Competitiveness in the Philippine Steel Industry*

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I. INTRODUCTION

Steel constitutes a basic industry prerequisite in a country's pursuit of development and industrialization. The central role of the industry stems from its linkages with numerous sectors, where its products serve as an essential input to countless uses, such as building and construction, automotive, shipbuilding and repair, electronics, packaging, etc. and its equally important contributions to employment generation, growth, and promotion of industrial activity, etc. Therefore, ensuring a strong domestic steel and steel-based industry is vital in developing the competitive edge of a country in meeting the challenges of globalization.

This paper aims to analyze the conditions in the local investment climate and how they affect firm-level competitiveness in the steel industry to serve as basis for defining or refining industry-specific policy needs and programs that support increased productivity and global competitiveness.

II. PRODUCTS AND PRODUCTION PROCESSES

Steel can be produced from iron ore or recycled scrap metal. In the case of the former, steel is manufactured by the chemical reduction of iron ore using the more traditional integrated steel manufacturing process or the more advanced technique of direct reduction using natural gas to produce direct reduced iron (DRI) or hot briquette iron (HBI) (World Bank, 1998; Metals Industry Research and Development Center, Department of Science and Technology, 2004). Steel production from iron ore involves the following three basic processes:

1) Cokemaking: Initial step involving heating of bituminous coal to very high temperatures in coke ovens to remove impurities and produce the heat and carbon source to melt iron.

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2) Ironmaking: Intermediate step involving the reduction of iron ore to pig iron[1] by heating iron ore, coke, and limestone in a blast furnace.

3) Steelmaking: Final step involving feeding and heating of molten pig iron together with scrap metal, fluxes, alloys, and high-purity oxygen in a basic oxygen furnace or open hearth furnace for final refinement of iron into steel. Supplementary refinements are done to remove impurities and the addition of alloying agents may be made to enhance the qualities of the resulting liquid crude steel. In older plants, molten steel is solidified in ingot molds and then rolled into semi-finished products, such as billets, blooms, slabs, etc. On the other hand, modern mills use continuous casting machines, which have lower energy consumption and produce less waste in reheating. Semi-finished products are finally heated at very high temperatures to make metal malleable and then rolled into desired finished products (World Bank, 1998; AIG Environmental, n.d.; US Environmental Protection Agency, n.d.).

However, in response to stiffer competition and more stringent environmental regulations, integrated steel mills were replaced to some extent by smaller plants, commonly called "minimills" or "mini steel plants" that produce steel from scrap metal as their basic raw material using Electric Arc Furnace (EAF) technology (Illinois Waste Management and Research Center, n.d.). Minimill operations, which characterize steel making in the country today, involve intense heat from electric energy and oxygen that melts iron and steel scrap as opposed integrated steel mill production, which entails the addition of coke and limestone to iron ore (AIG Environmental, n.d.). Steel manufacturing from scrap requires fewer steps[2] since it dispenses of several processes, such as cokemaking and ironmaking that are requisite in integrated mills (US Environmental Protection Agency, n.d.). Although the reduction in the number of steps involved in mini steel plant operations implies lower cost, given the current state of technology, steel produced from these mills are generally considered lower quality in comparison to the consistently high quality new steel produced from iron ore-based integrated steel manufacturing methods due mainly to the inability of minimill operators to keep tight reigns over the chemical composition of scrap steel (Illinois Waste Management and Research Center, n.d.; NAICS 3311, 3312, n.d.). In addition, minimills produce a limited array of products, excluding the more specialized products from larger steel plants (Illinois Waste Management and Research Center, n.d.). However, despite these deficiencies, the lower operations cost and initial capital investment requirements of minimills have contributed immensely to their increasing popularity and growth. Moreover, in cases where a country has readily available sources of scrap metal, mini steel mills provide relative flexibility in location, preferably in close proximity to market centers like Metro Manila compared with integrated steel plants, which are generally found near iron ore deposits (NAICS 3311, 3312, n.d.).

Molten steel from iron ore or scrap metal is then further processed into semi-finished long products, such as billets and blooms or semi-finished flat products, such as slabs. In older plants, liquid crude steel is solidified in ingot molds and then rolled into semi-finished products while modern mills use continuous casting machines, which are more efficient in energy use and waste generation. Finally, semi-finished products are again reheated in a furnace to make metal malleable and then rolled into finished products, such as bars, sections and wire rods for long products and hot rolled coils, plates, and cold rolled coils for flat products (Indiainfoline.com, n.d.).

[1] Defined as the molten metal resulting from ironmaking process (Indiainfoline.com, n.d.).
[2] This includes melting scrap metal, refining by removing impurities, and casting molten metal into semi-finished shapes or finished steel products.

III. Industry Definition

Discussions in this paper focus on the primary steel industry in the country except for the industry profile based on the *2002 Census of Philippine Business and Industry*, which includes the further downstream processes beyond basic iron and steel, e.g., building and construction, automotive, shipbuilding and repair, electronics, etc. Distinction is made between the intermediate downstream processes and other heavy users of steel in the manufacturing sectors.

The basic steel industry involves all processes from smelting in blast furnaces to the semi-finished stage in rolling mills and foundries, where billets, blooms, slabs or bars are produced, re-rolling and drawing into basic forms such as sheets, plates, strips, tubes and pipes, rails, rods and wires, tin-plates, rough castings and forgings (Appendix 1. Local Iron and Steel Industry Flowchart). Also included are coke ovens, which are associated with blast furnaces. The domestic iron and steel industry is involved in the manufacture of billets and ingot, flat products, and long products (Metals Industry Research and Development Center, Department of Science and Technology, 1972, *Ibid*., 1980).

IV. PHILIPPINE STEEL MANUFACTURING

A. History

The iron and steel industry in the Philippines started with the establishment of the country's first nail-making plant by the government-run National Development Company. The plant was later sold to Marcelo Steel Corporation in 1949. Two years later, Philippine Blooming Mills began the rolling of bars operations in the country and built the first open-hearth furnace in Pasig with a holding capacity of 40 tons in 1952. During the same year, Marcelo Steel established the first domestic scrap melting plant that utilized electric arc furnaces (Metals Industry Research and Development Center, Department of Science and Technology, 1972; *Ibid*., 1980; *Ibid*., 2004).

Pipe and tube making was pioneered locally by Republic Steel Tubes in 1957 using German-made electric resistance weld tube mills. Super Industrial Corporation was second in line in 1964 with Japanese-made induction welded tube mills, followed by International Pipe Industries (IPI) in 1968, which introduced spiral-welded pipes (Metals Industry Research and Development Center, Department of Science and Technology, 1972; *Ibid*., 1980).

In the area of GI sheets, Puyat Steel established plain and corrugated GI sheet production in the Philippines in 1956. Cold-rolling mill operations were initiated by Southern Rolling Mills in 1960. Iligan Integrated Steel Mills, Inc. [IISMI, later renamed National Steel Corporation (NSC)] and Elizalde Steel Rolling Mills (ELIROL) followed suit with the completion of their cold rolling mills in 1968 (Metals Industry Research and Development Center, Department of Science and Technology, 1972; *Ibid*., 1980).

Another Elizalde-owned company, the Elizalde Iron and Steel Company (ELISCO) initiated tinplating operations in 1962 using Japanese manufactured hot-dip tinning lines. IISMI also started manufacturing tin plates in 1969 utilizing the US-built Ferrostan line. In 1976, ELISCO bought the tinplate plant of NSC and was renamed Elizalde Steel Consolidated (Metals

Industry Research and Development Center, Department of Science and Technology, 1972; *Ibid*., 1980).

The only hot rolling mill in the country was run by NSC with a capacity of 350,000 metric tons (mt)/year of hot-rolled sheets and coils until its closure in 1999 (Metals Industry Research and Development Center, Department of Science and Technology, 1972; *Ibid*., 1980).

B. Industry Profile

The iron and steel industry can be categorized into upstream and downstream sectors. The upstream segment involves iron making[3], steel making[4], and billet, ingot and slab casting[5]. On the other hand, the downstream sector includes the intermediate sector, which involves processing of semi-finished iron and steel products into finished products (i.e., rolling, forming, drawing and finishing) and industries that are major consumers of iron and steel products[6], such as construction, metalworking and engineering, shipbuilding and repair, vehicle assembly, appliance manufacturing and packaging (Metals Industry Research and Development Center, Department of Science and Technology, 2004).

1. Number of Firms

The latest published Census of Philippine Business and Industry (CPBI) by the National Statistics Office (NSO) with 2001 as reference year covers 6,397 firms in the manufacturing sector with average total employment of 20 and over. Steel and steel-related industries recorded a total of 1,895 establishments (29.6% of manufacturing firm count) with the downstream segment accounting for a lion's share with 1,649 or 87.0% and 25.8% of the total number of firms in the steel and manufacturing industries, respectively (Table 1). Of this, 403 establishments (21.3% of the steel industry or 6.3% of the manufacturing industry) were from the intermediate steel sector while the larger concentration with 1,246 establishments (65.8% of the steel industry 19.5% of the manufacturing industry) came from the other manufacturing sectors that are heavy users of steel, such as machinery manufacturing, repair, and rebuiliding, electronics, etc. On the other hand, firms engaged in the upstream processes of steelmaking numbered 246, roughly 13.0% of the steel industry or 3.8% of the manufacturing industry firm count.

[3] Defined as the extraction of iron from iron ore (Metals Industry Research and Development Center, Department of Science and Technology, 2004).
[4] Defined as the refinement of iron or scrap into steel (Metals Industry Research and Development Center, Department of Science and Technology, 2004).
[5] Defined as the transformation of molten steel into semi-finished products (Metals Industry Research and Development Center, Department of Science and Technology, 2004).
[6] Includes wire products, hard drawn wire, nails, galvanized wire, welding electrodes, and bolts and nuts for the long products, and fabricated items, CR pipes, roll formed products, e.g., roofing sheets, trussers, purlins, etc., and hot rolled pipes.

Table 1: Summary Statistics for Steel and Steel-Related Establishments in the Philippines with Average Total Employment of 20 and Over, By Industry Group, 2001

Industry Group	No. of Establishments	Employment[a] (Ave for the Year)		Total Compensation[c] (Million Pesos)	Revenues[d] (Million Pesos)	Cost[e] (Million Pesos)
		Total ('000)	Paid Workers[b] ('000)			
Upstream Steel Sector[k]	246	28.9	28.8	3,311.5	72,710.6	60,315.9
Downstream Steel Sector (Intermediate)[l]	403	31.6	31.3	3,497.9	29,400.3	22,939.9
Downstream Steel Sector (Other Heavy Users of Steel in the Manufacturing Industry)[m]	1,246	309.5	307.9	41,131.6	738,043.5	609,628.8
Downstream Steel Sector[n]	1,649	341.1	339.2	44,629.5	767,443.8	632,568.8
TOTAL (Steel Industry: Exc Other Heavy Users of Steel in the Mfg Industry)[o]	**649**	**60.5**	**60.2**	**6,809.4**	**102,110.9**	**83,255.8**
TOTAL (Steel Industry)	**1,895**	**370.0**	**368.1**	**47,941.0**	**840,154.4**	**692,884.7**
TOTAL (Manufacturing Industry)	**6,397**	**942.2**	**937.4**	**116,222.4**	**1,807,531.1**	**1,420,204.4**

[a] Number of establishments refers to the average number of persons who worked in or for the establishments during the year; that is, the sum of all persons who worked all months of the year and divided by 12, regardless of the number of months the establishment was in operation during the year. Total employment includes paid employees and unpaid workers.

[b] Employment refers to all persons working in the establishment receiving pay as well as those working away from the establishment when paid by and under the control of the establishment. Included are persons working as full-time or part-time and those employees on sick leave, paid vacation or holiday. Excluded are consultants, home workers and workers receiving commission only.

[c] Compensation includes salaries and wages and employer's contribution to SSS/GSIS, and the like.

[d] Revenue/sales include cash received and receivable for goods sold and services rendered. For manufacturing, total receipts include value of products sold, value of industrial services done for others, value of goods for resale, interest/dividend income and other revenue. Valuation is at producer's prices (ex-establishment), net of discounts and allowances, including duties and taxes but excluding subsidies.

[e] Cost refers to all expenses excluding compensation incurred during the year whether paid or payable. Valuation should be at market price including taxes and other charges, net of discounts, rebates, returns and allowances. Goods and services received by the establishment from other establishment of the same enterprise are valued as though purchased.

Industry Group	Value of Output[f] (Million Pesos)	Value Added[g] (Million Pesos)	Gross Additions to Fixed Assets[h] (Million Pesos)	Change in Inventory[i] (Million Pesos)	Subsidy[j] (Million Pesos)
Upstream Steel Sector[k]	77,434.2	19,784.5	889.4	453.6	4.7
Downstream Steel Sector (Intermediate)[l]	29,847.4	10,406.3	1,007.3	871.0	1.8
Downstream Steel Sector (Other Heavy Users of Steel in the Manufacturing Industry)[m]	724,713.8	202,389.4	35,986.9	(3,470.4)	569.5
Downstream Steel Sector[n]	754,561.2	212,795.7	36,994.2	(2,599.4)	571.3
TOTAL (Steel Industry: Exc Other Heavy Users of Steel in the Mfg Industry)[o]	**107,281.7**	**30,190.8**	**1,896.7**	**1,324.6**	**6.5**
TOTAL (Steel Industry)	**831,995.4**	**232,580.2**	**37,883.6**	**(2,145.8)**	**576.0**
TOTAL (Manufacturing Industry)	**1,795,830.8**	**602,879.6**	**60,042.2**	**6,971.5**	**1,792.1**

[f] Value of output represents the total value of products sold, receipts from contract work and industrial services done for others, receipts from goods sold in the same condition as purchased, fixed assets produced on own account and change in inventories (ending less beginning) of finished goods, work-in-process and goods for resale.

[g] Value added represents the sum of census value added and value of non-industrial services done for others less the cost of non-industrial services done by others and other costs.

[h] Gross additions to fixed assets as derived indicator, is equal to capital expenditures less sale of fixed assets, including land.

[i] Change in total inventories as a derived indicator is computed as the value of ending inventory less the value of beginning inventory.

[j] Subsidies are all special grants in the forms of financial assistance or tax exemption or tax privilege given by the government to aid and develop an industry or production and to protect it against competition.

[k] Upstream steel sector includes the following industry groups based on the 1994 PSIC Code: 271: Manufacture of basic iron and steel; and 272: Manufacture of basic precious and nonferrous metals.

[l] Downstream (intermediate) steel sector includes the following industry groups based on the 1994 PSIC Code: 273: Metal casting; 281-289: Manufacture of fabricated metal products, except machinery and equipment.

[m] Downstream other manufacturing steel-related sector includes the following industry groups based on the 1994 PSIC Code: 291-294: Manufacture of machinery and equipment, not elsewhere classified; 300: Manufacture of office, accounting and computing machinery; 311-312: Manufacture of electronic motors, generators and transformers; electricity distribution and control apparatus; 313: Manufacture of insulated wire and cables; 314-319: Manufacture of accumulators, primary cells and primary batteries; lighting equipment and electric lamps; other electrical equipment, not elsewhere classified; 321-323: Manufacture of electronic valves and tubes; semi-conductor devices and other electronic components; TV and radio transmitters and apparatus for line telephony and line telegraphy; 324: Manufacture of television and radio receivers, apparatus, and associated goods; 331-333: Manufacture of medical precision and optical instruments, watches and clocks; 341-343: Manufacture of motor vehicles, trailers and semi-trailers; 351-359: Manufacture of other transport equipment; and 360: Manufacture and repair of furniture.

[n] Downstream Steel Industry Subtotal = Downstream Sector (Intermediate) + Downstream Sector (Other Heavy Users of Steel in the Manufacturing Industry).

[o] Total (Steel Industry) = Upstream + Downstream Steel Sectors.

Source: Industry Statistics Division, Industry and Trade Statistics Department, National Statistics Office.
http://www.census.gov.ph/data/sectordata/2001/cpbi00_mfg1.htm.

2. Employment and Compensation

Although a capital-intensive operation, the steel industry nonetheless contributed significantly to employment generation in the manufacturing sector with 369,985 workers (39.3%) in 2001, of which 368,084 (99.5%) were paid employees and the rest owners and unpaid workers[7] (0.5%) (Table 1). In fact, on a per firm basis, the average number of workers employed in the steel industry averaged 195 employees/firm compared with workforce of 147 for the manufacturing industry or an increase in labor intensity by 48 workers/firm (32.6%) (Table 2). This is due to the high concentration of employees in the downstream steel sector with 207 workers/firm, particularly in the other manufacturing sectors that are heavy users of steel, where the employee absorption rate was 248/firm compared with 117 workers/firm in the upstream sector. Note that while the other manufacturing downstream sector was the most labor intensive within the steel industry, the intermediate downstream steel industry was the least labor intensive with 78 workers/firm.

