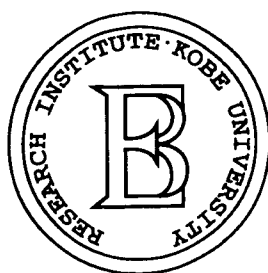


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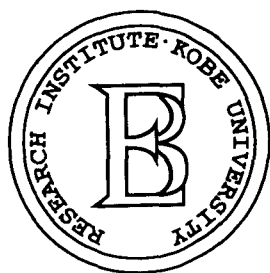
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A NOTE ON POSSIBILITIES ABOUT JAPAN-KOREA FREE TRADE AREA: A STRATEGIC APPROACH

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1. Introduction

In this paper, we will emphasize the strategic importance of formation of Japan-Korea Free Trade Area in two aspects. One is internalizing dynamic advantage to enlarge a potential of endogenous growth and the other is strengthening competitiveness of Asian ways of transaction for a global standard.

After the burst of bubble economy in Japan and the hit of Asian currency crisis in Korea, a government of each country is looking for new economic strategies for recovery. One of the strategies is a formation of free trade area between Japan and Korea. It is interesting to evaluate effects of formation of FTA (free trade area) between Japan and Korea. This is because, economic structures of one country is very close to those of others, roles of government policies for economic developments are important in both countries, and a market structure is also very close to each other. With these similarities in Japan and Korea, a formation of Japan-Korea FTA will accompany large industrial restructuring in both countries. The effects will not be just exports and imports restructuring but will be big adjustments of re-allocation of industries and firms between the two countries.

Traditional theoretical arguments about a formation of FTA mostly depend on assumptions of perfectly competitive markets with non-increasing returns. Trade creations and trade diversions are familiar. In these cases a formation of FTA between countries with similar economic structures might not accompany big changes of industrial structures, except the case that production technologies induce complete specialization of production.

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However with assumption of imperfect competitive market with increasing returns, a formation of FTA between countries with similar economic structures will accompany big change of industrial structures. The formation of FTA between Japan and Korea has many elements of this imperfect competition case.

Although the similarity between Japan and Korea might have some cost of adjustments of industrial restructuring, the formation of FTA could give both countries many benefits, and both countries could enjoy dynamic effects of endogenous growth. The Asian currency crisis has made explicit the difference of transaction or contract behaviors in Asian countries from those in Western (European and American) countries. If firms in Japan or in Korea are pushed to follow the way of Western countries, the firms might reduce their efficiency. This situation will be unsatisfactory not only for firms but also for government, which has taken leadership of economic development in each country. The cooperation between firms of Japan and of Korea may reduce those inefficiencies and dissatisfactions, and formation of Japan-Korea FTA could be one of the ways of cooperation.

In the following section, we show similarities of industrial structures and trade structures between Japan and Korea. In section 3, we will discuss theoretically about effects of a formation of FTA in the case of imperfect competition with increasing returns. Section 4 discusses about trends of globalization of economic activities of firms and about competition in forming a global standard for transactions. Final section will be used for strategic aspects of Japan-Korea cooperation in forming FTA.

2. Economic similarity between Japan and Korea

(1) Industrial structures

Let us briefly check world bank data (World Bank World Development Indicators, 1997) to see economic structures in Japan and Korea, structures in manufacturing industry. We will find similarity of economic structures in both countries. Production and demand structures are also similar in both countries.

[Structure of manufacturing]

Value added	Manufacturing		Food, beverages, and tobacco		Textiles and clothing		Machinery and transport equipment		Chemicals		Other manufacturing	
Country/Year	1980	1995	1980	1995	1980	1995	1980	1995	1980	1995	1980	1995
Japan	307.7	1146.2	9	10	7	4	33	38	9	10	43	38
Korea	18.3	102.0	17	10	19	12	17	34	10	9	36	36
World	2472.4	5012.4										

Unit : Billion \$, % of Manufacturing's value added

Manufacturing : ISIC major division 3

Food, beverages, and tobacco comprise 31

Textiles and clothing : ISIC division 32

Machinery and transport equipment comprise groups 382-84

Chemicals comprise groups 351-352

Other manufacturing : wood and related products (division 33), paper and paper related products (34), petroleum and related products (353-56), basic metals and mineral products (36,37), fabricated metal products and professional goods (381,385), other industries (390)

(2) Trade structures

Trade between Japan and Korea is one of the basic data in assessing FTA between Japan and Korea. Here it will help to show data of trade structures of Japan and Korea. Using World Bank data, we show structures of merchandise exports (World Bank World Development Indicators, 1997). We will find similarity of trade structures in both countries. Import structures of commodities and the structures of exports and imports in services are also similar in both countries.

[Structure of merchandise exports]

Value added	Merchandise exports		Fuels, minerals, and metals		Other primary commodities		Machinery and transport equipment		Other manufacturing		Textile fibers, textiles, and clothing	
Country/Year	1980	1995	1980	1995	1980	1995	1980	1995	1980	1995	1980	1995
Japan	130.0	443.1	2	2	2	1	58	68	37	29	5	2
Korea	17.5	125.1	1	3	9	4	20	43	70	51	30	19
World	2004.0	5144.0										

Unit: Billion \$, % of merchandise exports

Textile fibers are part of other primary commodities; textiles and clothing are part of other manufactures

The f.o.b. value of goods, classified using the Standard International Trade Classification (SITC), series M, no.34, revision 2

Fuels, minerals, and metals : commodities in SITC section 3 (mineral fuels, lubricants, and related materials), divisions 27 and 28 (crude fertilizers and crude minerals, excluding coal, petroleum, precious stones, metalliferous ores, and metal scrap), and division 68 (non-ferrous metals)

Other primary commodities: SITC sections, 0,1,2,4(food and live animals, beverages and tobacco, inedible crude materials except fuels, and animal and vegetable oils and fats), excluding division 27 and 28

Machinery and transport equipment : SITC section 7

Other manufactures : SITC section 5-9, excluding section 7 and division 68

Textile fibers, textiles, and clothing: SITC divisions 26,65, and 84 (textiles, textile fibers, yarn, fabrics, and clothing and accessories), are a subgroup of other primary commodities and of other manufactures

(3) Trade structures of commodities between Japan and Korea

It is interesting to see details of trade of goods between Japan and Korea. The data depending on statistical books, Annual Report 1996 Customs and Tariff Bureau (Fifth) by Ministry of Finance, and Annual report on Customs and Tariff (1999) by Japan Tariff Association. We can find characteristic features of intra-industry trade in manufacturing industries.

Japanese Exports and Imports with Korea

Commodity	1995		1998	
	Exports	Imports	Exports	Imports
Total	2927.8	1622.2	2004.5	1577.3
Foodstuffs	21.3	173.1	10.2	224.8
<i>Fish & shellfish</i>		108.9		111.8
<i>Fruit & vegetables</i>		37.1		34.8
Raw materials	41.0	22.7	56.2	25.3
Mineral fuels	82.0	80.0	17.7	141.5
<i>Petroleum & products</i>	81.0	78.4	16.7	138.6
Chemical products	391.1	90.8	346.7	115.7
<i>Plastic metals</i>	87.4	23.1	75.9	37.5
Textiles	56.2	61.5	37.1	44.4
Non-metallic mineral products	67.3	24.1	35.7	18.3
Iron & steel	221.7	171.5	152.7	148.7
Non-ferrous metals	60.0	14.6	57.3	18.3
Metal products	42.0	42.0	25.7	46.6
Machinery & transportation equipment	1624.6	550.3	1036.0	480.6
<i>Power generating machinery</i>	49.1		40.0	
<i>Office machinery</i>	66.5	47.4	33.9	62.9
<i>Metalworking machinery</i>	108.6		34.6	
<i>Heating or cooling equipment</i>	73.5		19.4	
<i>Pump centrifuges</i>		64.9		31.0
<i>Mechanical handling equipment</i>	40.2		12.1	18.7
<i>Electric power machinery</i>	54.9	47.4	40.5	74.3
<i>Audio and Visual apparatus (parts)</i>	31.2	82.5	40.5	11.1
<i>Electronic integrated circuits</i>	309.9	14.0	284.2	263.4
<i>Motor vehicles (parts)</i>	61.7		39.3	
Precision instruments	155.8	21.4	81.6	29.5
Clothing & clothing accessories		173.3		118.4
Travel goods, handbags & similar articles		32.7		15.6

Unit: Billion Yen

(parts): In case of exports to Korea

Italic: Subdivision

The value of exports: F.O.B.

The Value of imports: C.I.F.

Classification of goods: "The Basic Classification Index for The Summary Report on Trade of Japan", based upon "Commodity Classification for Foreign Trade Statistics"

(4) Korean tariffs and Korean trade deficits for Japan

Korea has reduced tariffs in these ten years. Trade imbalance between Korea and Japan is one of factors to discourage formation of Japan-Korea FTA.

[Tariffs in Korea]

	1988	1990	1992	1996
Total average	18.1	11.4	10.1	7.9
Industrial products	16.9	9.7	8.4	6.2
Agricultural products	25.2	19.9	18.5	16.6

Unit: %

Data source: Korea Customs Service

[Korean trade deficits to Japan]

Year	1996	1997	1998	1999.1/1-7/20
Billion \$	15.7	13.1	4.6	4.25

Data source: Ministry of Commerce, Industry and Energy and newspaper

(5) Removal of law of the diversification in partners of import

Korean import restrictions to Japan are introduced in 1978 to increase imports from EU and US to mitigate trade conflicts and reduce deficits for Japan. The number of assigned commodities had increased maximum to 924 but reduced to 344 by 1988, but it had been gradually reduced from 1997/12 and became zero in 1999/6. However very rapid increase in import of the former restricted commodities from Japan has become serious problem for Korea. This shows possible directions of trade after Japan-Korea FTA.

[Removal of import restrictions from Japan]

1997/12	25 commodities: CD player, small car, motorcycle
1998/6	40 commodities: small-color TV, micro-bus
1998/12	32 commodities: video-camera, analog-watch, forklift
1999/6	16 commodities: middle & large car, large TV, electric-rice-cooker, mobile-telephone

Table source: Newspaper (Nippon Economic)

Depending on KOTRA data, Korean newspaper (Korean Economic) has opened data as follows. For the 48 commodities (removal from 1998/1 and 1999/7), the value of imports for July & August in 1999 was 8.23 million \$, 180% increase relative to the value in the same period of previous year (video camera is 146 times, and camera is 23 times). Small and medium enterprises are seriously damaged by the removal of the restrictions.

3. Increasing returns and formation of FTA

It is well known that an opening of international trade changes production structures in cases of imperfect competition with increasing returns in production. In the industry where

increasing return works, an integration of firms into one firm will be efficient. Firms will perfectly specialize their productions into one commodity, but patterns of specialization after forming FTA are difficult to predict. The assumption of monopolistic competition partly helps to predict the industrial structure after trade. Evaluation of effects in forming FTA has similar difficulties in cases of imperfect competition with increasing returns. That is, it is difficult to predict industrial structures after tariff reduction between the member countries. This is because specialization patterns might change drastically between the two situations with tariffs and without tariffs. Again, the assumption of monopolistic competition may help to predict industrial structures after formation of FTA. However, the assumption is not satisfied in real world.

In the case of Japan, several groups of firms coexist and sharing their markets. This situation sometimes comes from government policies to avoid excess competition among Japanese firms. Similar situation prevails in Korea, where industrial structure with groups of firms (organizations of *Zaibatu*) is dominant. Therefore, once more strong competition is introduced by combining markets of Japan and Korea, there will be big waves of restructuring of industrial organizations in both countries. Government policies for economic development in both countries are similar and biased to protect manufacturing industries. Starting from textile and steel industries, government policies have assisted industries of shipbuilding, electric machinery, automobile, and semiconductor. Government policies for protecting agricultural producers and fisheries have remained inefficient and small farmers and fishermen. Many governmental regulations reduced international competitiveness in service industries. By and large, these effects of government policies are same for Korea. Korean structures of industry and of market are similar to those in Japan.

Once markets are combined by formation of FTA, imperfect competition with increasing returns produces many different outcomes of industrial structures, depending on commodities and technologies and other elements.

If levels of production technology in both countries are same, a market size in each country will be a dominant factor to determine competitiveness of firms. Even if the firms in each country are doing business in large international markets, the size of domestic market is still an important factor to determine their production size and thus competitiveness. Therefore, a formation of FTA gives advantages for firms with larger domestic market. However, the firms in larger country cannot take all industries, because of limitations in endowment of production factors. Larger country will specialize in the industries, where a degree of increasing return is larger, and smaller country will specialize in the industries of less increasing returns.

However, division of labor among differentiated products, different processes, or different intermediary products will mitigate above specialization.

If market sizes are same in both countries, the main elements of firms' competitiveness will be technology levels or levels of factor prices. Technology levels will determine a competitiveness of capital-technology intensive industry and the one of labor intensive industry will depend on labor costs. After a formation of FTA, firms of technology advanced country will dominate a technology intensive industry, and firms of lower wage country will dominate a labor-intensive industry. However, imperfect competition will mitigate above dominance.

Comparing Japan and Korea, country size is bigger and technology level is higher in Japan and wage level is lower in Korea. Therefore in the case of a formation of Japan - Korea FTA, Japan will expand production of high-tech and higher increasing return industries and Korea will expand production of more labor intensive and lower increasing return industries, on average Japanese firms will dominate high-tech and/or increasing return section of manufacturing industry, and Korean firms will dominate labor intensive section of manufacturing industry and primary industry on average. International division of service industry depends on regulations and restriction of direct foreign investment (DFI) in both countries. Although there will exist many local firms in each country because of properties of service industry, Japanese firms will expand business in Korea in high-tech and network section of service industry, if DFI is deregulated. If above arguments are true, Korea has less incentive for the Japan-Korea FTA formation.

There will be industrial adjustments within primary industry, manufacturing industry, and service industry. Japanese firms or Korean firms will take some sections of each industry, and some other section will be shared with firms of both countries. Each country has many protective regulations for primary industry and also for service industry, and competition in these industries will be regulated also after formation of FTA. The people in each country have different tastes and preferences for local products and local service network. These might protect large industrial adjustment in primary and service industries. Both Japanese and Korean firms are interested in dominating or surviving in manufacturing industry, especially in high-tech and increasing return sectors. If peoples enjoy varieties of same product and products can be differentiated, both Japanese firms and Korean firms can survive by differentiating their products. This might be the case in automobile and electric machinery industries. However there will be a competition for taking products of more profitable in this case.

As volumes of production increased, a possibility of specialization in a differentiated product will increase. A specialization in a different process of a commodity will also become possible with increase of production size of intermediary products. Thus a larger market will enforce specialization of intermediary products and international division of labor in production processes. Depending on characteristics of production processes, the processes will be shared in an efficient way.

This type of division of labor is most important for less capital or technology intensive country. However, on average, the firm with advanced capital and technology will make use of its advantages by specializing in capital-technology intensive processes. Firms of lower wage country will share labor-intensive processes. In the case of formation of Japan-Korea FTA, international division of labor of production processes will have a pattern of Japan's specialization in capital-technology intensive processes and of Korea's specialization of more labor-intensive processes, on average. Again, Korean firms will not easily accept this.

4. International standard for transaction and management

Technological developments in transportation and telecommunication have increased globalization of business activities. Multinational enterprises and DFI of firms has become typical patterns of international activities of firms. Firms have their ways of transaction and management depending on systems or habits of their home countries. The habits or systems of transaction and management are constructed with long term history, and thus well taken for insiders of the habits or systems. But it takes costs to change habits or systems. With globalization of international activities of firms, a competition in choosing habits or systems of transaction and management has become issue for global firms. They are interested in using their own habits or systems as a global standard.

There are three main areas in the world economy, European area, American area, and Asian area. Germany, USA, and Japan are centers of the three areas, respectively. It is said that US system or habit of transaction and management is more market oriented, Asian system or habit uses more organizational relations, and EU system or habit is in between the two. Although US system and EU system may not be far different, EU and US are competing each other to make its own system to be a global standard. Not only Asian system is different from those systems, but also Asian system is diversified among members in Asia. Even if Asian system cannot be a global standard, Asian countries will have casting board for establishing a global standard for international transactions. After Asian currency crisis, Asian transaction rule is criticized as crony capitalism and more transparency and accountability should be introduced in Asian markets.

Asian transaction system depends more on social or human relations between actors in a market and less on prices of items in contracts, relative to US system. Asian management system put more weight on consensus among members in an organization and less on top-down relation depending on positions in the organization. Asian transaction system and Asian management system also depend on active roles of government for economic development. To catch up to the more developed countries, a government in Asian country has played active roles by directly or indirectly controlling private firms. Specific firms of the basic industry for a country are directly protected, and firms of related industries are

also selectively supported for economic development. A government could use tax and subsidy policies and financial controls through fiscal decision processes and through banking systems under control of the government.

Although big groups of firms, *Zaibatsu*, are divided after the World War Second in Japan, former groups have reformed new industrial organization of new groups, called *Keiretsu*. Japanese firms have developed a Japanese style of transaction among group members and have developed Japanese management style inside the firms. In forming *Keiretsu*, selective supports by the government of basically important and prospective firms to reconstruct, after war economy, have played rolls. The government also controlled banking system to finance projects of those selected firms. Each *Keiretsu* group has one main bank and the main bank became a core the group. Firms and banks have employed retired government workers to make strong connections with the government and have exchanged managers with each other in the group. The Japanese style of network system of the connection has reduced transaction costs and partly substituted market mechanisms. The group-oriented behavior has formed environments to exchange information within the group and this facilitates attainments of group objectives. In Korea, by and large, strong connection between *Zaibatsu-Keiretsu* groups and the government are similar (may be more close) than the case in Japan.

The strong leadership of government and the profit seeking of firms as a group has developed unique market mechanisms in Japan. *Keiretsu* transactions of internalization by using organization instead of market and complicated regulations by government are typical in Japan. There are so many unwritten contracts for internal transactions of a group and also the way of unwritten contracts is often extended to transactions with outsiders of the group in Japan. These have become habits or systems in Japanese market. For national priority of catching up policy, firms have accepted and have depended on leadership of bureaucrats. The bureaucrats have controlled industrial organization by making complex of regulations. Rules are far from simple and thus accountability of firms and market transparency has not been established in Japan.

Dictatorship of government for economic developments can be found in many countries and the success story of East Asian development has supported active interventions of government into market. However after Asian currency crisis, a strong connection between government and firms has been criticized as crony capitalism. It is still true or partly true that active roles of government are efficient for catching up economy to grow. Although more transparency of market should be introduced in Asian market, too much dependence on market mechanism invites dictators of markets, who know better about specific market mechanisms and who have strong market powers.

Formation of group of firms has developed in many countries and strong competitiveness of Japanese firms in manufacturing industry has taken attentions of Japanese style of

management and internalization mechanism of transactions within a group. However, economic depression in Japan after burst of bubble in 1990s, especially slow restructuring in banking system, has called for criticisms of lack of accountability and transparency in transactions of Japanese firms, including financial firms. Internalization of transactions using a group organization is one of ways to save transaction costs of using market, and was efficient when Japan was in high growth economy and communication costs was large. Therefore, the efficiency might be reduced in future with reduction of communication costs by technological development. However, for Japanese firms, it will continuously be necessary to take the advantages of the internalization. This will also be true in Korea.

Asian markets are in the process of development and thus government regulations and organizational transactions are still working as visible hands. This may be called as crony capitalism but it has been chosen with historical background. Japan has invested in Asian countries as DFI and has formed international network of firms in Japanese ways. Japanese government has made ODA and constructed inter governmental relations among Asian countries in Japanese ways. Korean way was taken for Korean DFI and ODA. If Japanese firms and Korean firms change their traditional ways to US or EU ways, they might lose competitiveness in the global markets. There is a competition for selecting a global standard of transaction and management, through market mechanisms and/or political processes.

Asian market is important for Japanese and Korean firms and they prefer to use their ways of transactions as a global standard, at least as a standard in Asia. If the ways are efficient, they should not change the ways. Even if the ways are not efficient, gradual adjustments to EU way or US way might be better processes of adjustments. If this is the case, the formation of FTA between Japan and Korea will be beneficial to both countries. Japanese and Korean ways could be a typical Asian way, at least in East Asia, and firms will be able to enjoy the advantages.

5. Strategic importance of Japan-Korea FTA

EU and NAFTA are regional integration systems and have discriminatory elements to outsiders but Asia do not has such institutional systems. Once EAEG for block of East Asia was proposed, but it has changed to empty EAEC. Big firms of EU and US are aiming at growing Asian market and forming their network organizations to include Asian market. Before Asian currency crisis, Asian countries have shared larger parts of benefits of their growth, but EU and US firms or capitals will increase their share after crisis.

The formation of Japan-Korea FTA could be a start of core of East Asian block. With the FTA, Japanese and Korean firms will restructure and specialize into industries, commodities, or parts, depending on their competitiveness. Japanese firms and Korean

firms may join by M&A or cooperate in many ways of their international strategies, using Asian standard of transaction and management. However, without the FTA, both Japanese firms and Korean firms will join to EU or US firms, and will be controlled by them in EU or US standard of transaction and management.

Although there will be large adjustment costs of restructuring after formation of FTA, Japanese firms and Korean firms will get larger benefits of bigger home market. Japanese firms now conducting big restructuring to maintain competitiveness in the global market. M&A and take over has become issue for firms, after the convoys way of protection has become inefficient. A big firm wants to keep ownership and to take leadership of management, after M&A and take over. And thus wants to choose appropriate partners. If the partner is EU firm or US firm, the way of management and decision making is different and adjustment costs for cooperation will be large. However such costs will be less in case the partner is Korean firm, because of similarities in many aspects. As a global strategy, Japanese firms will find benefits of Japan-Korea FTA.

Korean firms are more serious for restructuring after Asian currency crisis. The Korean way of convoys cannot be continued any more and Zaibatsu started to be broken up. Korean firms must find partners to survive in the global market. EU firms or US firms are more aggressive to be partner of Korean firms, as their strategies for Asia. If the partner is EU firms or US firms, Korean firm will be more difficult to have ownership and to take leadership than the case with Japanese firms. In this case with Japanese firms, division of labor will not only be differentiated products but also be intermediate products of different processes. This international division of labor in production processes is only possible in a geographically close area. Korean firms could be competitive in the global market of less capital and less technology intensive products and processes, with the Japan- Korea FTA. Labor intensive products and processes will be shared in other Asian countries.

Specialization and keeping global competition will increase growth potentials of technology innovation and imitation. The firms both in Japan and Korea can climb up ladders to higher technology levels together. This is the most important dynamic benefit of FTA formation.

Avoiding dominance of US firms or EU firms in Asian market, cooperation of Japanese firms and Korean firms will be necessary. With Japan-Korea FTA, both Japanese firms and Korean firms will become competitive in global market and will have power to organize their industrial structure in Asia. So far Japanese firms and Korean firms are competitive in many aspects in other Asian markets. Although the competition helps to improve efficiency, cooperation also has many advantages. Overlapping investments will be avoided and complementing investments will be facilitated, and most importantly larger scale projects will become possible by cooperative actions of Japanese and Korean firms. Cooperation of Japan and Korea could be a core of Asian cooperation.

China market is expected to grow rapidly and DFI to China is an important strategy for firms in all over the world. Japanese firms and Korean firms are active to extend their business activities in China. Chinese business people have their own style of transaction and management, and have net work of over sea Chinese. They feel uneasy to be dominated by outsiders. Cooperative business with Japanese and Korean will be less uneasy for them than with American or European. Transaction habits and meaning of contracts are similar to those of Japan or Korea, and negotiations among Asian peoples will be easier.

China is a socialist country and a role of government is more important than the one in capitalist countries, especially than in US and in EU. Japan or Korea has an active government to intervene into market transactions, and has advantage to promote projects with governmental supports. China market is so big and no firm can monopolize the market and cooperation with Chinese local firms will be necessary. Competition between Japanese firms and Korean firms to enter the Chinese market will reduce gains for both countries. Chinese side will take advantage of the competition and the competition might result in smaller transaction. Cooperation of Japanese firms and Korean firms will be more beneficial to themselves. A negotiation power of China side will be relatively reduced and thus transaction size might become larger.

