milling industry executives could not have cooked up the fortification plan overnight as a result of the economic crisis.

Who actually benefited is an important part of the story, but another important part—and the more interesting story here—is how it came about. Scientists and health experts worked very hard beginning in the 1980s to get fortification implemented as a public policy. For them, the political-economic implication of flour fortification—that it might aid a monopoly industry—did not seem to matter too much. Many fortification advocates are well-intentioned, smart, and dedicated scientists. When I interviewed nutritional scientists and health bureaucrats in the country on this subject, I could not help wondering why they ended up helping a powerful monopolistic industry. I wanted to explore the logic that they operated under and what led them to push for wheat flour fortification.

In an effort to make sense of the experts' support of wheat flour as healthy food, in this chapter I contextualize wheat flour as part of the longer history of the nutritional experts' network in Indonesia. I look at not only the wheat flour fortification program but also two preceding fortification efforts in Indonesia: those involving monosodium glutamate (MSG) and instant noodles. Despite dubious health properties and questions about cultural appropriateness, MSG and instant noodles came very close to becoming officially sanctioned "healthy foods." By going back to these curious pre-wheat flour cases, what stands out is not the abnormality of the wheat flour case but its continuity with previous cases.

What was the vision that translated the problem of malnourishment into a need for fortified wheat flour? For MSG? For instant noodles? How were the needs of people defined in the fortification network? By weaving together the three stories of MSG, instant noodles, and wheat flour fortification, I highlight

the pervasive influence of nutritionism in defining the food “needs” and “problem” in an extremely specific manner—prioritizing quantifiability, universality, and simplicity—while simultaneously naturalizing that definition. It was this logic that was critically important in translating the problem of malnourished people into the “need” for fortified products, authorizing the public health campaigns for fortified MSG, instant noodles, and wheat flour.

Significantly, the “needs” of the malnourished and hungry were identified almost exclusively by “scientific data” and not through a democratic participatory process. It was nutritional surveys that were instrumental in pushing forward fortification projects, since experts believed that they provided undeniable evidence for the need for fortification. In contrast, throughout the three fortification attempts, little opportunity was available for ordinary citizens to discuss fortification’s desirability and its social, cultural, and political implications. Women, in particular, were the presumed beneficiaries of fortified instant noodles and wheat flour, since anemia was the target. Ironically, however, ordinary women were largely absent in the two decades of fortification policy debate. This reflects the reality of how women as a biologically coded group were salient while actual women who suffered from micronutrient deficiencies were absent from the discussion.

Instead of working with poor women, nutrition and development experts worked closely with private industry. Furthermore, nutritionism’s reductive focus on nutrients conferred on these corporations a status of expertise that were almost equal to that of nutritional scientists, since they were the ones who knew practical details of manufacturing, marketing, and distribution. Within the purview of nutritionism, nutritional scientists, corporate staff, and nutritional surveys were sufficient to provide necessary inputs in formulating fortification programs, while many cultural and political issues remained unaddressed.

## **Crony Agribusiness: The Flour Milling Industry under Suharto’s New Order**

The white house, which brought to mind the residence of the US president, to which I was invited by the owner of Sriboga Raturaya Flour Mill was a stark reminder that the industry was emblematic of New Order cronyism. Located near the company’s mill in Semarang, the shining white mansion resembling a Greek temple stood in the middle of the residential area. The owner, Alwin Arifin, manages Sriboga Raturaya Flour Mill, one of four flour milling companies in Indonesia, but it was his father, Bustanil Arifin, who was in charge until recently. Bustanil Arifin owned two of Indonesia’s milling companies at one point—the Sriboga Raturaya Flour Mill and Berdikari Flour Mill. He and his family all lived in Jakarta,

and the house seemed to have no regular residents except for several servants who maintained it. No one said it was a museum, but the house had all the qualities of a museum. All the rooms were bright and clean without any dust in sight, much better kept than most of the museums in Indonesia that I had visited. In the center of the main room was a round table covered with big photos of Suharto and his wife and of Bustanil Arifin and his wife. On the walls were portraits of the ancestors of the Suhartos and the Arifins, emphasizing the royal lineages of the wives. The smaller rooms to the side also housed memorabilia of all kinds. The house's sole objective seemed to be to commemorate and remind people of the glorious lineage and achievements of the Arifins. In the age of "Reformation," when anything related to Suharto tended to be stigmatized, I found the open celebration of the link with him in this "White House" quite striking.

The White House embodies Arifin's close ties to Suharto. But he was not the only one in the milling industry with such a connection. In fact, the history of this industry in Indonesia has a familiar resemblance to other stories of Suharto's cronyism. The industry was managed by a "who's who" of Suharto's inner circle. It seems as if participation in the milling industry itself was a form of patronage, as Suharto kept adding his favorite people to it.

Until the deregulation of the industry in the 2000s, there were five mills owned by four companies in Indonesia (table 5.1); Bogasari (Jakarta and Surabaya, owned by Indofood), Sriboga Raturaya (Semarang), Berdikari Sari Utama (Ujung Pandang), and Panganmas Inti Persada (Cilacap) (Purnama 2003).

The largest and oldest mill, Bogasari, was started by Suharto's long-time friend and confidant, Liem Sioe Liong, and Suharto's cousin, Sudwikatomo (Aditjondro 2000). Liem Sioe Liong is an ethnic Chinese businessman, originally from Fujian Province in China. He successfully expanded his business to form one of Indonesia's largest conglomerates, the Salim Group, under Suharto's protection. Liem's relationship with Suharto began when he started up a trading business in Central Java. Suharto was at that time an officer in the army, stationed in

**TABLE 5.1** Indonesian milling industry

| COMPANY NAME              | MILL LOCATION    | PRODUCTION<br>CAPACITY (MET-<br>RIC TONS/DAY) | OPERATION<br>STARTED | EMPLOYEES | ORIGINAL OWNER  |
|---------------------------|------------------|---|----------------------|-----------|-----------------|
| Bogasari                  | Jakarta/Surabaya | 11,766  | 1971                 | 2,600     | Liem Sioe Liong |
| Berdikari Sari<br>Utama   | Ujung Pandang    | 2,146   | 1973                 | 484       | Bustanil Arifin |
| Panganmas Inti<br>Persada | Cilacap          | 740   | 1997                 | 384       | Tutut           |
| Sriboga Raturaya          | Semarang         | 1,100   | 1998                 | 300       | Bustanil Arifin |

Source: Indonesian Association of Wheat Flour Producers (APTINDO) and interviews.

Central Java's Diponegoro Division. He was put in charge of supply and finance of the division, and that role connected him to the Chinese merchant Liem. Their hip grew over the years and further strengthened after Suharto rose through the ranks to become head of the military, finally replacing the Republic of Indonesia's first president, Sukarno, as acting president in the midst of the chaos caused by the alleged Communist Party coup in 1965 (Aditjondro 2000).

Suharto's New Order regime has a contradictory legacy in the management of the economy, and Liem is a quintessential example of its darker side. On the one hand, immediately after the coup, Suharto successfully controlled the wild inflation of the time and restored international business confidence, which was faltering partly due to Sukarno's nationalistic programs and anti-West rhetoric. When the clearly anti-Communist Suharto took over, Indonesia enjoyed an influx of Western aid and foreign direct investment. Oil and natural gas revenues also helped the national economy, and the GNP grew by about 4–5% per annum. The other side of the prosperous New Order economy, however, was the increasing takeover by Suharto's business allies and his own family. Suharto created a system of favoritism and cronyism among a handful of ethnic Chinese businessmen and his own family members. Some Chinese-owned businesses expanded tremendously under Suharto's protection and favor, growing into the country's major conglomerates such as the Astra, Sinar Mas, and Lippo groups.