The total compensation paid by the steel industry reached P47.9 billion in 2001, approximately 41.2% of the total salaries and wages and employer's contributions to SSS/GSIS, and the like borne by the manufacturing sector (Table 1). The average annual compensation was 130,244.7/worker, which is at par with the payments/worker made by the manufacturing sector at 123,986.7/worker (Table 2). There was wide disparity in the average compensation paid by the various sectors within the industry with the highest average rate paid by the heavy steel users in the other manufacturing industries at P133,581.5/worker. A variance of P21,942.0/worker (16.4%) is estimated between the highest paying segment in the steel industry and intermediate downstream sector, which paid the lowest annual compensation per employee, while a slightly smaller difference of P18,750.8 (14.0%) is observed between the upstream steel segment and the other steel-related downstream manufacturing industries. Once again, the inclusion of the other downstream manufacturing segment, where compensation is higher, inflated average compensation in the steel industry by an average amount of P17,075.8/worker or of 8.5%.

[7] Includes working owners who do not receive regular pay, apprentices and learners without regular pay, and persons working without regular pay for at least one third of the working time normal to the establishment (National Statistics Office, n.d.).

Table 2: Summary of Average Statistics for Steel and Steel-Related Establishments in the Philippines with Average Total Employment of 20 and Over, By Industry Group, 2001

Industry Group	Ave # of Workers	Ave Compensation	Ave Revenue (Million Pesos)	Ave Cost (Million Pesos)	Ave Value of Output (Million Pesos)
Upstream Sector: Steel Sector	117.4	114,830.6	295.6	245.2	314.8
Downstream Sector (Intermediate)	78.4	111,639.5	73.0	56.9	74.1
Downstream Sector (Other Heavy Users of Steel in the Manufacturing Industry)	248.4	133,581.5	592.3	489.3	581.6
Downstream Steel Sector	206.9	131,555.0	465.4	383.6	457.6
TOTAL (Steel Industry: Exc Other Heavy Users of Steel in the Mfg Industry)	**93.2**	**113,168.9**	**157.3**	**128.3**	**165.3**
TOTAL (Steel Industry)	**195.2**	**130,244.7**	**443.4**	**365.6**	**439.0**
TOTAL (Manufacturing Industry)	**147.3**	**123,986.7**	**282.6**	**222.0**	**280.7**

Industry Group	Productivity/ Worker (Million Pesos)	Value Added/ Worker (Million Pesos)	Value Added Ratio[1]	Ave Gross Additions to Fixed Assets (Million Pesos)	Ave Change in Inventory (Million Pesos)	Ave Subsidy (Million Pesos)
Upstream Sector: Steel Sector	2.7	0.7	25.6%	3.6	1.8	0.019
Downstream Sector (Intermediate)	0.9	0.3	34.9%	2.5	2.2	0.004
Downstream Sector (Other Heavy Users of Steel in the Mfg Industry)	2.3	0.7	27.9%	28.9	-2.8	0.457
Downstream Steel Sector	2.2	0.6	28.2%	22.4	-1.6	0.346
TOTAL (Steel Industry: Exc Other Heavy Users of Steel in the Mfg Industry)	**1.8**	**0.5**	**28.1%**	**2.9**	**2.0**	**0.010**
TOTAL (Steel Industry)	**2.2**	**0.6**	**28.0%**	**20.0**	**-1.1**	**0.304**
TOTAL (Manufacturing Industry)	**1.9**	**0.6**	**33.6%**	**9.4**	**1.1**	**0.280**

Value added ratio = value added/value of output.

Source: Industry Statistics Division, Industry and Trade Statistics Department, National Statistics Office. http://www.census.gov.ph/data/sectordata/2001/cpbi00_mfg1.htm.

3. Sales and Revenues

Total sales and revenues reported by establishments in steel and steel-related activities totaled P840.2 billion (46.5% of the full amount of sales in the manufacturing industry of P1,807.5 billion) (Table 1) with average revenues estimated at P443.4 million/firm in 2001 (Table 2). Although this represents an improvement of 36.3% (P160.8 million) over the manufacturing sector performance, where average sales reached P282.6 million/firm, much of the better than the general manufacturing industry performance of the steel industry can be exclusively attributed to the revenues posted by the other manufacturing downstream steel segment with P592.3 million/firm. Without the contributions of this sector, average sales from the upstream and downstream (intermediate) sectors of the steel industry alone would have fallen below the manufacturing average by -P125.2 (44.3%) to P157.3 million/firm.

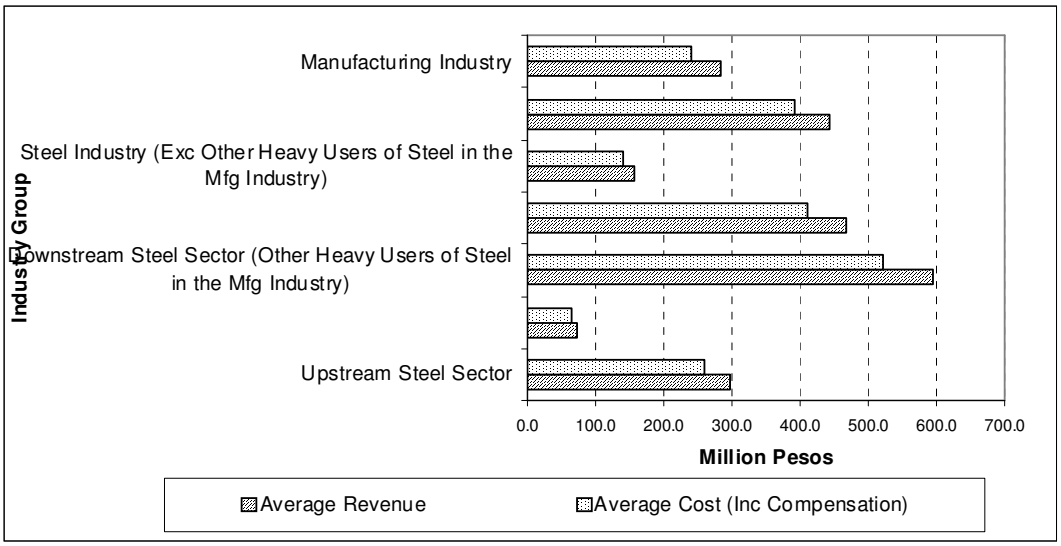
4. Costs

Total expenses incurred by the steel industry (other than compensation) for 2001 was valued at P692.9 billion, accounting for 48.8% (P1,420.2 billion) of the total costs by manufacturing establishments included in the 2002 Philippine Business and Industry Survey (Table 1). The largest cost was incurred by the downstream segment with total costs amounting to P632.6 billion, contributing 91.3% of the total cost of the steel industry and 44.5% of the gross cost of the manufacturing sector. Consistent with the earlier industry performance indicators, other steel-related industries in the manufacturing sector dominated industry costs estimated at P609.6 billion or 88.0% and 42.9% of the total costs incurred by the steel and steel-related establishments and the manufacturing industry, respectively. The upstream steel sector recorded costs of a much lower magnitude estimated at P60.3 billion, roughly 8.7% of the total costs of the steel industry or 4.2% of the sum of manufacturing industry expenses.

When costs are evaluated based on the industry average, the downstream sector continues to lead the way, posting average costs amounting to P383.6 million/firm, roughly 4.9% (P18.0 million) and 72.8% (P161.6 million) more than the steel and manufacturing industries mean expenses of P365.6 million/firm and P222.2 million/firm, respectively (Table 2). It should be noted however that this above average performance by the downstream industry was driven mainly by the exceptionally high average expenditure by the downstream steel-related manufacturing industries (P489.3 million/firm), which more than offset the extremely low average cost payments by the downstream (intermediate) steel sector of P56.9 million/firm or a mere 25.6% of the manufacturing industry costs/firm or worse, only 15.6% of the steel industry average cost. Although much higher average cost values are recorded by firms involved in upstream steel processes compared with the downstream primary steel sector and the general manufacturing industry, mean expenses of P245.2 million/firm for this segment falls below the industry average by 32.9% (-P120.5 million).

A comparison of average costs (including compensation) and average revenues within the steel industry as shown in Figure 1 reveal positive net revenues across all sectors. However, the disparity among the various segments of the industry is once again highlighted by the sterling performance of the downstream heavy users of steel in the manufacturing sector with net profits averaging P70.1 million/firm in 2001 and the much lower average net earnings by the upstream (P36.9 million/firm) and downstream (intermediate) (P7.4 million/firm) steel segments or an industry average of 52.4 million/firm compared to P42.4 million/firm for the manufacturing industry. This implies that had it not been for the strong net earnings of the further downstream segment, average profits of the industry would have fallen to 18.6 million/firm, below the manufacturing industry mean by 56.2% (P23.8 million/firm)

Figure 1: Comparison of Average Costs and Average Revenues for Steel and Steel-Related Establishments with Average Total Employment of 20 and Over, by Industry Group, 2001



5. Productivity

This section analyzes productivity in terms of gross output and value added. Gross output measures "disembodied technological change" while value added measures the industry's capability to "translate technological change to income and its contribution to final demand" (Cobbold, 2003, p. 27).

Total output value of the steel industry was estimated at P832.0 billion, accounting for 46.3% of total manufacturing output value of P1,795.8 billion (Table 1). Average output value amounted to P439.0 million/firm due mainly to the dominant contributions of the downstream other heavy users of steel in the manufacturing industries with output averaging P581.6 million/firm (Table 1b). Without this sector however, the steel industry average drops to a much lower value of P165.3 million/firm compared to P280.7 million/firm for the manufacturing industry. This once again puts in the fore the dominant contributions of the downstream heavy users of steel in the manufacturing sector.

However, estimates of productivity/employee show a reversal in the prevailing trend observed throughout the analysis with the upstream sector registering the highest output value/worker at P2.7 million and other steel-related industries a decent second with P2.3 million (Table 2). The runner-up performance of the further downstream sector is not so much due to poor productivity where it contributed bulk of the steel industry's gross output value as it is the much higher concentration of workers. Conversely, the downstream primary steel sector continues to lag behind the manufacturing and steel industries mean yield value/worker of P1.9 million and P2.2 million, respectively.

The dominance of the downstream steel-related sector is carried on to value added performance, where total contributions amounted to P202.4 billion, accounting for 87.0% (P232.6 billion) and 33.6% (P602.9 billion) of gross value added in the steel and manufacturing industries, respectively (Table 1). In terms of labor productivity however, estimates of value added/worker show moderately higher productivity estimates (4.8% or P31,096.1) in the

upstream sector at P684,988.2 compared to P653,892.1 in the downstream other-steel related industry. Value added/worker in the steel industry was P499,269.3 without the heavy users of steel in the manufacturing industry and P628,620.7 combining all upstream and downstream sectors. The manufacturing industry value added was much higher at P639,853.5/worker.

Another gauge of productivity is the value added ratio, which measures value added per peso of gross output produced. The value added ratio for the steel industry was 28.0% compared to 32.6% for manufacturing (Table 2). From among the sectors in the industry, the downstream (intermediate) steel sector recorded the highest value added ratio at 34.9%, surpassing both the steel and the manufacturing industry values. This was followed by other steel-related sectors with 27.9% and last was the upstream segment with 25.6%.

6. Capitalization

Gross additions to fixed assets are a proxy for capitalization and are estimated as the net of capital expenditure and the sale of fixed assets (National Statistics Office, n.d.). Net capital expenditure in the manufacturing industry in 2001 reached P60.0 billion, of which P37.9 billion (63.1%) came from the steel industry (Table 1). However, without the contributions of the more downstream manufacturing segment that are heavy users of steel with shares reaching 95.0% (P36.0 billion) of the gross additions to fixed assets in the steel industry, net spending on capital would have been reduced to only P1.9 billion. This translates to an average net capital expenditure of P20.0 million/firm for the steel industry, which is more than twice the manufacturing average of P9.4 million/firm (Table 2). However, this value drops drastically to P2.9 million/firm when other-steel related manufacturing sector is excluded.

Another measure of capitalization is the value of the change in inventory, where the total estimate for the steel industry was -P2.1 billion in 2001 compared to P7.0 billion for the manufacturing industry (Table 1). This is due exclusively to the reduction in inventory in the downstream heavy users of steel sector with -P3.5 billion. Despite the negative showing of this sector, the downstream (intermediate) and upstream segments of the steel industry did much better with P871.0 million and P453.6 million, respectively. When viewed in terms of the average, the change in inventory in the steel industry amounted to -P1.1 million/firm (Table 2). However, with the exclusion of the downstream sector of the steel industry that are heavy users steel, the industry performance improves drastically to P2.0 million/firm, exceeding the manufacturing industry average of P1.1 million/firm.

7. Subsidies

Special privileges extended by the government, such as financial assistance, tax exemption, tax privilege with the purpose of promoting, assisting in the development or protect against competition are called subsidies (National Statistics Office, n.d.). This is included in our discussion as a measure of government assistance and support to the industry.

Total government aid to the steel industry was estimated at P576.0 million or nearly 32.1% of the manufacturing industry total valued at P1.8 billion, with the larger other steel-related segment as the major beneficiary with subsidies amounting to 569.5 million (98.9% and 31.8% of the steel and manufacturing industries gross subsidies, respectively) (Table 1). On the average however, a more even distribution among the various sectors is transparent with mean values posted at P0.30 million/firm for the steel industry and a slightly lower average subsidy for the manufacturing industry at P0.28 million/firm. As with preceding discussions, the steel industry average would have been much lower at P0.01 million/firm with the exclusion of

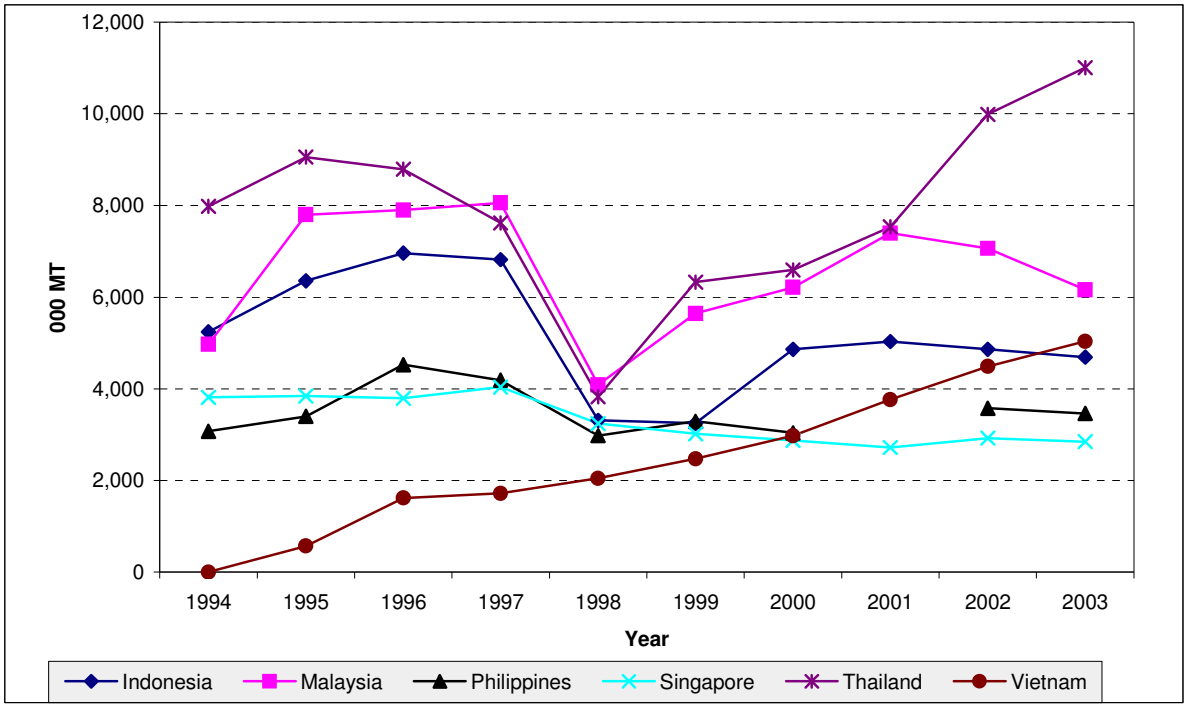
the further downstream steel-related manufacturing firms due to the extremely low average government subsidies to the upstream (P0.02 million/firm) and downstream (intermediate) (P0.004 million/firm) steel sectors.

C. Demand

Apparent steel consumption reached 3.5 million metric tons (MT) in 2003, accounting for 10.4% of total steel product consumption in Southeast Asia of 33.2 million MT, the second lowest in the region, next to Singapore with 2.8 million MT (8.6%) (Figure 2). This represents a growth rate of 1.3% from 1994-2003, below the regional average annual growth rate of 3.2%, due to the phenomenal performance of Vietnam.

In comparison with 2002 estimates however, consumption fell by 3.1% from 3.6 million MT. Since steel consumption is a derived demand from the steel-using segment primarily in the manufacturing sector, which in turn is very much influenced by the health of the macro economy, the country's continued struggle with the fiscal crisis has exerted its toll on the general standard of living, consumer buying power, availability of credit, government construction projects, etc., which has adversely affected demand for steel products from construction materials to canned goods (Philippine Iron & Steel Institute).

Figure 2: Apparent Consumption of Total Steel Products in Southeast Asia SEAISI Member Countries, 1994-2003



Source: Philippine Iron & Steel Institute (2004).