As an activity of firm becomes global, a global standard of transactions becomes important, and EU standard and US standard is competing each other to be the global standard. Asia is a big and growing market but do not has the Asian standard. Each country in Asia has its own standard of Asian culture. If US standard becomes global standard, US firms will have advantage for global strategy, and the same will be true for EU standard. Even if Asian standard cannot be global standard, it will be beneficial for Asian countries not to be dominated by other standard. Cooperation by forming Japan-Korea FTA, Japan-Korea standard will be a core of the Asian standard and Asian countries could take casting board of forming the global standard. Strategically, it will be beneficial for both Japan and Korea to form FTA and be a core area in East Asia.

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CRISE CAMBIAL BRASILEIRA - FUNDAMENTOS VS. ATAQUE AUTO-REALIZÁVEL -

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Abstract

This paper claims that the Brazilian currency crisis can be better understood within a framework which encompasses economic fundamentals analysis and self-fulfilling expectations. Insufficient fiscal adjustment and political uncertainties have caused a sudden shift in private expectations which lead to a run on the Brazilian real. Following Sachs, Tornell & Velasco (1996b), it is shown that the Brazilian economy was trapped in a multiple equilibria environment so that the crisis has just reflected the jump from an equilibrium without exchange devaluation to another equilibrium with devaluation.

JEL classification: E52, F31, F32, F41, O54

Keywords: Brazil; Real Plan; currency crisis; exchange-rate policy; self-fulfilling attack

Introdução

A economia brasileira, de meados da década de 80 até os primeiros anos da década de 90, apresentou índices de inflação bastante elevados que a colocaram muito próxima de um processo hiperinflacionário aberto. Em julho de 1994, as taxas inflacionárias foram significativamente reduzidas através da implementação de um programa de estabilização monetária (Plano Real) fundamentado em uma âncora cambial. Paralelamente, desde o início da década de 90, as autoridades econômicas governamentais brasileiras haviam

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modado radicalmente de orientação, passando de um modelo de desenvolvimento centrado na atuação do Estado para um modelo centrado nos mecanismos de mercado. Desta forma, a partir desta época, foram iniciados os processos de liberalização comercial e financeira, de privatização e de desregulamentação, dentre outros. Como consequência das políticas liberalizantes e do controle da inflação, o país alcançou grande destaque entre os chamados mercados emergentes, passando a receber grandes volumes de capital estrangeiro, seja sob a forma de investimento direto ou de investimento de carteira. A maciça entrada de capitais externos mais a ocorrência de uma inflação residual nos primeiros meses do plano de estabilização provocaram uma valorização expressiva da taxa de câmbio real, que se traduziu em déficits crescentes na balança de transações correntes e em uma dependência cada vez maior de capitais estrangeiros para o fechamento das contas do balanço de pagamentos.

A estratégia de adoção de uma política cambial rígida num contexto de liberdade de movimentos de capitais não era isenta de riscos, sendo o maior deles a possibilidade de um ataque especulativo contra as reservas internacionais do país. As crises cambiais experimentadas por alguns países do sudeste asiático, em meados de 1997, e pela Rússia, um ano após, tornaram o financiamento do déficit em transações correntes do país cada vez mais difícil e caro, o que acabou levando o governo brasileiro a assinar um acordo de empréstimo com o FMI no valor de US\$ 41,5 bilhões no segundo semestre de 1998. Entretanto, em janeiro de 1999, em meio a um forte movimento de saída de capitais do país, o governo brasileiro decidiu abandonar a âncora cambial, correspondendo, em certa medida, às expectativas do mercado. Naquele momento, conhecidas as consequências da crise asiática, temia-se pelos efeitos recessivos e inflacionários da desvalorização, bem como pela possibilidade de contágio para outras economias latino-americanas. No entanto, comparado ao caso asiático, a desvalorização da moeda brasileira apresentou efeitos bastante limitados.

Este trabalho tem como objetivo analisar as causas da crise brasileira à luz de duas das principais linhas de pesquisa sobre crises cambiais: uma, centrada no estado dos fundamentos da economia, e outra, centrada no estado das expectativas dos investidores (crises auto-realizáveis). O trabalho está dividido em três partes. Na primeira parte, são apresentados dois modelos simples com o intuito de expor a argumentação básica de cada uma das linhas de pesquisa citadas. A segunda parte é destinada a mostrar a evolução da política cambial brasileira antes e depois da desvalorização, incluindo os principais pontos do acordo com o FMI, o estado dos fundamentos da economia brasileira antes da desvalorização e os possíveis determinantes da mudança no estado das expectativas dos investidores às vésperas da desvalorização. Nesta parte, também são analisados os impactos da desvalorização sobre as principais variáveis macroeconômicas da economia brasileira, incluindo-se as taxas de inflação e a situação das contas públicas. Contrapondo

as duas abordagens teóricas apresentadas na primeira parte com os fatos apresentados na segunda parte, a terceira parte oferece uma explicação teórica para a ocorrência da crise cambial no Brasil através de um pequeno exercício que relaciona o nível da dívida pública (fundamento) com a possibilidade de equilíbrios múltiplos na economia, que pode gerar uma crise auto-realizável. Como principal conclusão, nota-se que o caso brasileiro somente pode ser melhor compreendido quando se analisam conjuntamente o estado dos fundamentos e o estado das expectativas dos investidores.

Parte I – Modelos teóricos¹

(1) Modelos de “primeira geração”

Muito embora a ocorrência de crises no Balanço de Pagamentos de países que por qualquer motivo adotavam regimes não-flexíveis de taxas de câmbio já fosse observada há muito tempo, a construção de modelos teóricos formais para a análise desse fenômeno é um fato relativamente recente.

Krugman (1979) mostra que a tentativa do governo de manter a estabilidade da taxa de câmbio (nominal ou real) através da utilização de suas reservas internacionais pode eventualmente terminar em um ataque especulativo por parte dos agentes privados.² A partir de um modelo simples para uma economia pequena, Krugman mostra que o comportamento dos agentes privados é uma decisão racional baseada na constatação de um comportamento inconsistente por parte do governo, que não compatibiliza sua política fiscal com o objetivo de estabilidade cambial. Em seu modelo, o equilíbrio no mercado monetário doméstico é dado por:

$$M / P = \exp (-\alpha \cdot i) \quad (1)$$

onde M representa a oferta de moeda, P representa o nível de preços domésticos e i é a taxa de juros doméstica. A oferta de moeda é suposta de responsabilidade exclusiva da autoridade monetária doméstica, consistindo-se na soma do crédito doméstico, D, e das reservas internacionais, R:

$$M = D + R \quad (2)$$

1. Excelentes resenhas teóricas sobre a ocorrência de crises cambiais podem ser encontradas em Flood & Marion (1998) e Ito (1999), dentre outros.

2. Outro artigo comumente citado como precursor na análise de crises cambiais, ao lado de Krugman (1979), é o de Flood & Garber (1984).

Tanto o nível de preços quanto o nível da taxa de juros são sujeitos às condições de arbitragem internacional. Portanto, para o nível de preços vale o princípio da paridade do poder de compra:

$$P = E \cdot P^* \quad (3)$$

onde E representa a taxa de câmbio nominal (unidades de moeda doméstica por unidade de moeda estrangeira) e P^* representa o nível de preços internacionais. Para o nível da taxa de juros vale a condição de paridade descoberta (*uncovered parity condition*):

$$i = i^* + \hat{E} \quad (4)$$

onde i^* representa o nível da taxa de juros internacional e $\hat{E}$ representa a variação esperada e efetiva (*perfect foresight*) na taxa de câmbio nominal.

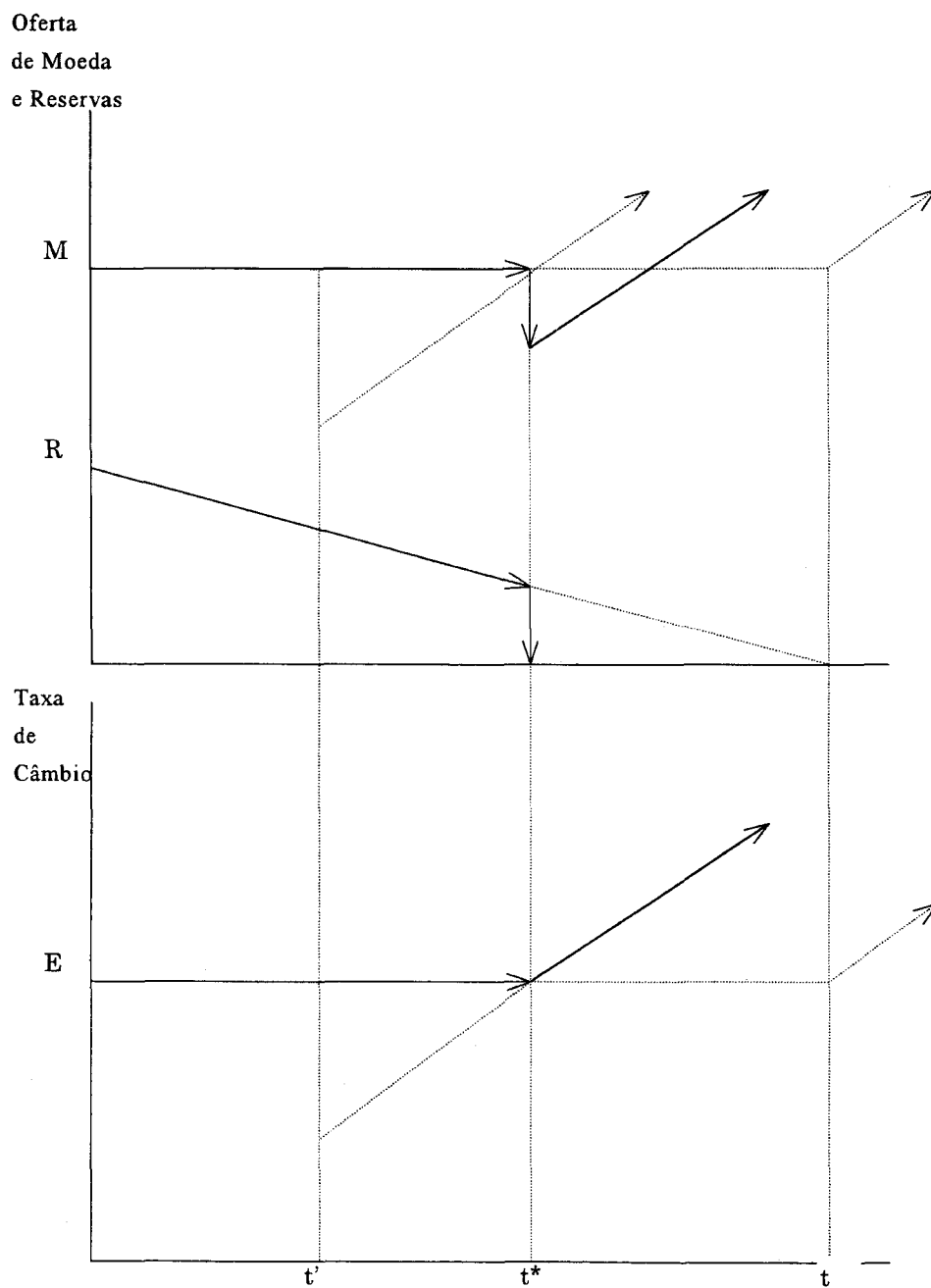
Supondo uma taxa de câmbio nominal fixa, $E = \hat{E}$, tem-se que $\hat{E} = 0$ e $i = i^*$. A partir das equações (1) a (4) e com um pouco de simplificação matemática, chega-se ao seguinte resultado:

$$d + r - e - p^* = -\alpha \cdot i^* \quad (5)$$

onde as letras minúsculas, com exceção da taxa de juros i^* , representam os logs das variáveis já descritas anteriormente com letras maiúsculas. Considerando o nível da taxa de juros internacional e o nível de preços internacionais fixos, além da taxa de câmbio, se o crédito doméstico se expande a uma taxa constante, μ , as reservas internacionais devem diminuir à mesma taxa, $-\mu$. Nestas condições, as reservas internacionais devem se exaurir após um determinado período de tempo.

O Gráfico 1 mostra a evolução da oferta de moeda, das reservas internacionais e da taxa de câmbio sob o regime de taxa de câmbio fixa ($E = \hat{E}$). Caso as reservas diminuíssem passivamente ao longo do tempo, elas se esgotariam na data t, quando o regime de taxa de câmbio fixa seria finalmente abandonado. A partir deste momento a taxa de câmbio seria constantemente desvalorizada assim como a oferta de moeda passaria a aumentar, ambos à taxa μ . Desta forma, estaria aberta a possibilidade da obtenção de ganhos de capital com a aquisição de moeda estrangeira momentos antes da data t, ou seja, as reservas não caem a zero passivamente, mas são rapidamente consumidas em algum instante anterior a data t, por exemplo, na data t^* . O ataque às reservas não aconteceria antes da data t^* , por exemplo, na data t' , pois, nesse caso, a redução na oferta de moeda seria tão grande que a partir do momento em que fosse permitida a taxa de câmbio flutuar ocorreria uma valorização da moeda doméstica que impingiria perdas de capital àqueles que compraram

Gráfico 1



Fonte: Kenen (1996)

moeda estrangeira.³

Desta forma, a taxa de câmbio passaria a ser desvalorizada a partir da data t^* , sem movimentos discretos que permitissem ganhos ou perdas de capital. De fato, na data t^* , a oferta de moeda cai em um montante equivalente ao ataque especulativo e a demanda de moeda cai devido à elevação na taxa de juros doméstica resultante da iminente perspectiva de desvalorização cambial, garantindo-se assim o equilíbrio no mercado monetário. A partir das equações (1) a (5) e alguma álgebra é possível determinar com precisão a data t^* em que ocorre o ataque contra as reservas, que estará mais distante quanto maior for o estoque inicial de reservas internacionais e menor a taxa de crescimento do crédito doméstico.⁴

O modelo revela claramente que o colapso do regime cambial fixo é decorrente da manutenção de déficits fiscais prolongados que, no caso acima, são financiados através de emissão monetária. Este resultado, entretanto, não se altera mesmo se forem consideradas as possibilidades de esterilização (Flood, Garber & Kramer, 1996) ou de o governo tomar recursos no mercado (Buiter, 1987).⁵

(2) Modelos de “segunda geração”

Modelos “bem-comportados”, como o acima exposto, em que existe apenas um único equilíbrio decorrem das hipóteses de linearidade no comportamento dos agentes privados (demanda por moeda) e do governo (expansão do crédito doméstico). A hipótese de previsão perfeita (*perfect foresight*) por sua vez permite estabelecer com precisão o momento do ataque contra as reservas.

Os modelos de segunda geração trabalham fundamentalmente com a hipótese de comportamento não-linear do governo, que proporciona a ocorrência de múltiplos equilíbrios. Neste sentido, a mudança no comportamento do governo pode ser uma resposta a mudanças no comportamento dos agentes privados (mudanças nas expectativas do mercado, por exemplo) ou a conflitos entre objetivos de política econômica (estabilidade cambial versus nível de emprego, por exemplo). No primeiro caso, uma crise cambial poderia ser “auto-realizável” na medida em que uma mudança no comportamento do governo no sentido da desvalorização poderia ser induzida pelos agentes privados através de uma ação coordenada de ataque às reservas. Crises auto-realizáveis poderiam,

3. Por hipótese, a autoridade monetária não pode expandir a oferta de moeda para evitar sua valorização.

4. A determinação da data exata do colapso do regime cambial fixo pode ser encontrada, dentre outros artigos, em Flood & Marion (1998).

5. Talvi (1997) apresenta um modelo em que a crise cambial é precedida por ausência de déficits fiscais e de perda de reservas, situação presente em vários programas de estabilização monetária aplicados em países da América Latina na década de 90. Entretanto, o autor mostra que quando esses programas não contemplam um ajuste fiscal permanente, o colapso do regime cambial é só uma questão de tempo.

portanto, ocorrer independentemente da consistência das políticas econômicas (ao contrário dos modelos de primeira-geração em que a crise é resultado de políticas econômicas insustentáveis).

Obstfeld (1996)⁶ apresenta um esquema simplificado de jogo entre o governo e dois agentes privados para demonstrar a possibilidade de múltiplos equilíbrios e crises auto-realizáveis. Cada agente privado detém n unidades de moeda doméstica, enquanto o governo detém R unidades de moeda estrangeira que podem ser vendidas para garantir a estabilidade da taxa de câmbio. Essas informações são de conhecimento comum e os agentes privados crêem que um ataque especulativo efetivo provocará uma desvalorização da moeda doméstica.

A primeira situação, descrita no diagrama 2A, retrata um estado de reservas elevadas ($R > 2n$). Supondo que a compra de moeda estrangeira por parte dos agentes privados incorra em um custo de transação igual a 1 (0, no caso de retenção de moeda doméstica), isoladamente ou em conjunto, os agentes privados não obterão sucesso em um ataque especulativo, pois a quantidade de reservas em poder do governo é mais do que suficiente para defender a paridade cambial. O único equilíbrio existente, portanto, é o do primeiro quadrante, no qual ambos os agentes retêm moeda doméstica e a taxa de câmbio é preservada.

A situação do diagrama 2B retrata um estado de reservas baixas ($R \leq n$). Neste caso, qualquer agente isoladamente pode atacar as reservas com sucesso. Evidentemente, os payoffs dependem dos valores assumidos para o nível de reservas em poder do governo e de moeda doméstica em poder dos agentes privados. Utilizando os mesmos valores de Obstfeld, supondo $R = n = 6$ e que o governo desvalorize o câmbio em 50% após o esgotamento das suas reservas, se um agente vender toda a sua disponibilidade de moeda doméstica terá um ganho líquido de capital, em termos de moeda doméstica, de 2. Caso os dois agentes vendam moeda doméstica, cada um obterá 3 unidades de moeda estrangeira e um ganho líquido de 1/2. O único equilíbrio será o do quarto quadrante, no qual ambos os agentes vendem moeda doméstica e a taxa de câmbio é desvalorizada.⁷

A última situação, descrita no diagrama 2C, retrata reservas em um estado intermediário ($2n > R > n$). Nenhum agente privado isoladamente pode atacar as reservas com sucesso, mas se ambos assim fizerem a taxa de câmbio é desvalorizada. Supondo $R = 10$, se apenas um agente busca o ataque contra as reservas, a iniciativa é fracassada, implicando uma perda equivalente ao custo da transação. Se ambos os agentes atacam, cada um obtém um

6. Obstfeld (1986) apresenta um modelo de crise cambial desencadeada por expectativas "auto-realizáveis" dos agentes privados quanto ao comportamento do governo inspirado em modelos de corrida contra bancos (bank run) do tipo Diamond-Dybvig (1983). A partir de então, uma série de modelos "auto-realizáveis" podem ser encontrados na literatura sobre o tema como, por exemplo, Obstfeld (1994) e Sachs, Tornell & Velasco (1996a), dentre outros.

ganho líquido de 3/2. Neste caso, há dois equilíbrios, representados pelos primeiro e quarto quadrantes. Apenas no segundo há crise cambial. O caráter auto-realizável da crise está no fato de a paridade cambial ruir se houver ataque, mas permanecer intacta caso não houver ataque.

Na terceira situação, portanto, a ocorrência de um ataque especulativo é uma possibilidade, que se transforma em realidade no caso de os agentes privados atuarem coordenadamente contra a autoridade monetária. São os mecanismos de “coordenação” dos inúmeros agentes privados que distinguem os modelos de segunda geração.

Obstfeld (1994, 1997), Sachs, Tornell & Velasco (1996a, 1996b) relacionam a ocorrência de um ataque auto-realizável a determinados estados da economia. Além da estabilidade cambial, o governo se defronta com outros objetivos (nível de atividade econômica, saúde do sistema bancário doméstico, administração da dívida pública, nível “ótimo” de reservas internacionais, etc), que para serem atingidos podem exigir o abandono da política de câmbio fixo. Assim, quando os custos para se manter o regime cambial são vistos como muito elevados para serem suportados pelo governo (em termos dos prejuízos impostos à consecução dos demais objetivos de política econômica), um ataque especulativo tende a ser bem sucedido, pois a desvalorização cambial também é vista como favorável para o governo. A suposição de que os agentes privados são capazes de avaliar esses custos garante a coordenação das suas ações.

Sachs, Tornell & Velasco (1996a) condicionam a desvalorização cambial à situação do sistema bancário, além do nível das reservas internacionais (fundamentos). No caso do sistema bancário encontrar-se fragilizado (maus fundamentos) - devido a um elevado grau de inadimplência, por exemplo - a autoridade monetária não apresentaria muita disposição em manter as taxas de juros elevadas para defender a paridade cambial, dados os prejuízos que este tipo de medida acarretaria para o sistema bancário, preferindo a desvalorização. No caso do nível das reservas ser superior ao montante máximo que poderia ser mobilizado em um ataque especulativo, este não aconteceria e a taxa de câmbio seria mantida, independentemente da condição dos fundamentos (estado de reservas elevadas). No caso oposto, a desvalorização poderia ou não acontecer, dependendo das expectativas dos agentes quanto à própria desvalorização que, por sua vez, dependeriam da condição dos fundamentos. Os níveis das taxas de juros doméstica e internacional determinariam um limite para a desvalorização esperada, acima do qual um ataque contra as reservas acarretaria no abandono do regime cambial. Se as expectativas de desvalorização ficassem abaixo desse limite, não haveria ataque especulativo e muito menos a necessidade de

7. Como o próprio Obstfeld adverte o fato de o nível de reservas ser superior ao valor da base monetária não garante a sustentabilidade de um regime cambial fixo. Obstfeld (1994) e Sachs, Tornell & Velasco (1996b) desenvolvem modelos de equilíbrios múltiplos nos quais o estoque da dívida pública exerce um importante papel para o desencadeamento de ataques especulativos.

Gráfico 2**2A – Reservas Elevadas**

		Agente 2	
		Retém	Vende
Agente 1	Retém	0 , 0	0 , -1
	Vende	-1 , 0	-1 , -1

2B – Reservas Baixas

		Agente 2	
		Retém	Vende
Agente 1	Retém	0 , 0	0 , 2
	Vende	2 , 0	1/2 , 1/2

2C – Reservas Intermediárias

		Agente 2	
		Retém	Vende
Agente 1	Retém	0 , 0	0 , -1
	Vende	-1 , 0	3/2 , 3/2

Fonte: Obstfeld (1996)

desvalorização.⁸ Neste último caso, haveria dois equilíbrios possíveis: (a) sem ataque e sem desvalorização e (b) com ataque e desvalorização. O segundo equilíbrio configuraria uma crise cambial auto-realizável na medida em que a desvalorização seria resultado das elevadas expectativas de desvalorização por parte dos agentes.

(3) É possível uma “síntese” dos modelos?

De fato, conforme salientam Flood & Marion (1998, p.31), a principal contribuição dos modelos de segunda-geração está em explicitar o compromisso com o regime cambial como dependente do estado da economia. Esses estados podem estar associados a eventos externos (elevação nas taxas de juros internacionais, desvalorizações cambiais em outros países, queda nos preços de commodities, etc) ou internos (nível das reservas, déficit público, tamanho da dívida pública, fragilidade do sistema financeiro doméstico, etc).⁹

Nos modelos de primeira geração o estado da economia é invariante, notadamente, caracterizado pelo desrespeito à restrição orçamentária governamental (maus fundamentos), e a crise cambial é apenas uma questão de tempo. Os modelos de segunda geração prevêem crises cambiais auto-realizáveis decorrentes de mudanças nas expectativas dos agentes quanto ao estado da economia, que não necessariamente teria de apresentar maus fundamentos (desequilíbrio orçamentário, por exemplo).

Observando o estado da economia, os agentes privados formam suas expectativas quanto à possibilidade de ocorrência de uma mudança no regime cambial. Dados o estado da economia e as expectativas dos agentes privados, o governo toma sua decisão de manter ou abandonar o regime cambial. Maus fundamentos devem em algum momento originar um ataque especulativo, enquanto que bons fundamentos o dificultam. Entretanto, a avaliação do que é “bom” e “mau” é feita pelos agentes privados na formação das suas expectativas, as quais podem ou não desencadear um ataque especulativo que resulte na desvalorização cambial.