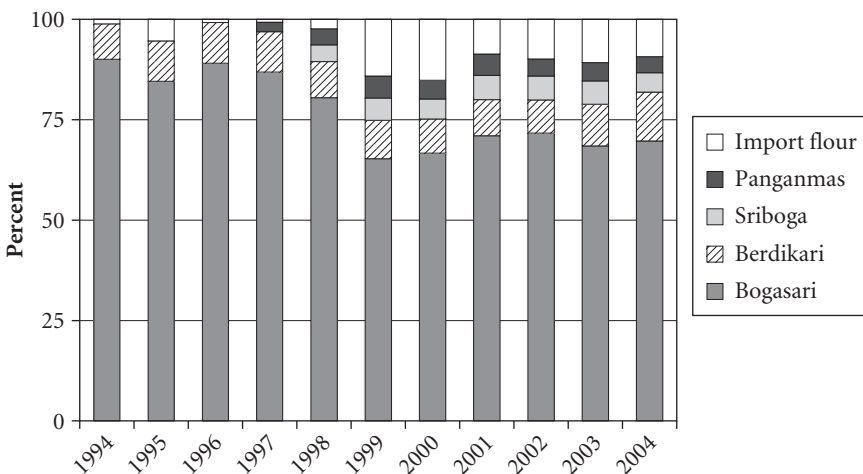
Liem's Salim Group was one of those conglomerates. Liem helped Suharto in the early years of his presidency by investing in infrastructure projects when the cash-short government could not. In return, Liem received special incentives and financial deals (Schwarz and Friedland 1991). His business, the Salim Group, grew tremendously and eventually came to hold the country's largest market share in various key sectors, including processed foods, private banking, cement, several grain commodities, auto manufacturing, chemicals, and real estate. By 1990, the Salim Group had revenues of \$8–9 billion, with its domestic sales equivalent to 5 percent of Indonesia's GDP. In the 1990s, it controlled three hundred companies employing 135,000 Indonesians (Friend 2003). The Salim Group expanded overseas as well, buying businesses in Singapore, Hong Kong, the Philippines, and Australia, and elsewhere (Schwarz and Friedland 1991).

Suharto himself was intertwined with the Salim Group's business fortunes. In return for his political patronage, Suharto received a percentage of the profits. According to George Aditjondro (1998), there were four investors who divided Salim Group's profits. Suharto's foster brother, Sudwikatmono, was one of them, along with Liem himself; Djuhar Sutanto, a Chinese businessman; and Ibrahim Risjad, an Achenese with close ties to the military. They usually divided the profits of investment with 40 percent each for Liem and Djuhar, and 10 percent each for Sudwikatmono and Risjad. Aside from personal ties, this arrangement ensured that Suharto and the Salim Group's relationship was close and tight.

It is indicative of these close relations that Suharto himself came to the opening ceremony, cut the ribbon, and celebrated Indonesia's first modern mill when Liem opened Bogasari Flour Mill in Jakarta in May 1971. The picture of that event still decorates Bogasari's corporate brochure.

Flour milling was a cash cow for the Salim Group. Bogasari Flour Mill obtained a right of monopoly on wheat imports and flour milling from Suharto. The profitability of Bogasari was also rooted in the fact that the wheat was supplied under the United States' foreign aid program Public Law 480 (the Food for Peace program) on concessionary terms (Aditjondro 2000). PL 480 was a food aid program for developing countries that was started in 1954, its purpose was both to aid in development and to dispose of US agricultural surpluses and create new overseas markets for US agriculture. As in many other cases, wheat for Indonesia under PL 480 was part of international Cold War politics. The United States had been irritated by the anti-West tendencies of Suharto's predecessor and had witnessed with concern his growing relationship with the Communist sphere. The United States therefore welcomed the transition from Sukarno's Guided Democracy to Suharto's New Order. The US government, along with that of its Western allies, rewarded Suharto handsomely with huge amounts of foreign aid; the wheat donation was one of these rewards. Under PL 480, wheat was provided through long-term loans with reduced interest rates. Suharto even received some special exemptions from regular PL 480 requirements (Magiera 1993).

With cheap raw materials, government subsidies, and political backing, Bogasari expanded greatly. It added a second flour mill in Surabaya in 1972. Bogasari



**FIGURE 5.1.** Market share trend of wheat flour market in Indonesia.

Source: APTINDO.



has since maintained the largest market share of wheat flour in Indonesia, capturing more than 70 percent of it (fig. 5.1).

Indonesia's second milling company, Berdikari, was managed by Bustanil Arifin, who is the owner of the glorious White House. Berdikari's history goes back to 1970, when a company from Singapore (Prima Limited) opened a mill in Makassar, in South Sulawesi. It was initially managed by Bogasari. In 1982, the founding shareholders sold their entire interest to a state-owned company called PT Perusahaan Pilot Proyek Berdikari (PT PP Berdikari), headed by Bustanil Arifin. Arifin later managed to turn this state company into a private firm of his own (Tiwon 1999). Bustanil Arifin was another of Suharto's confidants. He was an Achenese military general, and he was tied to Suharto by family—Arifin was married to a relative of Suharto's wife, Christine. He became a close partner of Suharto, centrally involved in most of his money-making schemes, and has been called the "single most important fund-raiser" for the Suharto regime (Schwarz and Friedland 1991). Not only did he control Berdikari beginning in the 1980s, but he later was put in charge of the Food Logistics Agency (BULOG), a powerful state agency originally set up to stabilize the price of rice and to distribute it, but which gradually expanded to control other key commodities including wheat and sugar. Arifin was also appointed Minister of Cooperatives, which was one of the money-making machines of New Order cronyism. In addition, he sat on the boards of Suharto's foundations (*yayasan*), such as the Indonesian Institute of Management Development and the Indonesian Institute of Cooperatives (Tiwon 1999). These foundations were also well known as tools that Suharto and his cronies used to make money through corrupt activities. For instance, under Arifin's management, BULOG channeled large sums from state accounts to these Suharto-related foundations (Jakarta Post 2000).

Arifin controlled Berdikari Flour Mill, first through PT PP Berdikari, and later by becoming the chairman of the Berdikari mill (Tiwon 1999). The mill was renamed Berdikari Sari Utama Flour Mills in 1983. Perhaps Arifin saw that the milling industry was so profitable that he had to have another company for himself. In 1998, he opened Sriboga Raturaya Flour Mill on his own in Central Java. This is the third-largest milling company in Indonesia and now is under the control of Arifin's son.

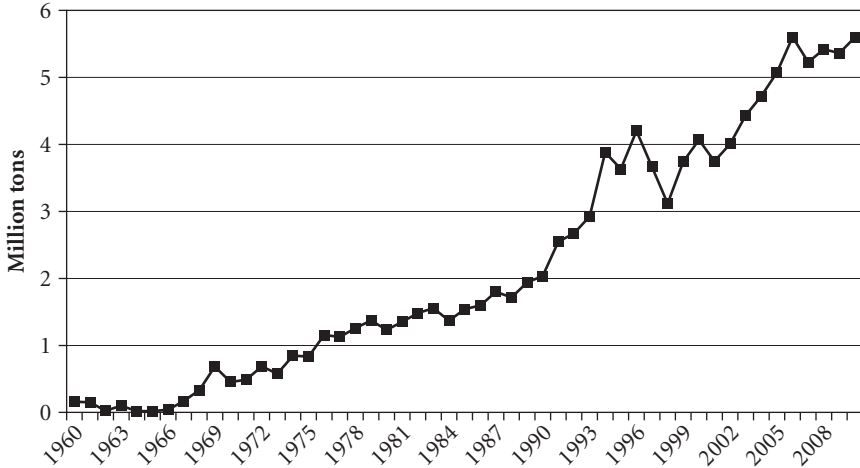
The fourth flour mill, Panganmas, was started in 1997 by Tutut, Suharto's eldest daughter. Like other members of the Suharto family, Tutut amassed huge wealth under a corporate group called Citra Lamtoro Gung Group. This conglomerate controlled a range of economic activities, including a toll-road company, telecommunications, banking, plantations, construction, forestry, sugar refining, and trading (Comey and Liebhold 1999). In 1997, Citra received a permit from the government to open up a new flour mill.<sup>3</sup>

In sum, what might at first glance seem like a healthy industry with four competitors was in reality made up of a small group of Suharto's favorites. If one digs a little further, one discovers that the cross-ownership of shares was so intertwined that the industry was essentially one gigantic monopolistic corporation. According to Aditjondro (1998), PT PP Berdikari was owned by Bustanil Arifin (30%), Salim (40%), and Bob Hassan (30%). Bob Hassan was another infamous crony of Suharto's, who was mainly implicated in the corrupt timber business. His business empire involved not only timber but also mining, manufacturing, and social charitable organizations, much like the foundations that Arifin was involved with. Sriboga Raturaya Flour Mill's ownership was split between Arifin (75%) and Salim (25%). Arifin's wife was a majority shareholder of Bogasari from 1977 (Aditjondro 1998).

