

KOBE ECONOMIC & BUSINESS REVIEW

**40th
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**RESEARCH INSTITUTE FOR ECONOMICS
AND BUSINESS ADMINISTRATION
KOBE UNIVERSITY**

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FINANCIAL RELATIONSHIPS IN JAPAN: AN INTERNATIONAL PERSPECTIVE

Kenji KOJIMA*

Abstract

This paper describes major characteristics of Japanese financial relationships in an international perspective. The financial relationships in Japan are examined in comparison with those in Germany and the United States. The primary purpose of the study is threefold: to identify important features of Japanese financial relationships, to provide economic rationale for those relationships, and to develop insights concerning corporate finance and capital market under institutional and regulatory environments.

Keywords: Cross-share holding; Financial relationships; Main bank

JEL Classification: G21; G32; G33

1. Introduction

As capital and product markets have become global, the differences in corporate behaviors across the countries have been shown distinct. Since behaviors and performances of firms substantially depend on institutional and regulatory environments where firms operate, peculiar patterns of behaviors turn out to be the rational economic responses to those environments. One of the major differences in corporate behaviors among different countries can be financing patterns, particularly the relationships between the capital market and non-financial corporations. Corporate capital structures and financing practices in Japan appear distinctive, particularly in comparison with those in the United States. Specifically, it is commonly observed that financial institutions in Japan tend to have much closer, longer

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relationships with their clients than do their counterparts in the United States. In large part, these differences are due to differing institutional and regulatory environments.

To the extent that the institutional and regulatory constraints vary systematically across countries, so may financial relationship. While legal and historical considerations help to explain why financial relationships in each country have followed distinctive trajectories, we need to explain the difference of patterns across the countries as well as the similarity within each country and their sustainability with providing economic rationales under specific institutional and regulatory environments. The key to answer these questions is comprehensive understanding of the financial relationships with a comparative study, identifying the underlying structure of constraints.

This paper presents major characteristics of Japanese financial relationships in an international perspective. It examines the financial relationships in Japan compared with those in Germany and the United States. The primary purpose of the study is threefold: to identify important features of financial relationships in Japan, to provide economic rationale for those relationships, and to develop insights concerning corporate finance and capital market under institutional and regulatory environments.

This paper is organized as follows. The next section presents the major characteristics of financial relationships in Japanese firms comparing with the counterparts in Germany and the United States. Section 3 describes one of the most distinctive features of Japanese financial relationships, that is main bank relationships, and discusses economic rationale. Some aspects of Japanese corporate finance have changed dramatically over the last decade. Most of these changes are the result of changes in the structure of Japanese financial markets, which in turn can be traced to regulatory changes. Section 4 discusses recent structural changes in corporate financial policies, and capital and credit markets in Japan. Finally, section 5 presents concluding remarks.

2 Close Financial Relationships

Non-financial firms have relationships to financial institutions in each country. In Germany and Japan, these relationships are especially

close and long-term, and it has important implications: banks are more likely to provide support when firms are in financial trouble, since helping their borrowing firms remain viable reduces the riskiness of their loans; banks support their borrowers' long-term growth to ensure their own; banks usually have sufficient influence to ensure that management's decisions are compatible with their own goals. Together with the small portion of equity in corporate capital structures, these close relationships can diminish the importance of shareholder wealth maximization as a prime goal of corporation.

U.S. corporations borrow from a broader array of sources than their Japanese and German counterparts, which rely more heavily on banks for external capital. Their bank financing also differs, since in Germany lenders supply more long-term financing. With an active equities market, a vigorous commercial paper market, a strong banking system, and a variety of long-term investors, the U.S. capital market has no equivalent ones in other countries. Yet the widespread use of conventional rules of thumb to determine capital structure policies and the prevalent reluctance to issue common stock for internal financing purposes negate this advantage. By setting specific debt-equity corporate goals and by refusing to issue equity for fear of diluting earning per share, U.S. firms arbitrarily limits its available capital. Consequently, the capital potentially available becomes irrelevant and unused asset. While U.S. firms draw almost 20% of their external funds from banks, their relations are not close. The natural conflict between managers, who are supposed to represent shareholders with residual claims in the firms, and the lenders, who have preferential claims on its assets, never entirely resolves. Moreover, the need to negotiate terms and restrictive covenants, which constrain management's latitude, underscore this adverse edge. U.S. legislation also prohibits commercial bank ownership of non-financial corporations, so U.S. banks act only as intermediaries on behalf of other investors.