A incorporação de variáveis de estado que retratam os fundamentos econômicos domésticos aos modelos de segunda-geração constitui, portanto, uma forma relativamente simples, adequada e viável de compatibilizar esses modelos com os de primeira-geração e de não se atribuir ao destino (choques externos, alterações ad-hoc nas expectativas dos agentes) o fracasso da política cambial quando, na verdade, este fracasso é resultado da má

8. Supondo investidores neutros para o risco, o limite θ é dado por $\theta = (r - r^*) / (1 + r)$, onde: r = taxa de juros doméstica e r^* = taxa de juros internacional. Em outras palavras, um investidor só se disporia a manter títulos denominados em moeda doméstica em seu portfólio caso a desvalorização cambial esperada fosse menor que o diferencial entre as taxas de juros.

9. Uma análise das mudanças no estado da economia decorrentes de alterações no ambiente externo e seus efeitos sobre o câmbio de equilíbrio pode ser encontrada em Masson (1998).

condução das políticas monetária e/ou fiscal.

Sachs, Tornell & Velasco (1996b) apresentam um modelo que compatibiliza os principais elementos dos modelos de primeira e de segunda geração. Os autores supõem um governo que procura minimizar a seguinte função utilidade:

$$L = 0,5 (\alpha \pi_t^2 + x_t^2), \alpha > 0 \quad (1)$$

sujeito à restrição orçamentária, que representa o estado da economia:

$$r B_t = x_t + \theta(\pi_t - \pi_t^e) \quad (2)$$

onde: r é a taxa de juros internacional, B é o passivo líquido consolidado do governo, x é a arrecadação fiscal, π_t é a taxa de desvalorização cambial e π_t^e é a taxa esperada de desvalorização. Sob a hipótese de paridade do poder de compra, o segundo termo do lado direito da equação 2 pode ser interpretado como sendo o imposto inflacionário.

A solução deste problema é dada por:

$$\begin{aligned} x_t &= \lambda(r B_t + \theta \pi_t^e) \\ \theta \pi_t &= (1 - \lambda)(r B_t + \theta \pi_t^e) \end{aligned} \quad (3)$$

Dado que $\lambda \equiv \alpha / (\alpha + \theta^2)$, segue-se:

$$L^d(B_t) = 0,5 \lambda (r B_t + \theta \pi_t^e)^2 \quad (4)$$

No caso de os agentes apresentarem previsão perfeita (*perfect foresight*), $\pi_t^e = \pi_t$, tem-se:

$$\theta \pi_t^e = [(1 - \lambda) / \lambda] r B_t \quad (5)$$

Solucionando o problema para o caso de o governo adotar uma taxa de câmbio fixa, $\pi_t = 0$, tem-se:

$$x_t = r B_t + \theta \pi_t^e \quad (6)$$

$$L^f(B_t) = 0,5 (r B_t + \theta \pi_t^e)^2 \quad (7)$$

Supondo que a adoção de uma desvalorização acarrete um custo fixo, $c > 0^{10}$, para o

10. Custo decorrente da perda de reputação ou de credibilidade do governo devido à mudança não esperada na política cambial (Sachs, Tornell & Velasco, 1996a, p.270).

governo, dadas as expectativas de desvalorização, π_t^e , o governo considerará uma desvalorização se

$$L^d(B_t, \pi_t^e) + c < L^f(B_t, \pi_t^e)$$

que é equivalente à condição:

$$r B_t + \theta \pi_t^e > k \quad (8)$$

$$\text{onde: } k = (1 - \lambda)^{-0.5} (2c)^{0.5} > 0$$

Assim, supondo que os agentes estabeleçam suas expectativas de desvalorização como sendo iguais a zero, $\pi_t^e = 0$, elas serão racionais apenas no caso de $r B_t \leq k$. Se $r B_t > k$, o governo deverá optar pela desvalorização, independentemente das expectativas dos agentes. Em outras palavras, se $r B_t \leq k$, ou seja, se o estado da economia, avaliado pelo tamanho dos compromissos do governo com o mercado, for positivo, a manutenção da taxa de câmbio não só é factível mas também esperada pelos agentes, os quais não vêem condições para um ataque especulativo bem sucedido.

Supondo que os agentes esperem uma desvalorização, $\theta \pi_t^e = [(1-\lambda)/\lambda] r B_t$ (equação 5), ela ocorrerá apenas no caso de $r B_t > \lambda k$. Prevalecendo a condição inversa, $r B_t \leq \lambda k$, o governo não desvalorizará, independentemente das expectativas dos agentes. Este caso também configura uma situação em que o estado da economia é positivo, o que inviabilizaria o sucesso de um ataque especulativo.

Em resumo, se $r B_t \leq \lambda k$ (estado da economia positivo), há um único equilíbrio, sem desvalorização, e se $r B_t > k$ (estado da economia negativo), o único equilíbrio será com desvalorização. Um estado intermediário, $\lambda k < r B_t \leq k$, caracteriza uma situação com dois equilíbrios possíveis (sem desvalorização ou com desvalorização), que dependem das expectativas dos agentes quanto à ocorrência ou não de uma desvalorização cambial. O governo não desvalorizará o câmbio no caso de os agentes não esperarem por ela; mas, se as expectativas dos agentes forem no sentido da desvalorização, para o governo será melhor que ela aconteça. A possibilidade de dois equilíbrios decorre do fato de o governo não possuir o controle absoluto da taxa de câmbio no estado intermediário, $\lambda k < r B_t \leq k$. O governo pode comprometer-se a manter o regime cambial fixo *ex ante* (mantendo-o *ex post* se não existirem expectativas de desvalorização), mas ser obrigado a abandoná-lo *ex post* (no caso de prevalecerem expectativas de desvalorização).

O modelo acima possui a virtude dos modelos de segunda geração de se subordinar o compromisso com o regime cambial ao estado da economia, permitindo a ocorrência de múltiplos equilíbrios e crises auto-realizáveis. Adicionalmente, associa o estado da

economia com seus fundamentos internos (no caso, o tamanho da dívida pública), destacando a importância de políticas econômicas consistentes para a manutenção duradoura da estabilidade de preços. Com algumas adaptações, o modelo pode descrever o papel do déficit em transações correntes ou do nível das reservas internacionais (variáveis de estado) no equilíbrio. Por outro lado, o modelo não se preocupa com o processo de formação das expectativas, fundamental para se compreender a dinâmica do equilíbrio. É nesta direção que devem caminhar os trabalhos teóricos sobre crises cambiais.

Parte II – Os caminhos da crise cambial brasileira

(1) Antecedentes

Desde a crise cambial mexicana no final de 1994, o governo brasileiro passou por alguns momentos de tensão com sua política cambial. No auge da crise asiática, em 1997, as reservas internacionais do país reduziram-se em cerca de US\$ 10 bilhões. No ano seguinte, a crise russa provocou uma perda de reservas da ordem de US\$ 25 bilhões apenas nos meses de agosto e setembro. Nos períodos de crise, além de capitais de curto prazo aplicados pelos investidores estrangeiros em ações, títulos públicos e papéis de renda fixa, também foram registradas saídas expressivas de capitais sob a forma de remessas de lucros e dividendos por empresas multinacionais e de pagamentos de dívidas contraídas no exterior por empresas e bancos brasileiros. A redução no grau de confiança do investidor no país refletiu-se principalmente na bolsa de valores paulista, que despencou de onze mil pontos, às vésperas da crise na Rússia em julho, para cinco mil pontos, em setembro. Já o nível das reservas internacionais que, em abril de 1998, estava em US\$ 74,7 bilhões, reduziu-se para cerca de US\$ 45,8 bilhões no final de setembro. Em janeiro de 1999, em meio às incertezas provocadas pela desvalorização do real, as reservas internacionais líquidas, isto é, desconsiderando-se os recursos do FMI, fecharam o mês em US\$ 27 bilhões.

Com o objetivo de diminuir as chances de uma crise cambial no país após o colapso russo, o governo brasileiro lançou mão de uma série de medidas destinadas a acalmar as expectativas dos investidores internacionais. No dia 8 de setembro de 1998, o Ministério da Fazenda divulgou cortes de despesas no valor de US\$ 4 bilhões no orçamento de 1998 e, no dia 10, o Banco Central elevou a taxa básica de juros para 49,75% ao ano. Entretanto, muito embora o aumento na taxa de juros fosse um instrumento necessário para tentar estancar a saída de capitais, seu efeito colateral sobre a dívida pública não podia ser ignorado.

Assim sendo, após as eleições gerais em 3 de outubro, que resultaram na reeleição do Presidente Fernando Henrique Cardoso, o governo apresentou o “Programa de Estabilidade

Fiscal” para o período 1999-2001, envolvendo propostas de cortes de despesas e aumentos de arrecadação imediatos, além de reformas nos sistemas de previdência social e de administração pública. Para o ano de 1999, o esforço fiscal total estimado representava algo como 3,08% do PIB.

Convém destacar que essas medidas eram não apenas necessárias para melhorar o estado dos fundamentos fiscais e externos da economia brasileira e com isso recuperar a confiança do mercado, mas também pré-condições para a liberação do empréstimo acertado com o FMI.

(2) O acordo com o FMI

Sob os efeitos da crise russa, o governo brasileiro iniciou conversações com o FMI para a aprovação de uma linha de crédito especialmente destinada a viabilizar o programa de ajuste econômico brasileiro. Diferentemente das negociações durante a crise da dívida externa dos países latino-americanos na década de 80, quando o ajuste fiscal era uma proposta do FMI que não encontrava respaldo nos países devedores (no caso brasileiro, as divergências entre governo e FMI culminaram com a declaração de moratória da dívida externa em 1987), desta vez a iniciativa do ajuste fiscal partia das autoridades governamentais brasileiras. Outra característica particular desta negociação foi o fato de o FMI ter aceitado a continuidade da política cambial brasileira, contrariando seu receituário clássico de ajuste econômico com desvalorização da taxa de câmbio. Com efeito, além dos riscos inflacionários da medida, a desvalorização cambial impingiria um elevado ônus para as empresas e bancos brasileiros endividados em moeda estrangeira com impactos diretos sobre o nível de atividade doméstica, que, certamente, provocaria violentas manifestações políticas contrárias às negociações com o FMI.

Uma crise cambial no Brasil e seu possível contágio para outros países da região também eram uma preocupação dos bancos privados internacionais, os quais tinham grande interesse num acordo rápido entre o país e o FMI já que, segundo dados do BIS, em junho de 1998, os empréstimos dos bancos norte-americanos e europeus (Alemanha, França, Inglaterra e Espanha, apenas) à América Latina totalizavam US\$ 64,1 bilhões e US\$ 120 bilhões, respectivamente.

No dia 13 de novembro, governo brasileiro e FMI anunciaram oficialmente os termos do acordo, cujas principais características eram as seguintes:¹¹

- Do valor total do empréstimo de US\$ 41,5 bilhões, o FMI contribuiria com a liberação de créditos no valor aproximado de US\$ 18 bilhões, ou seis vezes o valor da cota a que o país teria direito junto à instituição, sendo 70% disponíveis através de uma linha de crédito denominada SRF (Supplemental Reserve Facility), criada em dezembro de

11. Ministério da Fazenda do Brasil, Memorando Técnico de Entendimentos, 8 de novembro de 1998.

1997, e o restante, através de linhas regulares de crédito do FMI. Banco Mundial e Banco Interamericano de Desenvolvimento contribuiriam com US\$ 4,5 bilhões cada. E os cerca de US\$ 14,5 bilhões restantes viriam de Bancos Centrais de diversos países desenvolvidos através do BIS.

- Do valor total do empréstimo, US\$ 37 bilhões estariam disponíveis ao longo do primeiro ano de vigência do acordo, sendo US\$ 9 bilhões imediatamente após a aprovação do programa econômico brasileiro por parte da diretoria-executiva do FMI, e outros US\$ 9 bilhões até fevereiro de 1999 (que poderiam ser antecipados, desde que requisitados pelo governo brasileiro).
- O principal compromisso do governo brasileiro com o FMI para a concessão dos créditos foi a fixação de metas de superávit fiscal primário para os anos de 1999, 2000 e 2001, respectivamente, em 2,6%, 2,8% e 3% do PIB, além do avanço das reformas previdenciária, administrativa e tributária, incluídos no “Programa de Estabilidade Fiscal”.

(3) A eficácia do acordo com o FMI

Até a conclusão deste acordo, a receita de ajustamento econômico recomendada pelo FMI incluía dois ingredientes básicos: desvalorização cambial e aperto fiscal. Desta vez, reconhecendo a importância da política cambial para o controle da inflação no país, o FMI abria mão da desvalorização, concentrando suas exigências no âmbito das contas públicas. Não se podendo ajustar o desequilíbrio externo por meio da desvalorização da taxa de câmbio e necessitando corrigir urgentemente o crescente desequilíbrio fiscal, não se apresentava outra alternativa que não fosse um forte encolhimento do nível de atividades em 1999.

A perspectiva de recessão embutida no acordo com o FMI provocou reações no interior da ala desenvolvimentista do próprio governo, além de manifestações de repúdio por parte de líderes empresariais e trabalhistas, repercutindo no Congresso Nacional, local onde teriam de ser aprovadas as principais medidas de ajuste incluídas no “Programa de Estabilidade Fiscal” anunciado em outubro. A necessidade de reformas constitucionais era um entrave à rápida implementação do ajuste, assim como a exigência de 3/5 de aprovação do Congresso. Muito embora os partidos de sustentação do governo somassem mais de 2/3 do total de congressistas, a aprovação das medidas não era uma tarefa fácil. Uma vez que os novos parlamentares eleitos em 3 de outubro somente tomariam posse no início de janeiro, era necessário convencer os parlamentares não-reeleitos da base de partidos aliados a votar favoravelmente por medidas impopulares, tais como aumento de impostos e corte de benefícios previdenciários. Assim, havia uma probabilidade não desprezível de que as medidas de ajuste fiscal exigidas pelo FMI não fossem aprovadas pelo Congresso.

E, de fato, em dezembro, a legislação que instituía reformas no sistema de aposentadoria dos funcionários públicos federais acabou sendo rejeitada pela Câmara dos Deputados. E até o início do mês de janeiro, as medidas vinculadas à prorrogação e alteração das alíquotas da CPMF não haviam sido votadas. A lentidão no ritmo de votação das medidas de ajuste colocava dúvidas, principalmente nos investidores estrangeiros, quanto à capacidade política do governo para implementar os termos do acordo com o FMI, adicionando um grau de incerteza nos mercados que, assim, tornavam-se mais sensíveis a um ataque especulativo.

Um novo fator de incerteza política foi acrescentado em 6 de janeiro, quando o governador do estado de Minas Gerais, Itamar Franco, ex-Presidente da República e potencial candidato ao cargo nas eleições de 2002, anunciou uma moratória de 90 dias sobre a dívida do Estado junto à União. Durante o primeiro mandato do Presidente Fernando Henrique Cardoso, 24 de um total de 27 estados haviam negociado suas dívidas com a União. Dívidas que totalizavam mais de R\$ 100 bilhões tiveram seu prazo de pagamento estendido para 30 anos e juros subsidiados a 6% ao ano mais correção pelo índice geral de preços (IGP-FGV). Mesmo com condições de pagamento muito mais favoráveis que as existentes antes da negociação, alguns governadores pressionavam por uma nova negociação. Após a iniciativa do governador de Minas Gerais, abriu-se a possibilidade para outros governadores, eleitos por partidos de oposição, de seguir o caminho da moratória, levantando novas dúvidas sobre a capacidade política do governo federal para realizar o ajuste fiscal.

Muito embora o acordo entre o governo brasileiro e o FMI já estivesse assinado e o capital disponibilizado somasse a vultosa quantia de US\$ 41,5 bilhões, a liberação desses recursos estava condicionada ao cumprimento das metas de superávit fiscal. Entretanto, os eventos políticos sinalizavam ao mercado que a consecução das metas acordadas com o FMI estava em risco e que, portanto, os recursos poderiam não estar à disposição do governo brasileiro. De fato, a insuficiência de reservas internacionais para defender a política cambial de um possível ataque especulativo era motivo de nervosismo nos mercados em geral, principalmente depois do episódio da moratória.

O acordo era uma condição necessária para tranquilizar os mercados após a maciça saída de capitais que se seguiu à crise russa, mas não suficiente, pois faltava credibilidade ao governo brasileiro quanto à realização de sua parte no acordo. O simples anúncio do programa econômico sob supervisão do FMI não reverteu as expectativas negativas do mercado quanto à desvalorização e, neste sentido, poder-se-ia afirmar que o acordo foi inefetivo. Entretanto, não se pode descartar a possibilidade de que ambos, governo brasileiro e FMI, tinham em consideração que a passagem para o regime de câmbio flexível era apenas uma questão de tempo e que, portanto, o acordo tinha o objetivo de

garantir uma transição de regime cambial sem grandes sobressaltos. De qualquer modo, o caso brasileiro, juntamente com a experiência dos países asiáticos, sugerem que o papel do FMI como prestador de última instância para os países em dificuldades com suas políticas econômicas necessita ser repensado, bem como todo o aparato institucional relacionado aos mercados internacionais de capitais.

Ironicamente, somente após a liberação da taxa de câmbio e a acentuada desvalorização que se sucedeu, as medidas de ajuste econômico passaram a ser aprovadas pelo Congresso Nacional. No dia 19, o Senado aprovou as medidas relativas à CPMF e, no dia seguinte, a Câmara de Deputados aprovou as medidas concernentes à aposentadoria dos funcionários públicos federais.¹²

Em resumo, o acordo com o FMI foi discutido e concluído sob o regime cambial fixo, visando a um reforço nas reservas internacionais do país (na época ao redor de US\$ 40 bilhões) suficiente para diminuir o risco de um ataque especulativo bem-sucedido. Diferentemente da prática usual do Fundo, não foi exigido que o governo brasileiro efetuasse a desvalorização do real, significando que era um acordo que visava à manutenção do regime cambial vigente. Além do efeito prático sobre as reservas, o acordo teria a função de acalmar as expectativas do mercado, que, após as crises no México, no sudeste asiático e na Rússia, especulava fortemente sobre a possibilidade de o Brasil ser a “bola da vez”, ou seja, o país seguinte a sofrer uma crise cambial.

Apesar de as reservas líquidas apresentarem uma tendência de queda desde a crise russa, a diminuição no nível das reservas no mês de dezembro e a ocorrência de pequenos fluxos cambiais negativos nos primeiros dias de janeiro (cerca de US\$ 100 milhões diários) podiam ser explicadas muito mais como sendo o resultado de saídas sazonais relacionadas às remessas de lucros, dividendos e juros por parte de filiais de empresas estrangeiras instaladas no país, comuns nessa época do ano, do que uma indicação de que o regime cambial estava sendo colocado em dúvida. De fato, as saídas cambiais líquidas explodiram apenas a partir do dia 12, quando os rumores de que o então Presidente do Banco Central, Gustavo Franco, estaria demissionário prevaleciam no mercado.

A existência do acordo com o FMI e a possibilidade de serem sacados até US\$ 41,5 bilhões não foram suficientes para evitar a desvalorização do real. Permitindo que o câmbio flutuasse, a Autoridade Monetária brasileira deixou de precisar de dólares para defender o valor da moeda nacional e, portanto, as razões originais para o acordo (implementação de um programa de ajuste econômico sem desvalorização da taxa de câmbio) deixaram de existir a partir do momento em que o real foi desvalorizado. Então,

12. A CPMF foi aprovada definitivamente em segunda votação pelo Senado no dia 18 de março, entrando em vigor a partir de 17 de junho. A reforma no sistema de aposentadoria dos funcionários públicos federais foi finalmente aprovada pelo Congresso em 26 de janeiro, mas acabou não sendo implementada por ter sido considerada inconstitucional pelo Poder Judiciário no final de setembro. Em seu lugar, foram propostos novos cortes no orçamento.

no cenário pós-desvalorização, a manutenção do acordo visaria, sobretudo, à administração das expectativas dos investidores internacionais quanto à realização do programa de ajuste econômico, o qual é realmente necessário para que o país retome a direção do crescimento econômico financeiramente sustentável, sob um regime de taxa de câmbio flutuante.

(4) A mudança nas expectativas e a desvalorização

Após a moratória declarada pelo governador do estado de Minas Gerais em 6 de janeiro de 1999, os mercados financeiros começaram a demonstrar seus primeiros sinais de preocupação com relação à sustentabilidade da política cambial. Em meio a boatos sobre as demissões do Ministro da Fazenda, Pedro Malan, e do Presidente do Banco Central, Gustavo Franco, a saída líquida de capitais totalizou cerca US\$ 1,2 bilhão no dia 12. Neste dia, conforme a expectativa do mercado e com a taxa de câmbio fechando em R\$ 1,2114, também foi decidida a mudança no intervalo da banda cambial larga, cujo limite superior estava fixado em R\$ 1,22 desde janeiro do ano anterior. No dia 13, confirmando parcialmente as especulações do mercado, foi anunciado o nome do novo Presidente do Banco Central, Francisco Lopes, que até então ocupava uma das diretorias da instituição. A troca no comando do Banco Central era o sinal de que a política de bandas largas e mini-bandas cambiais, desenvolvida por Gustavo Franco e vigente desde março de 1995, estava chegando ao fim e, conseqüentemente, de que a taxa de câmbio não mais funcionaria como âncora nominal para a estabilidade monetária. Com efeito, neste dia, o governo inaugurou uma nova política cambial baseada apenas em uma banda larga com limites fixados inicialmente em R\$ 1,21 e R\$ 1,32. As mini-bandas foram abandonadas e a revisão dos valores-limites da banda larga, que antes eram feitas praticamente uma vez ao ano, passariam a ser realizadas a cada três dias úteis. Entretanto, a demanda por dólares ultrapassou em muito a oferta e a taxa de câmbio imediatamente encostou no limite superior da banda (implicando uma desvalorização de 10% em um único dia). A capacidade de o governo defender a nova política cambial estava sendo colocada em dúvida pelo mercado, provocando uma saída líquida de capitais da ordem de US\$ 3 bilhões nos dois primeiros dias de vigência da nova política. Entre os dias 12 e 14, o índice Bovespa recuou 24% e os C-Bond, títulos da dívida externa brasileira de maior liquidez no mercado internacional, tiveram uma queda de 16%. No dia 15, o Banco Central deixou de intervir no mercado de dólares e a taxa de câmbio chegou a ser cotada em R\$ 1,55 durante o dia, fechando em R\$ 1,47. Ao mesmo tempo em que o real era fortemente desvalorizado, o índice Bovespa subia 33% e os C-Bond, 15% em relação ao dia anterior. Em resumo, entre os dias 6 e 15, cerca de US\$ 5 bilhões haviam deixado o país.

(5) O guardião do valor do real

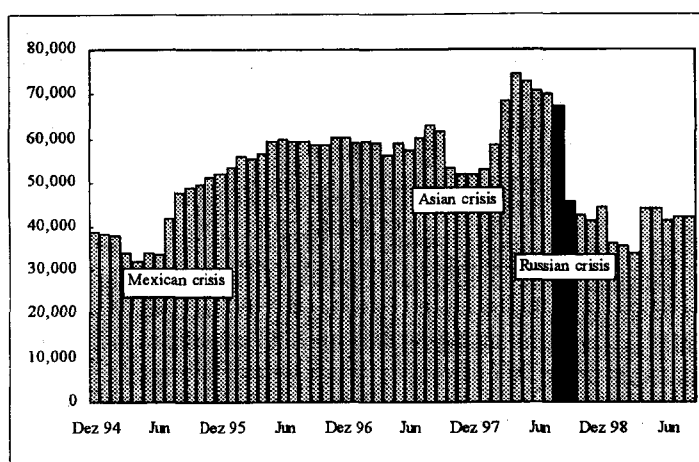
A crise cambial mexicana em dezembro de 1994 gerou impactos negativos sobre a economia brasileira, particularmente, sobre os movimentos de capitais estrangeiros para o país, que por sua vez colocaram pressão sobre a política cambial vigente. Naquele mês, as reservas internacionais brasileiras situavam-se no patamar de US\$ 38,8 bilhões (Gráfico 3) e a taxa de câmbio em torno de R\$ 0,85 por dólar. Entretanto, sob forte tensão do mercado, a Autoridade Monetária alterou a estratégia de administração da taxa de câmbio, introduzindo o sistema de bandas e mini-bandas de flutuação cambial no início de março de 1995. Atuando ativamente na defesa dos limites estipulados para a taxa de câmbio, através da elevação da taxa de juros (Gráfico 4) e da utilização de cerca de US\$ 4,3 bilhões das reservas internacionais, o Banco Central promoveu uma desvalorização controlada de 5% ao longo do mês, conseguindo administrar as expectativas do mercado e manter o regime cambial (Gráfico 5).