Under Suharto's protection, the wheat flour business was strictly regulated. There was an elaborate system to ensure each flour mill's prosperity. After 1972, BULOG controlled all aspects of the wheat flour business. As Indonesia does not produce wheat, all wheat was imported, and BULOG was given control over all wheat imports. Technically, it was BULOG that imported wheat, and each flour mill just milled grains for BULOG and received fees for milling it (USDA 1997). BULOG also kept tight control on the marketing of wheat flour. All flour distributors had to be approved by BULOG, organized under the Association of Sugar and Flour Distributors, and they had fixed territories, except for some bread and noodles cooperatives, which were allowed to obtain wheat flour directly from BULOG (Fabiosa 2006).

What this system meant for the milling companies was guaranteed profitability. Unlike mills in other countries, Indonesian mills did not have the risk of trading grains by themselves. In addition, because the government fixed the milling fee at a generous rate, the profit margin for Indonesian mills was high. For instance, economist Stephen Magiera (1993) calculated that in 1988, the total mill margin was \$35.68 per ton in Indonesia, compared to the \$10 margin for typical mills in the United States. Besides this lucrative "milling fee," mills had another source of revenue: they were allowed to keep all milling by-products, which could be sold as animal feed (Fabiosa 2006). The mills received revenues of about \$38 per ton from the sale of milling by-products (Magiera 1993).

In addition to the four flour mills, other food companies also benefited from the patronage system. Most notable was Indofood, which was also owned by the Salim Group.<sup>4</sup> Indofood is one of the largest food manufacturers in Asia, with 45,000 employees, and is best known for its instant noodles, of which it sells about nine billion packs every year. Indofood had a great advantage because the company could procure wheat flour from its sister company, Bogasari. Their



**FIGURE 5.2.** Indonesian wheat imports, 1960–2010.

buying price for wheat flour was much lower than the global market price (Magiera 1993); their competitors had to pay distributors who paid a “surcharge” to BULOG. It is perhaps thanks to the cheaper raw material that Indofood became Indonesia’s largest food processor and, in fact, the world’s largest instant noodles producer. Indofood’s market presence is overwhelming; it has more than a 90 percent market share of instant noodles in Indonesia, and uses a significant portion of the wheat imported by the country (Purnama 2000, 71). In sum, it could be argued that the biggest beneficiary of this scheme was the Salim Group, which owned both Bogasari Flour Mill and Indofood (Kwok 1997; Gozal 1998).

Under the New Order’s protection, Indonesia’s wheat imports grew from less than a half a million tons in 1974 to more than four million tons in the mid-1990s (fig. 5.2). All of the wheat was milled by these four companies.<sup>5</sup> The country’s total wheat flour milling capacity grew tremendously and is now much bigger than capacities in other Southeast Asian countries (tables 5.2 and 5.3).<sup>6</sup>

## Fortification Policy: A Lifesaver for a Monopoly Industry

The glorious days of Suharto’s New Order came to a halt when the Asian Financial Crisis hit first in Thailand and then spread across the region. Indonesian currency fell from Rp 2,400 per dollar in June 1997 to Rp 16,000 per dollar in June 1998. Economic upheaval sparked a political crisis. Discontent with the New

**TABLE 5.2** Flour production capacity in Southeast Asian countries

| COUNTRY     | FLOUR PRODUCTION CAPACITY (METRIC TONS/YEAR) | MILLS   |
|-------------|--|---|
| Indonesia   | 4,728,600                                    | Bogasari, Berdikari, Sriboga, Panganmas   |
| Philippines | 2,673,620                                    | General Milling, Philippine Foremost, Wellington, Morning Star, Purefoods, Pilmico, Republic, Universal Robina, Liberty, Delta Milling Industries, Philippines, Pacific, Nissin Monde |
| Malaysia    | 1,269,840                                    | Federal, Malayan, Kuantan, Seberang, United Malaysian, Lahad Datu, Sarawak, Sabah Flour & Feed  |
| Thailand    | 925,000                                      | United, Laemthong, Siam, CP Thai, Bangkok, Kerry/Thai President, Nisshin-STC  |
| Singapore   | 199,800                                      | Prima Flour   |

Source: APTINDO.

**TABLE 5.3** Top ten flour mills in the world by capacity

| RANK | MILL                          | COUNTRY     | CAPACITY (METRIC TONS/DAY) |
|------|-------------------------------|-------------|----------------------------|
| 1    | Bogasari Flour Mills–Jakarta  | Indonesia   | 7,400                      |
| 2    | Bogasari Flour Mills–Surabaya | Indonesia   | 4,366                      |
| 3    | Prima Flour Mills             | Sri Lanka   | 2,600                      |
| 4    | Berdikari Sari Utama          | Indonesia   | 2,146                      |
| 5    | Nabisco Brands                | USA         | 1,600                      |
| 6    | ConAgra Flour Milling         | USA         | 1,450                      |
| 7    | General Mills                 | USA         | 1,300                      |
| 8    | ADM Milling Corp.             | Canada      | 1,200                      |
| 9    | Sriboga Raturaya Flour Mills  | Indonesia   | 1,100                      |
| 10   | General Milling Corp.         | Philippines | 1,100                      |

Source: APTINDO.

Order's cronyism had already been close to erupting. Students took to the streets demanding economic and political reforms. Unable to cope with the economic shock and increasingly threatened by the political instability, Suharto asked for IMF bailouts in October 1997 and January 1998. The IMF offered to provide new credit in return for major economic reforms (Liddle 1999). Initially resentful of these economic reforms that would destroy his and his cronies' economic empires, Suharto grudgingly had to agree to the IMF terms. One of the IMF's terms is of particular importance here: the requirement to open up the flour industry. As a part of the package, the IMF required BULOG to release control over the wheat-import business. The IMF required the government to eliminate tariffs on wheat imports along with other commodities and to allow free competition in importation of wheat and wheat flour and sale or distribution of flour (IMF 1998; USDA 1997).

These reforms meant a sea change for the hitherto protected industry. Importation of wheat was deregulated, and BULOG was no longer the only importer. Now, independent traders and food processors could import wheat flour directly. The import duty on wheat flour was also reduced to zero in 2000. As a result of these economic reform measures, the Indonesian milling industry faced tough competition for the first time in its history. The biggest threat to the Indonesian milling industry was imported wheat flour. As the subsidy declined and the duty on wheat flour dropped, the mills faced growing competition from foreign flours. The impact was acute. Only six months after the market was liberalized, Indonesia imported a substantial 150,000 metric tons of flour (Government of Australia 2000). Wheat flour imports had been at a level of 22,000 tons per year before the reform, but this increased to 500,000 tons after the liberalization (APTINDO 2001). Of course, the industry did not remain beaten. The milling industry resorted to various means to curb the impact. They argued that the import companies were dumping in Indonesia and asked the Indonesian Anti-Dumping Commission to conduct an investigation into the dumping of wheat flour onto the Indonesian market beginning in 2000. The industry also lobbied the government to raise the import duty again.<sup>7</sup>