Banks enjoy a special position in German industry. The historically underdeveloped capital market and burdensome corporate tax policy have inclined to firms to finance with bank debt rather than equity. German banks also own a significant fraction of equity in non-financial firms, although the exact percentage of bank-owned shares is not known. In addition to direct share ownership, banks serve as depositories for stock owned by other shareholders. At the end of 1988,

they held approximately 40% of the total market value of outstanding domestic shares. Banks also enjoy *Vollmachtstimmrecht*, or the right to vote shares held on deposit on behalf of the depositors. Effectively, bank control virtually half of German shares. German law has been amended to require that banks solicit voting instructions from shareholders whom they represent and renew the right of proxy for shares held on deposit every 15 months. In the event of a takeover offer, banks must inform shareholders of pending bids only if the offer is published. Still, banks continue to obtain wide latitude in the voting of shares held on deposit. Big commercial banks and central savings banks, or *Landesbanken* in Germany, practice universal banking, which includes direct investment in equities and bonds. As a result, German bankers held directorships on the supervisory boards of the firms. German commercial banks, facilitated by law and tax policy, own sizable portions of many large industrial firms. Ownership gives it the power to block any change in the firm's statutes. This has resulted in a concentration of ownership among major banks. The larger banks also reinforce their influence through the proxies they hold.

Ties between banks and non-financial firms are also strong in Japan. Banks still play a central role in financing industries through large group of industrial firms. Bankers often serve on manufacturing firms' boards and, particularly in periods of financial distress, become heavily involved in management. Japanese firms make extensive use of leverage and intercorporate holdings of debt and equity. Banks' personnel move frequently between banks and firms as part of an ongoing relationship that involve training, consulting, and monitoring. While current law requires Japanese banks to reduce their equity positions to 5% of outstanding equity of the firm, they still own about 21% of the outstanding shares of Japanese firms in the period of 1985 through 1992 as shown in Table 1. In contrast, individual shareholders own only 23% of common stocks and they exercise little influence over management.¹

There are the six largest industrial groups, or *keiretsu* which have

1 In the U.S., the Bank Holding Company Act underscores it by requiring a bank passivity in wielding stock. The law prohibits not just control of a firm, but control of any voting stock. It deters taking proxies, voting trusts, and owning through nonbank subsidiaries. The Bank Holding Company Act would deter the U.S. banks with either Japanese main bank ownership or German proxy votes even if the Act allowed day-to-day influence (Roe 1993).

Table 1
Share Ownership of All Listed Firms by Type of Investors in Japan
Five-Year Average
(Percentage of Listed Shares)

	1970-74	1975-79	1980-84	1985-89	1990-92
Government	0.2	0.2	0.2	0.8	0.6
Financial Institutions	34.4	37.6	39.0	44.4	44.8
Banks	n.a.	n.a.	17.7	21.0	21.8
Investment Trusts	1.4	1.8	1.2	2.5	3.3
Annuity Trusts	n.a.	n.a.	0.4	0.9	1.0
Life Insurance	11.2	12.0	12.6	13.2	13.1
Other Insurance	4.6	4.8	4.9	4.3	4.0
Other Institutions	1.8	1.9	2.2	2.4	1.6
Business Corporations	25.6	26.3	26.0	24.6	24.7
Securities Companies	1.4	1.6	1.8	2.3	1.5
Individual & Others	35.2	31.9	27.7	23.5	23.4
Foreigners	3.2	2.4	5.2	4.4	5.0

Source: Zenkoku Shoken Torihikisho Kyogikai (The National Conference of Stock Exchanges), *Kabushiki Bunpu Jyokyocho* (Survey on Stock Distribution), 1983, 1986, 1992.