Within the context of the country's product mix, long products held the larger market share of apparent demand in 2003 with 59.1% (2.04 million MT) and the remaining 40.9% (1.4 million MT) from flat products. This represents an improvement over the previous year's market share of 55.7% in long products due to the strong growth performance of the bars/angles/shapes/sections classification (8.4%), which was more than compensated for the reduced sales (-23.4%) in the smaller wire rods category of 0.3 million MT (Table 3). On the other hand, apparent sales of flat products, such as galvanized sheets and other welded structures deteriorated by 10.4% from its 2002 volume posted at 1.6 million MT due to poor demand (-18%), especially by government sponsored construction projects resulting from the fiscal crisis. Construction in the private sector posted a moderate growth of 7.4% as a result of an improvement in housing credit, but was not enough to offset the dearth in public construction projects. This in turn led to smaller import volumes of hot rolled coils and cold rolled coils imports, from which flat products are made (Philippine Iron & Steel Institute, 2004).

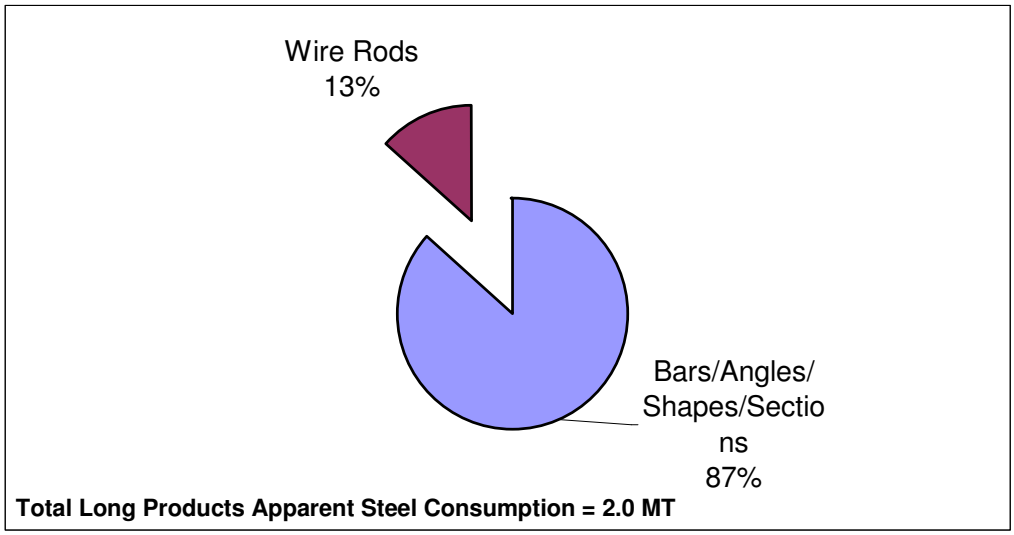
Table 3: Apparent Steel Consumption in the Philippines, By End Product, 2002-2003

Item	Volume (000 MT)		AAGR
	2002	2003	
Flat Products	1,582	1,417	-10.4%
Hot Rolled Coils	440	340	-22.7%
Cold Rolled Coils	113	80	-29.2%
Tinplates	212	220	3.8%
GI Sheets/Preprinted	533	484	-9.2%
Pipes & Tubes	193	210	8.8%
Alloy/Others	91	83	-8.8%
Long Products	1,992	2,045	2.7%
Bars/Angles/Shapes/Sections	1,632	1,770	8.5%
Wire Rods	360	275	-23.6%
TOTAL	**3,574**	**3,462**	**-3.1%**

Source: Philippine Iron & Steel Institute (2004).

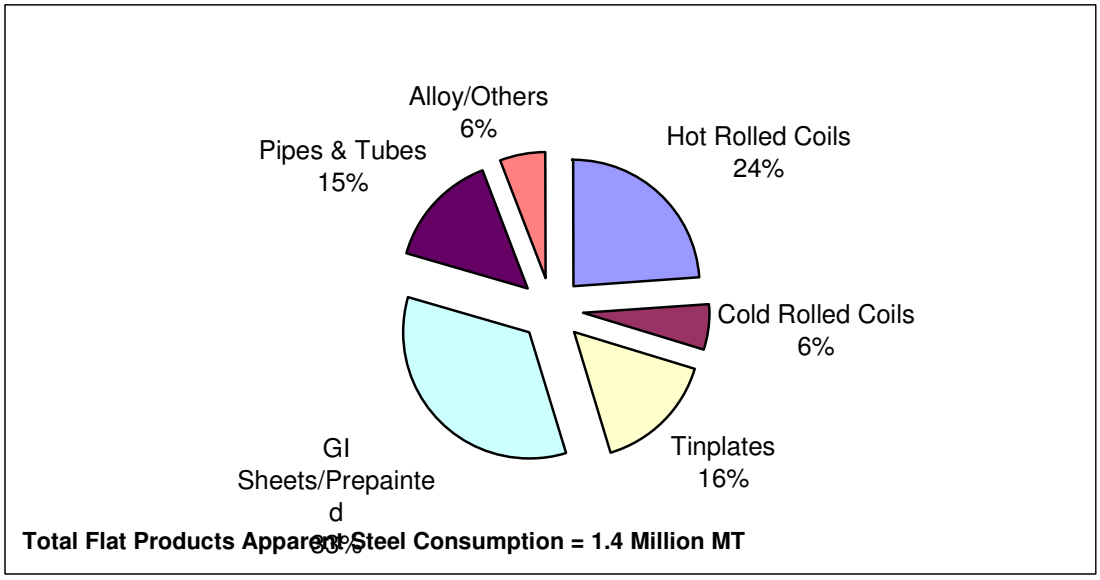
Figure 3 shows the market share in long products in 2003 with bars, angles, shapes and sections, comprising 86.6% (1.8 million MT) of apparent demand within the category and the remaining 13.4% (0.3 million MT) from wire rods. On the other hand, GI sheets/pre-painted accounted for 34.2% (0.5 million MT) of apparent consumption in the flat products group, hot rolled coils ranked second with 24.0% (0.3 million MT), tinplates and pipes/tubes followed with 15.5% (0.22 million MT) and 14.8% (0.21 million MT), respectively, alloy/others is next with 5.9% (0.083 million MT), and cold rolled coils contributed the smallest share with 5.6% (0.08 million MT) (Figure 4).

Figure 3: Apparent Steel Consumption Mix in the Philippines, Long Products, 2003



Source: Philippine Iron & Steel Institute (2004)

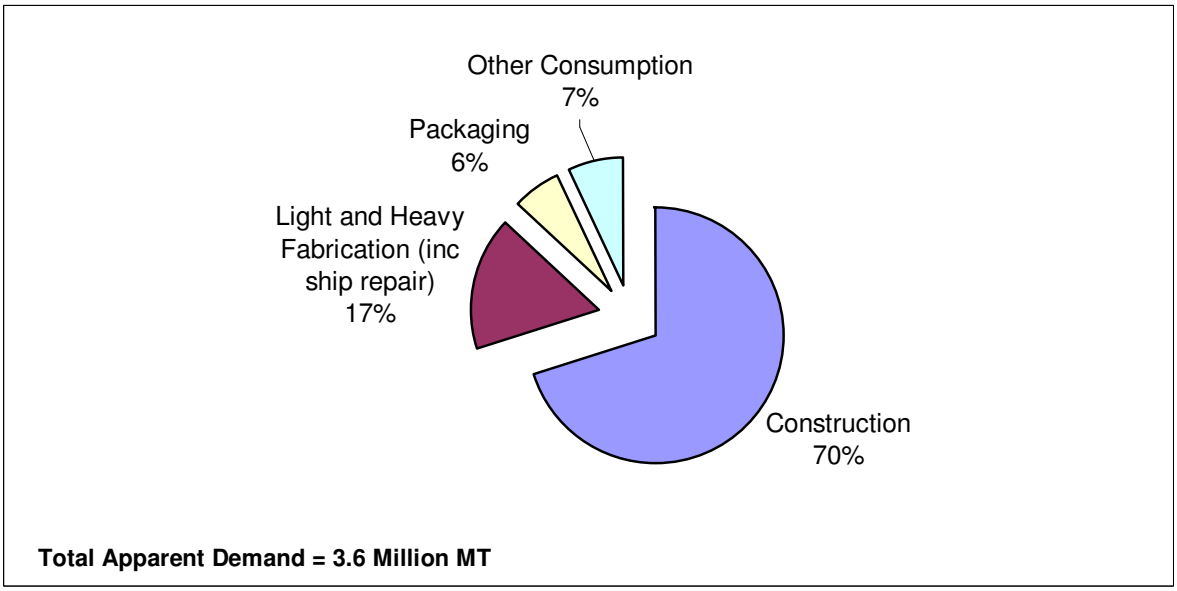
Figure 4: Apparent Steel Consumption Mix in the Philippines, Flat Products, 2003



Source: Philippine Iron & Steel Institute (2004)

In terms of sectoral demand, steel consumption in the country is dictated by construction, which by far has been the largest user of steel than any of the other categories combined, with a market share of approximately 70% or a corresponding volume of 2.5 million MT in 2003 (Figure 5). Light and heavy fabrication (including ship repair) was a far second with 17% (0.6 million MT), other consumption was next with 7% (0.3 million MT) and packaging with the smallest market share of 6% (0.2 million MT) as a result of increased competition from plastic materials that offer better prices (Philippine Iron & Steel Institute, 2004).

Figure 5: Sectoral Demand for Steel in the Philippines, 2003

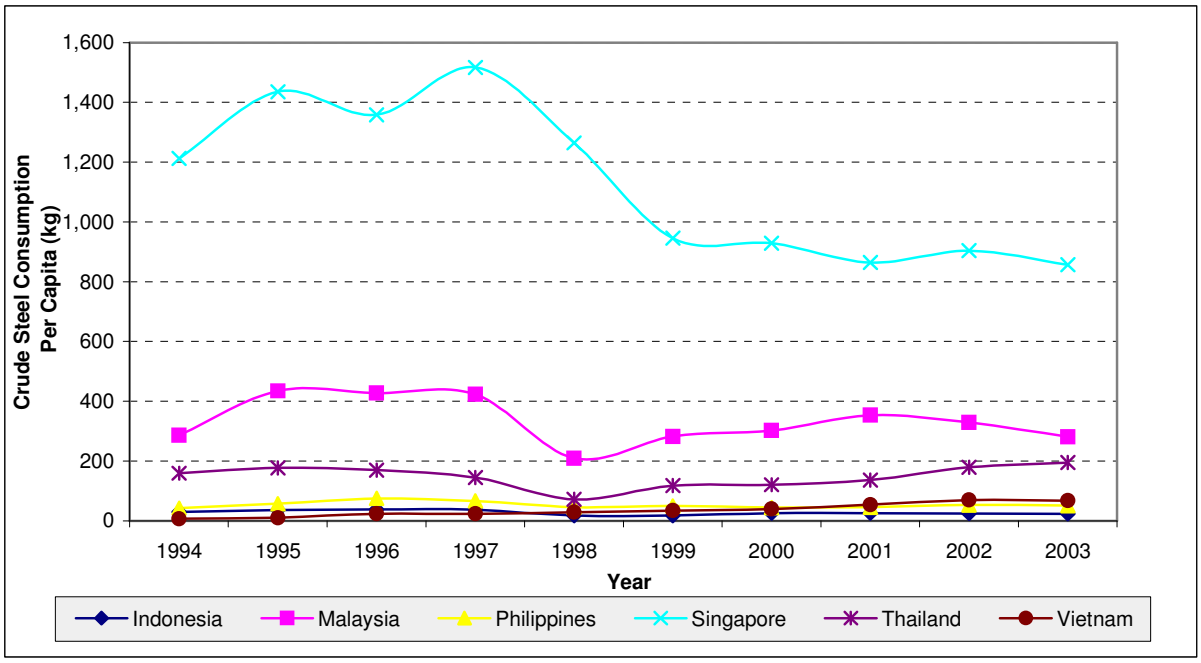


Source: Philippine Iron & Steel Institute (2004)

D. Steel Intensity

Per capita steel consumption in the country increased at a modest rate of 2.0% annually from 42 kg in 1994 to 51 kg in 2003. When compared to Association of Southeast Asian Nations (ASEAN) countries that are members of the Southeast Asia Iron and Steel Institute (SEAISI)[8], the Philippines' per capita consumption of steel products accounts for only 3.4% of the ASEAN SEAISI total of 1,477 kg and is below the ASEAN SEAISI average by 195 kg (79.4%). The country ranks second from the bottom, next to Indonesia with 24 kg. On the other hand, Vietnam, which started off as the lowest per capita consumer of steel among the ASEAN SEAISI countries has surpassed the per capita steel consumption of the Philippines since 2001 with estimated average growth of 27.4% for the past nine years since 1994.

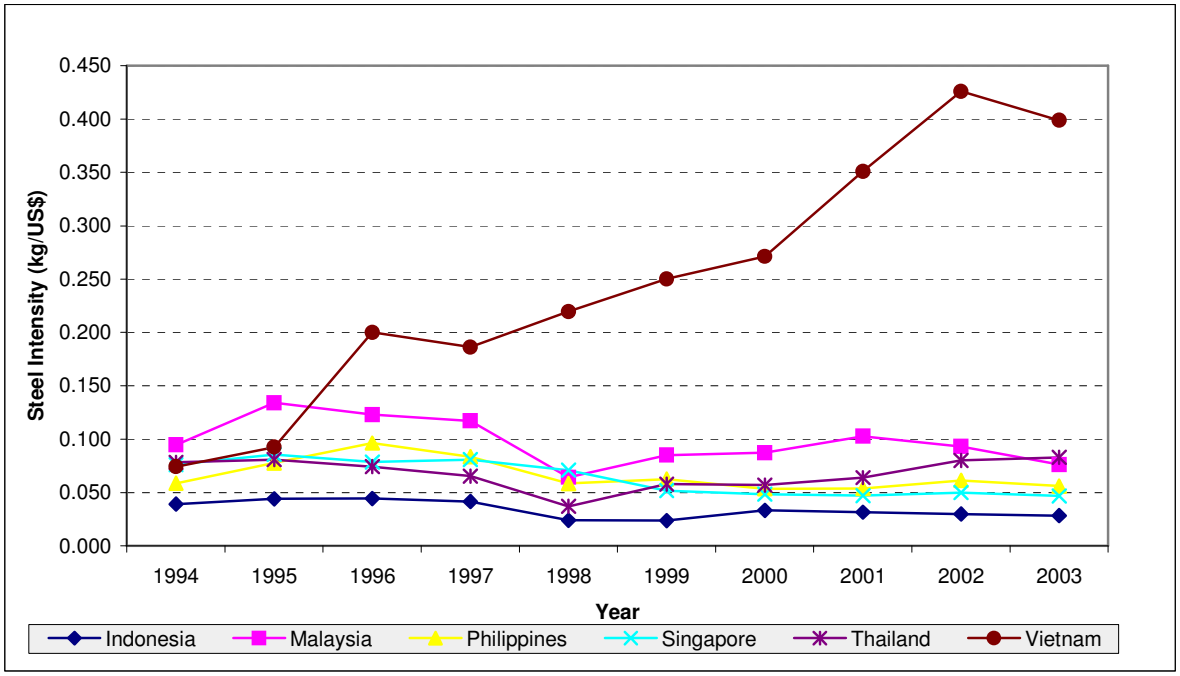
Figure 6: Per Capita Steel Consumption in ASEAN SEAISI Member Countries, 1994-2003



Steel intensity measures the amount of steel used per unit of Gross Domestic Product (GDP). Steel intensity in the Philippines today remains unchanged from its value of 0.06 in 1994 (Figure 7). This implies that the local economy is not using any more or any less of steel per unit of output produced than it did nine years ago. Compared with other ASEAN countries, the Philippines steel intensity rating is less than half of the regional average of 0.115, but at par with the average steel intensity among ASEAN SEAISI members if Vietnam is excluded, where steel intensity reached 0.40 in 2003 due to the expansion in various industries that are heavy users of steel.

[8] Other countries include Australia, Japan, Korea, and Taiwan.