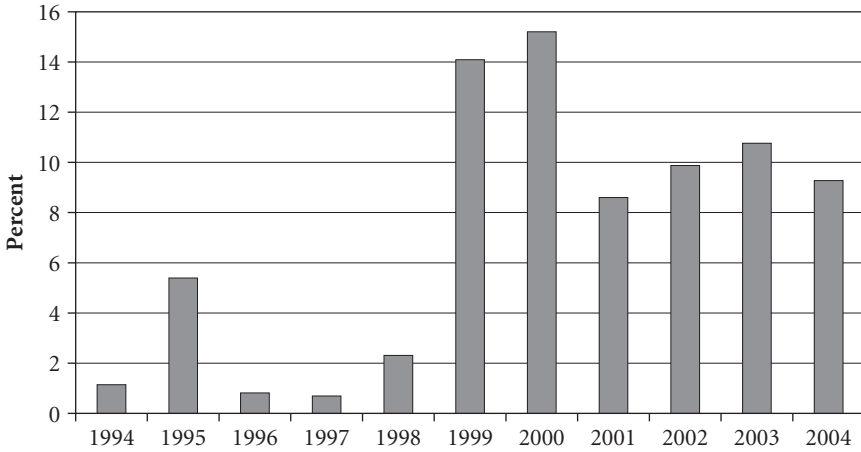
As it turns out, Indonesian nutrition experts and the flour industry had been working on the fortification policy for a while. In a climate of competition unprecedented in the history of the Indonesian milling industry, companies found a benefit in fortification: a trade barrier that was justifiable on public health grounds. The fortification policy made it more difficult to import wheat flour, because the Indonesian National Standard for wheat flour fortification is different than any other country's (table 5.4). The wheat flour milling industry therefore found that they could be protected from imported wheat flour by having a fortification requirement. This is not a secret. In many interviews I had with nutritional experts, they suggested this was the key ingredient for the successful fortification policy. For instance, a former official in the Office of State Minister of Food Affairs said, "Making it mandatory was also a need of industry itself. Why? Because with it, the quality of imported wheat flour from Australia or elsewhere becomes not good, or lower because they are not fortified. Therefore the industry feels, with this [fortification], there is a certain policy instrument for making some sort of technical barrier."<sup>8</sup> The head of the nutrition division in the Ministry of Health also recalled that the industry was interested in fortification "because they were worried about globalization. They said if they fortify the wheat flour, then another wheat flour cannot enter in Indonesia. That's what they were worried about. We got pressure from foreign competitors."<sup>9</sup>

**TABLE 5.4** Wheat flour mandatory fortification standards (in ppm)

| COUNTRY         | VITAMIN B <sub>1</sub> | VITAMIN B <sub>2</sub> | FOLIC ACID | NIACIN | ZINC | IRON |
|-----------------|------------------------|------------------------|------------|--------|------|------|
| Bahrain         |                        |                        | 1.5        |        |      |      |
| Belize          | 4                      | 2.5                    | 1.5        | 45     |      | 60   |
| Bolivia         | 4.45                   | 2.65                   | 1.5        | 35.6   |      | 60   |
| Canada          | 6.4                    | 4.0                    | 1.5        | 53     |      | 44   |
| Chile           | 6.3                    | 1.3                    | 2.2        | 13     |      | 30   |
| Columbia        | 6.0                    | 4.0                    | 1.54       | 55     |      | 44   |
| Costa Rica      | 6.2                    | 4.2                    | 1.8        | 55     |      | 55   |
| Cuba            | 7.0                    | 7.0                    | 2.5        | 70     |      | 45   |
| Ecuador         | 4.0                    | 7.0                    | 0.6        | 40     |      | 55   |
| El Salvador     | 6.2                    | 4.2                    | 1.8        | 55     |      | 55   |
| Guatemala       | 6.2                    | 4.2                    | 1.8        | 55     |      | 55   |
| Honduras        | 6.2                    | 4.2                    | 1.8        | 55     |      | 55   |
| Indonesia       | 2.5                    | 4                      | 2          |        | 30   | 50   |
| Jordan          |                        |                        | 1.5        |        |      | 30   |
| Kuwait          | 6.38                   | 3.96                   | 1.5        | 53     |      | 44   |
| Mexico          | 4.0                    | 2.4                    | 1.6        | 28     | 16   | 24   |
| Nicaragua       | 6.2                    | 4.2                    | 1.8        | 55     |      | 55   |
| Nigeria         | 6.2                    | 3.7                    |            | 49.5   |      | 40.7 |
| Oman            |                        |                        | 1.5        |        |      | 30   |
| Panama          | 6.0                    | 4.0                    | 1.5        | 55     |      | 60   |
| Paraguay        | 4.5                    | 2.5                    | 3.0        | 35     |      | 45   |
| Peru            |                        |                        |            |        |      | 28   |
| Qatar           |                        |                        | 1.5        |        |      | 60   |
| Saudi Arabia    | 6.38                   | 3.96                   | 1.5        | 52.9   |      | 36.3 |
| South Africa    | 1.94                   | 1.78                   | 1.43       | 23.7   | 15   | 35   |
| Trinidad Tobago |                        |                        | 1.5        |        |      | 30   |
| UAE             |                        |                        | 1.5        |        |      | 30   |
| UK              | 2.4                    |                        |            |        | 16   | 16.5 |

Source: [www.sph.emory.edu/wheatflour/training/resources/fortstds2.pdf](http://www.sph.emory.edu/wheatflour/training/resources/fortstds2.pdf), data as of 2002.

The milling industry started to give serious thought to a fortification policy. It increasingly seemed like a good idea. Seeing the industry more willing than in this area, nutritional experts were jubilant. Details were worked out, and the official law for mandatory fortification of flour was issued in 2001. The effect was dramatic. In 2001, imports of flour decreased radically (fig. 5.3). The Indonesian milling industry wanted to make sure that the regulation would continue to block their foreign competitors. Even after the initiation of the fortification law, they repeatedly complained that most imported flour was still not fortified in compliance with the SNI and urged the government to conduct stricter monitoring. The Indonesian Association of Wheat Flour Producers' (APTINDO) spokesperson, Ratna Sari Loppies, frequently appeared in the media, claiming that much imported wheat flour did not satisfy SNI or labeling requirements and that the



**FIGURE 5.3.** Market share of imported wheat flour in Indonesia.

Source: APTINDO.

domestic industry was subject to unfair competition (see, e.g., Kompas 2003a, 2003b, 2003c). Their lobbying was partially successful. Several years after the start of the policy, the government issued a new regulation requiring imported flour to be registered with the Ministry of Health.<sup>10</sup>

There were some criticisms of this policy. Even within the government, some considered this a thinly veiled protectionist policy posing as an antimalnutrition policy. Particularly vocal opposition came from the Business Competition Supervisory Commission (Komisi Pengawas Persaingan Usaha or KPPU). Its head, Soetrisno Iwantono, criticized mandatory fortification of wheat flour, saying that it might constitute an unfair trade barrier. Another member of KPPU, Ani Pudyastuti, said that mandatory fortification in SNI was an entry barrier, and pointed out that there were no clear benefits from the added micronutrients (Kompas 2003b).

The wheat flour industry fought back. APTINDO dismissed the KPPU's charge of creating an unfair trade barrier and said that it was not the job of the KPPU to investigate fortification policy (Kompas 2003b). Furthermore, the milling industry launched a public relations campaign, praising the fortification program as a nutritional endeavor and portraying itself as sacrificing for the national development. For instance Sriboga Raturaya Flour Mill distributed promotional material headed "Wheat Flour fortified with vitamins. Built to improve the health of the nation" (PT Sriboga Raturaya n.d.). Similarly, the industry organization, APTINDO, argued:

Even today, many imported wheat flour products still come to the domestic market that do not fulfill the Indonesian National Standard requirement, although the government already has decided that the wheat standard is mandatory and that it needs to be fulfilled by every company that wants to market its products in Indonesia. This situation already has caused losses to the national wheat flour industry as it has implemented the fortification program that constitutes one of the decisions of SNI. Domestic producers need to pay an additional R40 million per year. (Ministry of Trade and Industry 2003, 49; my translation)

The industry emphasized the cost it was bearing for fortification and the high moral position it was taking in the name of the nation's health, and pleaded for a crackdown on the foreign competitors.

However, in reality, the fortification required very little new investment and the micronutrient premix's price was modest. Interviews with industry insiders confirmed that cost was actually not a major problem for the industry. I asked managers at the mills what was entailed in adding extra nutrients, and they said that changes in processing were not consequential at all. Yet in their self-portrayal, the Indonesian milling industry was making a heroic sacrifice for the nutrition of the nation and was the victim of foreigners who were dumping cheaper wheat flour on the market.