O principal mentor do sistema de bandas e mini-bandas cambiais e executor da política cambial era o então Diretor de Assuntos Internacionais do Banco Central, Gustavo Franco, no cargo desde a implantação do Plano Real em julho de 1994. Indicado para a Presidência do Banco Central em julho de 1997, Gustavo Franco mostrou inequívoca determinação na manutenção do regime cambial durante as sucessivas crises financeiras internacionais, tornando-se o maior defensor da política de taxa de câmbio controlada.¹³

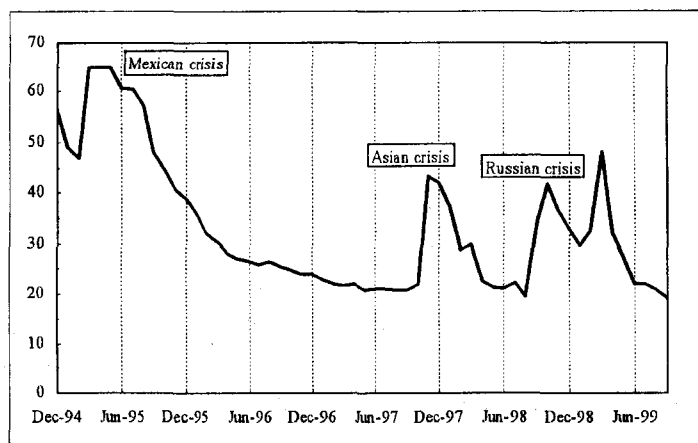
A crise asiática atingiu a economia brasileira em outubro de 1997. Novamente, utilizando US\$ 8 bilhões das reservas internacionais em outubro e duplicando a taxa de juros, que saltou do patamar de 20% para 40%, em novembro, o governo demonstrou sua firme intenção de manter o regime cambial.

No entanto, o grande teste de resistência da política cambial brasileira foi realizado após a desvalorização do rublo e a declaração de moratória pelo governo russo em meados de agosto de 1998. Durante os meses de agosto e setembro, as reservas brasileiras diminuíram em US\$ 25 bilhões (90% deste valor apenas em setembro), enquanto a taxa de juros passou mais uma vez do patamar de 20% em agosto para 35% em setembro e, 40% em outubro.

13. O regime cambial brasileiro pressupunha desvalorizações “controladas” da taxa de câmbio nominal com o objetivo de manter uma relativa constância da taxa de câmbio real. Com o passar do tempo e com a redução dos índices de inflação no Brasil, as desvalorizações nominais também passaram a significar desvalorizações reais. Em 1998, enquanto a desvalorização nominal alcançou 8,3%, a inflação ao consumidor ficou em 3,6%.

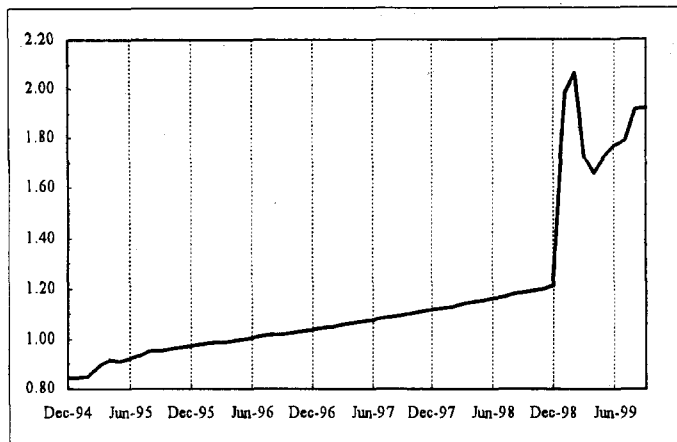
Gráfico 3. Reservas Internacionais (US\$ Milhões)

Fonte: Banco Central

Gráfico 4 – Taxas de Juros (% ao ano)

Fonte: Banco Central

No final de novembro, as reservas internacionais atingiram seu menor nível desde a crise mexicana, cerca de US\$ 41 bilhões. Com a incorporação da primeira parcela do empréstimo do FMI, as reservas fecharam o mês de dezembro no patamar de US\$ 44,5 bilhões. Nos primeiros onze dias de janeiro, as saídas cambiais líquidas situaram-se entre US\$ 900 milhões e US\$ 1 bilhão, enquanto que apenas no dia 12, quando o mercado já dava como certa a saída de Gustavo Franco da Presidência do Banco Central, as saídas cambiais líquidas superaram US\$ 1 bilhão.

Gráfico 5 – Taxa de Câmbio Nominal (R\$ / US\$)

Fonte: Banco Central

No dia 16, o Banco Central anunciou o abandono da política de bandas cambiais e, poucos dias após, determinou novos limites para a banda das taxas de juros, com o piso (TBC) passando de 29% para 25% e o teto (TBAN), de 36% para 41%.

Apesar da redução no valor do piso da taxa de juros, a Autoridade Monetária continuou a trabalhar com a taxa de 29%, inicialmente, elevando-a progressivamente para 39% no início de fevereiro. A política de juros elevados, defendida pelo FMI, era vista como um mal necessário durante o período de maior volatilidade da taxa de câmbio, mas sua duração não encontrava consenso dentro do governo. Para o Presidente do Banco Central, Francisco Lopes, reduções nas taxas de juros deviam ser implementadas logo, enquanto que para o Ministro da Fazenda, Pedro Malan, reduções nas taxas de juros eram temerárias na situação econômica vigente.

A incompatibilidade entre as principais autoridades econômicas do país foi resolvida com a demissão do Presidente do Banco Central, menos de um mês após sua indicação. Em 2 de fevereiro, foi anunciado o nome de Arminio Fraga - ex-diretor do Banco Central em 1991 e 1992 e, até pouco tempo antes, administrador de carteiras dos Fundos de Investimentos Soros - como sendo o novo presidente da instituição. Oficialmente, a razão apresentada para a troca de presidente foi a necessidade de um indivíduo com experiência nos mercados internacionais de câmbio para comandar as operações do Banco Central sob o novo regime de câmbio flexível. Entretanto, a indicação de Lopes, acadêmico e sem experiência no mercado financeiro, para a presidência do Banco Central havia sido uma decisão pessoal do Presidente da República, Fernando Henrique Cardoso, mas vista com desconfiança pelo FMI, pela comunidade financeira internacional e pelo próprio Ministro da Fazenda, Pedro Malan. De fato, com a saída de Lopes e o ingresso de Fraga, reforçava-

se a liderança do Ministro Malan na condução da política econômica já que a equipe econômica voltaria a falar em um único tom.

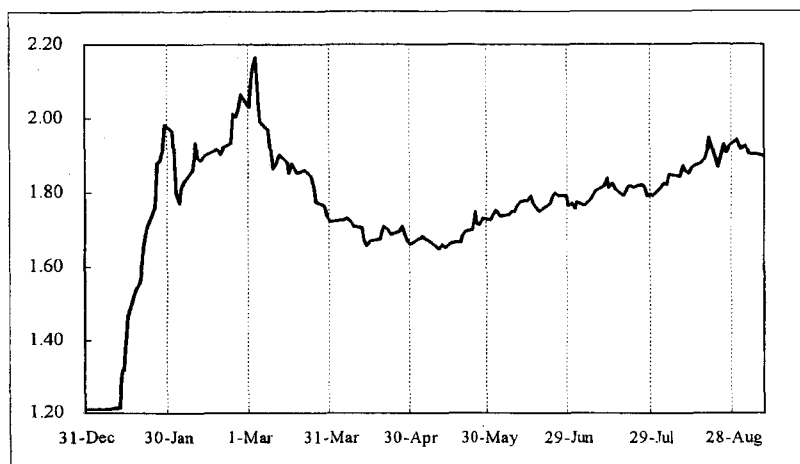
Durante o mês de fevereiro, a taxa de câmbio oscilou entre a mínima de R\$ 1,77 e a máxima de R\$ 2,06, até atingir seu ponto mais elevado no dia 3 de março, quando foi cotada em R\$ 2,16 (Gráfico 6). Pressões no câmbio fizeram com que a Autoridade Monetária alterasse sua política de juros, extinguindo o sistema de bandas e substituindo-o por uma única taxa de referência (*overnight*). No dia 5, os juros foram elevados para 45%, com impacto imediato sobre a taxa de câmbio, que recuou para R\$ 1,99 no dia e passou a cair persistentemente a partir de então. Em 8 de março, o governo brasileiro e o FMI anunciaram um novo Memorando de Política Econômica com a revisão das metas definidas antes da desvalorização cambial (Anexo 2). No início de abril, o país retirou a segunda parcela do empréstimo acordado com o FMI (US\$ 4,9 bilhões do FMI, US\$ 4,5 bilhões do BIS e US\$ 400 milhões do Banco do Japão), elevando suas reservas internacionais para cerca de US\$ 44 bilhões.

Com o avanço das votações no Congresso Nacional para a aprovação das medidas do pacote fiscal e com uma ampla oferta de títulos públicos indexados à variação cambial, a taxa de câmbio estabilizou-se no patamar de R\$ 1,65 – R\$ 1,70 a partir da segunda metade de abril, permanecendo neste nível até o final de maio. A partir de abril, também, os juros começaram sua trajetória descendente, situando-se em 23,5% no final de maio.

A tranquilidade nos cenários interno e externo permitiu ao governo pagar parte da primeira parcela do empréstimo externo (US\$ 1,4 bilhão) em meados de junho. Neste mês, o Banco Central instituiu o regime de metas de inflação (*inflation targeting*), definindo 8% como meta para 1999, com uma margem de 2 pontos percentuais (índice de preços ao consumidor).

Em julho, a autoridade monetária reduziu os juros para 19,5%, valor que permaneceu até a segunda quinzena de setembro. Com as reservas internacionais estabilizadas em torno de US\$ 42 bilhões, o governo brasileiro não sacou a 3a. parcela de US\$ 4,3 bilhões do empréstimo com o FMI.

Em novembro, a taxa de juros estava em 19% e o governo brasileiro ainda avaliava a necessidade de sacar novas parcelas do empréstimo com o FMI.

Gráfico 6 – Taxa de Câmbio Nominal (R\$ / US\$)

Fonte: Banco Central

(6) Evolução dos fundamentos após a desvalorização

a) Inflação

O principal temor em relação à desvalorização do real era, sem dúvida, o ressurgimento da inflação. O Plano Real, concebido para eliminar uma inflação de quatro dígitos e trazê-la em um curto espaço de tempo para o nível de um dígito, necessitava da âncora cambial para manter o nível de preços estabilizado.¹⁴ Os índices de preços recuaram significativamente a partir de 1994, ano da introdução do plano, alcançando o patamar de um dígito em seu terceiro ano de implementação (Quadro 1).

A desvalorização do real iniciou-se em meados de janeiro. No mês, a moeda brasileira perdeu 39% do seu valor. No final de fevereiro, a perda acumulada foi de 42%. Em que pese uma pequena recuperação nos meses seguintes, no final de maio, a perda mantinha-se significativa, na casa dos 30%. Esse *overshooting* na taxa de câmbio, sem dúvida, refletiu a expectativa dos agentes quanto ao novo patamar inflacionário pós-desvalorização. Entretanto, o impacto da desvalorização sobre a inflação acabou sendo bem menor do que

14. Além da âncora cambial, havia as âncoras fiscal e da liberalização dos fluxos de bens e capitais. A primeira exigia o ajuste das contas públicas para se eliminar a necessidade do financiamento inflacionário do déficit público. A segunda exigia a abertura do mercado interno para as importações, que exerceria uma pressão competitiva sobre os produtos domésticos, dificultando reajustes internos de preços, e facilidades para a entrada de capitais externos, necessários para compensar a esperada deterioração do balanço de transações correntes no início do programa de estabilização.

Quadro 1. Índices de Preços

	Geral IGP-DI	Consumidor IPCA	Atacado IPA-DI
1993	2.103,4	540,8	2.065,4
1994	2.406,9	2.076,1	2.279,0
1995	67,5	64,6	58,8
1996	11,1	16,7	6,3
1997	7,9	6,9	8,1
1998	3,9	3,2	3,6
1999/01	1,15	0,70	1,58
02	4,44	1,05	6,99
03	1,98	1,10	2,84
04	0,03	0,56	-0,34
05	-0,34	0,30	-0,82
06	1,02	0,19	1,35
07	1,59	1,09	2,03
08	1,45	0,56	2,15
09	1,47	0,31	2,30
Acum. 1999	13,46	6,01	19,68

Fontes: FGV, IBGE

as expectativas iniciais, diluindo-se nos índices de fevereiro e março, sobretudo nos preços no atacado. Em abril, os índices já passavam a mostrar estabilidade, tornando-se negativos no mês seguinte.

Contribuíram para esse comportamento da inflação, o estado recessivo da economia, com os níveis de consumo muito deprimidos por conta de uma massa de salários nominais em declínio, uma taxa de desemprego aberto ao redor de 8% e uma atuação incisiva da Autoridade Monetária, que manteve as taxas de juros em patamares bastante elevados (39% em fevereiro e 45% em março). Fatores circunstanciais como mudanças estacionais e uma excelente safra agrícola também acabaram contribuindo favoravelmente para o bom desempenho dos índices inflacionários nos primeiros meses após a desvalorização.

Assim, a meta de até 10% de inflação ao consumidor deve ser alcançada com relativa folga em 1999. Os reajustes nas tarifas públicas e nos preços dos derivados de petróleo provocaram um pequeno repique inflacionário em julho, mas a expectativa é de que os índices mensais se estabilizem ao longo do segundo semestre. Para 2000, a meta inflacionária está estipulada em até 8% ($6\% \pm 2\%$), e para 2001, em até 6% ($4\% \pm 2\%$).

b) Déficit e dívida pública

Dado o regime cambial adotado a partir do início do Plano Real, as taxas de juros necessitaram permanecer em patamares elevados a fim de atrair capital externo suficiente para equilibrar o balanço de pagamentos. O comportamento débil das exportações durante todo o período não contribuiu para a formação de um fluxo positivo de divisas no lado comercial, enquanto que as crises nas economias asiáticas, em 1997, e russa, em 1998, não permitiram que o juro fosse reduzido na proporção desejada. Com isso, a política de juros altos fez com que os encargos financeiros da dívida pública aumentassem, correspondendo a 6% a 8% do PIB nos anos de 1995 a 1998 (Gráfico 7).

Já o relativo equilíbrio verificado entre receitas e despesas não-financeiras (custeio, previdência social e investimentos), indicado pelos resultados do déficit primário, mostra que o ajuste fiscal (a segunda âncora do Plano Real) não foi suficientemente implementado no período, fazendo com que o estoque da dívida se elevasse consistentemente ano após ano (Gráfico 8).

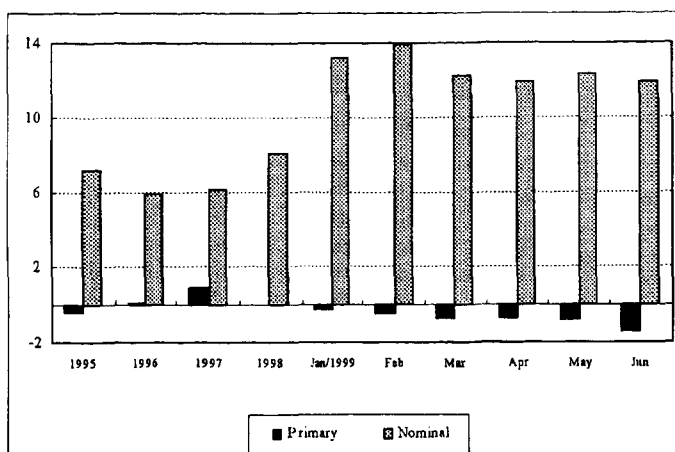
Com a desvalorização do real, o déficit público como proporção do PIB saltou do patamar de 8%, em dezembro de 1998, para 14%, em fevereiro de 1999, ou seja, um impacto de 6% do PIB (aproximadamente US\$ 28 bilhões). Já o estoque da dívida como proporção do PIB saltou de 43% para 52% no mesmo período, aumentando em cerca de US\$ 54 bilhões.¹⁵

A razão para a desvalorização ter impactado tão severamente sobre os indicadores fiscais estava no fato de parte da dívida pública emitida pelo Tesouro Nacional e pelo Banco Central estar indexada ao dólar. Em dezembro de 1998, 1/4 dos títulos públicos federais pagava, além de juros, uma taxa adicional equivalente à variação cambial (cerca de US\$ 49 bilhões ao câmbio da época).

O estoque da dívida líquida total do setor público é um dos indicadores monitorados pelo FMI, cujo limite foi fixado em R\$504,5 bilhões ao final de 1999.¹⁶ Em junho, o estoque da dívida correspondia a R\$ 491 bilhões (49,8% do PIB), ficando abaixo do limite de R\$ 514 bilhões definido pelo FMI. Outra meta fiscal estabelecida pelo FMI é a magnitude do superávit primário, R\$30,2 bilhões (ou 3,1% do PIB) no final de 1999. No primeiro semestre, o superávit acumulado alcançou R\$ 13,6 bilhões, bem acima dos R\$ 12,9 bilhões exigidos pelo FMI para o período. Com a CPMF sendo recolhida durante todo o segundo semestre (R\$ 8,5 bilhões a R\$ 9 bilhões de receita adicional), há condições de o governo brasileiro satisfazer as metas fiscais acordadas com o FMI para 1999.

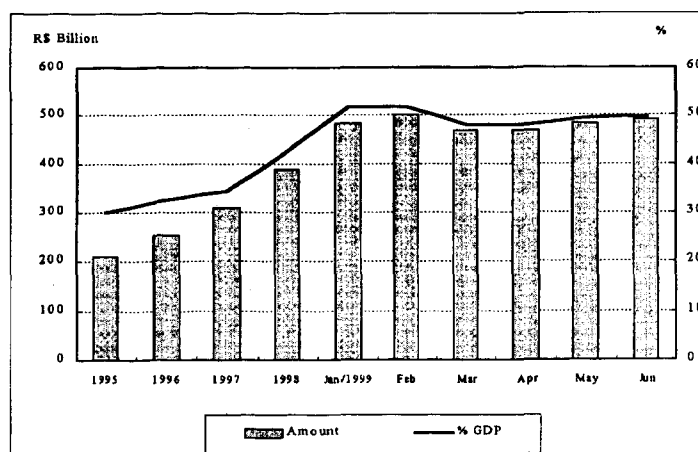
15. Esses dados correspondem à dívida líquida total consolidada do governo (União, Estados, Municípios e empresas estatais), incluindo a dívida externa. A dívida líquida pública interna total passou de 36% para 39,5% do PIB, com uma elevação de R\$ 52 bilhões (cerca de US\$ 27 bilhões).

16. Considerando uma inflação de 8% e uma taxa de crescimento real da economia de -0,5%, o limite do endividamento público equivaleria a cerca de 52% do PIB em 1999.

Gráfico 7. Déficit Público (Fluxo dos Últimos 12 meses em % do PIB)

- Notas: 1. Primary – Não inclui gastos com o pagamento de juros.
 Nominal – Inclui os gastos com o pagamento de juros.
 2. Valores negativos indicam superávit.

Fonte: Ministério da Fazenda

Gráfico 8. Dívida Pública Total

Fonte: Ministério da Fazenda

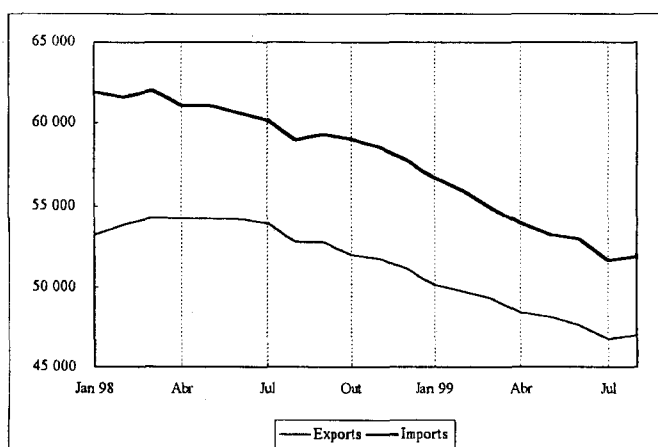
c) Comércio internacional

Um dos efeitos positivos esperados da desvalorização cambial era a melhora dos resultados da balança comercial, principalmente a partir do crescimento das exportações. Evidentemente, havia a expectativa também de redução das importações, bem como do

déficit na balança de serviços, especialmente nos itens relativos às viagens internacionais (de brasileiros para o exterior).

Entretanto, o desempenho das exportações vem se apresentando aquém do imaginado (Gráfico 9). Seis meses após a desvalorização, o fluxo dos últimos 12 meses até julho das exportações alcançou seu nível mais baixo em dois anos, demonstrando a lenta reação dos volumes exportados. O resultado ligeiramente superior em agosto pode ser uma indicação de que os valores exportados cresçam a partir de então. Entretanto, a tendência de queda das importações também foi interrompida em agosto, devido à elevação dos preços internacionais do petróleo, impedindo, por enquanto, uma melhoria mais significativa no saldo comercial.

Gráfico 9 – Balança Comercial (Fluxo dos Últimos 12 Meses em US\$ Milhões)



Fonte: Banco Central

A desvalorização da moeda brasileira também produziu consequências importantes em países vizinhos, especialmente na Argentina, cujo regime de *currency board* estabelece uma paridade fixa de 1:1 entre o peso e o dólar.¹⁷ Com cerca de 1/3 das exportações direcionadas para o Brasil, com o qual obtinha um superávit comercial anual entre US\$ 1 bilhão e US\$ 1,5 bilhão desde 1995, o país viu este valor diminuir para US\$ 300 milhões no primeiro semestre de 1999 e a participação do Brasil nas exportações totais cair para menos de 25%.¹⁸ Por outro lado, os produtores argentinos têm pressionado seu governo a respeito dos impactos do barateamento dos produtos brasileiros sobre o nível de emprego na indústria argentina e da necessidade de medidas protecionistas. Questões comerciais de

17. Após a desvalorização cambial no Brasil, levantou-se a possibilidade de dolarização completa da economia argentina. Ver Nishijima (1999a).

18. Para o primeiro semestre de 1999, o governo argentino estimou uma queda de 4,9% do PIB em relação ao mesmo período do ano anterior.

várias ordens já foram levantadas pelo governo argentino, gerando certo impasse nas relações diplomáticas bilaterais e colocando em xeque a viabilidade do Mercosul.¹⁹

d) Sistema bancário

Um dos principais efeitos da queda da inflação após a introdução do Plano Real para o sistema bancário foi a correspondente redução dos lucros associados a ela (*floating*). Durante o período de inflação alta, a maior parte das instituições bancárias deixou as operações de empréstimo em segundo plano, dando preferência às operações de *floating*. Com a estabilização monetária, muitas dessas instituições tiveram dificuldade para se adaptar à nova situação. Acirramento da concorrência e despreparo na análise de risco de crédito provocaram a falência de alguns bancos ou a reestruturação de outros, resultando em uma redução no número de instituições no país. A reorganização do sistema bancário brasileiro, realizada entre 1995 e 1996, contou com uma quantia expressiva de recursos públicos disponibilizados através de programas especificamente desenvolvidos para este fim (PROER, PROES).²⁰ Desta forma, o sistema bancário brasileiro apresentava um grau de robustez muito maior do que o dos países do sudeste asiático às vésperas da crise cambial, de tal forma que sua eventual fragilidade não poderia ser apontada como uma das causas do ataque especulativo contra o real. Entretanto, o cenário recessivo delineado pelo acordo com o FMI indicava uma situação de deterioração da situação financeira das empresas do setor produtivo da economia com efeitos sobre a qualidade dos ativos dos bancos. A desvalorização do real gerou temores quanto ao endividamento em moeda estrangeira de firmas e bancos brasileiros, mas como a maior parte das operações externas dessas empresas haviam sido realizadas com cobertura contra o risco de desvalorização (*hedge* cambial) os impactos foram bastante limitados.