Table 2
Cross-shareholdings of Major Keiretsu in Japan
(Percentage)

	1970	1975	1981	1985	1989	1992
Mitsui	21.32	21.17	23.13	21.61	19.46	19.29
Mitsubishi	26.78	30.26	36.93	36.94	35.45	38.21
Sumitomo	28.94	29.58	36.57	29.68	27.46	27.95
Fuyo	16.04	18.28	18.80	17.36	16.39	16.88
Sanwa	12.50	20.30	19.95	18.03	16.45	16.68
Dai-ichi Kangin	24.51	23.77	17.50	16.78	14.60	14.24

Note; Ratio stands average ratio of the group, which is numbers of shares owned by firms in the group divided by total outstanding shares.

Source: Fair Trade Commission, *Kigyo-syudan no Jittai ni tuite*. (A Survey on Corporate Groups), 1992, 1994.

their origins in the 1950s: Mitsubishi, Mitsui, Sumitomo, Fuyo, Dai-ich Kangyo, and Sanwa. Almost half of the 200 largest firms in Japan are members of one of these groups. Firms in the group are more likely to trade with their members than non-members. These trade relationships are reinforced by stable cross-shareholding in the group shown in Table 2. The distinctive feature of the group is the relationships between its manufacturing firms and financial institutions. Group firms do a substantial fraction of their borrowing from financial institutions in their own group. One of these institutions is usually considered the main bank in the group, which takes a more active role in arranging financing for the firm, even though the firm borrows from other institutions outside the group. Using a loose definition of group affiliation, Sheard (1985) estimates that group firms borrow 21% of their borrowing from their group's financial institutions in 1980. In addition, group financial institutions typically own equity in the firms to which they lend. He calculates that for 72% of Japanese firms the largest lender was one of the firm's top five shareholders. Furthermore, the placement of bank personnel in top management positions of group firms reinforces the bank's power as shareholders and creditors.

In both Germany and Japan, these close relationships between the financial institutions and non-financial firms foster a longer term perspective reducing the pressures from the capital market for short-term stock performance that U.S. managers experience. The executives of German and Japanese banks who oversee investments in manufacturers manage institutions, not portfolios. Unlike fund managers who make the equity market in the U.S., they are committed to their institutions's growth and not to the short-term performance of their investment portfolios. In sharp contrast to the high turnover rates that fund managers in the U.S. generate, financial institutions in Germany and Japan rarely sell their equity holding. Since banks' capital investments are predominantly loans, they can serve their economic interests by expanding their business with the firms in which they invest than by pressing for short-term stock price gains. For them, the greater a firm's growth, the greater the loan demand, and the more competitive the firm, the higher the quality of the loans. The high degree of leverage that banks in those countries accept decreases the cost of capital and reduces the level of return manufacturers need

to seek on their investments. As a consequence of these factors, managers in German and Japanese firms do not focus as intensely on shareholder returns as their U.S. counterparts do, and they are willing to compromise shareholders interests for growth that serve a broader stakeholder.

Financial institutions may hold equity and debt at the same time. Besides strengthening the long-term relationship between the financial institutions and the firm, the simultaneous holding of debt and equity clearly reduces the scope for conflict between stockholders and debtholders over the choice of policies, particularly in situations of financial distress. Therefore, it facilitates more leverage. In Germany and Japan, banks own a significant proportion of client firm's equity. In Germany banks directly own substantial proportion of non-financial firm's equity. Moreover, over majority of total shares are held in their custody and they may exercise proxies at the shareholders' meeting with the consent of real stockholders. On the other hand, the U.S. banks are prohibited from owning equity and are almost impossible to make any coordinating effort to reconcile conflict between stockholders and debtholders.