Figure 7: Steel Intensity in ASEAN SEASI Members, 1994-2003

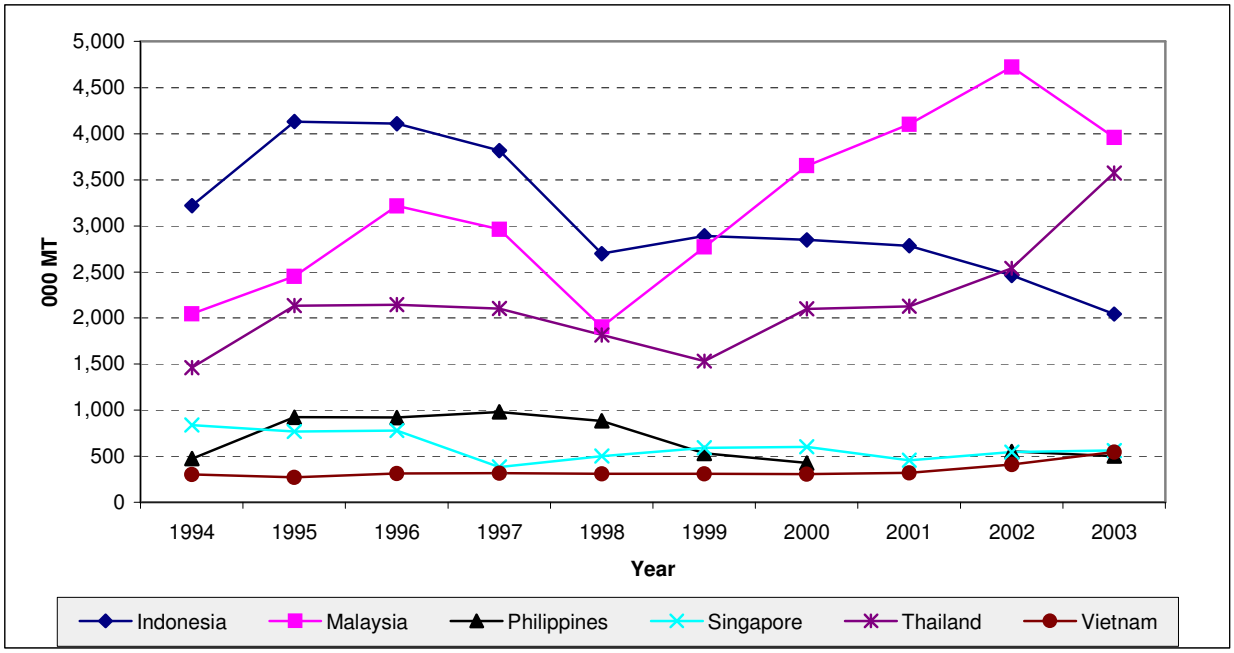


E. Supply

Production of crude steel in the country has yet to recover from its pre-Asian crisis level, which hit its peak in 1997 with nearly 1 million MT, and thereafter remained stagnant at the 0.5 million MT level since 1999 (Figure 8). Compared to our Southeast Asian neighbors, the Philippines is a small player in the regional crude production, contributing only 4.5% (0.5 million MT) in 2003 while Malaysia and Thailand combined accounted for 67.4% (7.5 million MT) of the regional total (11.2 million MT).

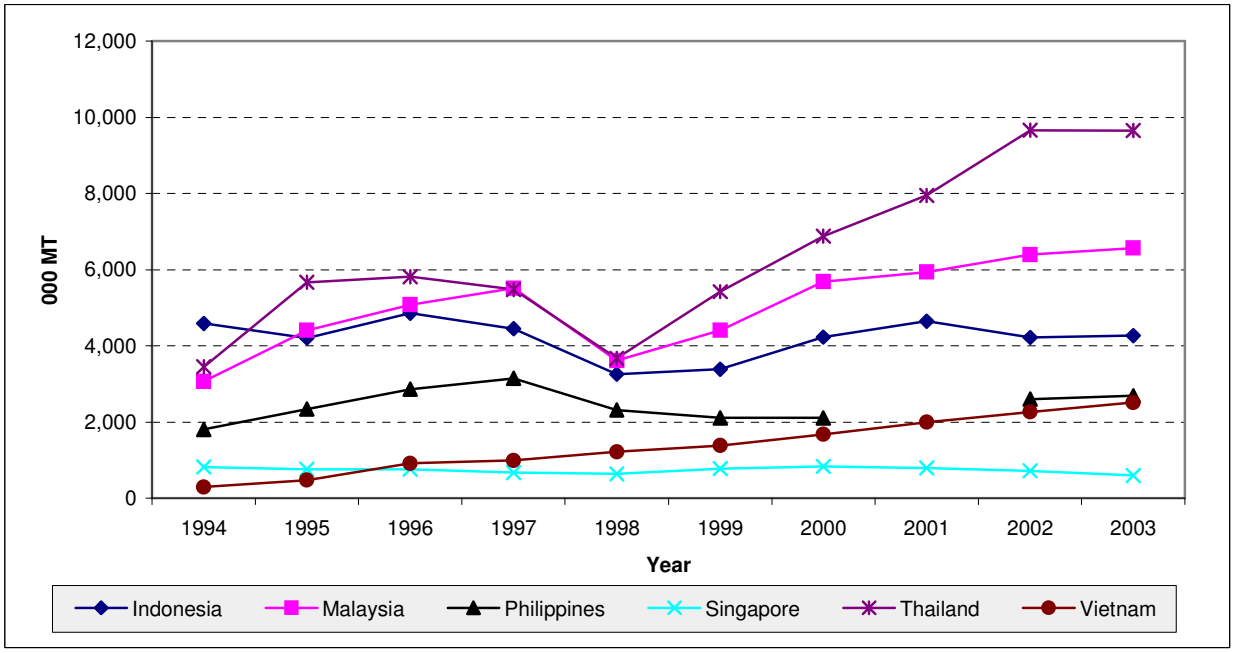
The finished products category presents a better picture with Philippine production recorded at 2.7 million MT or 10.2% of Southeast Asia supply for 2003 (Figure 9). Although growing at a relatively faster pace than the crude steel category (4.5% vs. 0.6%), the country still remains in the bottom half of the pack, ahead only of Indonesia and Singapore, which registered negative growth for the period between 1994-2003.

Figure 8: Crude Steel Production in Southeast Asia SEAISI Member Countries, 1994-2003



Source: South East Asian Iron & Steel Institute (2004).

Figure 9: Total Finished Products in Southeast Asia SEAISI Member Countries, 1994-2003



Source: South East Asian Iron & Steel Institute (2004).

F. Trade

1. Imports

Given the limited steel production in the country compared with demand, the Philippines has been relying increasingly on imports to meet its domestic demand. Imports of iron and steel products reached 3.2 million MT and are distributed among several countries, with the Russia as the main trading partner providing 61% of our external supply of billets and 38.2% of total imports (Table 4). Other major trading partners include Ukraine and Japan with 17.0% and 14.2% shares, respectively. Minor players include Korea with 7.8%, where we import most of our cold rolled coils (27%), India with 5.8%, and Taiwan with 5.0%. The rest of the countries accounts for a total of 12%. Although posting a modest increase of 2.1% annually since 1994, incremental growth in steel imports has slowed down since 1996, prior to the Asian financial crisis of 1997 (Figure 10).

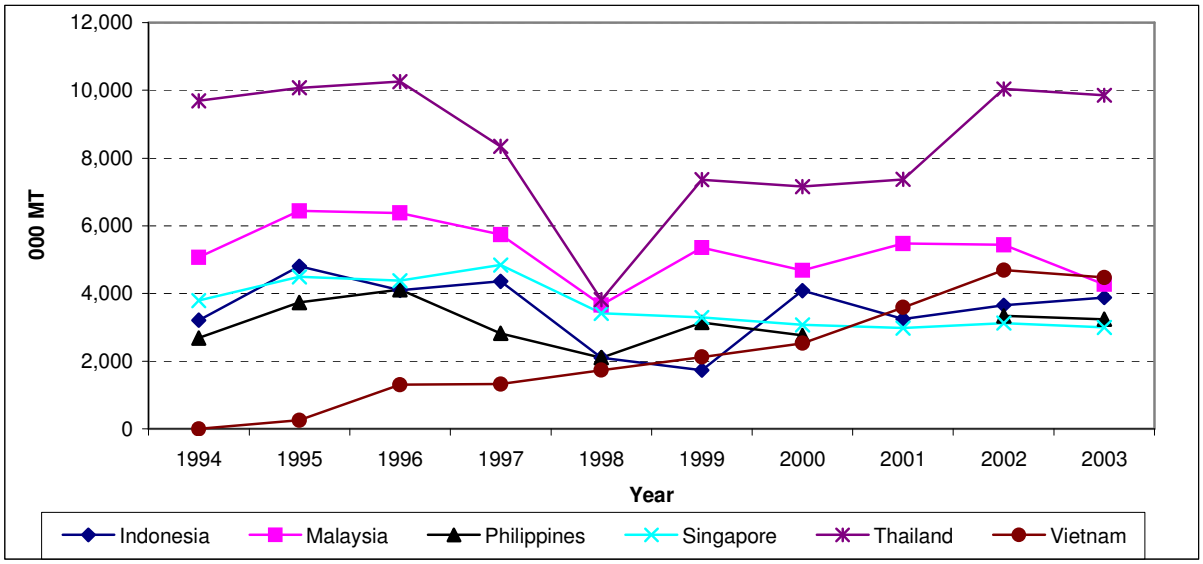
Table 4: Steel Product Imports of the Philippines, By Country of Origin, 2003

(in percent)

Country of Origin	Hot Rolled Coils	Hot Rolled Plates	Cold Rolled Coils	Tinplates	Billets	Wire Rods	Total Steel Products
Russia	35	33	26		61	74	38.2
Ukraine	19	33	1		24	25	17.0
Japan	18	5	18	44			14.2
Korea	3		27	17			7.8
India	6	14	5		10		5.8
Taiwan	4	2	12	12			5.0
Others	15	13	11	27	5	1	12.0
TOTAL	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: Philippine Iron & Steel Institute (2004).

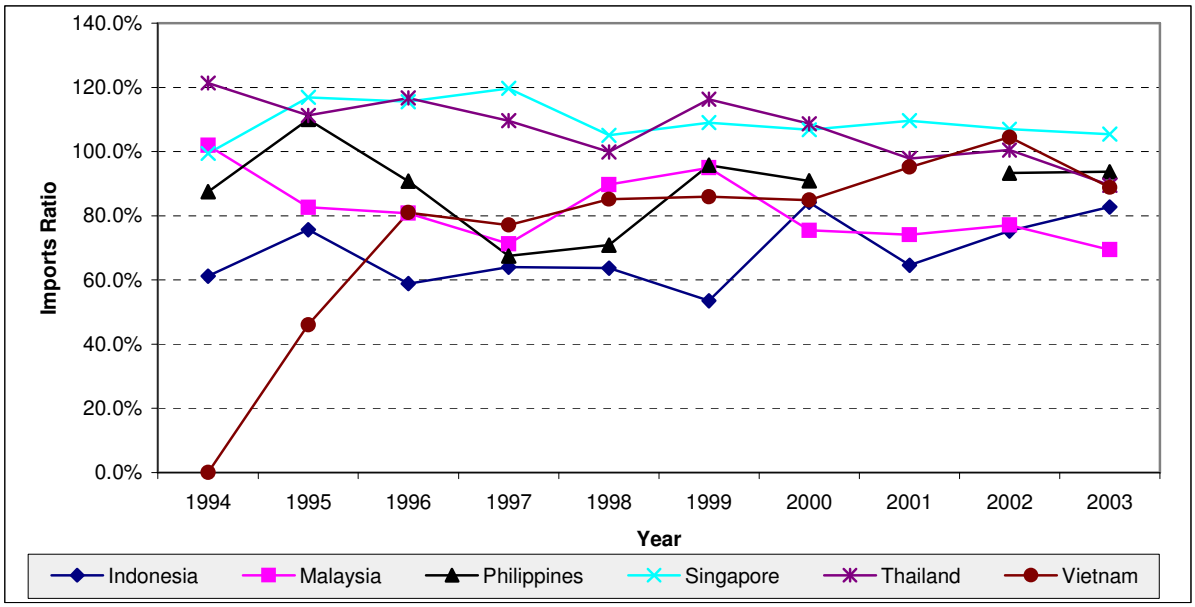
Figure 10: Total Imports of Iron & Steel Products in Southeast Asia SEAISI Member Countries, 1994-2003



Source: South East Asian Iron & Steel Institute (2004).

In addition to gross import volume as a measure of dependence on external sources of supply to meet a demand, the import ratio provides an alternative measure of how much a country is importing relative to its apparent consumption. Imports ratio estimates show steadily increasing dependence on imports from 87.5% in 93.6% in 2003 in an attempt to fill the void between domestic production and consumption. The same is true with Indonesia and Singapore (Figure 11). These countries belong to the bottom half with negative to miniscule growth in apparent consumption and production of finished steel products. This implies that further growth in apparent demand from these countries will further deepen their dependence on imports. Malaysia and Thailand, having higher dependence on steel imports than the Philippines in 1994, have gradually built their local steel industries to decrease reliance on non-domestic steel source and reports lower import ratios in 2003.

Figure 11: Steel Imports Ratios* in Southeast Asia SEAISI Member Countries, 1993-2004

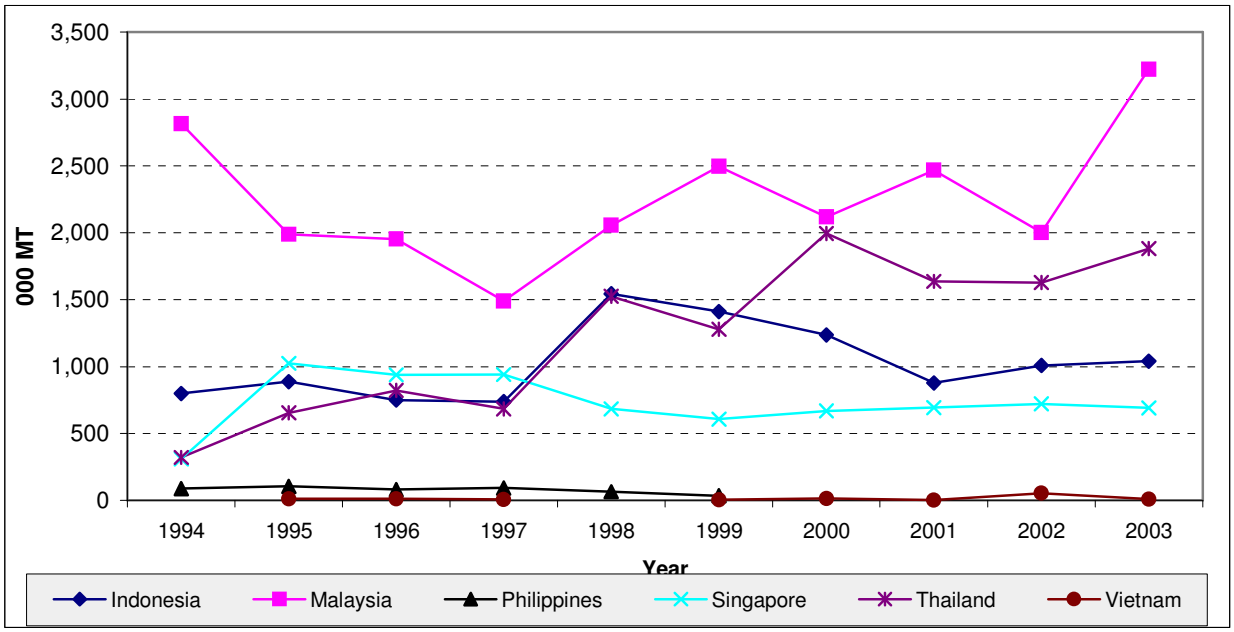


* Import Ratio = Imports/Apparent Consumption

2. Exports

Available data on the exports on iron and steel products covering the period from 1994-1999 showed the Philippines was hardly a player in the Southeast Asian trade with trade volume of 0.03 million MT in 1999, the second smallest next to Vietnam with only 6,000 MT. The rest of the countries at the time were producing at the 0.6 million MT-2.5 million MT mark (Figure 12). Malaysia was the consistent lead exporter in the region, but its shares have been diminishing with Thailand as the emerging growth center in the region.

Figure 12: Total Exports of Iron & Steel in Southeast Asia SEAISI Member Countries, 1994-2003



Source: Philippine Iron & Steel Institute (2004).

3. Comparative Advantage

Symmetric Revealed Comparative Advantage (SRCA) is an indicator of trade competitiveness (Utkulu and Seymen, 2004). It measures the intensity of trade in a particular product category within a country relative to the world market. The closer the index is to 1 indicates strong comparative advantage in exporting a particular good, SRCA values closer to -1 indicates strong comparative disadvantage, and 0 indicates neutral comparative advantage.

An exercise involving the estimation of SRCA in various exported products by the Philippines and other South East Asia Iron & Steel Institute member countries, i.e., Australia, Indonesia, Japan, Korea, Malaysia, Singapore, Taiwan, Thailand, and Vietnam shows some positive SRCA values in 5 of the 39 product categories that the country exports. These include the following Harmonized System (HS) categories: 720410 (scrap), 720430 (scrap), 720450 (scrap), 730721 (steel tube fittings), and 730690 (welded steel tubes) (Table 4). In two of these categories, e.g., 720430 (scrap) and 720450 (scrap) SRCA values range from 0.80-0.95 and are the highest within the product group, showing strong comparative advantage in these areas. Unfortunately, these are the same raw materials that the Philippines uses in its steel processes and are currently severely lacking in supply. SRCA levels for the other product sectors are too low to be even considered as an area where the country is relatively competitive in exporting.