## **MSG and Instant Noodles Are Good for You**

This analysis of the milling industry raises many questions as to the actual motivation for the fortification regulation. The description of the industry and the impact of wheat flour fortification could imply that fortification was implemented to benefit the powerful monopolistic industry. Yet this conclusion, albeit attractive due to its straightforwardness, would undermine a realistic assessment of nutritional science on the ground. For one thing, exploration of flour fortification had already begun before the economic crisis and liberalization. The country's nutrition experts had lobbied for wheat flour fortification well before it became financially valuable for the industry. Therefore, it would be inaccurate to assert that wheat flour fortification was only driven by corporate interests. We also need to understand that the technoscientific community's support for fortification could not be forged overnight at the will of the corporations, however powerful they were. Over the decades leading up to 1998, the Indonesian nutrition experts had built up a network of institutions and scientists interested



in fortification. Particularly strong proponents emerged in the national nutrition research institutes that conducted multiple studies on possible vehicles beginning in the early 1980s. Many of these experts had worked with international vitamin A researchers such as Alfred Sommer. Although they initially strongly supported the supplement approach, namely vitamin A pills, these experts expanded their interests to other tools to address the problem. The network enjoyed strong support from international organizations and, over the years, gained sympathizers within the Ministry of Health as well. We need a better framework than the simple contamination model of science to understand how these technoscientific experts ended up helping the crony industry.

Wheat flour's curious predecessors in fortification drives were instant noodles and monosodium glutamate (MSG) (see table 5.5). MSG was one of the

**TABLE 5.5** Chronology of fortification projects in Indonesia

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|      |   |
|------|---|
| 1985 | Research on MSG fortification (Muhilal and Murdiana 1985)   |
| 1988 | Research on efficacy of fortified MSG (Muhilal et al. 1988)   |
| 1989 | Five-Year Development Plan (Repelita) III mentions fortification  |
| 1991 | Research on instant noodle fortification (Soetrisno, Slamet, and Hermana 1991)  |
| 1993 | Research on wheat flour and condiment fortification's impact on the final products' characteristics (Komari and Heraman 1993) |
|      | National Workshop on Food and Nutrition (Widyakarya Nasional Pangan dan Gizi) includes one panel on fortification             |
| 1994 | Fortified rice project started  |
| 1995 | National Household Health Survey (SKRT)   |
|      | Research on instant noodle fortification with vitamin A and iron for children under five (Sukati et al. 1995)                 |
|      | Research on instant noodle fortification with vitamin A and iron for pregnant women (Saidin et al. 1995)                      |
| 1996 | Office of State Minister of Food Affairs established. Food Law mentions the needs of fortification.                           |
| 1997 | National Fortification Committee established  |
|      | Research on standard fortification level for iron-fortified wheat flour (Muhilal, Murdiana, and Hermana 1997)                 |
| 1998 | Widyakarya discusses fortification  |
|      | With funding from UNICEF, USAID, and CIDA, testing of wheat flour fortification in a factory.                                 |
|      | Ministry of Health decree on wheat flour fortification (32/MENKES/SK/VI/1998)   |
| 2001 | Ministry of Industry and Trade issues the Indonesian National Standard (SNI) for wheat flour                                  |
|      | Indonesian government notifies WTO about health-based trade restrictions, which are accepted                                  |

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earliest serious fortification attempts by nutrition experts and the government in Indonesia, beginning in the 1980s. In the 1990s, researchers contemplated instant noodles as another possibility.<sup>11</sup> And these were not isolated laboratory experiments by overly enthusiastic scientists. They actually came very close to making it into national policy. These two cases offer an interesting opportunity to understand the dynamics of fortification. In particular, the MSG and instant noodles cases are instructive for two reasons. First, with their similarity and continuity of logic with wheat flour fortification, they demonstrate that wheat flour fortification should not be considered a historical accident. The narrow view of the “needs” of the people in these cases, I suggest, is symptomatic of the way that food problems are defined within nutritionism. These two cases exemplify the reductionist logic that circumscribed the description and prescription of the malnutrition issue, with striking resemblances to the case of wheat flour fortification. Second, they show that fortification is not only driven by the logic of science, nor only by the logic of the market, but by a coalescence of both. Only when industry was successfully enrolled in the endeavor was fortification possible. MSG and instant noodles could not bring the industry into the network, while the convergence of two logics led to the success of wheat flour fortification. This leads to the question: How did industry, not citizens, become the veto power in fortification? Ultimately, MSG, instant noodles, and wheat flour fortification were viewed as unproblematic due to various characteristics of nutritionism in which the problem is interpreted as one of nutrients rather than as a social problem; where statistics are presented as the only valid means of knowing the problem; and where industry and technoscientific experts are considered as the exclusive authorities in defining the problem and offering the solution.

## **The Case of MSG**

The most revealing story of fortification in Indonesia before wheat flour is that of MSG. In the earliest fortification attempt by nutrition experts in the country, they wanted to add vitamin A to MSG in order to reduce vitamin A deficiency. The initial impetus for the MSG program came from a survey that calculated the prevalence of vitamin A deficiency in the country. In order to tackle the problem, government and international organizations initially relied on the mass distribution of vitamin A supplements, but they also started to look at other options, including fortification. The government hired consultants, including Alfred Sommer, whose studies in Indonesia on vitamin A deficiency had had a major international impact (Edmunds 1989). On the Indonesian side, Muhilal at the national laboratory became the foremost researcher on fortification. In

1980, the Ministry of Health began studies to identify an appropriate “vehicle,” that is, a food product to be fortified for the purpose of vitamin A deficiency eradication. They funded a household consumption survey to quantify national dietary patterns and to identify candidates for a vitamin A fortification vehicle. From this survey, researchers found several food items with potential: salt, MSG, wheat, and sugar. Soon after, Muhilal and his collaborators started a pilot project on fortifying MSG (Muhilal and Murdiana 1985).

These researchers at the national nutrition research institutes found that fortification of MSG was technically feasible and relatively easy. Adding vitamin A did not disturb the product’s characteristics too much, and it remained stable during storage and was amenable to mass production. After sorting out the technical side of fortification, researchers then went on to demonstrate that it worked by conducting a small nutrition efficacy study. To their delight, the study showed that fortified MSG improved the nutritional indicators. When consumed, the fortified MSG increased the level of serum retinol in the blood. Researchers did not forget to underline in their report that, in particular, young children and pregnant women benefited from this fortification (Muhilal et al. 1988). The fortified MSG project seemed like a great success, and the researchers who had conducted the study, particularly Muhilal, became ardent supporters.

When I interviewed them, the MSG researchers did not have any regrets about having chosen MSG for fortification. The choice was, in their view, justified by the data—they had survey data on the prevalence of the deficiency and on food consumption patterns. There was a deficiency, and people consumed MSG. The only remaining issue was to find out whether it was technically feasible and whether it would satisfy the nutrition efficacy study. Outside of the framework of the project, however, the choice of MSG might have seemed strange for two reasons. First, MSG is not a traditional part of the Indonesian diet. Glutamic acid was discovered by a Japanese researcher as a flavor enhancer at the beginning of the twentieth century, and subsequently MSG was mass produced by a Japanese food conglomerate, Ajinomoto. Ajinomoto aggressively marketed MSG not only in Japan but also in other Asian countries, successfully making it ubiquitous in Asian kitchens (Consumers Association of Penang 1986; Dibb 1999). Government fortification would mean that this multinational business product would be promoted as a healthy ingredient and that regular consumption would be encouraged throughout the country. The cultural and social implications of such a policy were not debated.

Additionally, given that there had been controversy around MSG’s negative health effects, it was indeed remarkable that MSG was chosen to become the national healthy food. Chinese restaurant syndrome had already been reported, causing much controversy within and beyond medical circles worldwide. Researchers reported MSG-related symptoms such as flushing, tightness in the

chest, increased blood pressure (Kwok 1968), and headache (Kenney and Tidball 1972; Schaumburg et al. 1968). Consumer concern was so great that in the late 1970s, manufacturers “voluntarily” removed MSG from baby food. Despite the controversy, nutritional researchers insisted that fortified MSG could benefit “vulnerable” groups, namely, children, pregnant women, and lactating women.

It might be argued that current research tells us that adverse health effects of MSG have turned out to be negligible. For instance, the 1988 Joint FAO/WHO Expert Committee on Food Additives decided that there was no significant health threat from MSG, and a similar conclusion was reached by the European Union and the American Food and Drug Administration. However, the FDA still admits that there are particularly sensitive subgroups within the population (Walker and Lupien 2000). In addition, these reassuring statements did not come until the late 1980s, thereby making the MSG espousal in Indonesia in the mid-1980s unusual. Yet these health concerns with MSG were largely carved away because of the reductionist framing of the issue.