Financial institutions in Germany and Japan, banks in particular, are more efficient providers of capital, and their equity ownership in client firms represents far more than a mere portfolio investment. Through their activities as main banks or *Hausbank*, they play essential roles in the governance of nonfinancial corporations in their respective countries. Their close and long-term relationships with a borrower afford them greater access to privileged information and establish them in the eyes of other lenders as delegated monitors of their major industrial clients. They effectively function as centers of information gathering about client firms, and their responses to virtually any aspects of their client firms' activities represent important signals to other corporate stakeholder. As significant equity owners, they enjoy direct or indirect board representation through which they may exercise an active voice in the governing of the corporations in which they invest.

More than just voice, however, they also have the capability and willingness to suspend managerial autonomy and exert more substantial control over client firms experiencing a financial distress or undertaking a difficult transition in management. In effect, selectively

intervening in the management of their preferred borrowers, equity-owning Japanese main banks and German *hausbank* help internalize the process of reorganizing assets, financial claims, and top management itself, thereby reducing the use of legal bankruptcy or externally forced changes in ownership in the market for corporate control so frequently relied upon in the U.S. In this respect, German and Japanese banks have an indirect but critically important role in the preservation of valuable and long-term relationships among industrial corporations. By shielding sound corporate investment programs from short-term business fluctuations; by judiciously sheltering management from pressures to breach commitments to one or another stakeholder in order to improve short-term performance; yet by also acting swiftly enough to reverse performance declines before corrections become extremely costly if not impossible, major equity-owning banks in Germany and Japan help ensure the independence and longevity of nonfinancial firms. To the extent this is achieved across a network of firms engaged in trading relationships and relying upon a common main bank or *Hausbank*, the integrity of long-term business relationship is maintained (Kester 1992).

Commensurate with their status as lead lenders and major shareholders, main banks enjoy preferred status in the provision of a wide range of financial services to client firms, and in the yields received on their loans in Japan. Japanese main banks have been involved deeply in the affairs of their client firms, requiring detailed disclosures of management and investment plans on a frequent basis. It was common for bank executives to require modification of these plans as a condition for the continued provision of capital. Although the securitization of Japanese corporate finance in the 1980s has considerably weakened main bank influence over large and highly liquid firms, they remain important suppliers of capital to smaller affiliates of these larger clients.

Main banks also have been and remain important providers of auditors and directors to many Japanese nonfinancial firms. Whereas virtually all U.S. firms have at least one outside director, most Japanese boards of directors are entirely inside boards with virtually all members being salaried executives of the firm. One or more members of board in Japanese firms frequently are former executives of the firm's main bank. These appointments arise from the common

practice among major Japanese firms, commercial banks in particular, retiring those senior managers not being nominated to their own firms boards of directors and placing them as directors or senior managers of client firms. Japanese main banks will often take a leadership role in corporate restructuring, dispute resolution, or simply the promotion of new business for client firms.

As in Japan, German firms tend to have strong relationships with one or a few banks, called *hausbank*. A *hausbank* would be a primary lender to a firm and would often enjoy representation on the supervisory board or an equity position in the firm. Supervisory board members from such banks are valued for their knowledge of business and economic conditions, as well as for their detailed knowledge of the firm. In time of financial crisis, the *hausbank* would tend to be more willing to aid the firm than would other banks. As in Japan, shares owned by house banks are seldom traded. As early as the late 1960s, German banks began to transform themselves in anticipation of reform in German financial market. The *hausbank* system has already given way to what is called network system of financing. In the traditional *hausbank* system, a firm is completely dependent on a single bank for all of its financing needs. In the network system, by contrast, several banks join together informally to finance entire networks of firms. Representatives of the banks in the network sit on the supervisory boards of a particular firm. And often managers from one firm in the network sit on the board of another firm also financed by the same of banks. In a sense, these networks are the German equivalent of the Japanese *keiretsu*. Their fundamental advantage is to give firms in the network more options for financing and much greater flexibility and security in planning their long-term investment needs (Baum 1992).