Table 5: Revealed Comparative Advantage in Steel Products Exported by Philippines, 2003

Country	Steel Products Exported*		HS Codes	Products with Comparative Advantage
	Total	With Comparative Advantage		

Australia	23	7	720410, 720421, 720429, 720430, 720441, 721061, 730439	Other coated sheet and strip (1), Scrap (5), Seamless steel tubes (1)
Indonesia	22	5	720918, 720890, 721061,721050, 730729	Cold-rolled coil sheet (1), Hot-rolled plates (1), Other coated sheet and strip (1), Tinplate (1), Steel tube fittings (1)
Japan	39	15	722810, 720917, 720918, 721935, 720810, 722530, 720449, 720450, 721050, 730429, 730430, 722990, 721030, 721049, 721220	Cold-finished bars and flats (1), Coiled-rolled sheet (3), Hot-rolled wide strip (2), Scrap (2), Tinplate (1), Seamless steel tubes (2), Wire (1), Zinc coated sheet and strip (3)
Korea, Republic of	38	22	720917, 720918, 721935, 721410, 721650, 721061, 721070, 720410, 720421, 720450, 732599, 721050, 730723, 730729, 730791, 730793, 730630, 730690, 722990, 721030, 721049, 721220	Cold-rolled sheet (3), Forged bars (1), Hot-rolled light sections (1), Other coated sheet and strip (2), Scrap (3), Steel castings (1), Tinplate (1), Steel tube fittings (4), Welded steel tubes (2), Wire (1), Zinc-coated sheet and strip (3)
Malaysia	29	6	721061, 721070, 730723, 730793, 730690, 721220	Other coated sheet and strip (2), Steel tube fittings (2), Welded steel tubes (1), Zinc coated sheet and strip (1)
Philippines	39	5	720410, 720430, 720450, 730721, 730690	Scrap (3), Steel tube fittings (1), Welded steel tubes (1)
Singapore	36	3	722810, 720430, 721220	Cold-finished bars and flats (1), Scrap (1), Zinc coated sheet and strip (1)
Taiwan	35	18	721590, 722810, 720917, 720918, 721935, 722230, 721061, 721070, 732599, 721050, 730729, 730640, 730690, 721790, 722990, 721030, 721049, 721220	Cold-finished bars and flats (2), Cold-rolled sheet (3), Forged bars (1), Other coated sheet and strip (2), Steel castings (1), Tinplate (1), Steel tube fittings (1), Welded steel tubes (2), Wire (2), Zinc coated sheet and strip (3)
Thailand	29	10	721590, 720917, 720918, 720935, 720421, 730793, 730630, 730690, 721790, 721041	Cold-finished bars and flats (1), Cold-rolled sheet (3), Scrap (1), Steel tube fittings (1), Welded steel tubes (2), Wire (1), Zinc coated sheet and strip (1)
Vietnam	4	3	730722, 730793, 730690	Steel tube fittings (2), Welded steel tubes (1)

V. POLICY CLIMATE

Republic Act No. 7103 (Iron and Steel Industry Act) aims "to promote industrialization through the immediate establishment of an integrated iron and steel industry." It includes the provision of the following incentives under the Board of Investments for a period of 15 years from the effectivity of this Act:

1) Power, Infrastructure, and Auxiliary Facilities. Entitles each enterprise to generate its own electricity, build-operate-and transfer, and other contracts, and provide infrastructure under BOT arrangement.

2) Financing. Facilitation of financing for iron and steel plant operations.

3) Tax and Duty Exemption on Imported Machinery. Exemption from all customs duties payable on the importation of equipment, machinery, and accompanying spare parts, subject to certain conditions.

4) Tax Credit on Domestic Capital Equipment. Tax credit equivalent to the national internal revenue taxes and customs duties on imported machinery, equipment, and accompanying spare parts for the purchase of domestically manufactured machinery, equipment, and spare parts.

5) Other Loans. Provision of loans, credits, and indebtedness from foreign private institutions or funds sources shall be made available for the use in the operations of the steel plant. In addition, the Central Bank of the Philippines shall give priority to the applications made by certified enterprises to foreign currency loans; debt-assets and debt-equity conversion and other transactions that may receive approval by the Central Bank. Finally, interest income from loans with maturity of five years or more from financial institutions shall be except from all national internal revenue taxes.

6) Rational Tariff Incentives and Protection Scheme. A rational tariff incentive and protection scheme that will enhance the viability of the iron and steel industry shall be recommended by the National Economic and Development Authority.

7) Other Incentives. In addition to those already mentioned, other incentives applicable under the Omnibus Investment Code, laws creating export processing zones, other laws, and those that may be given to similar enterprises in the future shall also apply.

Aside from incentives, the RA 7103 also includes other provisions, such as:

1) Divestment. Encourage measures that will gradually increase Filipino participation in enterprises that involve foreign equity.

2) Penalties for Smuggling. Penalties shall be impose on persons who smuggle, fraudulently import or bring goods into the Philippines that are intermediate or finished products of the iron and steel industry.

3) Preferred Use. The use of locally manufactured iron and steel products shall be specified for use in all infrastructure, industrial, and other construction projects undertaken by the government, foreign currency loans or secured by guarantees of foreign nationals, and funded/benefiting from foreign or multilateral loans, grants, or other forms of official development assistance.

4) Promotion of Steel Industry Linkages. Formulation of a plan by the Investment Coordinating Committee of the NEDA Board for the development and the establishment of the upstream and downstream industries identified within the iron and steel industry within one year from the effectivity of this Act.

5) Technology and Manpower Development. Technology dissemination programs shall be undertaken by the Department of Trade and Industry and the Department of Science and technology to improve the level of technology used in domestic enterprises.

VI. INDUSTRY COMPETITIVENESS CLIMATE

Industry performance is closely tied with current economic/political issues and industry expectations. In a broad sense, firm-level competitiveness for the past decades has been influenced (and hindered) by internal industry factors, infrastructure, and governance. Some of the problems faced by the sector during the start of the establishment of a local basic steel industry in the country in the 1940s have been resolved while others have persistently plagued the industry and hampered its progress, either as minor or major obstacles.

The local steel industry is comprised of a variety of players. There is a production network of steel producers from primary to intermediate to finished steel products. Competitiveness in each of the levels of this production network is important, especially when the success of the industry relies on the performance of both the steelmaker and steel-user. To get a clearer picture of what assails the local steel industry, entrepreneurs representing different levels of the steel production network were interviewed about their perceptions of the severity of various apparent problems faced by the local industry.

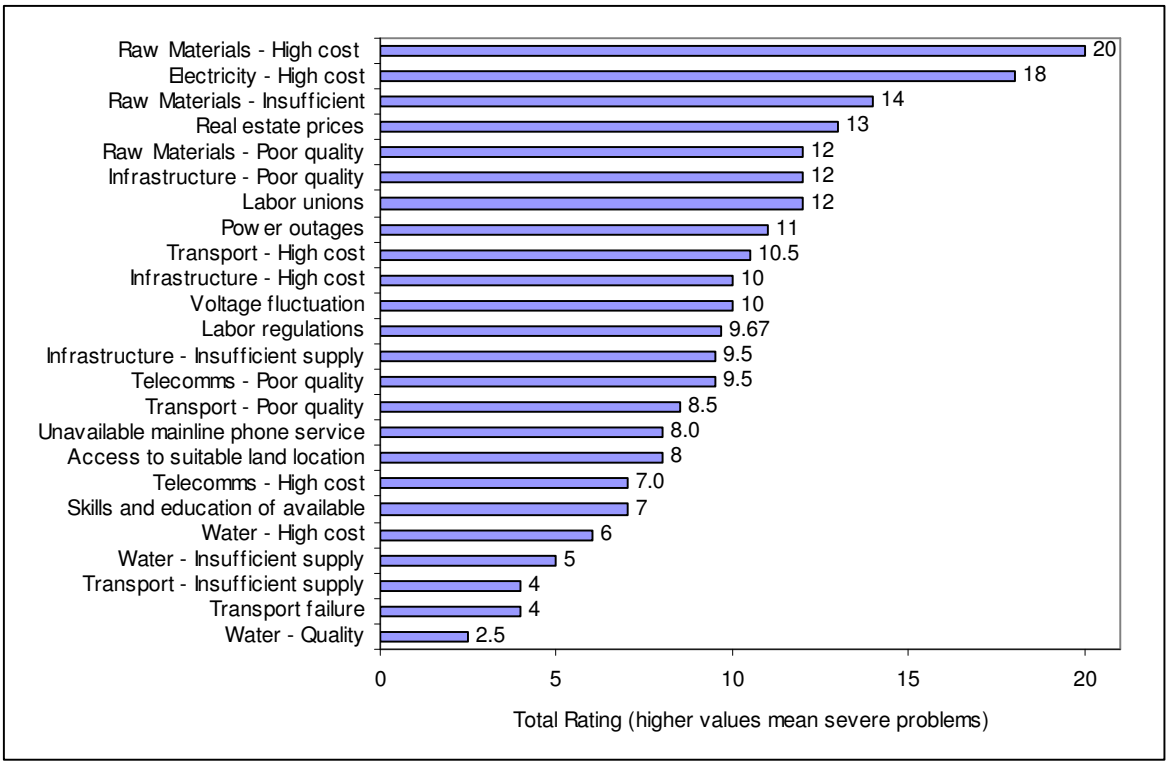
The assessment that follows is organized into five main groups: 1) production inputs and infrastructure, 2) tax and trade regulations, 3) market uncertainty, 4) market malpractices, and 5) governance. As part of the interview, the entrepreneurs were asked to rate various identified obstacles based on their level of severity[9] (0 to 4 with 4 reflecting "most severe," basing perception on the magnitude of the impact of these obstacles to firm activities) (Appendix 1. Steel Industry Competitiveness Survey). Responses from the five interviews were added and consolidated into a scorecard. The scorecard has a maximum score of 20, with higher values corresponding to higher levels of severity. A ranking greater than 15 indicates "very severe," 11-15 is "major," 6-10 "is moderate," and 1-5 "minor."

A. Production Inputs and Infrastructure

Production inputs and infrastructure are comprised of the key components of production (raw materials, electricity, water) and other factors necessary for the normal conduct of business (road infrastructure, telecommunications, etc.). Steel firms perceive high cost of raw materials and electricity as very severe obstacles to the operation and growth of the business (Figure 13). Moreover, raw material availability and poor quality are both ranked as major obstacles to competitiveness.

[9] Interviews were conducted with leaders of the various local steel associations: Philippine Steel Association (PSA)-upstream, Philippine Iron and Steel Institute (PISI) -rollers, downstream, Pipes and Tubes Manufacturing Association-downstream, and Tin Can Manufacturing Association (TCMAPI) - downstream.

Figure 13: Firm Perception of Production Inputs and Infrastructure



1. Raw Materials

Raw materials of semi-finished steel products, such as long products (blooms and billets) and flat products (slabs) are 70-80% imported while slabs are currently 100% imported. In 2003, imported billets amounted to USD 320 million (or 1.3 million tons), and ranked 12th leading product import of the country, next only to petroleum and various specialized circuits, transmission/communications machines, and mechanical equipment. With stronger global demand for steel, prices of steel products have been rising and increasing cost of production has led to the deterioration of the competitiveness of local producers. Rising prices of steel raw materials is doubly felt through higher prices and higher requirements of foreign exchange.

There are a few steel mini-mills in the country. These operations melt scrap steel using electric arc furnaces (EAFs) and cast the melted steel into billets and blooms. These melt shops make use of locally procured scrap steel (junk shop steel and mostly steel scraps from downstream steel operations, such as tin can manufacturing). Current problems with scrap steel availability in the local market are attributed to increased exports of scrap steel. International prices for scrap steel have also been increasing and the lifting of the export ban on steel scrap in 2000 has resulted to a surge in the export of scrap steel. Indeed, upstream players perceive that raw material availability and its high cost as major and severe obstacles to production.

Upstream players are still adjusting to the steep rise in local scrap steel prices (local scrap prices immediately adjusted closer to international scrap prices when the export market became accessible to scrap dealers) and have lobbied for the reinstatement of the export ban. Domestic steel scrap prices rose by 27% from 2001 to 2003 compared to an increase of 19% in

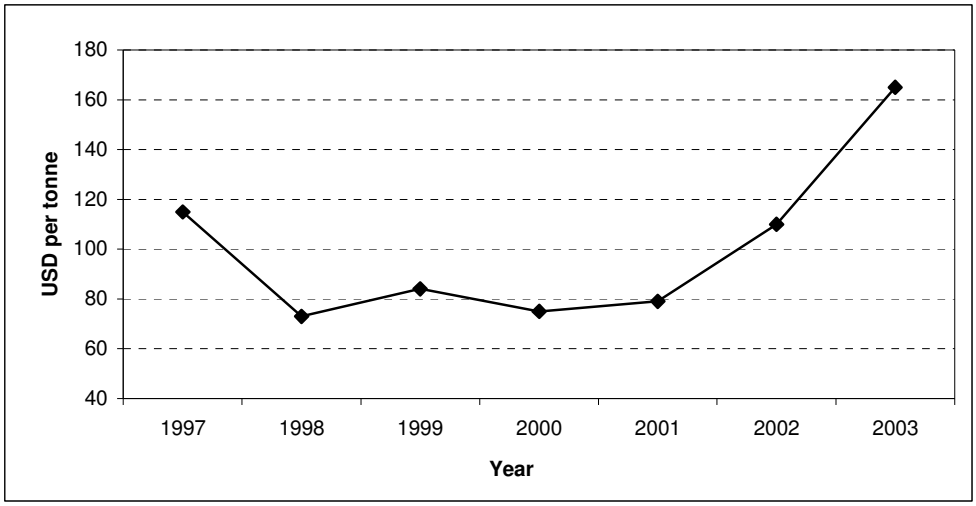
international prices of scrap (Figure 14 and 15). In 2003, the country exported USD 67.74 million (494,304 tons) of steel scrap[10] and is the leading world exporter of waste and scrap of tinned iron and steel (representing 20% of total world exports of that product code). Taiwan is the main destination of Philippine steel scraps (although the majority of its scraps still come from Japan), importing 51% of total steels scraps exported by the country in 2003.

Tinned iron and steel scraps are by-products of tin can manufacturing (a downstream steel-using sector) since scraps are usually a result of some spoilage in the production stage or in most cases, used cans collected from solid waste. There is a clear conflict of interest at this stage since local upstream players are faced with diminishing local steel scrap availability and the problem of rising cost due to exportation of the said raw material, while downstream players in the tin can manufacturing sector have opted to export their scrap to international customers who are willing to pay better prices and are willing to buy scrap with higher levels of impurities. Tin plates are the basic raw material used for tin can manufacturing and are 100% imported. The selling of tin scraps has become an added venture to tin can manufacturers to partially recompense for the high cost of tinplates. Despite arguments offered by upstream industry players to justify the reinstatement of an export ban or even the imposition of new taxes on the exportation of scraps, the Philippine House Committee on Trade and Industry (Committee Report 971) has discouraged government agencies from enforcing such measures on scrap metals fearing a possible glut in the local scrap market which may cause low prices of domestic scrap. The conflict of interest occurs when a downstream firms importing raw materials (a tin can manufacturer) is prevented access to its additional revenue and dollar earning activities to mitigate the cost of acquiring its own imports. Scrap trade figures for the Philippines in 2003 show that local steel makers import cast iron and alloy steel scrap whereas scrap dealers export mostly scraps of tinned iron and steel[11].

Historically, steel scrap prices have been known to be volatile. However, the recent strong demand for steel scrap (driven by demand from China and Korea) has pushed prices higher and with receding supply of scrap, prices are expected to remain high in 2005. Steel scraps are now mostly coming from arisings, which is scrap from new steel resulting from steel-using production in manufacturing sectors. Thus, the increasing cost of raw materials will continue to pose a problem for local minimills.

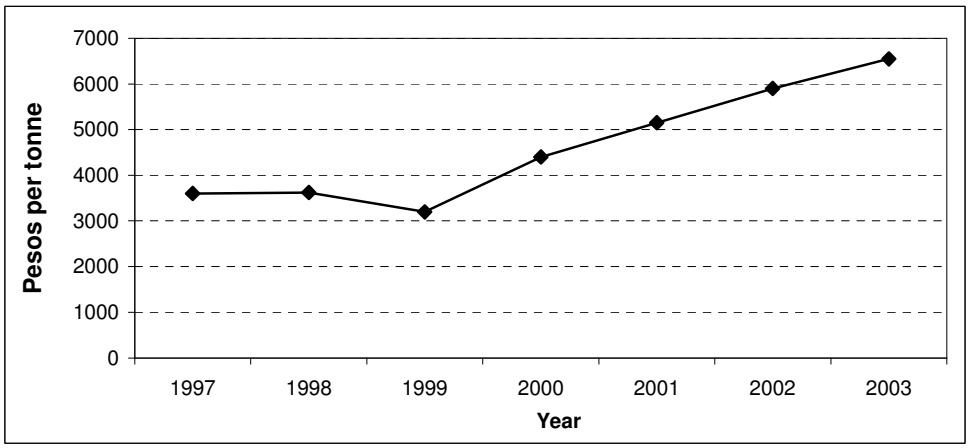
[10] HS 7204. Of the total export value of scrap, 71.4% is waste and scrap of tinned iron or steel (or 76.8% of total weight).
[11] Exports of HS 720410 and HS 720429 (scraps of cast iron and alloy steel) was only 1.6% of total scrap exports in 2003.

Figure 14: International Scrap Prices, 1997-2003



Source: Metal Bulletin (2004).

Figure 15: Domestic Scrap Prices, 1997-2003



Source: Scrap Collector and Recycler Association of the Philippines.