Parte III - A desvalorização do real e os modelos teóricos de crises cambiais

A revisão teórica apresentada na primeira parte do texto procurou mostrar que crises cambiais não são o resultado de apenas maus fundamentos ou de apenas expectativas auto-realizáveis. As expectativas de desvalorização dos agentes privados são formadas com base no estado dos fundamentos, bem como no comportamento esperado das autoridades governamentais, o qual, por sua vez, depende dos fundamentos e das expectativas privadas. Conforme salientam Obstfeld (1994) e Sachs, Tornell & Velasco (1996a), esse elemento de circularidade propicia a ocorrência de múltiplos equilíbrios. Neste sentido, a análise do caso brasileiro revela-se bastante útil para demonstrar essas interrelações.

19. Ver Nishijima (1999b).

20. Sobre o saneamento do sistema bancário brasileiro, ver Nishijima (1998).

A política cambial introduzida com o Plano Real, em julho de 1994, incluindo a adoção do sistema de bandas a partir de março de 1995, visava ao controle da inflação através da utilização da taxa de câmbio como “âncora” nominal para os preços domésticos. Desde o início, sabia-se dos riscos desta política para o macro-equilíbrio geral, principalmente, para o equilíbrio das contas externas. Entretanto, havia o pressuposto de que a economia seria capaz de gerar ganhos de produtividade e de que o governo implementaria reformas fiscais adequadas para enquadrá-lo em sua restrição orçamentária. Até que esses dois objetivos fossem atingidos, o país continuaria a depender de um fluxo líquido positivo de capitais externos para fechar o balanço de pagamentos. Naturalmente, não eram esperadas crises financeiras internacionais profundas, mas a má evolução dos fatores domésticos mostrou-se tão ou mais importante que os eventos externos para a explicação do colapso da política cambial brasileira em janeiro de 1999.

Sachs, Tornell & Velasco (1996a), ao analisarem os efeitos da crise financeira no México sobre outras economias emergentes, destacam que os países com um nível elevado de reservas internacionais (em relação a oferta de moeda, M2) foram os menos afetados.²¹ Com efeito, no momento dos ataques especulativos que se seguiram às crises asiática e russa, o Brasil contava com mais de US\$ 60 bilhões em reservas. No final de dezembro de 1998, as reservas internacionais líquidas do país (não incluindo a primeira parcela do empréstimo do FMI) totalizavam US\$ 34 bilhões, ligeiramente mais baixas que às vésperas da crise mexicana.

No início de 1999, os principais indicadores econômicos não mostravam que a economia brasileira encontrava-se em uma situação de descontrole: (a) déficit em transações correntes ao redor de 4,5% do PIB (inferior aos valores observados na maioria dos países envolvidos na crise asiática), sendo 75% financiados através de investimentos diretos; (b) estoque da dívida pública equivalente a 40% do PIB (menor do que na maioria dos países da OCDE, muito embora com prazos mais curtos); (c) déficit público em torno de 8% do PIB, mas com uma série de medidas fiscais para seu ajuste em processo de votação no Poder Legislativo; (d) taxa de juros em declínio depois da acentuada elevação ocorrida após a crise asiática, porém ainda alta no patamar de 30%; (e) taxa de câmbio real valorizada entre 15% a 25%, mas gradualmente corrigida através de desvalorizações nominais da ordem de 7,5% a 8% ao ano. Adicionalmente, o fechamento do acordo com o FMI representou um aporte de recursos de US\$ 9,3 bilhões às reservas internacionais e o aval daquela instituição à política cambial implementada pelo governo brasileiro.

Assim, muito embora pudesse se afirmar que alguns fundamentos da economia brasileira caminhavam para uma situação de insustentabilidade (particularmente, os indicadores fiscais), no início de janeiro, o estado desses fundamentos por si só não era suficientemente

21. Os efeitos da crise mexicana foram medidos em termos da desvalorização cambial e da perda de reservas internacionais em 20 países emergentes entre novembro de 1994 e abril de 1995.

severo para que as expectativas dos agentes privados convergissem no sentido da desvalorização.

Na primeira parte do trabalho foi apresentado o modelo de Sachs, Tornell & Velasco (1996b), no qual a existência de dois equilíbrios possíveis conferia um caráter de indeterminação ao modelo, dependente do estado das expectativas dos agentes privados. Conforme os próprios autores enfatizam, “... *in situations with indeterminacy, rumors become all-important and events can become focal points for drastic shifts in expectations*” (p.266).

Para os autores, a decisão do governo do México de implementar uma desvalorização “administrada” (*managed devaluation*) de 15% teria precipitado a reversão das expectativas e a corrida contra as reservas, que culminaram no colapso do regime cambial mexicano.

No caso brasileiro, as expectativas de desvalorização convergiram no dia 12, quando os rumores quanto à demissão do Presidente do Banco Central, Gustavo Franco, tornaram-se um consenso entre os agentes. Seu afastamento do governo era um sinal inequívoco ao mercado de que a política cambial seria alterada, o que realmente acabou acontecendo.

Mas por que optou-se pelo abandono da política cambial?

Basicamente, porque os custos de sua manutenção foram avaliados como sendo muito altos pelo governo. Para cobrir o déficit em transações correntes e manter um nível elevado de reservas internacionais para combater movimentos especulativos no mercado de câmbio era necessário atrair capitais externos, bem como incentivá-los a permanecer no país, o que era alcançado através de juros altos. Entretanto, com as sucessivas crises internacionais, a percepção de risco dos investidores estrangeiros em relação ao país foi aumentando e o governo brasileiro já não encontrava espaço para reduzir os juros. A consequência, no plano doméstico, era uma economia em recessão e com uma taxa de desemprego ao redor de 8%. Além disso, os desembolsos com o pagamento dos juros sobre a dívida pública eram cada vez maiores, totalizando 8% do PIB em 1998. Ainda, no plano político, janeiro de 1999 representava o início do segundo mandato do Presidente da República, Fernando Henrique Cardoso, que desejava conferir um caráter desenvolvimentista a seu governo, em contraposição ao caráter estabilizador que marcara o mandato anterior.

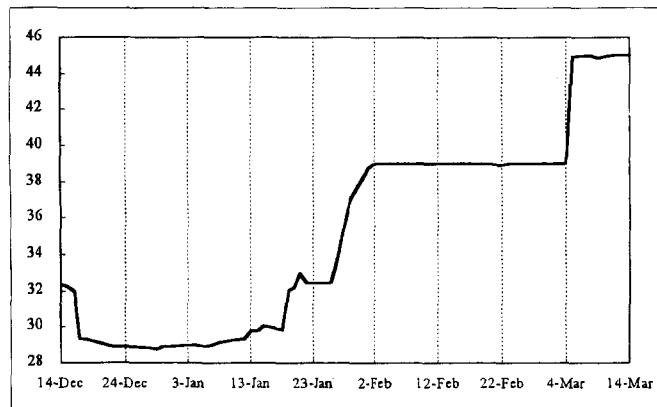
Em outras palavras, os custos da manutenção da política cambial passaram a ser vistos pelo governo como maiores do que os custos de uma desvalorização²². Esta avaliação acabou sendo compreendida pelo mercado com a demissão do principal mentor e executor da política de bandas e mini-bandas cambiais, Gustavo Franco. O pânico nos mercados e as grandes saídas de capitais que se viram nos dias seguintes refletiram a passagem para a nova situação de equilíbrio com desvalorização. O ataque especulativo que desencadeou a

22. Segundo o modelo de Sachs, Tornell & Velasco (1996b), $L'(B, \pi^*) > L'(B, \pi^*) + c$ (Ver Parte I).

desvalorização da moeda brasileira teve, portanto, um caráter eminentemente auto-realizável.

Outra indicação de que o governo tinha desistido de defender a taxa de câmbio foi o fato de a taxa de juros ter se mantido inalterada durante o ataque, sendo elevada posteriormente à adoção do regime cambial flexível com o objetivo de conter pressões inflacionárias (Gráfico 10).

Gráfico 10 – Taxa de Juros Interbancários (% ao ano)



Fonte: Banco Central

Sachs, Tornell & Velasco (1996b) destacam o fato de múltiplos equilíbrios ocorrerem apenas para determinados níveis de endividamento público. Recapitulando, os limites deste endividamento são dados pela expressão:

$$k = (1 - \lambda)^{-0.5} (2 \cdot c)^{0.5}$$

onde: $\lambda \equiv \alpha / (\alpha + \theta^2)$, α representa o peso atribuído à desvalorização da taxa de câmbio na função utilidade do governo, θ representa a capacidade de recolhimento do imposto inflacionário, e c representa o custo da desvalorização.

Para um dado valor de θ , quanto maior for o valor de λ , maior será o valor de α , indicando um maior peso associado à desvalorização da taxa de câmbio. Assim, supondo $\theta = 1$, para λ igual a 0.5, α será igual a 1, significando que ambas as variáveis na função utilidade têm a mesma importância para o governo. Para λ igual a 0.6, α será igual a 1.5 e assim por diante.

Em seguida, são apresentados os limites inferior e superior para o nível de endividamento público que coloca a economia sob a perspectiva de múltiplos equilíbrios para λ variando de 0.5 a 0.65 e para vários custos da desvalorização, c . Os valores para c , λ e k podem ser

interpretados como porcentagem do PIB.

$$\lambda = 0.5$$

c	0.02	0.04	0.05	0.06	0.07	0.10
λk	0.14	0.20	0.22	0.24	0.26	0.32
k	0.28	0.40	0.45	0.49	0.53	0.63

$$\lambda = 0.55$$

c	0.02	0.04	0.05	0.06	0.07	0.10
λk	0.16	0.23	0.26	0.28	0.31	0.37
k	0.30	0.42	0.47	0.52	0.56	0.67

$$\lambda = 0.6$$

c	0.02	0.04	0.05	0.06	0.07	0.10
λk	0.19	0.27	0.30	0.33	0.35	0.42
k	0.32	0.45	0.50	0.55	0.59	0.71

$$\lambda = 0.65$$

c	0.02	0.04	0.05	0.06	0.07	0.10
λk	0.22	0.31	0.35	0.38	0.41	0.4
k	0.34	0.48	0.53	0.59	0.63	0.76

Em dezembro de 1998, a dívida pública total líquida do governo equivalia a 42,6% do PIB. Não considerando a dívida externa líquida de médio e longo prazos, cerca de 31%. Em março de 1999, esses valores equivaliam a 48,2% e 38,5% do PIB, respectivamente.

Considerando que o governo dê mais importância para a desvalorização da taxa de câmbio do que para a arrecadação, $\lambda > 0.5$, e que o custo c reflita o impacto esperado da desvalorização sobre o estoque da dívida, por exemplo, entre 4% e 7% do PIB, conclui-se que o estoque da dívida às vésperas da crise cambial situava-se dentro do intervalo de ocorrência de múltiplos equilíbrios para os vários valores de λ considerados.

Considerações finais

Tendo em vista a evolução dos acontecimentos, uma crise cambial no Brasil era uma questão de tempo. Para que o programa de estabilização monetária baseado na âncora cambial implementado pelo governo brasileiro em meados de 1994 tivesse um sucesso completo eram também necessários um ajuste definitivo das contas públicas e a ampliação

dos ganhos de produtividade na economia.²³ Na falta desses componentes, o desequilíbrio externo decorrente teria de ser basicamente compensado com medidas para estimular a entrada de capitais externos no país. Entretanto, com as sucessivas crises internacionais, a opção de se cobrir os déficits na balança em transações correntes por meio da captação de capitais estrangeiros foi se tornando crescentemente mais cara e difícil. Dado que os demais elementos do programa de estabilização (ajuste fiscal e ganhos de produtividade) não evoluíam favoravelmente, aumentava a possibilidade de uma desvalorização da taxa de câmbio. Neste sentido, o ataque especulativo contra o real poderia ser interpretado como uma espécie de “gatilho” que, ao ser acionado, detonou o processo de implementação dos ajustes necessários na economia brasileira.

Muito embora não se pudesse dizer que os fundamentos da economia brasileira eram excelentes, também não eram ruins. As crises asiática e russa certamente fizeram com que os investidores se tornassem mais prudentes em relação aos mercados emergentes de um modo geral e mais suscetíveis a rumores. Neste sentido, a situação do país antes da desvalorização da taxa de câmbio podia ser bem representada como sendo uma situação de equilíbrios múltiplos (decorrente do nível relativamente elevado do estoque da dívida pública, como no modelo apresentado na Parte III, ou do nível relativamente baixo das reservas internacionais), na qual uma súbita mudança de expectativas poderia provocar o movimento da economia de um equilíbrio para outro (no caso, de uma situação sem desvalorização para outra, com desvalorização).

Dados o estado dos fundamentos econômicos e as incertezas quanto à capacidade do governo brasileiro cumprir as metas acordadas com o FMI provocadas pela dificuldade em se aprovar as medidas do ajuste fiscal no Congresso Nacional e pelo anúncio da moratória do estado de Minas Gerais, a troca do Presidente do Banco Central foi o sinal que faltava ao mercado de que o governo havia desistido de sua política cambial. A abrupta mudança nas expectativas do mercado (equivalente ao deslocamento de uma posição de equilíbrio para a outra posição de equilíbrio) refletiu-se imediatamente nas grandes saídas de capitais do país, tornando ineficaz qualquer tentativa de se defender a taxa de câmbio. Era o chamado “ataque auto-realizável”.

Após a desvalorização, as atenções voltaram-se para seus efeitos sobre a atividade econômica, a inflação, o sistema financeiro e para o possível contágio para outros países da região. Entretanto, diferentemente das crises anteriores em outros países emergentes, no caso do Brasil, as implicações foram pequenas, pois, dentre outros fatores, a desvalorização cambial fora realizada bem antes de serem esgotadas as reservas internacionais, o sistema financeiro já se encontrava saneado e pouco exposto aos riscos da desvalorização, os preços dos ativos (ações, imóveis) não se encontravam em níveis muito elevados e o país já havia fechado o acordo com o FMI. A evolução da economia brasileira

sob o 23. Ver Nishijima (1996).

regime de taxa de câmbio flexível e a transição para um sistema cambial que admita a plena conversibilidade do real são agora as próximas questões a merecer atenção.

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Anexo 1 - Principais metas quantitativas do acordo

1. Metas fiscais (Resultado primário do setor público consolidado em % do PIB)

	1999	2000	2001
Governo Central	1.8	2.0	2.3
Estados e Municípios	0.4	0.5	0.5
Empresas Estatais	0.4	0.3	0.2
Consolidado	2.6	2.8	3.0

2. Metas monetárias (Crédito doméstico, teto, em R\$ milhões)

Dezembro 1998 (p)	-9,506
Março 1999 (p)	-7,376
Junho 1999 (p)	-6,130
Setembro 1999 (i)	-12,644
Dezembro 1999 (i)	-19,070

3. Metas externas (Dívida externa do setor público não-financeiro, teto, em R\$ milhões)

Dezembro 1998 (p)	87,765
Março 1999 (p)	91,215
Junho 1999 (p)	93,235
Setembro 1999 (i)	94,610
Dezembro 1999 (i)	97,675

4. Outros indicadores

- Reservas internacionais líquidas estimadas em US\$ 20 bilhões em dezembro de 1999.
- Taxa de câmbio esperada de R\$ 1,295 por dólar ao final de 1999 (desvalorização de 7,5% no ano).

5. Notas explicativas

- Resultado primário positivo significa superávit fiscal, sem levar-se em consideração despesas financeiras (juros da dívida).
- Crédito doméstico definido como a diferença entre a base monetária e o valor das reservas internacionais líquidas expressos em reais.
- Dívida externa não inclui valores liberados pelo acordo.
- (p) Critério de performance a ser considerado pelo FMI para a liberação de novas parcelas do empréstimo; (i) Meta indicativa.

Anexo 2 - Revisão das principais metas quantitativas do acordo (março 1999)

1. Metas fiscais (Resultado primário do setor público consolidado em % do PIB)

	1999	2000	2001
Governo Central	2.3	2.65	2.60
Estados e Municípios	0.4	0.50	0.65
Empresas Estatais	0.4	0.10	0.10
Consolidado	3.1	3.25	3.35

*Resultado Consolidado observado em junho = 2.9% do PIB (R\$ 13,9 bilhões).

2. Metas monetárias (Crédito doméstico, teto, em R\$ milhões)

Abril 1999 (p)	-7,152
Junho 1999 (p)	-42
Setembro 1999 (i)	-176
Dezembro 1999 (i)	766

* Crédito doméstico estimado em junho = -1.999.

3. Metas externas (Dívida externa do setor público não-financeiro, teto, em US\$ milhões)

Março 1999 (p)	87,966
Junho 1999 (p)	91,823
Setembro 1999 (i)	92,482
Dezembro 1999 (i)	93,821

* Valor estimado da dívida em junho = US\$ 83 bilhões.

4. Outros indicadores

- Reservas internacionais líquidas estimadas em US\$ 24,7 bilhões em dezembro de 1999.
- Taxa de câmbio esperada de R\$ 1,70 por dólar ao final de dezembro de 1999 (revista em julho para R\$ 1,75).
- Inflação ao consumidor esperada de 16,8% (revista em julho para 8%).
- Queda do PIB esperada de -3,5% a -4% (revista em julho para -1%).
- Balança comercial com superávit de US\$ 11 bilhões (revista em julho para US\$ 4 bilhões).
- Receita com privatização de R\$ 27,8 bilhões (revista em julho para R\$ 13,2 bilhões).
- Dívida líquida do setor público consolidado equivalente a 49,3% do PIB em 1999, e 46,5%, em 2001.

JAPANESE SUPPLIER RELATIONS: A COMPARATIVE PERSPECTIVE†

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Abstract

This paper describes major characteristics of Japanese supplier relations in a comparative perspective. The supplier relations in Japan, particularly automobile industry, are examined in comparison with those in the United States. The primary purpose of the study is to characterize significant features of Japanese supplier relations and to provide economic rationale for those relationships. In addition, comparing supplier relations in Japan and the U.S., convergence in the nature of those are discussed. Significant features of Japanese supplier relations are characterized: long-term relationships and commitments; forced competition among few suppliers; transaction-specific investments in plant, equipment, and human capital; significant involvement of suppliers in product development with sharing of information. Supplier relations in the U.S. are changing and moving close to the Japanese counterpart. There has been a limited, yet noticeable, convergence in the nature of U.S. and Japanese supplier relations.

Keywords: Long-term relationships; Procurement; Supplier relations; Transaction-specific investments;

JEL Classification: L14; L62

1 Introduction

Supplier relations are important areas for any firm that subcontracts portions of components and production because this creates the opportunity to enhance values of products and efficiency of production. There have been significant differences in supplier relations between Japan and the United States. U.S. automakers are more vertically

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integrated than their Japanese counterparts (Dyer, 1996a).¹ Even though U.S. automakers are more vertically integrated, they contract directly with more than one thousand suppliers for the parts they do not make. Product development process is heavily influenced by the traditional system in which suppliers produce parts under short-term, arm's-length contracts and have little role in design and engineering. Most high value-added component development and production are done by U.S. automakers in-house using large in-house supply capability. Outside suppliers are used predominately as low-cost manufacturing platforms that are handed blueprints. Vertical integration might enable companies to enjoy all of the benefits of fewer direct suppliers and specific investments. But vertical integration removes suppliers from the discipline of the market and essentially eliminates competition because suppliers have a captive customer base. Incentives that keep both automakers and suppliers efficient and focused on continuous improvement are weak in the U.S. supplier relations.

Japanese automakers, by contrast, work with approximately one-tenth that number, purchasing more entire subsystems from each supplier.² Japanese supplier network is organized into clearly defined, hierarchical tiers with relatively large first-tier suppliers at the top taking most of the responsibility for design of subsystems and delegating responsibilities for simple parts to second and lower-tier suppliers that generally build parts according to blueprints provided to them. In Japanese supplier relations, suppliers, particularly primary ones are an integral part of the product development and manufacturing processes: they are heavily involved, assume significant responsibility, and communicate extensively and directly with product and process engineers. Japanese suppliers frequently play a significant role in designing, prototyping, and testing complex parts and subsystems than U.S. suppliers do. Suppliers in Japan are given great autonomy in designing, prototyping, and testing their components or subsystems. Both automakers and suppliers have recognized the need to be interdependent and have responded by developing mechanisms to cooperate under the discipline of the market.

Supplier relations in Japan can be characterized to have distinctive characteristics in several aspects compared with the U.S. counterpart. It is important to understand how efficiently Japanese supplier relations work, and whether the Japanese practices are unique to the peculiar circumstances of the Japanese social and cultural system or whether it can be applied in other countries. Furthermore, it is also important to understand the economic

1 Dyer (1996a) examines the relationship between inter-firm asset specificity and performance in Japanese and the U.S. automobile industry. The unit of analysis is the supplier-automaker relationship. The sample consists of two Japanese, three U.S. automakers. A half of sample is from partner relations, the other is from arms-length relations in supplier-automaker relations. The survey was conducted with mailed, self-administered questionnaire. The survey also shows significant differences between two countries with regard to vertical integration.

2 Cusumano and Takeishi (1995) review the literature in empirical studies on supplier relations in Japan and the U.S.

rationale of supplier relations in Japan. Yet many aspects are still left unknown about the process that unfolds between buyers and suppliers in Japan or the U.S.

This paper describes major characteristics of Japanese supplier relations in a comparative perspective. The supplier relations in Japan, particularly in automobile industry, are examined in comparison with those in the U.S. The primary purpose of the study is to characterize significant features of Japanese supplier relations and to provide economic rationale for those relationships. In addition, comparing supplier relations in Japan and the U.S., convergence in the nature of those are discussed.

In this paper, significant features of Japanese supplier relations are characterized. First, long-term relationships and commitments with close communication reduce transaction costs and eliminate inefficiencies between automaker and supplier. The practices of building trust like supplier-assistance programs, cross-share holdings, and interfirm employee transfer and having guest engineers can work effectively to create a high degree of mutual trust.

Second, forced competition among few suppliers is effective in focusing on costs, quality, and technological development. Using few suppliers can create value by providing economies of scale and benefits of experience curve that reduce both transaction and production costs. Moreover, the contest among few suppliers serves to make the supplier's reward dependent on his rivals' efforts as well as his own, while the reward is actually independent of the supplier's cost. Japanese automakers can increase incentive of suppliers for enhancing efficiency of production through contests.

Third, willingness to make significant transaction-specific investments in plant, equipment, and human capital as well as to share valuable technical information is more significant in Japanese supplier relations than the U.S. Automakers and suppliers may choose to seek efficiency advantages by investing in transaction-specific assets. These transaction-specific assets as the vehicle through which trading partners are able to generate relational quasi rents when trade partners have developed safeguards which can control opportunism at relatively low cost and task activities are characterized by a highly degree of interdependence. In Japanese supplier relations, mutual investment in specific assets creates incentives to cooperate, and the reduction in cost and improvements in quality that are gained through the cooperation outweigh the risks of opportunistic behavior from the parties involved.

Fourth, significant involvement of suppliers in product development with intensive and regular sharing of technical and cost information improves performance and reduces costs. Japanese supplier relations involve intense and frequent sharing information during the product development stage. The intense and regular sharing of technical information can be effective to improve performance and reduce cost. The long-term automaker-supplier relationships can facilitate the quality and efficiency of information exchange. Aggressive

target prices are a major factor in driving supplier to reduce cost so they can make a profit at the price dictated by the customer. Since Japanese automakers also know the cost structure of their suppliers, they generally set the target price very aggressively under the assumption that suppliers will continually reduce costs over experiences of the previous model. The supplier has a great incentive to design the part so it can meet that price and still make a profit in the long run.

Supplier relations in the U.S. are changing rapidly and are moving close to those in Japan. There has been a limited, yet noticeable, convergence in the nature of U.S. and Japanese supplier relations. In the U.S., suppliers are significantly more likely than they were in 1980s to provide detailed information to their customers, have long-term contracts, and get involved in product development and manufacturing processes. These results indicate progress toward collaborative relationships, in which suppliers play an important role in solving problems and developing ideas about products and manufacturing processes.

This paper is organized as follows. Major characteristics of Japanese supplier relations are discussed in order. The next section presents transaction relationships with few direct suppliers. Section 3 discusses forced competition among limited suppliers. Section 4 describes transaction-specific investments. Section 5 discusses supplier involvement in product development. Section 6 discusses the convergence in the nature of supplier relations in Japan and the U.S. Finally, concluding remarks are presented.