It was not the realization that an otherwise “unhealthy” food could not be made “healthy” by fortification that stopped the MSG project from becoming a reality. Nor was it the realization that this might not be a real solution to the complex issue of malnutrition. It was the opposition of the MSG industry, which disliked the fortified MSG’s change in color. When fortified MSG was hung in its small cellophane packets outside small rural shops—the usual way that this product was marketed and probably the reason for its successful penetration of the market—discoloration occurred. The resultant yellowish color was unacceptable for the producers, who had marketed MSG as the whitest of white products. Although the industry initially had celebrated the prospect of marketing their product as “healthy food” and “new and improved,” it eventually backed out of the program (Darnton-Hill and Nalubola 2002).

## **The Case of Instant Noodles**

Despite the failure of the MSG project, nutrition experts continued to eye fortification as a public policy option. Vitamin A deficiency seemed to be controlled well by pills, so the next target became iron. In the 1990s, Indonesian researchers started several experiments with iron fortification. The issue was which food item should be chosen as a vehicle for iron, and it seems that researchers soon decided that instant noodles was the best way to deliver iron. Already in 1991, researchers had experimented with iron fortification of instant noodles (Soetrisno, Slamet, and Hermana 1991). The experiments were successful, with no technical glitches. Researchers proceeded to conduct a study in South Kalimantan and South Sulawesi demonstrating that instant noodles were consumed in nearly

all households in both areas. The bonus finding was that the poor consumed even more than the average consumer (Melse-Boonstra et al. 2000, cited in Darnton-Hill and Nalubola 2002). After establishing instant noodles as the ideal vehicle, it was time for a technical feasibility and efficacy study. In 1994, experts conducted an experiment by giving instant noodles fortified with iron to pregnant mothers (Saidin et al. 1995) and children under five years old (Sukati et al. 1995). These studies found fortified noodles were sufficiently effective.

From the experts' point of view, these experiments and surveys provided enough justification for making fortification of instant noodles a public health policy. Nutritional experts started to lobby government officials to fund the project. Once we step outside the worldview of experts, however, instant noodles also seem like an odd choice for a public health policy. Instant noodles are quintessential modern junk food, without significant nutrients and with many unhealthy ingredients. It is not only high-minded Western consumers who are worried about instant noodles. Already in the 1990s, Indonesian consumers were concerned about the noodles' nutritional quality, their high sodium content, and the use of preservatives and additives, among other issues. Social critics were worried about the cultural implications of the rapid increased use of instant noodles in Indonesian social and cultural life (Eviandaru 2001).

In contrast, the rise of instant noodles was good news for nutritional scientists who were working on fortification. More instant noodles consumed meant more iron delivered. A Ministry of Health official recalled the project:

In 1994, we tried to conduct a small study first to try to involve one of the producers of instant noodles. For the first time, we tried instant noodles. Because we had data that showed consumption of instant noodles among people in rural areas was actually increasing. At the time, [there was] something like a boom of instant noodles production in Indonesia. And instant noodles were very, very cheap. They are easy to prepare. Even for breakfast, lunch, for school children, they can prepare it very easily. So when we were first thinking about how to fortify, it was instant noodles.<sup>12</sup>

For companies that make instant noodles, fortification was appealing because they could market their products as healthy food. The industry itself had tried to convince consumers of the products' safety and quality for some time, and they expected that a public fortification policy would boost the legitimacy of their health claims. The same interviewee from the Ministry of Health said:

The Ministry of Health issued a ministerial decree on noodles fortification, but at the time, it was not yet mandatory. But we were just asking the producers to fortify for the health of the people. And it works,

and the producers actually also tried to promote their instant noodles. I mean the value of the product increased because of fortifying. So they always put [about nutritional benefits] in advertising.<sup>13</sup>

Despite the endorsement from experts, the instant noodle fortification project did not materialize in the end. The industry finally decided to oppose it, citing the increase in cost entailed by fortification. They wrote to the government that it would be an unbearable burden for them. The Ministry of Health tried to convince them that only several rupiah would be added to the cost, but still the industry was not happy with the increase.<sup>14</sup> Once the industry opted out, researchers had to give up the dream of healthy instant noodles.

What do these two cases of MSG and instant noodles fortifications tell us? The intriguing aspect of these attempts was how the scientific quest for nutritious food somehow ended up with a technical fix that had dubious social and cultural implications. In this regard there is a striking resemblance to the project of wheat flour fortification. Notice how “nutritional needs” were interpreted in the technoscience network. Although the overall goal was to improve the nutritional status of the population, the needs were reduced to one nutrient at a time—vitamin A or iron. The focus on a single nutrient effectively put a boundary on subsequent efforts in terms of scope and range of options. Correspondingly, the solution was a simple one, of just adding the missing nutrient to a food vehicle. The research task involved two simple steps: looking for a carrier for a nutrient and adding the nutrient to it. In this logic, MSG and instant noodles stood out as ideal products to improve nutritional status.

For experts, fortified MSG and instant noodles were brilliant solutions that encountered unfortunate technical glitches and cost problems. This sentiment is particularly evident among nutrition experts who were directly involved in the experiments. They tend to emphasize that fortified MSG and instant noodles were effective in trials and would have been a great policy if there had not been industry opposition (see, e.g., Edmunds 1989).

Although it is questionable whether MSG and instant noodles deserved official promotion as healthy food, nutritional experts did not believe it was necessary to address the cultural, political, and social implications of their work. They were following a typical protocol in which the complex reality of malnutrition was categorized into a set of data: the problem for the malnourished was identified and specified by a nutrition survey; the adequacy of the solution was confirmed by an efficacy trial. From this viewpoint, it is no wonder that little debate took place on the broader merits of MSG or instant noodles among experts. In their view, MSG and noodles were mere “carriers” of the nutrient, and what was important was that they carried nutrients to people. Nothing else. We can now

understand why experts took the increasing consumption of MSG and instant noodles across socioeconomic strata as a trend to be welcomed. Making nutritional composition the only issue that ultimately mattered, nutritionism narrowed the food policy discourse in such a way as to block out broader and more complicated issues.

## **Expanding the Fortification Network**

It was after these two failed fortification attempts that wheat flour fortification emerged and materialized. The earlier part of this chapter focused only on the milling industry. Now we know that there already had been a network of scientists and policymakers involved in earlier fortification attempts. This points to the need for broadening the examination of wheat flour fortification beyond the corporate world. Here we look in more detail at how the technoscience network for wheat flour fortification expanded, leading to the adoption of mandatory fortification policy by the government in the late 1990s.

Even after the two aborted attempts at fortification, the experts' network did not disappear. On the contrary, there was an increasing interest in micronutrients globally. As I have described, "micronutrient deficiencies" started to appear frequently in the vocabulary of development and food policy specialists, and fortification itself gained stronger momentum in the international and domestic scenes. The international development community saw Indonesia as a place fit for fortification initiatives and started exploratory projects. For instance, the Micronutrient Initiative chose Indonesia to experiment with rice fortification in the early 1990s. With MI funding, an organization called the Program for Appropriate Technology for Health (PATH) implemented a feasibility study of vitamin A-fortified rice called Ultra Rice between 1994 and 1996 (PATH 2000). UNICEF also was a source of international encouragement for fortification. In Indonesia, UNICEF had maintained good connections and working relationships with the government on health and nutrition issues over several decades. As international interest in fortification grew, UNICEF started to put fortification on its Indonesian office's agenda as well, seeking to heighten the interest among various sectors of Indonesian society. It sponsored workshops such as "A Dialogue on Food Fortification," which was held in 1996 at BULOG (Direktorat Bina Gizi Masyarakat 1997). Such workshops demonstrated the growing international interest in fortification and encouraged Indonesians to seriously consider it for public policy.

In addition to the international sponsors, a bureaucratic sponsor was also critical in the process. The emergent fortification network got a boost when the Office of State Minister of Food Affairs was established in 1996. The new ministry

was created to fill the perceived institutional gap that existed between the Ministry of Agriculture and the Ministry of Health. The newly established ministry took on fortification as a mission well suited to its mandate. Fortification seemed to fall nicely within the new ministry's jurisdiction of "food": something that was neither agriculture nor health. In particular, many of my interviewees identified the assistant to the State Minister of Food Affairs for the Division of Food, Suroso Natakusuma, as the prime mover behind fortification.