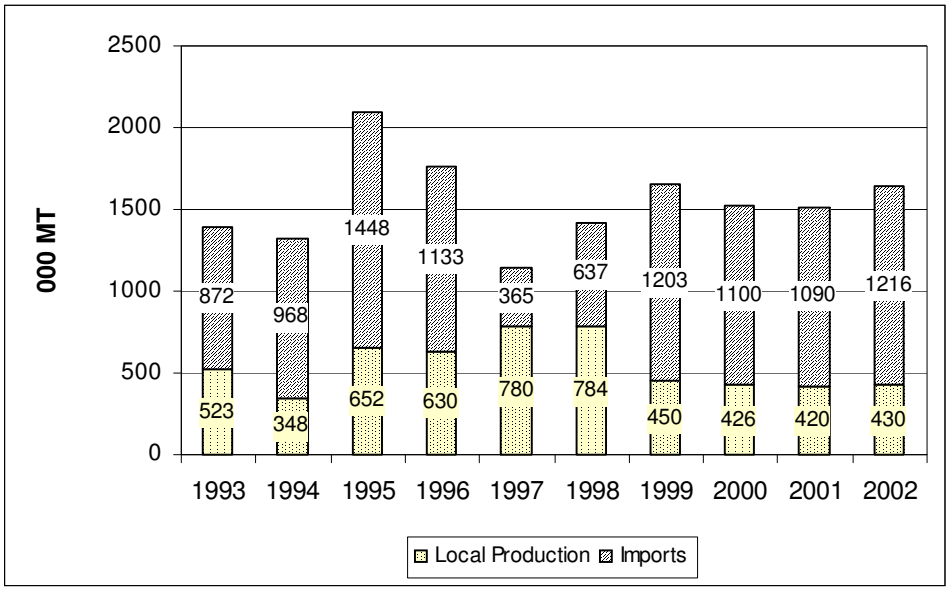
On the other hand, the products of melt shops, such as billets/blooms, hot rolled coils (HRCs) and cold rolled coils (CRCs) are used as raw materials by the downstream sector. The current production capacity of local melt shops is significantly below the demand for long products of the downstream sector. Based on a MIRDC industry study by Arizabal (2003) on the long product sector, there are 12 installed melt shops in the Philippines. Of the twelve, four have been permanently shut down[12] while two were temporarily closed during the time of the MIRDC study. These include the Bacnotan Steel Industries, Inc. plant in Calaca, Batangas and the former National Steel Corporation (NSC) that was shut down in 1999 by its Malaysian investors. NSC, now called Global Steelworks Infrastructure Inc. (GSII) is currently undergoing rehabilitation and has reopened to start operations this year to produce hot rolled and cold rolled coils, targeting tinplate production in the near future.

[12] Includes Midland Steel Corporation in Pasig, Metro Concast in Valenzuela, Allied Integrated Steel Corporation in Las Piñas, and Armstrong Industries in Quezon City. Total rated capacity for the four melt shops is 160,000 MT/year.

The six other steel melting facilities currently in operation have a total rated capacity of 660,000 MT[13] of billets per annum. This is only half of the total rated capacity of 1.3 million MT, if both the Bacnotan Steel minimill and Iligan mill were still in normal operation. In total, local billet production in 2002 was 430,000 MT (Figure 16). This is only 65% of total rated capacity of the six plants operating that year, and 34% of total rated capacity of all existing melt shops in the country. Local production meets only 26% of the total billet requirement of the industry. The billet/blooms import/demand ratio has increased from 45% in 1997 to 73% in 1999 when the Illigan plant was temporarily shut down due to business reversals. With a large portion of billet requirements being filled by imports, the rising trend in steel prices resulting from stronger global demand for semis has also adversely affected the downstream steel sector. In addition to this, local production of billets/blooms primarily go into the rolling and finishing mills of firms affiliated to melt shops. A relatively small amount is available in the local market for the downstream sector. As a result, demand for locally produced billets/blooms have waned, resulting to a disadvantageous position for the newly reopened Iligan plant under GSII. Commercial operations of GSII would have to face rising steel scrap prices as well as tame domestic demand.

Input prices faced by the downstream sector include those for HRCs, hot rolled (HR) plates, and CRCs. Figure 17 illustrates the monthly price trend of intermediate steel products from 2003 up to early 2005. The price of steel has climbed steeply and steadily starting 2004, with the global recovery of steel prices hinged on strong demand from China, Korea, and Japan, recording a total price increase of 26.3% for HRCs, 31.0% for HR plates and 23% for CRCs[14] in 2004. Prices appear to be more stable in 2005 resulting from a decline in Chinese imports.

Figure 16: Historical Demand of Billets, 1993-2002

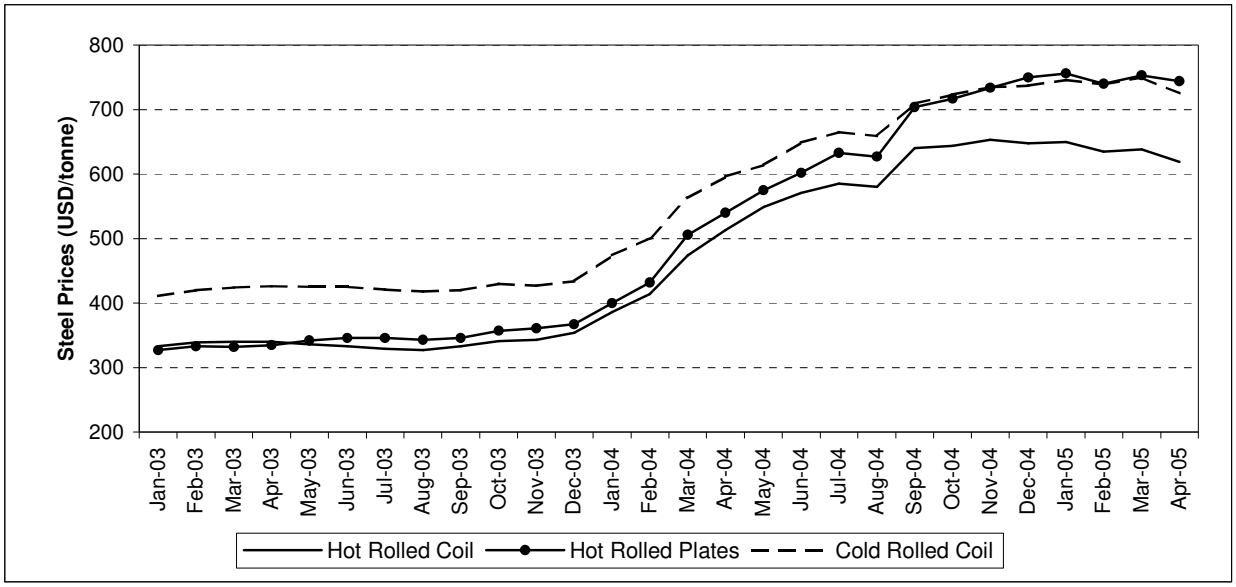


[13] The six melt shops are: Cathay Pacific Steel Corporation (Cainta, Rizal), Cathay Pacific Steel Corporation (Taguig, Metro Manila), Stronghold Steel (formerly Milwaukee Steel Corporation in San Simon, Pampanga), SKK Steel Corporation (San Simon, Pampanga), Amalgamated Iron Works, Inc. (formerly Cathay Metal in Novaliches, Quezon City), and Elegant Steel Corporation (San Fernando, Pampanga) (Arizabal, 2003).

[14] Average monthly rate of increase in prices in 2004 were 2.2%, 2.6% and 1.9% for HRCs, HR plates, and CRCs, respectively.

Source: Philippine Iron and Steel Industry (Long Product Sector) (2004).

Figure 17: World Steel Prices, 2003-2005



[a] Prices are arithmetic average of low transaction values identified in three regions (EU, Asia and North America), converted into US dollars.

[b] For more information on steel prices, please refer to International Steel Review.

2. Conversion Cost

Table 6 shows the costs incurred in the production of steel end products from raw materials/semi-finished products. Owing to the high cost of raw materials, power, etc., conversion costs in the country are generally high compared to their international counterpart both in the long and flat product categories. The only exceptions where the country is currently competitive include conversion from billets to bars in continuous or category A mills[15] of which two of the three are in operation; and the conversion from steel strips to spiral welded pipes, of which four are currently installed with a total rated capacity of 100,000 MT/year (Arizabal, 2003).

[15] Defined as mills that have a "full-tandem arrangement, high speed operation, computerized controls, and fuel efficient reheating furnaces, and capacity of at least 300,000 MT/year" (Arizabal, 2003).

Table 6: Conversion Cost

Product Category	Plant Category/Mill Type/End Product	Philippine Conversion Cost/MT (USD)	International Ave Conversion Cost/MT (USD)
Scrap to Billet	B	80-100	75
	C	100 or greater	75
Billets to Bars	Continuous, Category A	24	28
	Semi-Continuous, Category B	30	28
	Revesing, Category C	40	28
	Shape	30	28
Cold Rolled Coils	Full hard	58	50
	Annealed and skin rolled	72	
	Tinmill blackplate	78	
GI sheet/strip plants producing thin gauge (0.2-0.4 mm) mainly for roofing	Product mix of 80% full hard and 20% annealed (50-60 HRV)	70-80	60-65
Steel Strip to Pipes and Tubes, Black and Galvanized*	Longitudinal Welded Types	135	108
	Spiral Welded	60-100	60-100

* Varies considerably with pipe diameter.
Source: Arizabal (2003)

3. Utilities

The high cost of electricity is also seen as a severe obstacle in the industry. Operations in steel production (whether semis or finished steel products) are highly energy intensive due the heavy energy requirements electric arc furnaces. Some operations that are connected directly to the National Power Corporation (NPC) grid are able to enjoy 30% lower cost (Metals Industry Research and Development Center, Department of Science and Technology, 2004) compared to facilities in the MERALCO franchise areas. Production facilities in the MERALCO franchise area try to take advantage of the available off-peak pricing schedules, though current labor rules softens the savings in off-peak operations since a premium needs to be paid to workers. Even among firms connected to the NPC grid, those located in Luzon pay 74% higher cost relative to those located in Mindanao (Table 7). Six billet shops and 30 rolling mills are located in the National Capital Region, primarily in the MERALCO franchise area. There is only one billet plant in Mindanao, GSII's Iligan steel plant, and only two rolling mills (Metals Industry Research and Development Center, Department of Science and Technology, 2004). In general, firms in the industry are not able to take advantage of the lower energy cost in Mindanao because poor transport facilities from Mindanao to Manila drive up transportation and handling costs that act as a disincentive for local steel manufacturers to locate or move their steel plants in Mindanao. High electricity cost is said to be one of the main reasons why the local steel industry cannot be competitive in the international market.

Table 7: National Power Corporation Effective Selling Rates
(US cents/kWh, as of May 2005)

Item	Selling Rate	
	In Pesos	In US cents
NPC Grid		
Luzon	4.41	8.11
Visayas	3.38	6.22
Mindanao	2.53	4.66
Average	**3.44**	**6.33**

Source: National Power Corporation. (2005).

The Philippines has one of the highest electricity tariffs charged in the Asian region, significantly higher than that of Malaysia and Thailand (Table 8). In terms of quality, voltage fluctuation in the grid is identified as a major obstacle, especially for operations located in MERALCO franchise areas. Since severe and persistent voltage fluctuation can cause damage to machinery and quality of output (driving up maintenance cost), firms have to shoulder extra cost to ensure more stable energy. Table 9 summarizes average electricity cost by typical industrial consumption levels. Larger scale operations on average pay 1.5 to 2.9 cents higher (in USD per kWh), depending on the total amount of energy used.

Table 8: Monthly Residential and Commercial Rates
(US cents/kWh)

Country	As of	Commercial	Residential
Cambodia	Mar-05	20.00	15.18
Japan	Mar-05	17.54	no data
India	Jun-04	14.37	8.47
Hong Kong	Jun-04	13.89	12.99
Philippines	Jun-05	**13.58**	14.43
Indonesia	Mar-05	12.53	10.10
Singapore	Dec-04	10.58	10.59
Lao PDR	Dec-04	10.49	10.49
Vietnam	Jun-04	9.79	9.86
Bangladesh	May-04	8.62	8.20
China	Mar-05	8.24	no data
Malaysia	Jun-04	7.64	5.78
Thailand	Dec-04	7.19	8.65
Brunei	Mar-05	3.10	no data

Source: Senate Economic Planning Office (2005).

Table 9: Rate per kWh of Industrial Customers at Typical Consumption Levels, as of September 2004

kW	Hours Used	kWh	Rate per kWh	
			in PhP	in USD[a]
Small				
20	200	4,000	5.53	0.100
20	400	8,000	4.38	0.080
20	600	12,000	4.00	0.070
Medium				
100	200	20,000	6.46	0.120
100	400	40,000	5.40	0.100
100	600	60,000	5.04	0.095
Large[b]				
300	200	60,000	6.64	0.120
300	400	120,000	5.58	0.100
300	600	180,000	5.23	0.098
Very Large[b]				
2,000	200	400,000	6.65	0.125
2,000	400	800,000	5.56	0.100
2,000	600	1,200,000	5.20	0.098
Extra Large[b]				
10,000	200	2,000,000	6.84	0.129
10,000	400	4,000,000	5.72	0.107
10,000	600	6,000,000	5.34	0.100

[a] Exchange rates ₱ 53 per USD.
[b] Very Large Industries are customers with demand of 2MW but less than 10MW, and extra large customers with demand of 10MW and up.
Source: Bureau of Investments (www.boi.gov.ph).

4. Transport and Infrastructure

Infrastructure quality, specifically supply and quality of roads (as well as infrastructure planning) is identified as a major obstacle in the industry. Port infrastructure has been cited as a possible point of improvement, particularly the provision of upgraded (and efficient) off-loading facilities. Table 10 shows indicators of port efficiency for the Philippines vis-à-vis some Asian countries in 2000. Philippine ports handling foreign trade is shown to be least efficient with an index value of only 2.79, still lower than Malaysia which has a comparable time duration of median days to clear Customs. In general, firms consider the country's distribution infrastructure to be inefficient. Based on the survey of executives conducted by the IMD World Competitiveness Center in 2003, the Philippines is ranked as having the second most inefficient distribution infrastructure (Table 11). Moreover, local water transportation (harbors, canals, etc.) is deemed inadequate in meeting business requirements.

Table 10: Port Efficiency Index, 2000
(Index values 1-7 with 7 being the best)

Country	Port Efficiency Index	Median Clearance Time (Days)
Hong Kong	6.38	n.a.
Malaysia	4.95	7
Philippines	2.79	7
Singapore	6.76	2
Taiwan	5.18	n.a.

Median clearance time is the median number of days to clear customs.
Source: Global Competitiveness Report.

Table 11: Distribution Infrastructure Efficiency, 2002

Country	Index	Rank
Australia	7.49	12
Indonesia	3.61	45
Japan	6.91	19
Korea, Rep. Of	6.44	23
Malaysia	7.97	10
Philippines	3.23	48
Singapore	9.32	1
Taiwan	6.97	17
Thailand	6.86	20

Index values takes values between 0 and 10, 0 being most inefficient and 10 being most efficient.
Source: IMD World Competitiveness Center (2003).

A comparison of the capacities and performance of South Harbor (a Philippine Port Authority-owned port operated by private concessionaires) and Harbour Center[16] (a competing port owned and operated by a private investor) reveals that South Harbor can unload steel shipments at 40,000MT/vessel in 8-10 days while Harbour Center takes 5.5 days. Harbour Center handles 90% of foreign break-bulk steel trade and has rates that are 30-50% lower than South Harbor as a result of lower cost[17]. Currently licensed to handle breakbulk cargoes, its facilities design, modern equipment, and deep berthing drafts reduce turnaround time by as much as 50%. Some steel firms have been able to take advantage of Harbour Center's facilities in Manila, reducing turnaround time from 14 days to 2.5 days.

Steel firms importing raw materials indicate that losses from inefficient off-loading facilities in local ports are comparatively higher than counterparts in other countries as a result of outdated and insufficient port equipment. As a specific example, firms off-loading scraps in the shallow ports of Manila have been know to lose some 10% of cargo weight due to inefficiencies of available off-loading facilities. In comparison, Taiwanese firms are able to keep losses to a minimum of 1%.

[16] The ports working apron measuring 30 meters wide by 865 lineal meters (north port) and 20 meters by 250 lineal meters (south port), can accommodate up to 12 vessels at any given time. Spacious and well-designed, its port terminal can handle up to 3 million tons of breakbulk cargoes and up to 400,000 TEU's of domestic containers. The Harbour Center also has three superhighway channels that facilitate faster and more efficient dispatch of goods from the port facility.
[17] Findings from Strategic Implications of Competition. R. Romero (Masteral Thesis, 2004).