3 Main Bank Relationships

3.1 Monitoring

Main banks in Japan have historically been the most likely to intervene because of their position as the largest supplier of capital to the group of industrial firms. In addition to having an equity investment, they have considerable amount of debt at stake. Nominally, this debt is in the form of senior collateralized short-term loans and 90-to 120 days promissory notes, which are usually routinely rolled

over indefinitely. However, in the event of impending financial distress, the character of main bank's loans changed dramatically. This is because most main banks voluntarily subordinate their debt to that of other banks lending to the main bank's troubled clients. Whereas fear of such equitable subordination keeps most the U.S. lenders on the sideline until a loan agreement is formally breached, and even then restrains the degree of intervention, the Japanese main bank effectively assumes such subordination from the outset and takes far-reaching, early steps to limit the damage.

The main bank acts as an alert monitor of performance and begins to act like a private, controlling shareholder well in advance of the time when problem become acute. One effect of this intensive monitoring with early selective intervention is to reduce some of the costs normally associated with the hazards of lending. Opportunities to borrow money and then take extraordinary risks that might benefit shareholders at the expense of creditors are reduced when banks own some equity and are able to intervene early when problems are spotted. The costs normally associated with financial distress are reduced to the extent that problems are identified and corrected early (Kester 1991).

Diamond (1984), among others, argues that banks serve as corporate monitors who bear the cost of becoming informed about their client firms and who ensure that they make efficient business decisions. Diamond shows that delegating the role of monitoring to a bank minimizes monitoring costs. The alternative - issuing securities like public debt and equity - may be inefficient either because monitoring costs are needlessly duplicated among individual security holders or because monitoring is a public good that no one has an incentive to provide. He shows that bank diversification plays a key role in ensuring that banks monitor their client firms.

As Myers and Majluf (1984) point out, liquidity is an important determinant of investment when there are informational problems in the capital market. If managers are better informed than investors about a firm's prospects, the firm's risky securities will sometimes be underpriced, thereby raising the cost of external finance. Managers find it more attractive to finance investment with internal funds. Thus, for firms facing information problems, liquidity will be an important determinant of investment. Bank monitoring is one way of overcoming these information problems. If bank lend a large fraction of a firm's

debt as well as own a portion of its equity, then they have strong incentives to become informed about the firm and its investment opportunities. It is also in their interest to ensure that managers make efficient business decisions. In this case, there should be little relationship between investment and liquidity for bank-monitored firms. If firms need funds to finance investment, they can go directly to their informed bank to raise the money. The bank should be willing to provide the capital provided the project is valuable. The close relationship with the bank is likely to mitigate information problems that typically arise when debt and equity are diffusely held and no individual investor has an incentive to monitor the firm. Since the independent firms have weaker ties with banks, they are likely to face greater difficulty raising capital. Thus, it is relatively easy to distinguish between firms that are likely to face information problems and those that are not.

Sheard (1989) provides an economic rationale for this main bank system focusing on the role of the main bank as an agent that specializes in the collection, evaluation, and transmission of information about firms and their managements, and that provides a mechanism which substitutes for the inactive market for corporate control in Japan. The significance of the main bank system is the close information-sharing relationship that exists between the bank and the firm. It is possible to view the main bank system as functioning as a substitute for the kind of screening and monitoring institutions that are prevalent in other capital markets such as bond and credit-rating institutions and security analysis agencies. The close association that the main bank has with the firm means that the bank is able to obtain inside access to the firm and its management which is not readily available to the external capital market.

The main bank system seems to exemplify in a concrete way some other important aspects of monitoring: delegated monitoring. The main bank system can be characterized in terms of banks themselves delegating the monitoring of a particular firm to one particular bank: the main bank. The bank delegated to be monitoring is not only the bank with the largest loan share but also holds a significant stake in the firm as a shareholder. Having a sufficient large loan share may be the way in which the bank ensures that it obtains an adequate return on its monitoring outlays. In this regard, it is worth noting the free-

rider problem may be mitigated somewhat by virtue of the fact that non-monitoring banks will not be able to imitate the loan portfolio of the main bank in size.