2 Fewer Direct Suppliers

2.1 Long-term Commitments

U.S. automakers are more vertically integrated than their Japanese counterparts. Even though U.S. automakers are more vertically integrated, they contract directly with 1,500 to 3,000 parts suppliers for the parts they do not make. Toyota, by contrast, works with approximately one-tenth that number, buying more entire subsystems from each supplier. Reducing the total number of direct suppliers can lower costs while increasing quality. Using fewer suppliers can create value by providing economies of scale and benefits of experience curve that reduce both transaction and production costs. Transaction costs, as defined here, are all the costs associated with effecting an exchange, that is, information gathering and analysis, negotiation, contacting, physical distribution costs, and so on.

Within most industries, as cumulative production experience in producing a product or service increases, quality is improved and costs are reduced. Japanese automakers have consolidated their business with a few highly efficient suppliers and created conditions that facilitate the suppliers to make the investments necessary to accelerate down the experience curve and to share the full advantage of this volume with the automakers. When a Japanese supplier wins a contract with a Japanese major automaker, it is essentially guaranteed four years of business or the life of the model. Moreover, if the supplier

performs up to expectations, it can usually renew the contract for the next model as well. Naturally, these practices encourage long-term and transaction-specific investments. Suppliers can invest in developing ideas and plans for the next model well in advance. Engineers from the limited suppliers have long-term experiences in working together, making it easier to efficiently develop designs for the next model. When the model change occurs, suppliers continue to move down the experience curve (Dyer and Ouchi, 1993).

In contrast, U.S. automakers have attempted to keep input prices low by maintaining size and bargaining power over suppliers. By splitting their business among many suppliers and rotating them frequently, U.S. automakers have repeatedly destroyed the experience curves of suppliers by ensuring that no one supplier could enjoy the experience curve effects to accumulate decisive cost advantage. Thus, the U.S. suppliers have not developed long-term relationships and experiences with automakers. Moreover, they are unable to effectively plan long-term production and investments, which is reflected in lower average plant capacity utilization. Without long-term commitment, U.S. suppliers can not have incentives enough to make long-term investments in capital equipment, particularly transaction-specific assets. Moreover, without the ability to make long-term forecasts, it is very difficult to make maximum use of capacity and capital equipment. For example, automakers may involve suppliers to a greater degree in the product design process to utilize fully the value of present tools and equipment. In this way, the risk of tool obsolescence due to unilateral design changes is lowered. Naturally, the longer the automaker and the supplier work together under these circumstances, the more likely it is for mutual trust to be developed. Trust in this case comes from reliability demonstrated over repeated interactions, as well as the shared knowledge that the parties need one another.

2.2 Building Trust

Trust is an expectation held by an agent that its trading partner would behave in a mutually acceptable manner including an expectation that neither party will exploit the other's vulnerabilities. This expectation calibrates the set of possible actions, thus reducing the uncertainty surrounding the partner's actions. The Japanese companies have recognized the need to be interdependent and have responded by developing facilitating mechanisms to build mutual trust. The Japanese do not rely on legal contracts heavily to protect their interests in trading relationships. Sako (1991) and Smitka (1991) argue that developing mechanisms to build trust between suppliers and customers have been critical in

3 Sako and Helper (1998) collected data by questionnaire survey during 1993 from 675 first-tier automobile component suppliers in the U.S. and 472 first-tier suppliers in Japan. Respondents were asked to answer the questionnaire for their most important customer regarding one product which was typically of their company's output and with they were familiar.

attenuating the hazards of opportunism in Japan.

Sako and Helper (1998) define trust as goodwill trust, that is, suppliers can rely on their automakers to help them in ways not required by their agreement with customers. Then, they find that Japanese suppliers were more trusting their customers than U.S. suppliers.³ Japanese suppliers tend to entertain a higher level of trust and a lower level of opportunism than U.S. suppliers do.⁴ Helps and technical assistance of automakers are significant in enhancing trust in Japan but not by in the U.S. Major Japanese automakers help their supplier match competitors' efforts if one of competitive suppliers offered a lower price for a product of same quality. Furthermore, the automakers provide significant helps for suppliers to reduce costs if their material costs raised. Japanese suppliers receive technical assistance from their automakers. Automaker engineers visit supplier site to aid in implementing improved procedures and processes of product development and production. Automakers provide opportunities to train personnel of supplier at automakers' sites.

Major Japanese automakers have large supplier-assistance management consulting groups with specialized expertise that work full time with suppliers to help them improve their production techniques and achieve total quality, cost, and delivery. They have engaged in disseminating technical and management techniques such as TQC (total quality control), VA (value analysis), VE (value engineering), JIT (just-in-time) production method, and so on. Providing assistance to suppliers is a highly effective method for both helping and forcing suppliers to continuously innovate and improve to stay ahead of the competition.⁵

The practice of long-term employment within one firm is important in developing trust among individuals both within the firm as well as across firms. There is real personal contract between the purchasing managers of manufactures and the managers or owner of a supplying firm. Because people can develop long-term relationships with their counterparts at the supplier or buyer, it is natural that the Japanese have developed significantly greater trust across firms.

The way that Japanese firms build trust is by requiring career paths in which employees transfer from firm to firm. Employee transfers, both temporary and permanent, are common among business partners, particularly between large manufacturers and their subcontractors. In addition to permanent and temporary employee exchanges, suppliers

4 Dyer (1996a) shows that Japanese supplier were more likely to trust Japanese automakers to treat them fairly and more willing to make dedicated investments based on oral agreements.

5 Suppliers often feel indebted or obligated to the automakers, but they also have mixed feelings about the system. On the one hand, they sometimes feel that sharing the business with another supplier is inappropriate when they are clearly ahead in both cost and quality. Moreover, they have to share not only the business but also information or technology in order to help their competitor improve. On the other hand, since they realize that someday they may need such assistance, they view the system as insurance. Toyota suppliers rarely go bankrupt because they receive helps from Toyota if they are in financial distress. Only suppliers that are unwilling or unable to improve continuously are cut off completely, and suppliers will do almost anything to avoid such damage to their reputations.

often send guest engineers to work at their customer technical centers on an ongoing basis. Supplier and automaker engineers work jointly designing the components for a new car model.⁶ Not only do these career-path help build trust between firms, but also transferred and guest employees are better able to understand how to enhance the efficiency of the development and production processes because they know both buyer and supplier operations. Direct contact is much more important than other forms of contact in developing ways for employees to know and trust each other. Both of automakers and suppliers encourage a considerable amount of face-to-face contact between supplier salespeople and automaker engineers and between automaker purchasing agents and supplier engineers. Japanese suppliers engage in more face-to-face contact and utilize more guest engineers than do U.S. automaker parts divisions and assembly divisions (Dyer, 1996a).

Companies need credible commitments if they are going to be willing to make customized investments. Cross-share holding in Japanese trading relationships represents commitments that firms have made to each other, and in many ways, it is an arrangement that is akin to an exchange of hostages (Williamson, 1983). Japanese automakers own significant portions of shares of their major suppliers. This ownership stake builds trust and goal congruence between automakers and their suppliers. Interlocking stock ownership represents a commitment to the supplier that needs an incentive to make the customized investment automakers requires. Those suppliers can be called as subsidiaries or affiliated companies of automakers depending on the proportion of share-ownership.⁷

3 Forced Competition

3.1 Three Types of Suppliers

A supplier typically has contracts with an automaker both for a variety of components in a single model and for similar components in different models. There are usually several companies within the automaker's supplier group qualified to manufacture a component. The other qualified suppliers may be currently producing similar components for other models. Within an assembler's hierarchical structure of suppliers, there are two basic types - design approved (DA) suppliers and design supplied (DS) ones (Asanuma, 1985a). DA suppliers provide both design and production services to the automaker's specifications while DS suppliers produce a component from drawings provided by the automaker. DA parts usually include air conditioners, body and instrumental panels, engines, and transmissions. The survey indicates that DA parts account for 62% of total components of

6 Dyer and Ouchi (1993) find that suppliers send guest engineers to work at their customer technical centers on an ongoing basis. Toyota had about 350 guest engineers at its main technical center in 1992. These engineers become a part of the design team and are given desks to the Toyota engineers.

7 Toyota and Nissan own an average of 23 percent of the stock of subsidiaries or affiliated companies, whereas U.S. automakers do not own stock in their suppliers in the sampling survey done by Dyer (1996a).

Japanese automakers in the late 1980s. On the other hand, DS parts account for 81% in the U.S. automakers in that period. The U.S. automakers have recently changed to relying more on DA parts (Clark and Fujimoto, 1991).

The DA suppliers are usually those with the close and long-term relationships with the automaker. Most of them are subsidiaries or affiliated companies of the automaker. First-tier and the DA suppliers have a greater number and more profitable contracts with the automaker. The automaker usually has less detailed knowledge of the DA supplier's production costs that give the supplier an advantage in price negotiation. There are many thousands of suppliers in the automaker's supplier hierarchy and only a few hundred at the first-tier.

Third type of supplier is commodity supplier who simply manufactures parts designed by the automaker, usually standardized parts such as batteries, glasses, and tires. Since such parts are not customized to a particular automaker, it can be thought close coordination for that parts may be less important than for other parts. Commodity suppliers may have long-term relationships with their automakers if the suppliers' unique manufacturing capabilities make them necessary.

3.2 Supplier Competition for Design and Manufacturing

Cusmano and Takeishi (1991) survey purchasing agents and product planners of the largest Japanese automakers, US automakers, and the U.S. operations of Japanese automakers. They find sole sourcing is not uncommon among the U.S. automakers, nor is multiple sourcing uncommon among the Japanese automakers, though on average the Japanese use fewer suppliers per part.⁸ They also find that suppliers to U.S. firms play a large role from an apparently early stage in development, though Japanese suppliers still play a greater role in design. Japanese firms usually employ a multiple sourcing policy to force suppliers into intense competition, even though they forgo economies of scale (Asanuma, 1985b). Japanese automakers are less likely to rely on one supplier than the U.S. automakers are. On average, each Japanese automaker purchases each part from approximately three suppliers, and each supplier sells the same part to approximately three automakers (Cusmano and Takeishi, 1995). They maintain competition so that one supplier's ability to generate cost or quality improvements provides an incentive for the other supplier to keep up.

The typical production cycle for a car model begins with a lengthy design and development stage followed by a 4-year production stage. The automaker usually invites several qualified firms in the supplier group to compete for a contract to design and produce a component for a new model cycle. A DA supplier will undertake the design and

⁸ Dyer, Cho, and Chu (1998) find exclusive relationships between automakers and suppliers with high level of interaction in Korean automobile industry.

development as well as tooling for production with no guarantee of reimbursement by the automaker. For DS supplier, the automaker will guarantee reimbursement for specific investments such as tolling. Whether DA or DS, the automaker makes a firm commitment to use the supplier for the 4-years production life of the model.

Recent evidence suggests that although the Japanese companies encourage their suppliers to make customized investments, they use forced competition with one or two competitors to make sure that their suppliers are disciplined by the ever-present threat of competition. This competition often begins at the design stage when the automaker invites guest engineers from two suppliers to work at the automaker's technical center as part of the design team. As the design work proceeds, the automaker meets with each supplier separately to review proprietary ideas and eventually decides which supplier has superior product design. The losing supplier may become a secondary supplier for that model or may simply have an opportunity to develop a design for a different model. Liker, *et al.* (1996) shows that Japanese suppliers face less competition in the design and manufacturing stage than U.S. suppliers, though Japanese suppliers do face considerable competition - about two competitors for a given design and manufacturing contract on average.⁹

The buyer can strengthen the incentives for cost or quality improvements by making the price paid to each supplier dependent on relative performance. The second-place supplier loses out on additional business and the bonus for good performance. However, the buyer does not abandon a weak supplier, but works with it to help it compete with the strong suppliers.¹⁰ The forced competition among the limited suppliers can be explained with the theory of principal-agent. The theory focuses on how a principal may compensate an agent for works delegated. The theory deals with the design of optimal compensation scheme in order to motivate an agent to work efficiently under the situation where an agent's action is not observed perfectly. According to the literature in the use of contests to compensate multiple agents, contests among the suppliers can work as a mean for providing incentive to suppliers. The contest serves to make the supplier's reward dependent on his rivals' efforts as well as his own, while the reward is actually independent of the supplier's cost. It can be shown that contests outperform individual-agent-incentive schemes in solving the problem in unobservable efforts when suppliers face some degree of common production uncertainty in addition to their own uncertainty. Thus, the buyer as a principal can increase incentive of supplier, as an agent for enhancing efficiency of production through multiple

9 Liker, *et al* (1996) examines supplier involvement in design based on a 1993 survey of approximately 143 Japanese and 189 U.S. automobile component suppliers. The survey was based on mailed, self-administered questionnaires. Respondents were asked to identify their largest dollar-volume automobile component or component group. The questions were also to be answered with their largest automobile customer.

10 Green and Stokey (1983); Lazear and Rosen (1981); Nalebuff and Stiglitz (1983) have examined the use of contests to compensate multiple agents.

suppliers.

4 Transaction-specific Investments

4.1 Investments in Specific Assets

Automaker-supplier relationships in Japan are characterized long-term and highly committed, whereas they are more likely to be governed by short-term, arm's-length relationship in the U.S. One of the major benefits of the Japanese supplier involvement in design is access to highly customized design with unique features for a particular buyer's needs.

Japanese automobile suppliers develop more unique parts for their customers and make greater investments in specialized assets than U.S. suppliers do. A first-tier supplier does not usually receive a separate payment for the investment in tools, dies, molds, and jigs that are highly customized and would need to be scrapped if the automaker cut off orders to the supplier. The suppliers' specialized capital investments make them highly dependent on the automakers, with the real possibility of hold-up problems. However, automakers are also significantly dependent on the suppliers. Most DA suppliers' parts are "black box," meaning that the automaker provides only very general specifications while the supplier does all of the detailed functional specifications and blueprints. Consequently, DA suppliers have significantly more knowledge about the design and manufacture of the part than does the automaker. Because black-box parts are customized to a specific model, the automaker is highly dependent on the supplier. If the supplier did not perform as desired, the automaker would have difficulty simply shifting business to another supplier, given the product's specific nature.¹¹ Some DA suppliers claim that they do not provide the automakers with all of the specific functional details when they submit their design drawings for approval, but intentionally leave out certain important details such as tolerances. Because the automaker does not know the part's exact design specifications, it is difficult to change suppliers, resulting in the automaker's dependence on the supplier. Asanuma (1989) argues that the more technological initiative DA suppliers have, the more likely they are to earn from supplying relations with automakers. Automakers can respond to it by investing in technological development or starting in-house development and production, or finding rival suppliers.¹²

Under these conditions, each party makes commitment with substantial transaction-

11 Most automakers in Japan restrict suppliers to sell design specification to other companies (Fair Trade Commission in Japan, 1993).

12 Denso Corp. is one of the major suppliers of electronic components to Toyota. Denso supplied 50% of Toyota's total electronic component needs in 1997. Toyota maintains multiple sourcing policy. The second source can give Toyota the leverage to impose its stringent schedule of cost reduction on the primary source. But Toyota cannot find rival suppliers of Denso who could serve as alternative sources of electronics parts. Consequently, it has been decided that Toyota itself must become the rival to avoid heavy dependence on Denso for electronics (Lincoln, Ahmadjian, and Mason, 1998).

specific investments, which creates quasi rents only if the both parties continue working together. If the relationship is terminated, each party loses some portion of the rent. Thus these specialized investments create interdependence, which in turn creates incentives to cooperate. According to transaction cost economics, it may be difficult to specify *ex ante* precisely how the assets will be employed in production even if transaction-specific investments are entirely contractible. Once transaction-specific assets are in place, the characteristics of the transaction and the gain from trade will be determined by *ex post* bargaining between the buyer and the supplier. Highly transaction-specific investment should be avoided by buying commodities in the market and making customized products in-house where the hierarchy can be used to reduce transaction costs (Masten, Meehan, and Snyder, 1989; Monteverde and Teece, 1982; Williamson, 1979). By contrast, Japanese automakers have increasingly delegated responsibility for design and manufacture of more complex subsystems to a close-tied group of suppliers who are willing to make significant transaction-specific investments in developing customized parts for the buyers. Moreover, Japanese automakers seem willing to allow suppliers to develop capabilities to receive the long-term advantages of cooperation. In fact, transaction-specific investment increases mutual dependence if they are made equally by both parties. Since these specific investments increase the exit costs for a party and reduce the potential for opportunistic behavior, parties are likely to be comforted and thus may increase their commitment to each other. This, in turn, creates incentives to cooperate, and the reduction in cost and improvements in quality that are gained through the cooperation outweigh the risks of opportunistic behavior from the parties involved.

Liker *et al.* (1996) shows that suppliers have a close and long-term relationship with their largest customer both in Japan and U.S. automobile industry. They also suggest closer, more long-term relationships in Japan, though these differences are not as large as expected. It is observed that Japanese automakers have the most dedicated relationships with subsystem suppliers and the least dedicated with lower-tier suppliers. Japanese suppliers are considerably more dependent on their largest customer. These results suggest U.S. automobile companies are as likely as Japanese companies to out-source design, given suppliers early information about product development, and allow them to develop unique design capabilities the automakers cannot replicate.¹³

4.2 Investments in Customized Assets

Japanese suppliers dedicated some of capital investments to their primary customer that these customized physical assets that could not be re-deployed if the customer terminate to purchase from them. Clark and Fujimoto (1991) suggested that dedicated physical assets

¹³ Korean automakers demand a high degree of loyalty from their suppliers. Suppliers make highly customized investments and coordinate closely with their automakers (Dyer, Cho, and Chu, 1998).

play an important role in the improvement of product integrity and thus in overall product quality. It generally requires various types of investments in customized assets by one or both firms in order to make the production and physical distribution more efficient. Dyer and Ouchi (1993) identify three types of customized investments employed in supplier relationship: (1) site-specific investment; (2) physical investments; (3) human capital investments.¹⁴

(1) Site-specific investments: Site specificity refers to the situation whereby successive production stages that are immobile in nature are located in close proximity to one another to improve coordination and economize on inventory and transportation costs. Plants are located so that they are dedicated largely to a particular customer in order to improve coordination and economize on inventory and transportation costs. Supplier relations in Japan involves building a supplier plant within fifteen miles of the customer plant to reduce transportation costs, improve delivery, and generally improve coordination. It allows supplier engineers to work daily at customer technical centers with customer engineers in designing new products.

(2) Physical investments: Manufacturing equipment such as tools, dies, molds, jigs, machinery, information system and so on is customized. Physical specificity refers to transaction-specific capital investments. Physical asset specialization allows for developing unique feature of product and may improve quality by increasing product integrity.

(3) Human capital investments: Dedicated design to manufacturing requires engineers to develop significant customer-specific knowledge. Human capital specificity refers to transaction-specific know-how accumulated by trade partners through long-term trading relationships.

Mutual human capital increases as trade partners develop experiences working together and accumulate specialized information, language, and know-how that allows them to communicate efficiently and effectively. It involves transferring the buyer's executives or employees to the supplier to work on a temporary or permanent basis, and sending consultants to work with the supplier to improve production methods, implement just-in-time delivery systems, or assist in solving other problems.

Dyer (1996a) shows greater transaction-specific investments are sunk in Japanese supplier relations than those in the U.S. Japanese automakers are more effective at coordinating the supply-production system. Greater mutual human capital gives Japanese companies the ability to rapidly disseminate information and to improve interfirm communication, thereby coordination in supplier relations. Japanese suppliers are much more likely to share key task-related information with automakers, notably technical information and information on their production costs. Furthermore, Japanese automakers

¹⁴ Asanuma (1989) identified that transaction-specific investments are prevalent in supplier relations in Japan, and developed the notion of "relation-specific skill."

are providing more information to assist affiliated suppliers in reducing costs, increasing quality, and improving delivery.

4.3 Relationship between Transaction-specific Investments and Performance

Dyer (1996b) examines the relationship between inter-firm asset specificity and performance in the automobile industry. The survey consists of two Japanese automakers and all three U.S. automakers and a sample of their suppliers. The unit of analysis is the supplier-automaker relationship. Toyota and Nissan's supplier indicated that approximately 21 percent of their capital equipment investments were not re-deployable, compared with 20 percent for Ford suppliers, 14 percent for GM suppliers. On virtually every assets specificity measure, Japanese automakers and their suppliers were more specialized than their U.S. counterparts. Moreover, with regard to site and human asset specificity, Toyota's supplier group was more specialized than Nissan's supplier group. More specifically, it examines the extent to which differences in supplier-automaker asset specialization may explain performance differences between Japanese automaker and the U.S. The findings indicate a positive relationship between supplier-automaker specialization and performance. In particular, the data suggest a positive relationship between inter-firm human capital specificity and both quality and new model cycle time. Moreover, site specialization is found to be positively associated with lower inventory costs. The findings suggest that in the automobile industry a tightly integrated production network characterized by proximity and a high level of mutual human capital specificity will outperform a loosely integrated production network characterized by low level of inter-firm specificity.

A firm may choose to seek efficiency advantages by creating assets, which are specialized in conjunction with the assets of a trading partner. These transaction-specific assets as the vehicle through which trading partners are able to generate relational quasi rents. Although investments in specific assets boost productivity, the incentive to make transaction-specific investments is tempered by the fact that the more specialized a resource becomes, the lower its value in alternative uses. The contingent value of a specific resource exposed its owner to a greater risk of opportunism than the owner of generalized resources. According to the transaction cost economics perspective, if trade partners make transaction-specific investments, then they must safeguard against the hazards of opportunism. Source of advantage is contingent on the costs associated with safeguarding those investments. Transaction-specific investments are more likely to result in high performance when trade partners have developed safeguards which can control opportunism at relatively low cost and task activities are characterized by a highly degree of interdependence.

It would be misleading to suggest that asset specificity is the only, or even the primary, factor that contributes to performance differences among automakers. Undoubtedly

numerous other factors not captured in the model contribute to performance differences. The optimal level of inter-firm asset specificity will depend on the costs of safeguarding specific investments. If the safeguard costs are particularly high then the gains from specialization may be outweighed by the costs. The fact that *kankei gaisha* (affiliated suppliers) exhibit greater asset specificity than U.S. in-house division is intriguing. Trust may be a highly effective and low-cost means for safeguarding transaction-specific investments. One can argue that constraints on opportunism within the Japanese institutional environment allow Japanese companies to generate relational quasi rents more effectively (Dyer, 1996b).

The efficient level of specificity between trading partners is likely to be contingent on the task activities and degree of interdependence. Generally speaking, the greater the interdependence, the more both parties will benefit from investments in specialized assets. The findings suggest that when working activities are highly interdependent as they are in the automobile industry, the Japanese automakers are more efficient than the U.S. These transaction-specific investments create substantial buyer and supplier switching costs and, once sunk, make the two parties highly interdependence. This interdependent relationship can create potential contracting problems if the parties do not completely trust each other. Toyota's just-in-time (JIT) system is a good example of how customized investments can create value. Just-in-time system was designed to reduce complexity and costs by eliminating inventories and work in process and to ensure that there was no redundant buffer stocks, distribution facilities, or quality inspections. However, to implement JIT efficiently, Toyota and its suppliers had to make customized investments in information systems, plants, and flexible manufacturing systems that created mutual dependency.

5 Supplier Involvement in Product Development

5.1 Suppliers' Roles in Product Development

One of the key features of Japanese supplier management is the substantial involvement of suppliers in product development. The early involvement of suppliers in product development is instrumental in reducing lead-time and avoiding costly production problems in automakers (Clark and Fujimoto, 1991). Clark (1989) finds that gains of Japanese automakers from having close relations with suppliers with superior capability in product development is a great proportion of unique parts without substantially increasing their own engineering costs. Kamath and Liker (1994) examine supplier-management used in product development practiced by major Japanese automakers. They observed closely coordinated buyer-supplier relationships in product development. It is widely believed that Japanese automakers treat virtually all their primary suppliers who deal directly with the automobile assembler as close partners. In fact, they typically regard only a handful as partners and assign more limited roles to the rest. Nor do buyers and suppliers work

together in free-flowing teams to develop new products. Rather, Japanese automakers design their development programs tightly and use targets and prototypes to keep suppliers in line. Managed correctly, suppliers can help their automakers reduce lead times and manufacturing costs, and can aid the design process.