A new port facility, the Mindanao International Terminal and Container Port (MITCP), located along the shoreline of Macalajar Bay in Tagoloan, Misamis Oriental is a port planned as an international container port in Northern Mindanao that has good logistics access to any point in the Asia and Pacific rim and the United States. Constructed complementary to the Phividec Industrial Estates, the port and the industrial estate are eyed as competitive production locations, especially for bulk raw material industries, such as steel. The deep waters of Macajalar Bay would enable better berthing and off-loading efficiency than the shallow ports in Manila. The Phividec Industrial Agency will be in-charge of overseeing the facilities of MITCP, which initially includes a 400-meter berth that can accommodate up to 30,000-DWT vessels, cargo-handling equipment which can handle 270,000 containers per year, truck holding areas, a container yard, administrative offices, and access roads.

Inter-island transport costs are also high in the country. Although roll-on, roll-off ports (RORO ports) have become available (symbolizing the total linkage of the archipelago from north to south), transport and shipping costs continue to be high. Despite various reforms and regulations implemented by government, the market structure of shipping is still highly concentrated among a few firms. The shipping industry remains to be dominated by five shipping companies with 90% share of the market for passenger and cargoes in primary and secondary shipping routes (Llanto *et al*., 2005).

With respect to land transportation, most firms subcontract their trucking needs to save on maintenance costs of an in-house fleet of trucks. Truck bans and road congestion are just some of the problems in land transport, limiting turn-around time of trucks and disrupting delivery of materials. For steel makers outside Metro Manila, however, congestion becomes less of a problem. It is apparent that poor urban planning in some areas of Metro Manila, especially around industrial zones, has resulted to limitations and obstacles to doing business.

Because by nature the raw materials and final products in the steel industry are bulky, it is expected that local transport of said materials/products poses a challenge. Facilities designed for handling bulk material are required to minimize losses during transport. For any steel facility, a location that is near a deep water port is considered a major competitive advantage because of the opportunities to minimize transport costs.

For international transport of goods, logistics costs for exports are so high as to make local steel products uncompetitive in the international market. International shipping costs (including handling costs) have continued to be high in all parts of the world.

5. Real Estate

Real estate is not a serious problem to the industry. However, it was noted that inconsistent zoning regulations have started some problems. Former industrial zones have been reclassified to residential zones, resulting to conflicts between companies and local residents (considering the industry generates much noise pollution in production).

Location is also a key determinant of competitiveness. Since by nature raw materials and final products are bulky, firms in land-locked locations are expected to be less competitive. Conversely, firms located near a deep-water harbor are able to be more competitive. It is in the later case that the Pohang Iron and Steel Company (POSCO) of Korea has become very successful. Located in the southeastern port city of P'ohang, POSCO sits in an industrial complex housing companies that manufacture finished steel products and various steel-based products (automobile and home appliance manufacturers) that source raw materials from

POSCO's integrated steel mill. From the very beginning, POSCO was designed to operate in one complex for maximum efficiency, including savings on transport cost of goods to steel-using industries. In contrast, the Philippine government was not able to practice a similar industrial planning strategy in encouraging a local iron and steel industry.

Recently constructed, the Phividec Industrial Estate-Misamis Oriental (PIE-MO) with its proximity to an international port is recommended as a prime location for new steel firms in the Philippines. Firms located here can take advantage of lower power cost, lower transport cost, and better access to export markets. A minor disadvantage is that a majority of steel users are still located in the National Capital Region. Since the production of semis still caters mostly to the domestic market, with exports being very minimal, firms located in PIE-MO will still need good logistics strategies in transporting their final goods to customers in Manila. A good number of local steel-makers have located their plants in the Metro Manila area, giving up potential cost advantages in other locations (in terms of power) in exchange for proximity to the domestic market for their products.

B. Tax and Trade Regulations

Tax and trade regulations have direct effects on the cost of doing business as well as the structure of the industry. The mix of rules and regulations for trade (both local and international), and the efficiency of the implementation of these rules and regulations, determines the environment that either promotes or discourages business. In the steel industry, customs and trade regulations, and tax administration are judged major obstacles to business (Figure 17).

Figure 17: Firm Perception of Tax and Trade Regulations

1. Customs and Trade Regulations

Customs and trade regulations efficiency includes firm perception of effectiveness and efficiency of Customs' authorities implementation of trade rules and regulations and tariff structures (and levels). Since manufacturers in the steel industry imports 70%-90% of production inputs, delays in Customs dealings due to inefficiencies in the Customs procedures of the country can also be a hindrance to doing business. As seen in Table 10, median clearing time from Customs is 7 days, whereas Singapore can clear goods through Customs in only 2 days. The ranks of Philippine Customs are plagued by severe corruption resulting in inefficiencies that drive up transactions costs pushed up by delays and bribes. The Philippines is ranked 44th (of 49 countries) in efficiency of Customs in 2002 (Table 12), second most inefficient among its neighboring countries in Southeast Asia (IMD World Competitiveness Center, 2003).

Table 12: Efficiency of Customs' Authorities

Country	Index	Rank
Australia	7.76	12
Indonesia	3.09	47
Japan	5.86	32
Korea, Republic of	5.67	34
Malaysia	6.54	26
Philippines	3.52	44
Singapore	8.88	2
Taiwan	6.58	24
Thailand	4.56	42

Index values takes values between 0 and 10, o being most inefficient and 10 being most efficient
Source: IMD World Competitiveness Center (2003).

Government reforms to minimize corruption and red tape, such as computer automation are in the process of implementation, but results are yet to be seen. In response to the enduring tribulations at Customs, some private initiatives spearheaded by TCMAPI, in collaboration with the Federation of Philippine Industries and the Philippine Chamber of Commerce and Industry, put in place their own Industry Commodity Expert (ICE) to lessen the incidence of undervaluation and misdeclaration for certain types of special commodities. This private initiative brings in additional revenues for government estimated between P5-10 million/ICE. In absence of effective reforms, firms have taken the situation at hand and imposed their own alternative solutions to mitigate the costs of Customs inefficiencies.

In terms of tariff structure (and levels), Table 13 summarizes tariff rates in the iron and steel industry by major product categories. Instead of weighted averages of all products falling under each category, tariffs reflected in Table 13 are measured as either averages of tariffs on products that are locally produced or averages of tariffs on products that have highest import values in each category.

The Philippines has the lowest tariffs relative to neighboring countries. Where Thailand, Malaysia, and Indonesia have chosen to impose Most-Favoured-Nation (MFN) rates of up to 20-30% on special commodities, the Philippines is applying at most 10% MFN rates on only welded pipes. Table 4 has shown that the Philippines has a slight comparative advantage on welded pipes, implying it is a sector in the industry that needs least protection through higher tariffs. Common Effective Preferential Tariff (CEPT) rates are also lower for the Philippines, mostly 0-3%. Compared to Thailand and Malaysia that have comparative advantage in 10 and 6 products respectively, the Philippines having a comparative in only 5 products (three of which are in scrap metals) have the least level of protection. The current tariff structure is biased towards imports.

Tariff distortions occur when the rates between the raw materials are higher than (or the same as) the rates on finished products. There are tariff distortions on HRCs, CRCs and tin plates (Table 13). At current rates, there is no incentive for local production of steel products with relatively lower value added. Steelmakers are still able to produce semis for the local market so long as tariffs are at least 3%, claiming 1% is too low to ensure continued viability of operations. In response to petitions of GSII, Executive Order 375 issued in 2003 set forth an increase in tariff rates from 3% to 7% for HRCs and from 3% to 7% for CRCs effective upon commencement of GSII's Iligan Plant's commercial operations. This will create a tariff distortion between inputs and final products of galvanized sheets/strips firms. The distortion between tin plates and its raw materials cannot be helped considering there are no tinning lines currently

operating in the country that is able to satisfy the needs of the sanitized tin can manufacturing sector (the biggest local user of tin plates).

Table 13: Tariff Rates, 2003

	Philippines		Thailand		Malaysia		Indonesia	
Product Category	MFN	CEPT	MFN	CEPT	MFN	CEPT	MFN	CEPT
Scrap	0	0	0	0	0	0	0	0
Billets	3	3	10	5	10	5	0	0
Slabs	3	0	10	3.75	0	0	0	0
Tin Plates	0	0	20	5	0	0	15	5
Rebars	7	3	15	5	15	5	15	0
Wire Rods	3	0	15	5	15	5	15	0
Shapes/Sections	7	3	10	5	20	5	20/25	5
Wires	7	3	25	5	30	5	5-20	0-5
Hot Rolled Coils	3	3	10	5	25	5	5	5
Cold Rolled Coils	3	3	12	5	25	5	10	5
Tinmill Blackplates	3	3	12	5	25	5	0	0
Galvanized Sheets/Strip	3	0	15	5	10	5	5	0
Welded Pipes	10	5	15	5	30	5	20	5

Source: APEC Tariff Database (www.apectariff.org)

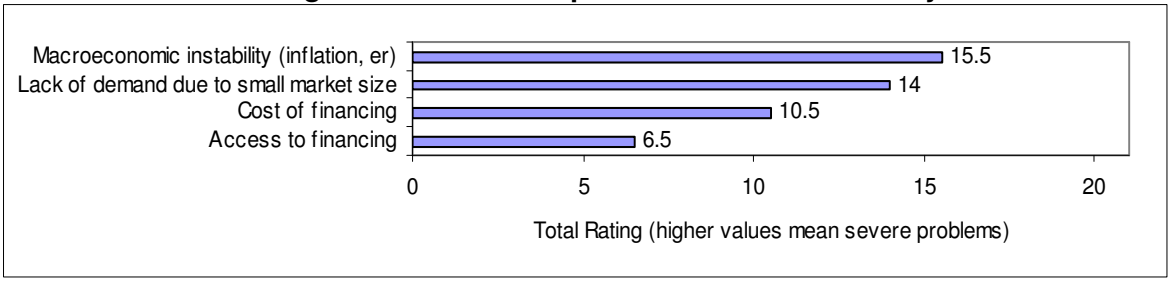
2. Tax Administration

Tax evasion continues to be a persistent problem in government revenues collection. Objections in tax administration dwell mostly on the Bureau of Internal Revenue's lack of success in upping collection efficiency. The incidence of tax evasion ranks the Philippines 46th (of 49), implying that the local business environment considers tax evasion to be a common practice in the country (IMD World Competitiveness Center, 2003). Unlike in Customs' administration though, there are no disadvantages in taxation that is unique to the local steel industry. Tax and other incentives are available to investors in the industry depending on eligibility for Bureau of Investments and special economic zone incentives.

C. Market Uncertainty

Of the different variables of market uncertainty, macroeconomic instability is considered to be the heaviest obstacle. Macroeconomic instability, referring to inflation, exchanges rates, and political instability, is ranked as a major obstacle. Risk of political instability is high, increasing the cost of doing business and the reducing the inflow of foreign investment. Political instability also deteriorates the country's credit standing, increasing the cost of borrowing funds from abroad.

Figure 18: Firm Perception of Market Uncertainty



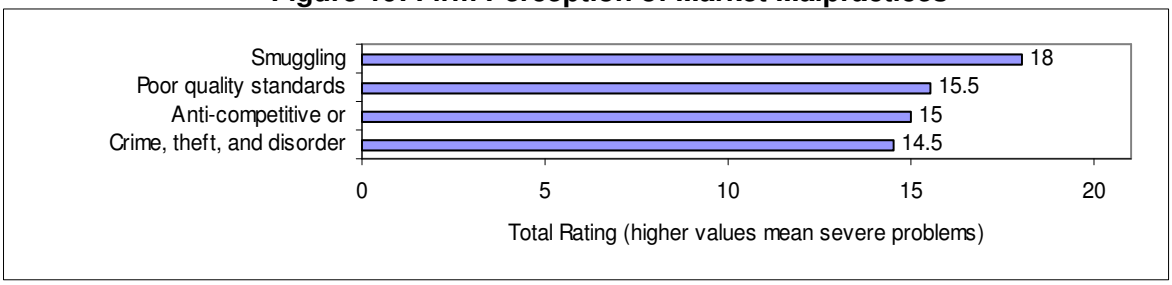
Next to macroeconomic instability, tameness of local demand is also seen as a drawback for upstream steel firms. Since 70% of steel demand is accounted for by the construction sector, the growth in the latter has the highest impact on market expansion. However, the case of tied official development assistance (ODA) in the large-scale construction/infrastructure sectors in the industry is often cited as a major cause of the local steel market's underdevelopment. Tied ODA refers to aid (grants, loans, etc.) that require the beneficiary country to source the raw materials, machinery, and equipment that would be used, as well as consultants/engineers from the donor country (Francia, 2002).

D. Market Malpractices

Competition in the domestic market is also affected by various underhanded measures practiced by some firms in trying to capture a larger portion of the market for local steel products. Incidences of technical smuggling occur in both semi-finished and finished steel product categories, posing a problem to both the upstream and downstream steel sectors. Smuggling (outright and technical) is seen as a severe obstacle to doing business (Figure 19). Technical smuggling results from the misdeclaration (misclassification, underdeclaration, or undervaluation) of imported goods, done to avoid the payment of tariffs. It can be measured/detected through the comparison of mirror statistics (export value of reporter/exporting country versus import value of partner/importing country). This can be done easily in other countries through a computerized system recording the export values from exporting countries that can be cross checked with the arriving cargo in the importing country.

Smuggling is not the only import activity that imposes losses on local steel producers. Dumping of semis—billets from Russia, CRCs from Russia and Taiwan, and HRCs from Russia—has also affected the upstream steel industry. Dumping occurs when any specific kind or class of foreign article is imported or brought into the Philippines at a price less than the normal value causing injury to the domestic industry of the like product. In fact, the dumping of billets from Russia and the failure of government to intervene in time is seen as one of the factors that contributed to the former NSC's eventual closure. Although far from being the sole contributing factor to NSC's eventual demise, a combination of market contraction, competition from normal (undumped) imports, foreign exchange losses, and increasing cost of production ultimately led to the closedown of the Iligan plant (Tariff Commission Report, 2000). As discussed in terms of Customs' administration, private solutions have stepped in to help combat the incidence of dumping in the domestic market.

Figure 19: Firm Perception of Market Malpractices



Monitoring product standards on all steel goods traded in the domestic market is also regarded as an industry setback. Leading firms in the industry complain of competitors cutting costs by deliberately lowering product quality below those set by the Philippine National

Standards Body (PNSB) of the Department of Trade and Industry. One possible reason for this could be current Philippine national standards (PNS) for steel products are too wide, overshooting the requirements of some end users. Compared to Japan's steel market, which set standards for more steel products to define every type of demand from end users, PNS for steel could be defining too few steel categories.

A review of the current set of PNS for steel should be made to match standards to domestic demand. This should lessen the distortions and perceived malpractice in the market when firms who would like to strategize through product differentiation are allowed to do so. If there is a market for steel products that fall below current PNS, with consumers fully knowledgeable of what they are buying, then there are incentives for firms to produce these products. A distinction between product differentiation and malpractice should of course be made. Product differentiation occurs when a firm sells a product of lower quality to a buyer that knows it is of lower quality. Malpractice, on the other hand, happens when a firm sells a product of lower quality to a buyer who does not know the quality is lower. With a more comprehensive mix of standards, focus should be put into strengthening PNSB's capabilities in carrying out its functions, especially in monitoring if firms are reporting the correct product standards to end users.

Finally, crime and theft are seen as major obstacles. Of the 2.5 million MT of steel imports shipped to Manila in 2004, an estimated P1 billion (or 1% to 3% of total weight) is lost due to pilferage, theft and mishandling of goods in unsecured ports (Malaya, 2004). Reports from the Harbour Center indicate that theft and pilferage take place mostly at the port terminal, where goods are unloaded. Tighter security measures, such as those offered by modern ports like the Harbour Center, now seek to abate losses from these undesired activities. Pilferage at ports is far from being the only threat to security. The occurrence of hijacking of goods is also present in the industry, increasing the risk of transporting goods. Insurance of goods become necessary, raising transport cost even further.

E. Governance

Good governance and, to a large extent, a well executed central plan for the steel industry, are among the top factors that have contributed to the success of steel in countries such as Korea and Japan. POSCO's success story is owed to the strategic planning involved in making the increase of Korean domestic demand for steel its future. The will of the government to undertake economic development and to establish a steel industry that would supply domestic demands of steel as they push for industrialization were among the key factors contributing to POSCO solid beginnings.

The Philippine government, in its efforts to establish a local iron and steel industry issued RA 7103 to set goals and strategies to promote local steel production. However, even though it is able to identify the critical sectors of the iron and steel industry, it still falls short in terms of implementation. Of the goals promoted by the Philippine Iron and Steel Industry Act, very few of the strategies have been realized:

a. Power, Infrastructure, and Auxiliary Facilities. The cost of power continues to be high and the impact of energy reforms are yet to be seen in the power industry, especially in the industrial areas of Manila. No cost advantage is enjoyed by energy intensive steelmaking activities, exacerbated by poor power quality. Infrastructure, primarily ports, is still poor with inadequate handling equipment that cost losses.

b. Financing and Other Loans. Financing is not considered a major problem in the industry, but needed investments in integrated steel mills and in the modernization of steelmaking technologies are low despite current incentives granted to interested investors.

c. Tax and Duty Exemption on Imported Machinery and Tax Credit on Domestic Capital Equipment and Other Incentives. These incentives are available subject to eligibility requirements and certification by the Bureau of Investments. Industries can also be declared by the Philippine Economic Zone Authority (PEZA) to be special economic zones to enjoy a different menu of incentives.

d. Rational Tariff Incentives and Protection Scheme. Protection is down for steel products, generally in the range of 0%-5%, which is relatively low compared to our neighbors in Southeast Asia. Distortions are present in a number of product codes, occurring between billets and other intermediate products. Some of the current efforts to address tariff distortions include: a comprehensive tariff review by the Tariff Commission and a resolution issued early this year in response to the GSII's application for tariff protection, the successive issuance of EO 375, and the strong lobbying of downstream players against higher tariffs on raw materials.