This new ministry's first important job was to draft food-related laws. The resulting Food Law of 1996 was the government's first major codification on issues of food quality, food safety, and labeling, and fortification was included as an important policy option to be considered. In order to materialize its commitment to fortification, the ministry then established the Food Fortification Committee (Komisi Fortifikasi Pangan).<sup>15</sup> The committee invited experts, government agencies, food producers, and other stakeholders to chart the way for a national fortification policy.

In the 1990s, nutritional experts also sought more data on micronutrients and micronutrient deficiencies. Critical in creating the momentum that eventually led to wheat flour fortification was the national nutrition survey data on anemia. In particular, nutritional experts used the National Household Health Survey on anemia among pregnant women and children under five years old to demonstrate the seriousness of anemia in the country and to boost the fortification movement.<sup>16</sup> The survey helped the fortification network claim "scientific evidence" regarding the need for additional iron and to move on to a discussion of which vehicle to use. By this time, instant noodles had been vetoed as a candidate for fortification, and the experts had to look for other options. Rice, sugar, and cooking oil had potential, and many other countries had already used them. But each had problems in the Indonesian context—rice mills were too numerous to ensure quality control and also were deemed "too political"; cooking oil was technically difficult, as Indonesian cuisine frequently uses deep frying, which destroys some nutrients (Untoro 2002).<sup>17</sup> The production of sugar was considered too dispersed for fortification control and monitoring.

In contrast, wheat flour seemed to fulfill necessary conditions. The official justifications for choosing wheat flour as a fortification vehicle encompass a variety of issues, but typically they include the following points: (1) production is centralized (Natakusuma 1998; UNICEF 2003); (2) it is consumed by many people, and particularly by the poor (Natakusuma 1998); (3) its distribution is widespread, reaching remote areas (Natakusuma 1998); (4) it is affordable (Natakusuma 1998); (5) its fortification is technologically feasible (Natakusuma 1998; UNICEF 2003); (6) it would mean that instant noodles would also be fortified, and their consumption is widespread even in rural areas and among the



urban poor (three times a week, and covering 80% of children two years of age) (Soekirman et al. 2005); (7) fortification adds an insignificant cost (Soekirman et al. 2005; UNICEF 2003; Soekirman 1998).

One expert echoed the official explanations when I asked why wheat flour was chosen:

Why wheat? Because technologically, in Indonesia, the staple food that meets the criteria for fortification is wheat. Because rice is produced by millions of people. And again, we have been trying with rice, but it's very complicated. In Latin America, sugar. But for Indonesia, sugar is an unstable commodity. Production, price, imports. So we cannot work on that. Wheat is good because production is controlled, and now the consumption of wheat is going up, it reaches everybody—even the poor. So, if you make effective iron fortification [of wheat flour], this will reach the poor.<sup>18</sup>

Wheat flour also seemed like a good candidate because of the industry's close ties to the government. Since the Office of State Minister of Food Affairs was a spin-off of BULOG, the latter's close relationship with the milling industry was an asset. Indeed, a former staff member of the Office of State Minister of Food Affairs, who was identified as the prime mover for the project, had worked at BULOG before moving to the Office of State Minister of Food Affairs. He explained to me in December 2004 that wheat flour emerged as the best candidate partly because "Bogasari is an old friend of BULOG. Therefore, there were already long individual contacts so that we could work together."

In the meantime, nutrition researchers had gone ahead and conducted some research on wheat flour fortification. Scientists at the Center for Research and Development of Nutrition and Food (Puslitbang Gizi) conducted several studies (Komari and Hermana 1993; Muhilal, Murdiana, and Hermana 1997), and Bogasari did technical feasibility studies to confirm that there was no impact on taste, color, and cooking properties from fortification. By 1997, nutrition experts seemed to have solidly decided on wheat flour as a vehicle (Natakusuma 1998).

In June 1998, the government came close to finalizing the wheat flour fortification regulation. The Ministry of Health issued a decree on the mandatory wheat flour fortification program.<sup>19</sup> This regulation stipulated that all wheat flour be fortified with iron (60 ppm), zinc (30 ppm), thiamine (2.5 ppm), riboflavin (4 ppm), and folic acid (2 ppm), at a minimum. Deciding the details of fortification, nonetheless, took some more negotiation between researchers and the industry. When deciding on the iron level, Muhilal of the Center for Research and Development of Nutrition and Food initially argued that 50 percent of the Indonesian recommended daily allowance would be a good rule to adopt.

But industry rejected this as too much, and in response, Muhilal changed the recommendation to 25 percent of the RDA (Muhilal, Murdiana, and Hermana 1997), which would have been 60 ppm.<sup>20</sup> But the milling industry opposed this amount as well, and pushed for 50 ppm of iron. The experts compromised, and the final Indonesian National Standard became 50 ppm. Hence there was a slight change between the 1998 announcement and the 2001 SNI. The type of iron was another tricky question to be resolved. Researchers wanted to use ferrous sulfate and ferrous fumarate (Komari and Hermana 1993). However, the industry opposed this, citing the unattractive color of instant noodles if made with this fortified flour, based on an experiment conducted by Bogasari (Purnama 2002). Finally, the experts agreed to use another type of iron called elemental iron. The final SNI issued by the Ministry of Industry and Trade in 2001 was therefore a product of multiple compromises struck between experts and the industry.<sup>21</sup>

International organizations and bilateral donors were also keen on promoting fortification and eager to help the Indonesian program take off. Once wheat flour seemed to be the consensus, international organizations expedited the process. The major push for flour fortification came from USAID, UNICEF, CIDA, and ILSI (Maberly 2002). USAID donated through UNICEF the initial premix (iron, zinc, thiamine, riboflavin, folic acid) sufficient for 1 to 1.5 years in 1999.<sup>22</sup> This premix was distributed among Indonesia's mills according to their installed capacity (Purnama 2000). In 2001, CIDA provided a grant to UNICEF for assisting Indonesia's fortification project as well as 232,440 kilograms of premix, which was distributed to the four flour millers.

In sum, wheat flour fortification was the fruit of the existing technoscience network that had worked for some time to materialize mandatory fortification in Indonesia. The extension of this network was greatly facilitated by various factors. As we saw, the survey on anemia was cited by many informants as the critical event behind the eventual materialization of fortified wheat flour. International aspects also mattered significantly. The ascending profile of fortification in the global development community and the community's working relationships with Indonesian scientists and bureaucrats, along with their eagerness to showcase Indonesia as an exemplary case of mandatory fortification helped boost the morale of the network and expedite the process. And last, it was important that the new Office of State Minister of Food Affairs, with its useful connections to the milling industry, also sponsored the initiative. The network was able to frame fortification as falling between agriculture and health, an authentic "food issue," in a way that worked to get the sponsorship of the newly established ministry. The groundwork had already been laid so that the industry could take advantage of fortification. This time, they did not veto the plan and willingly followed the path charted by international and domestic experts.

## Nutritionism and Its Blind Spots

If it was not solely due to the muscle of a powerful industry, why did wheat flour fortification happen despite its dubious cultural, economic, and health consequences? In search of an answer to this question, I have looked at two previous fortification attempts. Once it is situated in the longer history of fortification in Indonesia, it is clear that wheat flour fortification shares much with these two earlier fortification attempts, and what ties them together is nutritionism. In all three cases, nutritionism worked to narrow down the issue from malnutrition to a problem of “deficient” food and to the lack of particular nutrients. The equation of malnutrition with some form of dietary deficiency must not be naturalized, however. The etiology of vitamin A deficiency (in the case of MSG) and iron deficiency anemia (instant noodles and wheat flour) is quite complex, and there could be causes for these micronutrient deficiencies other than dietary deficiency, such as infection and other diseases. Nevertheless, there was a single-minded focus on food and its nutritional composition. It was deficient food that was blamed for micronutrient deficiencies. This ultimately justified the nutritional fixes whose sole mission was to add missing nutrients.