Japanese automakers assign suppliers different roles and give even first-tier suppliers varying levels of responsibility for the product development. The Japanese hierarchical structure simplifies communication between buyers and suppliers: first-tier suppliers coordinate the activities of the second tier and so on down the hierarchy, allowing customers to focus scarce communication resources on the top tier. Still, with 100 to 200 first-tier suppliers, an automaker cannot easily work with all of them as partners in product development. Successful partnerships depend on the right balance among supplier's technological capabilities, an automaker's willingness to share information, and both companies' requirements. There is a range of postures that automakers and suppliers can adopt within a long-term cooperative relationship. Suppliers may play different roles for different buyers. Each posture carries fundamentally different responsibilities during product development, and the automaker-supplier relationships vary considerably in closeness and intensity.

Primary suppliers top the hierarchy. These selected first-tier suppliers can also be thought of as full-service providers and DA suppliers. Primary suppliers are responsible for entire subsystems such as heating, ventilating and air conditioning. They often participate in planning a new model even before the concept stage. Their understanding of their products and processes are superior to those of their buyers, and they suggest solutions to meet their buyers' price and performance objectives. They do their own testing and may even be responsible for testing other suppliers' parts. One of the major partners is Denso, which has grown to become an independent supplier of a broad range of components approaching to Toyota in size.

One type of DS suppliers refers to as a full-system supplier designing and manufacturing complex assemblies. Because they lack the technological capabilities of partners, they have less influence on design. The automaker gives these suppliers critical specifications for performance, interface requirements and space constraints. These suppliers then develop the systems on their own. Moreover, these suppliers take on major testing responsibilities: an automaker might not even verify the test data these suppliers submit along with its prototype.

Another type of DS suppliers has even less influence on design specifications. They may participate as consultants in meetings with the automaker during the concept stage, but the buyer determines in explicit detail the specifications for the part. The responsibilities of these suppliers include working out the detailed of the design and building and testing prototypes. But the automaker often conducts critical tests internally to assess the

performance of the supplier's parts. Communications are not very intensive in the concept stage but intensify during prototyping, though not to the same degree as with primary suppliers.

Commodity suppliers simply manufacture parts designed by the automaker, usually standard parts. This role is appropriate when a customer chooses to supplement its own internal ability to design those parts with a commodity supplier's manufacturing capacity. Commodity-suppliers and their buyers may communicate frequently during the late-prototype and production-preparation stages, though communication is less intensive than it is in the other roles. These suppliers may have long-term relationships with their customers if the suppliers' unique manufacturing capabilities make them necessary or if the automakers' just-in-time manufacturing schedules are so tight that they require them. Suppliers and their customers become increasingly interdependent as they work together and their trading relationship grows. The buyer depends on the supplier's know-how and relies on the supplier to deliver on time and on target. Committed ever more heavily to the customer, the supplier depends on it for its future business.

Japanese automakers manage product development tightly. They set clear, understandable goals and communicate them consistently to suppliers, and they use targets and prototypes to enforce those goals. It is a simple, rigid process, much like an assembly line. Suppliers must keep the line moving as a highly regimental role. With a highly structured and routinized product-development process, Japanese suppliers know exactly where they fit in and when, and this arrangement allows them to be innovative within clearly determined boundaries. Japanese automakers give marching orders to suppliers through carefully considered targets for price, delivery date, performance, and space constraints. Then the suppliers go off and design to those targets. There is usually little room for missing them because a deviation by one supplier will have implications for designers of mating components systems. Suppliers are expected to work hard to meet targets on time. Although buyers generally understand if supplier cannot meet a target, they are unsympathetic if the supplier shows signs that it has not worked very hard. The automaker is responsible for avoiding arbitrary and capricious changes in targets, because they would reverberate throughout the system and could disrupt other suppliers' design work.

Liker, *et al.* (1996) show that Japanese suppliers have more responsibility and a greater percent of subsystem suppliers designed parts themselves rather than jointly with their customer. There is a high level of supplier involvement in product development in both countries for the early stages of design, particularly among suppliers of major subsystems. Compared to the Japanese, U.S. suppliers are involved as early in the concept stage, take comparable levels of responsibility for design, analysis, prototyping and testing, and are as likely to influence the requirements for their component and communicate even more frequently with their customer in the early stage of design. The U.S. automakers seem to be

giving suppliers the responsibility and opportunities to exploit advantages of asset specificity and customer dependence on the supplier, without the same level of control as we see in Japan. They do not hold equity in the supplier, they do not represent as large a volume of the supplier's sales, they have less internal capability to design the parts themselves, and they are not repeating supplier's tests as frequently. There is no evidence in these data that Japanese suppliers are given greater responsibility for prototyping in Japan than in the U.S. Nor is there evidence that Japanese companies expect more complete prototypes and trust their suppliers enough not to replicate their component test. In fact, there is a significantly greater likelihood in Japan that supplier prototype tests are replicated. Japanese automakers are closely monitoring their suppliers' design.

5.2 Information Sharing in Product Development Stage

The Japanese supplier management suggests suppliers are trusted enough to be given model information relatively early in the design process - often at the concept or pre-concept stage - and suppliers, particularly the DA, are expected to participate in the development, beginning at the concept stage. Japanese DA suppliers wield significant influence over the process of defining customers' requirements so that the product designs exploits the suppliers' unique manufacturing capabilities. Liker *et al.* (1996) indicate that almost all of the subsystem supplier in Japan receive early vehicle concept information from their customers although they do not necessarily have a great deal of influences over the setting of specifications for their subsystems. Contrary to the current literature that suggests Japanese automakers provide broader specifications that allow the supplier greater freedom to innovate, there were no Japanese-U.S. differences in the degree of specificity of the customer requirements. Japanese automakers were as likely as their U.S. counterparts to include actual dimensions in the requirements.

Japanese automakers provide early new model information to primary suppliers as the product concept is forming and issue only the minimum critical product requirements. U.S. automakers are thought to provide much more detailed specifications to their suppliers, allowing suppliers little latitude on specifying the design. Japanese supplier management involves intense and frequent communication during the product development cycle, particularly in the early stages when the product is being defined. This includes the intense and regular sharing of technical information to improve performance and reduce cost. Because these are long-term automaker-supplier relationships, the quality and efficiency of information exchange is significantly higher than it would be in new relationships. Thus mutual human capital investment enhances information sharing and communication between automaker and supplier.

There was considerably more frequent exchange of design information reported in the U.S. compared to Japan at all tier levels and all stages of the development process. The

frequency of communication does not necessarily reflect the quality of communication. The Japanese relations have a long and continuous history of working together with their suppliers on design that they can communicate quickly and easily between them. Direct communication and relationships developed over a long period of time have made detailed and explicit written communications largely unnecessary. The result of this emphasis on communication is greater efficiency, faster product-development cycles. The greater frequency of information exchange about product development between automakers and suppliers in the U.S. may reflect less effective communication and decision making. Japanese suppliers are given specifications formally, asking to go off and do the design and return with a prototype on time. Communication has been streamlined so it is less frequent than in the U.S. The Japanese supplier relations can be thought to involve intense and frequent communication during the product development cycle, particularly in the early stages when the product is being defined. This includes the intense and regular sharing of technical information to improve quality and reduce cost. When a supplier gets a notice that the concept session for a specific vehicle model is being scheduled, there is no ambiguity about what the supplier must bring to the session; approximately when the first, second, and third prototypes will be due; and what the buyer's expectations at each of those milestone events will be. One can find clear and consistent communication between suppliers and automakers in the Japanese relations.

5.3 Cost-reducing Efforts

Japanese automakers use a prolonged target-setting process to further explore the design and improve cost and quality. For example, Toyota gives them targets shortly after the 36-month presentation. Usually, maximum/minimum targets are generally expressed in terms of improvements over an existing product or the prototype in the presentation: Toyota is likely to want about 4 percent reduction in cost, or about 5 percent improvement in power output. During the months that follow, the suppliers diligently strive to meet the targets through design improvements. If the targets are met or exceeded, this eventually becomes the specification; if not, in negotiations, the supplier demonstrates with test data that the target is impossible, and the both parties compromise on a target. Toyota's engineers typically set targets on each component higher than really necessary by as much as 20 percent. They realize that, with production variations, this ensures a comfort zone so parts out of tolerance will actually be quality parts. They also want the suppliers to stretch; if the targets are too easy, the supplier will relax and not try to continuously push possible boundaries. If the supplier cannot achieve the very challenging goal, there is still room for negotiation (Ward, *et al.*, 1995).

Along with specifications for a component, Japanese automaker gives suppliers a target price (Asanuma, 1988b). The automaker decides what price the market will bear for the

total vehicle and works back, roughly allocating costs to major subsystems and components. It then gives that cost to the supplier as a target at the beginning of the design process. When the Japanese automaker hands design specifications to its suppliers, these specifications include a target price, whereas U.S. automobile companies tend to rely more on direct market forces to control costs. Aggressive target prices are a major factor in driving supplier to use value engineering and reduce cost so they can make a profit at the price dictated by the customer. In fact, Japanese automakers also know the cost structure of their suppliers and generally set the target price very aggressively under the assumption that suppliers will continually reduce costs over experiences of the previous model. Supplier which are dependent on a principal customer have no choice but to reduce cost aggressively or risk losing the affiliation with that customer which could mean going out of business. The supplier has a great incentive to design the part so it can meet that price and still make a profit. Although there seems to be less flexibility in the target prices, there is much greater opportunity to explicitly consider trade-off between cost, performance in the early design stage (Ward, *et al.*, 1995).

Liker, *et al.* (1996) shows the data to support the more widespread use of target pricing in Japan and the greater prevalence of competitive bidding in the U.S. However, there is also considerable evidence that U.S. automakers are using target pricing. More than half of both the U.S. and Japanese suppliers said the use of competitive bids was a major way to set prices. Value engineering has become an institutionalized practice in these companies. The term used for identifying ways to reduce cost in the product/process development stage is value engineering. In fact each buyer has a formula for splitting the cost saving suppliers have achieved through value engineering between the customer and suppliers.

6 Convergence

Supplier relations in the U.S. are changing rapidly and are moving close to those in Japan. Cusumano and Takeishi (1991) present the results of a questionnaire survey to a sample of automobile manufactures in the U.S. and Japan during the spring of 1990. The survey provides evidence that U.S. automakers and suppliers have adopted at least some practices traditionally associated with the Japanese, thus indicating a possible convergence toward the Japanese supplier relations. The evidence shows that U.S. automakers appeared to move close to the Japanese model during the 1980s in several areas. It is found that decreases in the number of suppliers per part for the U.S automakers during the late 1980s and early 1990s.

Liker, *et al.* (1996) find little support for the expected differences between Japanese and the U.S. automakers in supplier involvement in the design process. U.S. automakers have been increasing levels of supplier involvement in product development rivaling the Japanese. U. S. automakers are as likely as the Japanese to be more dependent on suppliers

in design, give suppliers early information about product development, and allow them to develop unique design capabilities that automakers cannot replicate.

Once contracts were short-term, arm's-length relationships, now contracts have increasingly become long-term in the U.S. Helper and Sako (1995) shows that U.S. suppliers provide buyers with detailed information about their processes, and buyers talk of partnerships with their suppliers. 87 percent of Japanese suppliers, compared with 68 percent of U.S. companies, thought that their customer's commitment would last more than four years, the typical duration of a model cycle. The actual record of trading with the same customer was significantly longer in Japan than in the United States.

In the U.S., more suppliers provided their customers with a detailed breakdown of the steps in their production process, an increase that is compatible with a trend toward collaborative relationships between 1984 and 1993.¹⁵ More and more U.S. suppliers have given their customers a detailed breakdown of process steps, so that the gap between U.S. and Japanese companies was eliminated by 1993 in this respect. At the same time, automaker commitment, measured by either past record or suppliers' future projections, remains higher in Japan than in the U.S. In joint problem solving, suppliers' expectations of cooperation have increased in the U.S. but declined in Japan. In the U.S., suppliers are significantly more likely than they were five years ago to provide detailed information to their customers, have long-term contracts, believe that their customers are serious about product quality, and have defect-prevention systems in place.¹⁶ These results indicate progress toward cooperative relationships, in which suppliers play an important role in solving problems and developing new ideas about products and processes. Despite the movement toward the Japanese supplier relations in the U.S., suppliers with U.S. automakers do not feel that their customers are more trustworthy than were five years ago, do not receive much assistance from them in reducing costs or adopting new technology. One of the reasons behind seemingly contradictory trends can be the significant differences in purchasing policy among U.S. automakers. Therefore, there has been a limited, yet noticeable, convergence in the nature of U.S. and Japanese supplier relations.

Sako and Helper (1995) also show that there has been a considerable convergence in the methods of supplier relations towards those consistent with closer and longer-term relationships in Europe, the U.S. and Japan.¹⁷ An increasing proportion of European and U.S. suppliers have provided their customer with a detailed breakdown of process steps, so

15 Frey and Schlosser (1993) present a case of the Ford-ABB Oakville paint-finishing project that shows how cooperative and innovative buyer-supplier relationships can be achieved in the U.S. automobile industry.

16 Helper (1991) conducts survey of U.S. automobile suppliers and finds that automakers have increased the length of the contracts they offer, and suppliers are more likely to provide process information. However, suppliers still feel a lack of automaker commitment, since their level of trust in the automaker does not increase. Suppliers do not receive much assistance in reducing costs or adopting new technology. Moreover, performance improvements often come at the suppliers' expenses.

that the gap between European and the U.S. on the one hand and Japan on the other in this respect is eliminated by 1994. At the same time, customer commitment, measured either by past record or by supplier's future projection, remains higher in Japan than in Europe or the U.S. Suppliers' expectations of joint problem-solving have increased in Europe and the U.S. but declined in Japan.¹⁸

7 Conclusion

Supplier relations are important areas for any firm that subcontracts portions of component design and production because this contributes to enhance value of product and efficiency of production. There have been significant differences in supplier relations between Japan and the U.S. Supplier relations in Japan can be described to have distinctive characteristics in several aspects compared with the U.S. counterpart. It is important to understand how efficiently Japanese supplier relations work and whether it can be applied in other countries. Furthermore, it is also important to understand the economic rationale of supplier relations in Japan.

In this paper, major characteristics of Japanese supplier relations are described in comparison with those of the U.S. Economic rationale for those relationships are provided. Furthermore, comparing supplier relations in Japan and the U.S., convergence in the nature of those are discussed. Significant features of Japanese supplier relations are characterized as follows: (1) long-term relationships and commitments with frequent planned communication, which reduced transaction costs between buyer and supplier; trust-building practices like supplier-assistance programs, owning stock, and keeping employees' personal ties that create a high degree of mutual trust; (2) forced competition among few suppliers focusing on improvements in costs and quality; (3) significant transaction-specific investments in plant, equipment, and human capital as well as to share valuable technical information; (4) substantial involvement of suppliers in product development with intensive and regular sharing of technical and cost information to improve quality.

17 Sako and Helper (1995) conducts mail survey of first-tier parts suppliers in the U.S., Japan, and Europe during the period 1993-94. The findings are from responses from 1416 suppliers.

18 In the U.K. automobile industry the traditional buyer-supplier relationship was promised on stable, high volume, low variety production; relationship was one of close competition, with any new business secured by one supplier being won at bidding; price was the primary criterion on which contracts were awarded. Today, one can notice that several automakers are trying to shift toward reducing costs, and resolving scheduling problems, technical difficulties and the like through a process of cooperation rather than competition. The new relationship was characterized by far greater dependency as it involved suppliers in design, research and development work, and quality control, and this in turn facilitated more commitment from suppliers by allowing them to engage in more forward planning. Reducing the supplier base is one feature of the current transformation, long-term collaborative contracts awarded to a limited number of suppliers, and buying more assembled component systems rather than individual components. However, the structure of the U.K. vehicle industry presents severe technology transfer and to the close collaboration between buyers and suppliers. There is a largely independent and common first-tier of suppliers, as well as a common secondary/tertiary tier, which are shared by a number of vehicle assemblers (Turnbull, *et al.*, 1992).

Supplier relations in the U.S. are changing rapidly and are moving close to those in Japan. In the U.S., suppliers are becoming significantly more likely to provide detailed information to their customers, have long-term contracts, make efforts in improving costs and quality. These results indicate progress toward collaborative relationships, in which suppliers play an important role in solving problems and developing ideas about products and processes technology. Therefore, there has been a limited, yet noticeable, convergence in the nature of U.S. and Japanese supplier relations.

Despite many empirical studies on supplier relations, particularly in automobile industry, many empirical and theoretical problems are still left unknown. Can we identify same characteristics in supplier relations across industries in Japan compared with the U.S. counterpart? Can the Japanese practices be unique to the peculiar circumstances of the Japanese social system? Future research needs to provide empirical analysis based on different perspectives to gain insights.

How efficient Japanese supplier relations can be? Research need to combine the viewpoints of both automakers and suppliers. This analysis could lead to a better picture of how supplier relations as a whole affect efficiency and innovation in product development and production of automobile industry. Furthermore, theoretical models can be required to explain how efficient those relations can be.

To what extent can the nature of supplier relations in different countries converge? We know that each automakers attempt to seek more efficient way to manage supplier relations that work effectively in different countries. We need to continue to study how the circumstances affect characteristics of supplier relations in different countries to calibrate the likely patterns that supplier relations will converge in the future. Generalizations on a convergent pattern of supplier relations need longitudinal studies with multiple perspectives.

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DEVELOPMENT OF THE FOREST STEWARDSHIP COUNCIL CERTIFICATION PROGRAM

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Abstract

The Forest Stewardship Council is a non-profit, non-governmental organization which has become the most successful worldwide accreditor for third party conformance or certification of forest lands. This article provides a brief summation of the historical development of FSC and a description of its organizational structure. The forest certification program of FSC is controversial and has received criticism from many factions. Understanding the goals of FSC and predicting its success is discussed in relation to the forest management failures which FSC was conceived to address. Descriptions of the benefits of forest certification and discussion of the costs of certification are given as they relate to buyers, producers, and consumers. Distribution of certified forests and forest areas are provided in relation to regions and certifying agencies.

JEL Classification: K32, L73, Q23.

Key Words: FSC, Forest Certification, sustainability.

Introduction

During the past decade the management and preservation of the world's forest resources have come under increasing worldwide public scrutiny. Environmental research identified overuse and mismanagement of natural resources by commercial enterprise, private landowners, and government agencies as causes for the world wide deterioration of natural habitat. Publication of scientific reports, special interest group activities, and popular

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media coverage of these environmental concerns generated public involvement and put pressure on nations to address these problems. The convening of the United Nations Conference on Environment and Development (UNCED or more commonly known as "Earth Summit") brought together representatives of many of the world's nations to address these environmental quality issues as global problems requiring unified response.

Even though the scope of the Earth Summit conference was much broader than concerns with forest habitat, many issues and concerns regarding global forest management received extensive attention. Since the Earth Summit, many of the world's nations have continued to participate in international discussions and have formed agreements concerning the management of forest resources. Initiatives such as the Montreal Process, the Pan-European (Helsinki) Process, and the Tarapoto Proposal are indications of the seriousness with which these nations have attempted to address these problems. Initiatives such as these acknowledge that maintaining and monitoring responsible forest management as well as defining forest health require unilateral internationalization and globalization of standards, policies, and regulations.

Environmental interest groups, forest industry associations, and other non-governmental organizations (NGOs) have not allowed this time of international policy and regulation development to proceed without their input. They have participated in order to make sure that their special interests and agendas would be part of the decision making process. One of the most controversial initiatives to come out of this collaboration has been that of third-party conformance assessment also known as forest certification. The Forest Stewardship Council's forest certification program has been one of the most successful attempts to gain relatively widespread establishment and implementation of standards relating to forest health and management.

GOALS AND ORGANIZATIONAL STRUCTURE OF THE FOREST STEWARDSHIP COUNCIL

The concept of the Forest Stewardship Council originated in 1990 in order to confront the perceived threat of tropical deforestation and assist in the preservation of global species diversity. By 1993 that original collaboration of a few timber users, traders, and representatives of environmental and human-rights NGO's had developed into the 130 member Founding Assembly of the Forest Stewardship Council. By August 1994 a definitive set of guidelines, *Principles and Criteria for Forest Management*, were drafted and approved by the Founding Members.

Tables attached show the current distribution of FSC members. Table 1 shows that Northern hemisphere members are dominant with Europe and North America as the two major regions that occupy the current assembly of FSC. Among the top ten countries, three countries, USA, Canada and UK, occupy almost half of the total numbers of FSC.

Interestingly, Canada is the second top country in terms of the number of FSC member even though Canada has a very small portion of FSC certified forests in number as well as in area (Table 2). In terms of chamber in the FSC assembly, economics and environment are competing (Table 3).

Table 1. Distribution of FSC Members by Region.

region	# of members	%
Africa	8	2.6
Asia	10	3.2
Europe	119	38.0
L.America	62	19.8
N.America	108	34.5
Oceania	6	1.9
Total	313	100.0
North	228	72.8
South	85	27.2
Total	313	100.0

Data summerized from FSC (1999b)

Table 2. Number of Members from Top Ten Countries.

country	# of members	%
USA	58	18.5
Canada	50	16.0
UK	33	10.5
Germany	25	8.0
Brazil	18	5.8
Netherlands	15	4.8
Sweden	15	4.8
Mexico	8	2.6
Denmark	7	2.2
Belgium	6	1.9
Switzerland	6	1.9
Total	241	77.0

Data summerized from FSC (1999b)

Table 3. Distribution of FSC Members by Chamber.

Chamber	# of members	%
Economics	125	39.9
Environment	136	43.5
Social	52	16.6
Total	313	100.0

Data summerized from FSC (1999b)

Operating as a non-profit, non-governmental organization, FSC created their guidelines with the intention of encouraging forest managers to improve efficiency of their performance as well as conservation of forest resources. The founding members believed that setting impossibly high goals for forest management would be counter-productive to this purpose (Ferguson 1998). Their mission statement was crafted to include the three fields of environment, society, and economics.

The goal of the FSC is to promote environmentally responsible, socially beneficial and economically viable management of the world's forests, by establishing a worldwide standard of recognized and respected Principles of Forest Management. (FSC 1999a).

From its inception based on these guidelines, FSC has gained prominence as the primary institution providing a means of certifying forests worldwide.

As of September 30, 1999, FSC certified 189 forests and approximately 1.7 million hectares in the world. By region, Europe and America (North and South) are outstanding in number as well as in area (Table 4). By country, Sweden is head and shoulders above the rest in area, though USA is top ranked in number (Table 5). This is because AssiDoman, the world's largest timber company, supports FSC certification programs. By forest type, natural and semi-natural forests dominate in number as well as in area (Table 6). By tenure, industrial forests rank highest in number as well as in area, and government forests follow (Table 7).

Table 4. Distribution of FSC Certified Forests by Region.

Region	# of Forest	%	Area(ha)	%
Africa	11	5.8	1,842,872	10.6
Asia	6	3.2	134,397	0.8
Europe	61	32.3	11,336,727	65.4
L.America	39	20.6	2,176,350	12.5
N.America	66	34.9	1,769,628	10.2
Oceania	6	3.2	86,631	0.5
Total	189	100.0	17,346,605	100.0

Data summerized from FSC (1999b)

Table 5. Number and Area of FSC Certified Forests from Top Ten Countries.

Country	# of Forest	%	Area(ha)	%	Avg. Area
Sweden	25	13.2	8,875,979	51.2	355,039
Poland	6	3.2	2,324,013	13.4	387,336
USA	63	33.3	1,558,615	9.0	24,740
Brazil	9	4.8	1,329,705	7.7	147,745
Zambia	1	0.5	1,273,700	7.3	1,273,700
Bolivia	6	3.2	560,133	3.2	93,356
South Africa	8	4.2	495,322	2.9	61,915
Canada	3	1.6	211,013	1.2	70,338
Belize	1	0.5	95,800	0.6	95,800
Mexico	4	2.1	94,908	0.5	23,727
Total	126	66.7	16,819,188	97.0	253,370

Data summerized from FSC (1999b)

Table 6. Distribution of FSC Certified Forests by Forest Type.

Forest Type	# of Forest	%	Area(ha)	%	Avg. Area
Plantation	25	13.3	1,654,327	9.7	66,173
Plantation/Semi-natural	17	9.0	91,108	0.5	5,359
Plantation/Natural	5	2.7	22,739	0.1	4,548
Mixed semi-natural/Plantation	1	0.5	16,425	0.1	16,425
Mixed natural/Plantation	3	1.6	657,102	3.9	219,034
Semi-natural	35	18.6	8,686,196	51.0	248,177
Natural	102	54.3	5,898,707	34.6	57,830
Total	188	100.0	17,026,604	100.0	

Data summerized from FSC (1999b)

Note: Graninge Skog Och AB(Sweden, 320,000ha) was excluded because of unknown forest type.