Of incentives not included in the RA 7103:

a) Penalties for Smuggling. With the continuing inefficiencies in Customs administration, technical smuggling can sometimes go undetected or get away with a lower degree of punishment. The Philippines has not yet adopted a computerized global system for imports/exports that would simplify the detection of technical smuggling.

b) Preferred Use. Seventy percent of domestic steel demand comes from the construction sector. However, tied ODA frustrates the impact of this strategy. Instead of big infrastructure projects benefiting the industry, the conditions of tied ODA obstructs these gains. Government should exercise the will to strictly promote the use of local steel products to strengthen domestic demand and enable the elimination of excess capacity.

c) Promotion of Steel Industry Linkages. Steel industry linkages are strong with the presence of various steel associations: 1) Philippine Steelmakers Association (PSA), 2) Philippine Iron and Steel Institute (PISI), 3) Tin Can Manufacturers Association of the Philippines, Inc. (TCMAPI), and the 4) Filipino Galvanizers Institute. These associations also receive support from the Federation of Philippine Industries (FPI) and the Philippine Chamber of Commerce and Industry (PCCI). The Metals Industry Research and Development Center of the Department of Science and Technology (DOST-MIRDC) promotes public support for the iron and steel industry, among other government agencies encouraging local investment in steel.

d) Technology and Manpower Development. Technology dissemination programs specifically targeted to better steel making and finishing technology in the country are not available. There are incentives (tax credit and/or tax exemption) obtainable upon importation of capital equipment, but there are no guidelines available for modernization programs (that are targeted solely on steel technology upgrading), aside from incentives that can be availed through the Bureau of Investments. The

mills whose productivity can be compared to international standards are relatively few in the country, and currently producing below capacity.

In terms of the general picture, quality of governance is low. Corruption, uncertainty of policies, and incapacity to implement regulations are seen as major obstacles (Figure 20). The World Economic Forum World Competitiveness Report for 2004-05 corruption index shows that the Philippines is ranked 100th (of 104 countries), as having one of the highest levels of corruption. This observation is supported by various studies relating the persistence of corruption among government officials with the higher cost of doing business. Red tape, bureaucracy, and non-transparent public dealings further increase political instability. The country's competition legislation (or prevention of unfair competition) is ranked 43rd (of 49 countries) (Table 14). The legal framework is also ranked only 45th, with an index value of 3.30 implying the current legal framework is more detrimental to competition than not[18]. Like any other local industry, iron and steel firms depend on government efficiency to bring the cost of doing business down. These rankings merely summarize how poorly the country has done in designing and providing an environment that would be conducive to the sustainability, stability, and the eventual development of the steel industry.

Table 14: Competition Legislation and Legal Framework, 2002

Country	Index	Rank
Australia	7.76	12
Indonesia	3.09	47
Japan	5.86	32
Korea, Republic of	5.67	34
Malaysia	6.54	26
Philippines	3.52	44
Singapore	8.88	2
Taiwan	6.58	24
Thailand	4.56	42

Index values takes values between 0 and 10, 0 being most inefficient and 10 being most efficient
Source: IMD World Competitiveness Center (2003).

VII. RECOMMENDATIONSr

In light of the challenges faced by and stagnant performance of the industry, the following recommendations are made:

1) Bring down the high cost of power
   - i) Peak and off-peak pricing. This is what is happening in Japan, Taiwan, and Thailand. Price power cheaper at night to encourage firms who do not have to operate in the morning to shift their operations in the evening.
   - ii) Implement reform in the electricity industry. Possible areas for reform include:
     a) Removal of interclass subsidy. Industry subsidy runs around 70¢/KWH. Instead what is recommended is to charge various consumers based on the true cost of power utilization)
     b) Privatize the National Power Corporation. The cost of electricity in the country is one of the highest, if not the highest in the region (10-12¢ US/KWH, with an average rate of 11¢ US//KWH. This is due

[18] As defined in the IMD World Competitiveness Yearbook (2002).

large to the inefficiency of the NPC. If NPC is privatized, the generating cost of electricity is expected to drop anywhere between 5-8¢ US/kWh).

2) Improve infrastructure.

   In an effort to improve the turnaround delivery time, offload rate (1,000-2,000 tons/day vs. 8,000-10,000 tons/day in Taiwan for example), losses in offloading facilities (10% vs. <1% as a global standard), stealing by truck drivers of steel merchandise, and reduce the incidence of hijacking of delivery trucks, the country needs to improve on the design and quality and increase the number of external and internal infrastructure. These include good ports and port facilities (e.g., cranes, road and rail network within ports, self-discharging facilities), airports (for airfreight), and a reliable and extensive network of roads, ships, and ferries.

3) Rationalize tariff structure. Follow the compromise of the Tariff Commission in ruling protection for upstream players effective only upon commercial production of import substitutes to steel products used by downstream players. This will level the playing field and not be biased towards a specific segment of the industry.

4) Strengthen the implementation of product standards

   Despite the presence of laws and various regulations on product standards, the Philippines is notorious for allowing poor quality goods in the market. In order to protect consumers, industry groups have formed teams to address the problem. Unfortunately, after reporting to the government their findings, nothing happens. The government should not only increase the frequency of monitoring products but also improve on the quality of their monitoring. Consumers should also be made aware of the type of products that they are using and the possible detrimental effects of using substandard material. This was done before by the industry but because of the poor purchasing power of the consumer, they want to buy cheap. Industry has suggested to the government a scheme similar to what is done in the US, where certain industries hire independent companies to do the product testing, e.g., before a drug goes out to the market, aside from the FDA, the FDA engages the services of a 3rd party to do their independent evaluation. Unfortunately, this was turned down by the government due to lack of funds. Also, some companies in the US pool their resources together and do the product testing themselves. In the Philippines, the industry tried to do it, but failed. Some people contributed the required amount but some will not, especially those who were cheating. Again, this idea did not fly with the government.

5) Address the problem of smuggling

   Implement reform in Customs administration, e.g., computerization of Customs procedures.

6) Streamline/systematize government-related business processes

   The present government business-related processes takes too much time, requires too many signatures, which is not only costly, time-consuming, but also encourages corruption.

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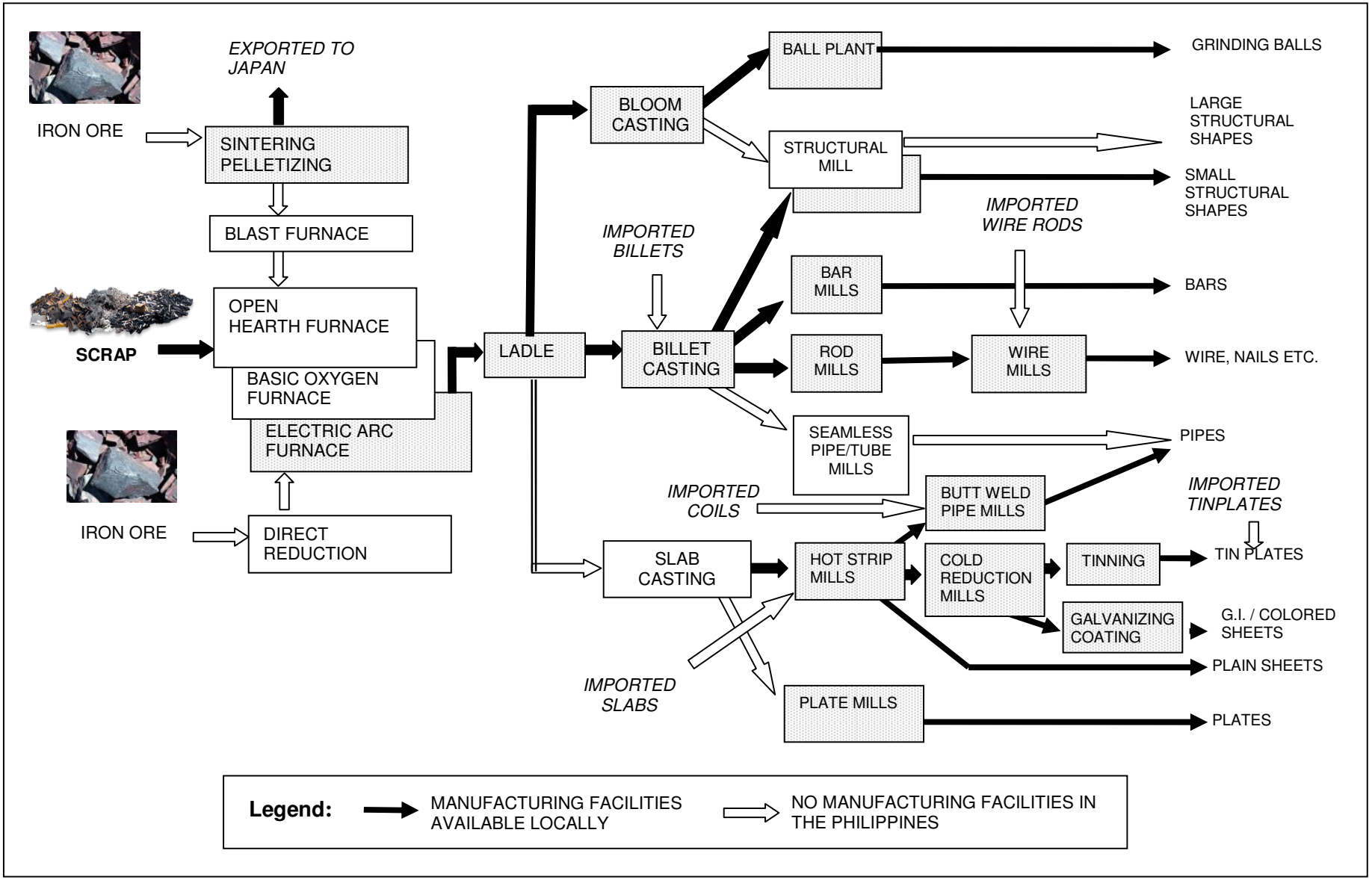
APPENDIX 1: LOCAL IRON AND STEEL INDSUTRY FLOWCHART



APPENDIX 2: STEEL INDUSTRY COMPETITIVENESS SURVEY

PRODUCTIVITY, INVESTMENT, AND COMPETITIVE CLIMATE IN THE STEEL INDUSTRY: PRIVATE ENTERPRISE SURVEY

The purpose of this survey is to better understand conditions in the local investment climate and how they affect firm-level competitiveness in the steel industry to serve as input toward a Philippine roadmap of industry restructuring and trade negotiations in forthcoming free trade and economic partnership agreements. The goal is to provide policy recommendations to government on ways to change current regulations that hinder the growth of private establishments like yours and to develop new policies and programs that support increased productivity and global competitiveness. Your answers should reflect only your experience of doing business in the Philippines. Please note that the information obtained in this survey will be treated with utmost confidentiality. Neither your name nor the name of your firm will be used in any of the documents based on this survey.

GENERAL INFORMATION

Note: Questions 1 through 6 apply to your entire firm, including all its establishments (factories, stores and/or service outlets).

1) Name of respondent _____

2) Position _____

3) Company _____

4) Type of business _____

5) In what year did your firm begin operations in this country? _____

6) What is the current legal status of your firm? _____
   1=Publicly listed company 2=Private held, limited company 3=Cooperative
   4=Sole proprietorship 5=Partnership 6=Other (Please specify): _____
   _____

7a) Was your firm previously owned by the government (1 = Yes, 2 = No) ? _____

7b) If yes, what year was it privatized? _____

8) Which of the following best describes the largest shareholder or owner in your firm?
   1=Individual 2=Family 3=Domestic company 4=Foreign company 5=Bank
   6=Investment Fund 7=Managers of the Firm 8=Employees of the Firm
   9=Government or governmental agency Other (Please specify): _____

9) How many establishments (separate operating facilities) does your firm have in this country?
   _____

10) Does your firm have holdings or operations in other countries(1 = Yes, 2 = No) ? _____

11) Where are these establishments and your headquarters located in this country?
   Establishments: _____
   Headquarters: _____

12) What is your main product line? _____

SALES AND SUPPLIES

13) What percent of your establishment's sales are:
   a) Sold domestically _____ %
   b) Exported _____ %
   TOTAL 100.0 %

14) If you export:
   a) What year did your establishment first export? _____
   b) Which countries are the biggest destinations for your exports?

_____

_____

15) What percent of your establishment's material inputs and supplies are:
   a) Purchased from domestic sources _____ %
   b) Imported _____ %
   TOTAL 100.0 %

INVESTMENT CLIMATE CONSTRAINTS TO THE ESTABLISHMENT

Please tell us if any of the following issues are a problem for the operation and growth of your business. If an issue poses a problem, please judge its severity as an obstacle on a four-point scale where:

0 = No obstacle 1 = Minor obstacle 2 = Moderate obstacle 3 = Major obstacle 4 = Very Severe Obstacle

16)	Telecommunications					
	a) Unavailable mainline telephone service	0	1	2	3	4
	b) Poor quality	0	1	2	3	4
	c) High cost	0	1	2	3	4
	d) Others (Please specify):_____	0	1	2	3	4
17)	Electricity					
	a) Power outages	0	1	2	3	4
	b) Voltage fluctuation	0	1	2	3	4
	c) High cost	0	1	2	3	4
	d) Others (Please specify):_____	0	1	2	3	4
18)	Water (Insufficient supply, high cost)					
	a) Insufficient supply	0	1	2	3	4
	b) High cost	0	1	2	3	4
	c) Others (Please specify):_____	0	1	2	3	4
19)	Infrastructure	0	1	2	3	4
	a) Insufficient supply	0	1	2	3	4
	b) Poor quality	0	1	2	3	4
	c) High cost	0	1	2	3	4
	d) Others (Please specify):_____	0	1	2	3	4

20)	Transportation	0	1	2	3	4
	a) Transport Failure					
	b) Insufficient supply	0	1	2	3	4
	c) Poor quality	0	1	2	3	4
	d) High cost	0	1	2	3	4
	e) Others (Please specify):_____	0	1	2	3	4
21)	Access to Land	0	1	2	3	4
22)	Real estate prices	0	1	2	3	4
23)	Tax rates	0	1	2	3	4
24)	Tax administration (e.g., red tape)	0	1	2	3	4
25)	Tariffs					
	a) High cost	0	1	2	3	4
	b) Structure	0	1	2	3	4
26)	Customs and Trade Regulations	0	1	2	3	4
27)	Labor Regulations	0	1	2	3	4
28)	Skills and Education of Available Workers	0	1	2	3	4
29)	Labor Unions	0	1	2	3	4
30)	Business Licensing and Operating Permits	0	1	2	3	4
31)	Access to Financing (e.g., collateral)	0	1	2	3	4
32)	Cost of Financing (e.g., interest rates)	0	1	2	3	4
33)	Economic and Regulatory Policy Uncertainty	0	1	2	3	4
34)	Macroeconomic Instability (inflation, exchange rate)	0	1	2	3	4
35)	Corruption	0	1	2	3	4
36)	Crime, theft and disorder	0	1	2	3	4
37)	Smuggling	0	1	2	3	4
38)	Anti-competitive or informal practices	0	1	2	3	4
39)	Legal system/conflict resolution	0	1	2	3	4

SERVICES

40a) Is your establishment/firm a member of a business association or chamber of commerce?

40b) IF YES, for each of the following, please indicate if this is a service the business association or chamber that is most important to your firm provides, and if so, what the value of this service is to your firm? *0= no value; 1= minor value; 2= moderate value; 3= major value; 4= critical value to your firm*

	Not Provided	Value to your firm				
a) Lobbying government	NP	0	1	2	3	4
b) Resolution of disputes (with officials, workers or other firms)	NP	0	1	2	3	4
c) Information and/or contacts on domestic product and input markets	NP	0	1	2	3	4
d) Information and/or contacts on international product and input	NP	0	1	2	3	4
e) Accrediting standards or quality of products; reputational benefits	NP	0	1	2	3	4
f) Information on government regulations	NP	0	1	2	3	4

BUSINESS-GOVERNMENT RELATIONS

41) How would you generally rate the efficiency of government in delivering services (e.g. public utilities, public transportation, security, education and health etc.). Would you rate it as *(read 1-6*)? _____

1 Very inefficient 2 Inefficient 3 Somewhat inefficient 4 Somewhat efficient 5 Efficient 6 Very Efficient

42) "In general, government officials' interpretations of regulations affecting my establishment are consistent and predictable." To what extent do you agree with this statement? Do you (*read 1-6*)? _____

1 Fully disagree 2 Disagree in most cases 3 Tend to disagree 4 Tend to agree 5 Agree in most cases 6 Fully agree

THE SURVEY ENDS HERE

THANK YOU VERY MUCH FOR YOUR COOPERATION