By reducing food to a collection of, or a vehicle for, measurable nutrients, nutritionism calculates food’s worth in terms of the amount of nutrients it delivers. Such a microscopic view of food made it hard for involved experts to see cultural and social issues. For instance, one might have legitimately questioned the implications of making MSG and instant noodles into officially sanctioned healthy foods, since concerns had already been raised about cultural and health effects of these products. Similarly, once outside of the logic of nutritionism, one might question the use of crony capitalists under the Suharto regime as partners for public health policy. Yet nutritionism enabled experts to pretend that they were merely tackling technical problems rather than social problems. For them, politics and culture did not matter, because they were strictly dealing with nutrients. Furthermore, it is worth pointing out that this narrow attention to micronutrients sometimes did not even make medical sense. For instance, fortified instant noodles might be high in iron, but that does not reduce their sodium content. Yet as long as nutritionism singled out iron content as the signifier of food quality, fortified instant noodles could be legitimately promoted as healthy food.

Understanding the function of nutritionism helps to make sense of the apparent confidence that nutrition experts have in wheat flour as an ideal food policy tool. For virtually all of those I interviewed, it was not a case of business interests taking over a public health project. It was seen as a truly happy marriage of business and science without any guilt. The characteristics of the wheat flour industry—that it was monopolized, that it was making large profits, and that it

had a close relationship with the regime—met with the approval of the experts, who saw this situation as providing ideal conditions for their pet project. In the nutrition experts' language, it meant that wheat flour satisfied the conditions of centralized production, ability to absorb additional cost, and easy enforcement of regulation. However, the flour milling industry might well be described alternatively as oligopolistic, protected, and politically well connected. Critical in constructing a deceptively simple and perhaps naive narrative was nutritionism, which connects wheat flour fortification with previous experiences with MSG and instant noodles.

## **We Know What You Need: Nutritionism and Science Governance**

The story of fortification in Indonesia should serve as a critical reminder of the implications of nutritionism for science governance. One might assume that technical policymaking on nutrition and food is better left to experts and bureaucrats with technical expertise on the issue. However, among science and technology studies scholars and those involved in policymaking, there is a growing awareness that even technical policies and programs need to be founded on a democratic footing. Contrary to the classic portrayal of science rooted in positivism, science is never a neutral tool in policymaking. Science involves an exercise of judgment and is founded on implicit normative assumptions. The history of the discipline, conventions, and socialization also restrict science's frameworks and its approaches to any policy issue. Hence, increasing numbers of scholars have called for discarding the old expert-monopoly model of science in favor of the governance of science by citizens (Kleinman 2000).

A leading science and technology studies scholar, Sheila Jasanoff, has argued for science to strive for what she calls “technologies of humility” (2003). With this concept that emphasizes science's inherent political nature, she argues for more engagement between experts and citizens in which “citizens are encouraged to bring their knowledge and skills to bear on the resolution of common problems” (227). She points out that experts' humility in seeking voices from citizens is necessary, as science often fails to consider issues that fall outside the conventional framing of a particular discipline or that have to do with long-term consequences and differential exposure to risks and benefits of particular policy interventions or technologies.<sup>23</sup>

Nutritionism, however, exists in stark contrast with such humility about technoscience's role in food policy. Notice that citizen participation was almost entirely absent from the history of fortification looked at here. In all three cases

of fortification attempts, there was very little direct or indirect input from regular Indonesians. There were several meetings that were dubbed “public” or “socialization,” but in reality, most of them were attended only by bureaucrats and scientists. One might try to call the Widyakarya Nasional Pangan dan Gizi a place for public dialogue about malnutrition issues open to citizens, but it would be a stretch. Widyakarya was attended only by academics, policymakers, and some international invitees. We might imagine that there were “socialization meetings,” which are regular fixtures in the Indonesian policymaking process and are supposed to increase public participation. Although I could not confirm the occurrence of such meetings before 1998, the ones I attended in 2004–5 only involved nutritionists, representatives of international organizations, and government officials. The KFI’s opinion was taken as citizens’ input, but as indicated earlier, all of its members are ex-government officials, nutrition researchers, or corporate representatives.

Instead of encouraging grassroots-based food policy dialogue, nutritionism effectively and significantly limits the stakeholders that are invited to take part in it. Key to this closure is the sense of certainty about the definitions of the problem and the needs that nutritionism offers. By reducing needs to nutritional components of food that are quantifiable and knowable by biochemical measurements, the statistics themselves become the authoritative account of “the food problem” and the needs of the people. It is not surprising, therefore, that all three cases of fortification in Indonesia crucially used survey data to make the case for fortification. Experts discussed fiercely the technical merits of survey data—whether it is representative of the population, what kind of measurements must be taken, which demographic groups need to be oversampled, and so on—but they took it for granted that they could rely on survey data to define the food problem and to understand the needs of people. The most valid and authoritative account of the needs of the people was, in their view, a survey with sufficient sample size, covering the whole nation, and conducted by the experts. It was for this reason that wheat flour fortification got a major boost when the national data on anemia became available. For experts, this data on the hemoglobin levels of pregnant women and children authoritatively fixed the shape of the problem and provided the indisputable evidence of the needs for fortification. Diagnosis and prescription were self-evident—hence, the people did not need to be heard.

Ironically, while nutritionism was instrumental in excluding regular citizens as relevant actors, it also worked to include the food industry as “experts” in food reform. By reducing food to a set of nutritional parameters, nutritionism refashions food into a mere carrier of macro- and micronutrients. This microscopic definition enables the business community to claim an expert status on food problems, particularly in the case of fortification, because the industry has

expertise in the mechanics of adding nutrients at factories. Malnutrition became a manufacturing problem with scientists as experts on etiology and epidemiology and the industry as experts with practical know-how about fortification and consumers.

In a sense, nutritionism is highly productive. It is critical for fortification policymaking in its ability to weave both scientists and the industry into its fabric. Scientists could come up with the best fortification vehicle from their vantage point, but they still need to enroll business partners. Nutritionism laid the basis for the collaborative relationship between the scientific and industrial communities.

The stories of fortification in this chapter also show that nutritionism put industry and nutritional scientists on a par as experts. In all three fortification attempts, industry played a significant role in making or breaking the deal. MSG and instant noodles did not become official fortification policy due to industry opposition, whereas wheat flour did with industry's support. The equal expert status given to the industry was also seen in the negotiation over the level of iron fortification, in which the scientists' proposed iron standard for wheat flour was rejected by the industry and the industry recommendation became the final standard. The negotiation over the type of iron is another example. The final decision to use elemental iron, although opposed by scientists because it has much less bioavailability—about 50 percent that of ferrous sulfate, which was originally proposed, was made by the industry (Lynch 2005). This kind of back-and-forth between industry and scientists was considered necessary, not a distortion of science by economic interests.

The food crisis of 2007–8 is another reminder of the power given to private industry under nutritionism. The milling industry this time lobbied the government to lift the fortification requirement. This further illustrates that nutritionism might help to create a comfortable partnership with private corporations when they are willing, but it obfuscates the fact that corporations' loyalties lies not with the malnourished but ultimately with stockholders.

The case study of wheat flour also points to contradictions of neoliberalism. In examining neoliberal development policies of Asian developing countries, anthropologist Aihwa Ong observes that they “combine authoritarian and economic liberal features” and “are not neoliberal formations, but their insertion into the global economy has required selective adoption of neoliberal norms for managing populations in relation to corporate requirements” (2002, 236). The neoliberal orthodoxy articulates with locally specific conditions and historic contingencies, producing ambiguous results not easily captured by the framework of competitive markets and free trade. While fortification can be celebrated as a “public-private partnership,” we should not conflate the global rise of neoliberal discourse and the pursuit of neoliberal strategies with what actually happens on

the ground. Ironically, in the context of the late 1990s in Indonesia, fortification was used against trade liberalization and deregulation.

The paradox of nutritionism is that while it is instrumental in forging the critical alliance of powerful actors, corporate actors are included in the dialogue as experts although they are not accountable to the marginalized in society. It creates a comfortable space for the scientific and industry experts and authorizes them to define the problem and needs of the people without listening to them. In Indonesia the microscopic language of nutritionism shared by these experts naturalized the large role played by the corporate sector in fortification policies as well as the absence of discussion of issues such as the cultural inappropriateness of instant noodles and MSG fortification programs and the economic distributive effects of wheat flour fortification. Far from being “humble” in recognizing the need for citizen participation, nutritionism sets out to dictate the problem and needs of people, delegating this authority to limited experts.