Table 7. Distribution of FSC Certified Forests by Tenure.

Country	# of Forest	%	Area(ha)	%	Avg. Area
Communal	22	11.7	1,546,187	9.1	70,281
Government	28	14.9	3,269,224	19.2	116,758
Group	14	7.4	232,381	1.4	16,599
Industrial	54	28.7	10,209,054	60.0	189,057
Non-Industrial	24	12.8	187,191	1.1	7,800
Private	26	13.8	1,533,566	9.0	58,983
Resource Manager	20	10.6	49,002	0.3	2,450
Total	188	100.0	17,026,604	100.0	

Data summerized from FSC (1999b)

Note: Graninge Skog Och AB(Sweden, 320,000ha) was excluded because of unknown tenure.

The FSC forest certification process consists of examining the management practices of a forestry organization in accordance with the *Principles and Criteria for Forest Management* as defined by the FSC Assembly. Successful completion of a thorough assessment permits the party seeking certification to associate wood product from their land with the FSC logo. This logo is intended to communicate to the consumer that the product they are purchasing originated from "certified well-managed forests". The FSC itself does not certify forests; it is instead an accreditor of certifying agencies. Worldwide, the FSC has approved six organizations to grant certification status: Skal in the Netherlands, IMO in Switzerland, SGS Forestry QUALIFOR programme and Soil Association Woodmark Scheme in UK, the Rainforest Alliance's Smart Wood Program and Scientific Certification Systems (SCS) in USA.

Table 8 shows distribution of FSC Certified Forests by certifying body. Rainforest Alliance takes over sole possession of first place in number and SGS in area. Generally, each certifying body certifies the forests in that region where the body is located, but some bodies take active part in certifying forests out of the regions such as Rainforest Alliance in Latin America and SGS in Africa (Table 9). Especially, SGS seems to have influence on Commonwealth countries. Table 10 implies that there is a relationship between a certifying body and tenure of a client. Among American certifying bodies, Rainforest Alliance, non-profit NGO, has many clients from the non-industrial sector (communal, non-industrial and private), and SCS, a private company, has many clients from industrial cluster.

Table 8. Distribution of FSC Certified Forests by Certifying Body.

Certifying Body	# of Forest	%	Area(ha)	%	Avg. Area
IMO	3	1.6	15,761	0.1	5,254
Rainforest Alliance	84	44.2	2,419,752	13.9	28,807
SCS	29	15.3	3,036,876	17.4	104,720
SGS	47	24.7	8,967,881	51.4	190,806
Skal	9	4.7	57,577	0.3	6,397
Soil Association	18	9.5	2,943,495	16.9	163,528
Total	190	100.0	17,441,342	100.0	

Data summerized from FSC (1999b)

Note: Menominee Tribal Enterprises(94,737ha) was included in both Rainforest Alliance and SCS due to joint certification.

Table 9. Regional Distribution of FSC Certified Forests by Certifying Body.

Certifying Body	Africa	Asia	Europe	L.America	N.America	Oceania
IMO	0	0	3	0	0	0
Rainforest Alliance	0	1	0	30	52	1
SCS	0	0	8	6	15	0
SGS	10	5	25	3	0	4
Skal	0	0	9	0	0	0
Soil Association	1	0	16	0	0	1
Total	11	6	61	39	67	6

Data summerized from FSC (1999b)

Note: Menominee Tribal Enterprises(94,737ha) was included in both Rainforest Alliance and SCS due to joint certification.

Table 10. Tenure Distribution of FSC Certified Forests by Certifying Body.

Certifying Body	Communal	Governmental	Group	Industrial	Non-Industrial	Private	Resources Manager
IMO	0	0	2	0	0	1	0
Rainforest Alliance	17	5	2	9	19	17	15
SCS	0	1	1	18	1	3	5
SGS	4	9	7	25	1	1	0
Skal	0	8	0	0	0	1	0
Soil Association	1	5	2	3	3	3	0
Total	22	28	14	55	24	26	20

Data summerized from FSC (1999b)

Note: Menominee Tribal Enterprises(94,737ha) was included in both Rainforest Alliance and SCS due to joint certification.

Since the formal beginnings of the FSC in 1994, the organization has developed into a complex system aimed at affecting the production, preservation, distribution, promotion and overall management of the world's temperate and tropical forests. The FSC recognized early on that even though the *Principles and Criteria for Forest Management* provide a general framework under which forest certification is initiated, regional standards would be necessary. Therefore, the organizational system was designed to include national branches that are responsible for coordinating such activities as the development of national and regional standards for forest certification. The certifying bodies mentioned work with these regional branches to implement the regional standards. The U.S. regional standards, for example, upon completion, will include the Northeast, Appalachia, the Southeast, Mississippi Alluvial Valley, Ozark, Ouachita, the Great Lakes, the Southwest, the Rocky Mountains, the Pacific Coast, Alaska and Hawaii.

CONTROVERSARY RELATED TO THE FOREST STEWARDSHIP COUNCIL

Though the FSC organization has attempted to better structure itself over its short history to converge upon its overall objectives, the council and its procedures are not free of debate. Contention exists regarding the political leanings of the organization. For example, the overall concept of the FSC was developed and strongly promoted by the World Wide Fund for Nature (WWF), an environmental interest group. Though both the FSC and the WWF have made significant effort to distance themselves from each other¹, many timber industry proponents are hesitant to enter a program originating from the 'green' faction. These same industry proponents criticize the FSC program for being too prescriptive, and claim that adequate input from forest industry groups does not exist. This, many argue, has resulted in a program that does not allow for an adequate degree of flexibility to deal with site specific management issues.

Regardless of the existing debates, the FSC program does seem to be gaining ground. Currently over 180 forests worldwide accounting for nearly 1.7 million hectares of forested land are FSC-certified. Additionally, the utilization of certified wood in end-use products is also becoming more prevalent. Buyer's groups and networks have arisen to more effectively link timber producers with value-added manufacturers. These same groups work to broaden the customer base and, hence, demand for certified forest products, while at the same time helping to minimize some of the costs inherent in developing a new well-defined and accessible market. Ten countries have buyer's groups and WWF 1995+Group in the UK and the Certified Forest Products Council in the U.S. are considered the most active ones in the world. In five more countries including Japan, there are movements to set up buyer's groups and networks.

The nature of much of the debate surrounding FSC can be attributed to the relative youth of its certification program. At this point in time, it can be assumed that adjustments in its structure and procedures will be necessary to develop the FSC certification program into an effective means of attaining the FSC objectives. This infancy and the associated political issues, however, do create problems when trying to draw definitive conclusions, as we will see later, regarding the appropriateness or effectiveness of the program.

FSC AS A RESPONSE TO PERCEIVED FOREST MISMANAGEMENT FAILURES

Attempts to speculate on whether or not the FSC certification program can meet its goals require assessment of how those goals are tied to management failures on forested lands. Public concern over the perceived mismanagement of global forest resources has revolved around the concept of *forest sustainability*. While clear and unanimous agreement on the

1 As just a brief example, a thorough examination of both the WWF and FSC web-sites reveals absolutely no mention of the other organization.

meaning of *sustainability* is not yet available, certain aspects of the issue do seem clear. When speaking of sustainability, we are necessarily referring to the allocation of resources across generations—this seems certain. What is less clear is how to achieve sustainability and at the same time meet the worldwide demand for wood products. In the midst of this uncertainty, FSC has bravely or foolishly chosen to make *forest sustainability* one of its main objectives. A not yet defined concept as a primary objective places the organization in a vulnerable position for criticism from all political factions.

A feasible starting point in examining this issue, while simultaneously clarifying its relationship to certification, would be to identify the effects of the perceived mismanagement. Upton and Bass (1996) provide an overview of the results of forest mismanagement. Included in their list of "Forest Problems" are the following: the reduction of forest area and quality, environmental degradation of forested areas, loss of biodiversity, loss of cultural assets and knowledge, loss of livelihood, and effect on climate change. Though a clear and obvious relation between these "Forest Problems" and specific forest practices may not be clear, what is certain is that many of the causes that underlie some "Forest Problems" are external to the forest industry. From this, we could infer that activities from within this sector alone would most likely not solve the full array of problems. Based on this assumption, FSC should anticipate a wide variety of socio/cultural influences across regions and national borders when making policy changes and approving regional and national standards as conforming to the FSC guidelines.

To assess some possible solutions, it is worthwhile to examine what failures may be occurring that have bearing on FSC current and future policy making. Again, Upton and Bass (1996) provide an outline of what they believe are the 'breakdowns' of the current market structure (see Figure 1 for an overview of many of these elements). The relevant failures are composed of three broad categories including market and policy failures, institutional failures and other causes.

EFFECTS OF MARKET AND POLICY FAILURES

- The failures undervalue forests
- The failures overvalue the benefits of removing forests
- The failures do not reflect the social and environmental externalities of forest management or removal
- The failures make investments in sustainable forest management unprofitable or too risky
- The failures count against primary production

INSTITUTIONAL FAILURES

- Poor monitoring of forest stocks and flows and changes affecting forests

- Differing priorities between stakeholders
- Uncoordinated decision-making
- Outdated or unclear institutional roles? Government control mechanisms which are inappropriate, weak or ineffective

OTHER CAUSES

- Increasing global population
- Increasing demands for forest products
- Fragmentation of the forests
- Increasing extent of infrastructure
- Inappropriate technology and skills applied to forest management

Figure 1. Failures that have Created the Problems Relative to Sustainable Forest Management.

(Excerpted from Upton and Bass, 1996)

FSC has been instrumental in the evolution of the concept of forest certification as a means of confronting many of these perceived failures. Forest certification has evolved as a *soft policy tool*, which differs from traditional command-and-control policy instruments. Instead of strictly regulating, and hence creating the inefficiencies inherent in this type of approach, certification operates as an incentive. This incentive provides those who manage the world's forest resources with a means to do so in a way that may efficiently take into account traditionally ignored or undervalued characteristics. This is beneficial to regulation because it provides a means of offsetting the costs (or possibly providing non-monetary benefits) that help to reduce the impacts of enlisting more costly forest management practices by the landowner/manager.

For optimum effectiveness, certification should be a voluntary process in which a third-party assessor implements an examination and forest activities are compared against a well-defined and understood set of standards. Some argument has taken place regarding the development of the standards. Much of the current debate centers on the idea of these standards in the sense that they are considered by some (usually industry proponents), to be too prescriptive and hence costly, or are relatively ambiguous in their application. Also, there is a certain degree of mistrust in the standards because some believe (again, usually industry proponents), that environmental interest groups have too much say in their development. This has been particularly evident in the controversy surrounding FSC certification.

Finally, to operate most efficiently and effectively, benefits should be obtained by all entities within the production and distribution chain (Baharuddin and Simula 1994).

Theoretically, these rewards are derived from higher product prices paid by the consumers who desire the assuredness that the products they purchase originated from responsibly managed forests. However, today, it is becoming more evident that other benefits and incentives may be driving resource managers into the market.

BENEFITS OF FOREST CERTIFICATION

Several assumptions underlie the concept of certification. For consumer behavior to be significant enough to change forest policy, it must be assumed that consumer interest in forest management, or the effects of this management upon the global environment, is strong. In aggregate, this interest would theoretically cause discrimination between products originating from environmentally sound management practices and those that do not (Abt Associates 1994). If there is a revealed preference for these *responsibly produced* products, theoretically an associated willingness-to-pay (WTP), a higher price for these products would follow. Stevens, Ahmad and Ruddell (1998) point out that the WTP, a higher price is dependent on two important factors. First, it is necessary that consumers recognize the certification process as being credible. The second is that there must be a desire by the consumer to support certified management practices through their purchasing decisions.

If certified products are adequately differentiated, access to the growing number of niche markets and/or increased market share could be attained. A survey of wood product manufacturers in the US revealed that 48 percent of the respondents indicated that increased market share would motivate them to sell certified products (Stevens et al. 1998). In addition, consumer demand for forest products originating from environmentally sound operations could help to maintain their market share among the growing number of non-wood products. This last expectation is based on the assumption that consumers appreciate the inherent qualities of natural wood and paper products as being derived from a renewable resource and additionally, that they are biodegradable (Upton and Bass 1996).

As briefly mentioned earlier, contrary to the voluntary nature of certification, the aspect of product differentiation is also arising in other contexts—for some it means *maintaining* market share. For example, in the United Kingdom during the early 1990's the World Wide Fund for Nature, an environmental interest group, pressured many large retailers and other forest product buyers to join a group that pledged to purchase wood and paper from third-party certified forests (De Callejon 1998). Similar movements are expanding to Holland, Germany, Austria, Switzerland and the United States.

The improved public perception of the way an organization operates is another important benefit to entering a certification program, or distributing certified products. Whether right or wrong, public and environmental NGO pressures are presenting many industry activities as contributing factors to the degradation of the forest ecosystems. Entering a certification

program could enable many of these participants with the means of communicating to the public the assurance that they are responsibly managing the forest resources. A study surveying companies currently offering FSC-certified products found that 10 percent of the respondents entered the market for improved public perception (Stevens et al. 1998).

A benefit that some may seek to gain by entering a certification program is the foothold against further regulation. We frequently see environmental regulations becoming increasingly restrictive. The foreseeable costs imposed upon forestland owners and managers from this increasing level of regulation may also lead many to enter programs of certification in hopes that today public assurance of responsible management may slow the inertia of future regulation.

A final benefit to certification that many have overlooked became evident when examining the impetus and effectiveness of certifying an array of public lands in the US (see Pinchot Institute 1998). The participants of this study claimed that they believe that certification helped them clarify their management strategy and also provides strategic assistance in highlighting areas of concern.

COSTS OF CERTIFICATION

Even though the possible benefits to certification may reward many for their participation, this does not come without costs. These costs will differ for all individual organizations applying for certification and these costs will be both financial and non-financial burdens.

In a general sense, all relevant costs can be viewed as direct or indirect (Simula 1996). Direct costs are the costs of initiating the certification process and they are typically paid to the certifying agency that initiates the assessment. Included here are fees associated with the initial application, inspection, annual auditing and fixed fees (or royalties). In general, these fees will vary with the scale of operations to be certified, but only the inspection fee is significant. Figure 2 provides the theoretical unit cost function (from Simula 1996).

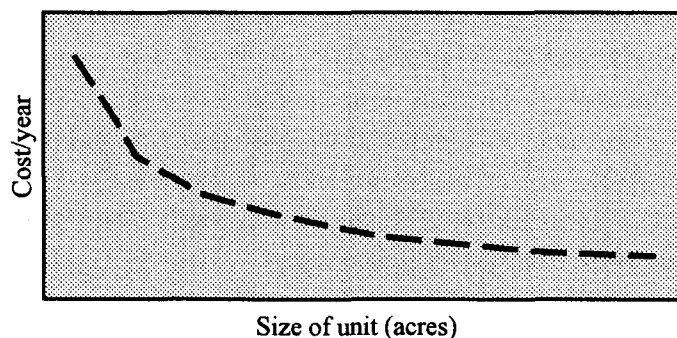


Figure.2 Theoretical Unit Cost Function.

When certifying individual operations, the variable fee rate implies a decreasing unit cost function (Simula 1996). The FSC has recognized this fact and has developed a certification option that allows forest resource managers to become certified. This alternative provides an incentive for small private landowners, who would otherwise find it too costly to participate. Under this alternative, resource managers can include all applicable lands under their care into one group, thus gaining economies of scale.

The indirect costs of forest certification arise from an array of factors (see Figure 3). In a broad sense, these segment into the marginal costs of altering forest management to meet the certification standards, and the certification-related information costs.

- | |
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| <p>1) Marginal costs of altering forest management practices</p> <ul style="list-style-type: none"> a) Investment costs b) Silviculture c) Harvesting d) Other costs such as those associated with delineating conservation areas <p>2) Information costs</p> <ul style="list-style-type: none"> a) Forest management <ul style="list-style-type: none"> i) Resource inventories and surveys (i.e. timber, biodiversity, soils, waste, etc.) ii) Socioeconomic surveys iii) Forest management planning iv) Reporting and records management v) Internal inspections b) Chain-of-custody <ul style="list-style-type: none"> i) Marking of logs and products ii) Recording and reporting iii) Transportation, storing, processing and distribution iv) Internal inspection and other management costs |
|--|

Figure 3. Indirect Costs Associated with Entering a Forest Certification Program.
(Excerpted from Simula 1996).

The indirect costs will obviously differ among participants, but an obvious conclusion is that those organizations whose forest management practices are similar to the FSC standards will have lower overall costs.

As for the information costs, good data is relatively scarce. This may be because most certificates granted so far have gone to private companies or individuals (55.8 percent), research managers (26.9 percent) or group/communal holdings (7.7 percent). Frequently these owners/managers consider financial information proprietary and are often reluctant to

release it to the public. Only five of the 52 (or 9.6 percent) certificates awarded have gone to public entities (state, county or city), and the majority of these were granted too recently to observe the full implication of costs.

One basic inference is that several of these costs will be new to an organization. For example, socioeconomic surveys and internal inspections typically are not part of a forestry organizations operational procedure. Nevertheless, the greatest financial (and procedural) burden will most likely result from chain-of-custody issues.

Chain-of-custody consists of tracking wood from the forest to the consumer. In a simple sense it is merely inventory control, but the sorting, storing and tracking complications that may arise from, say a mill that receives raw product from various sources can be quite significant.

Chain-of-custody tracking is a necessary component of the certification process if the consumer is to be assured that what they are purchasing comes from certified sources. Vlosky and Ozanne (1995) estimate the cost to conduct chain-of-custody tracking through all distribution channels to be approximately \$150,000. This includes the hardware and software necessary to implement effective inventory control. A survey by Vlosky and Ozanne (1998) also revealed that 79 percent of the respondents opposed incurring any costs relating to chain-of-custody unless the increased costs could be offset by higher prices paid by consumers. Additionally, 16 percent of the respondents replied that they would be willing to incur a cost of between \$5,000 and \$10,000. This, they note, falls far short of the estimated \$150,000.

THE MARKET FOR CERTIFIED FOREST PRODUCTS

The most dominant markets for certified forest products currently exist in Europe and North America and no expected change is foreseeable in the immediate future (De Callejon 1998). The regional demand for certified products appears to parallel the degree of environmental activism in a region. This is probably the leading factor as to why certified product demand is so much more prevalent in Europe and North America.

Although Japan and Asia have shown domestic concern for sustaining their forest resources, they have not yet shown a substantial interest in purchasing certified forest products. No certified wood is sold as such in those markets (De Callejon 1998).

On a global scale, current annual industrial roundwood production worldwide is estimated at 53 billion ft³ (FAO 1999). Of this, only an estimated 0.6 percent (approximately 318 million ft³) is FSC-certified (De Callejon 1998). Further, only a fraction of the 0.6 percent is sold or marketed as certified product. This does not necessarily imply a lack of demand. More likely, it is the result of inefficiencies in the chain-of-custody procedures. For example, though the forest itself may be certified, all components of the production and distribution chain must also have chain-of-custody procedures in place. If one link in the

chain is broken, the certification chain is broken. Considering the costs, complications, and lack of participation in installing chain-of-custody procedures, it should be obvious as to how certified timber may not reach the final market as certified product. Nevertheless, debate exists regarding whether or not future demand for certified products will be adequate to support the program.

One major complication in doing a thorough economic analysis of the market for certified forests products lies in the relative infancy of the market. At this early stage it is not only difficult to assess the overall tendency for consumers to demand certified products, but it is even more complicated to fully assess what specific goods the consumer may demand (i.e. hardwood and softwood products).

Current demand for certified forest products is both weak and segmented (Mater 1995; Lyke 1996; Ferguson 1998; De Callejon 1998; Hansen and Punches 1998). The predominance of certified wood is currently hardwood species used in relatively small-scale goods such as guitars, indoor and outdoor furniture, shelving, and millwork. There is a noticeable lack in the utilization of certified softwood species that would be applicable to large-scale projects such as new home construction or home remodeling.

The increased future use of softwoods is likely though. The American Institute of Architects and the American Society of Interior Designers have both developed environmental and sustainable wood specification policies and are promoting the use of sustainable forest products by their members (Winterhalter and Cassens 1994). De Callejon (1998b) also points to the trend in Europe, spurred by German environmental interest groups, where many publishers and other companies are actively seeking out environmentally friendly paper. She expects that this act may soon shift the current predominance of certified wood products to certified pulp.

Though there are signs that the market for certified forest products is growing, it is not clear if a market-wide price premium will surface. Many studies have attempted to assess the demand and WTP higher prices for certified products. When examining consumers, nearly all studies have revealed a preference for products that originate from responsibly managed forests (Winterhalter and Cassens 1994), or more specifically, certified forest products (Winterhalter and Cassens 1993, Ozanne and Vlosky 1997). The results of these surveys vary concerning the WTP higher prices for these products.

Winterhalter and Cassens (1993) claimed that about 34 percent of the 'affluent'² respondents in their study were willing to pay between 6 and 10 percent more for assurances of sustainability. Sixty-eight percent claimed they would 'spend more than they currently pay'. Ozanne and Vlosky (1997) examined the WTP by consumers for various certified goods ranging from a 2 x 4-8' stud, to a new home. Their results showed that that

2 Their survey of the 'affluent' population included households where single or dual income was at least \$50,000 annually.

respondents claimed they would pay from 4.4 to 18.7 percent more (weighted average of 12.5 percent), depending on the good.

Stated earlier was that to be most effective, benefits should amass for all entities throughout the production and distribution chain. Vlosky and Ozanne (1997) surveyed architects, building contractors and home center retailers. The WTP a higher price by architects and building contractors was examined with reference to 2 x 4-8' studs (base uncertified price of \$350/thousand board feet), hardwood flooring (base uncertified price \$20/square foot) and a new home (base uncertified price \$100,000). On average, architects were willing to pay 11.3 percent more for the studs, 16.4 more for the hardwood flooring and 5.1 percent more for the new home. Thirty-one percent showed no interest in paying a price premium at all. As for the building contractors, they revealed a WTP of 10.7 percent for the studs, 12.3 percent for the hardwood flooring and 3.7 percent for the new home. Forty-two percent stated they would not be willing to pay any price premium. Home center retailers were asked to reveal their WTP a higher price for 2 x 4-8' studs (base uncertified price of \$350/thousand board feet), a ready-to-assemble chair (base uncertified price \$100) and a wood dining room set (base uncertified price of \$1,000). On average, home center retailers were willing to pay 5.1 percent more for the studs, 2.8 percent more for the chair and 4.4 percent more for the dining room set. Here, 75 percent claimed that they would pay no price premium at all. The studies by Vlosky and Ozanne are summarized in Table 11.

	2x4-8' Studs ¹	Hardwood Flooring ²	New Home ³	Ready-to- Assemble Chair ⁴	Dining Room Set ⁵	Kitchen Remodel ⁶
Consumers	18.7%			14.4%	14.2%	11.0%
Architects	11.3%	16.4%	5.1%			
Contractors	10.7%	12.3%	3.7%			
Home Centers	5.1%			2.8%	4.4%	

Table 11. Price Premium Willing to be Paid for Certified Wood Products by Various Segments of Market

¹ Base uncertified price \$350/thousand board feet.

⁴ Base uncertified price \$100.

² Base uncertified price \$20/square foot.

⁵ Base uncertified price \$1,000.

³ Base uncertified price \$100,000.

⁶ Base uncertified price \$5,000.

Studies of manufacturers have revealed that there is a demand for certified forest products, and some of the companies' claim that their customers are willing to pay more. One study showed that 10 percent of the respondents believed that their company's customers would pay more for certified products, but only 9 percent of the respondents thought their company was willing to pay more (Vlosky and Ozanne 1998). Another study showed that the actual price premium paid for certified wood by manufacturers, on

average, was 6.6 percent, while the average price charged to the buyers was 4.7 percent (Stevens et al. 1998).

Though the results of these studies vary, an implication is that the market for certified products does exist. It also seems evident that a price premium exists, though it will differ significantly between segments and products. What is not clear is the extent to which the market will expand in the future. Currently the greatest constraint on market development is not demand, as many believed early on, but instead supply. One study noted that respondents consistently mentioned inadequate supply as a constraint on expanding sales (Stevens et al. 1998). Nevertheless, more time is necessary before definitive conclusions can be made regarding the market for certified forest products.

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