There are well-known free-rider arguments in Leland and Pyle (1977) and Stiglitz (1985). If knowledge about the firm and its management is a public good, it may be that no agent will undertake the necessary monitoring since other agents will free ride on the results. The solution to this problem is to have the monitoring agent buy and hold assets on the basis of its specialized information, under the assumption that outsiders cannot free ride on the agent's information merely by observing its portfolio choices. Hoshi, Kashyap, and Schafstein (1991) compares the investment behavior of these two sets of firms, which are in a particular industrial group with the bank and independent ones. The basis of comparison is the importance of liquidity as a determinant of corporate investment. They find that firms in the group is less sensitive to their liquidity than it is for independent firms. It shows that liquidity is a more important determinant of investment for independent firms than for ones in the group with close banking ties. This suggests that close relationships with the bank relax liquidity constraints by lessening information and incentive problems in the capital market. This results can help to explain the findings for at least two reasons. First, because group-affiliated firms can take on more debt, they are better able to exploit its tax advantages. This lowers their cost of capital. Second, group firms that need to raise capital can do so by issuing debt. They then avoid equity issues which tend to depress share prices. Thus, reducing the cost of financial distress facilitates investment and relaxes liquidity constraints even when firms are not distressed.

3.2 Intervention

Another major characteristics of main bank system that is closely related to the monitoring is the role of the main bank in corporate intervention. Main bank intervention refers to the fact that the bank will often intervene in various ways in the management of the firm when it is not performing adequately or is in need of restructuring. It can be argued that this function of the main bank provides an important substitute mechanism for what in effect is inactive market for corporate control in Japan. Main bank intervention can take a

number of forms, ranging on the one hand from cases where the main bank stipulates certain measures that requires the firm to take in exchange for the bank's support during a period of financial difficulty to cases where the bank sends officers to take over the management and carry out the reorganization of a firm that is on the verge of bankruptcy on the other. In the course of intervening in and managing the reorganization of the firm, a number of things are commonly observed. First, the bank may replace the top management, whose incompetence it is that has often expedite the trouble. The bank will reorganize the management structures and implement major asset liquidation. Second, the bank will often arrange some kind of tie-up or merger with another firm, which is commonly a firm also having this bank as its main bank.

One of unique characteristics in Japanese capital market is the virtual absence of an active market for corporate control. The absence of a hostile takeover market is related closely to the nature of intercorporate shareholding in Japan. The management of large firms in Japan have been able to entrench themselves from external market for control by arranging their shareholding structures so that a majority of their shares are held by closely and long-term related firms. There are known as stable shareholders in Japan and comprise principally long- term business partners and affiliate firms, all of which share the common aim of insulating themselves from the external market for corporate control. Together with the system of stable intercorporate shareholdings, the main bank performs a role that closely parallels in its effect the external takeover market: in particular in bringing about the displacement of ineffective management and the re-organization of corporate assets to improve efficiency.

In a sample of large Japanese manufacturing firms in the 1980's, Morck and Nakamura (1992) find that banks tend to send new directors to firms that have recently under-performed their industry firms in terms of stock market performance or that are in industries with depressed stock prices. Intervention is preceded by below average sales growth, investment and especially liquidity and cash flow as well as by low stock returns. It is thus not clear that bank intervention is aimed primarily at protecting shareholders. Cash flow and liquidity return to industry average levels quickly following bank intervention, as does investment. Sales growth and especially employment growth

remain low for several years, but eventually recover to and even exceed industry average levels. This suggests that bank intervention is associated with a period of downsizing. Public shareholders appear to gain little from this, however, as stock market performance continues to lag that of industry peers.

Kaplan and Minton (1994) attempts to shed lights on the nature of corporate intervention by considering when banks and shareholders intervene or become active in 119 large, non-financial Japanese public firms. They consider an outside intervention to have occurred if a firm appoints one or more outsiders to its board in a given period. The likelihood of a new bank director is most closely associated with negative pre-tax income at both one- and two-years. The results suggest that bank appointments respond to poor firm performance and do so over relatively short frequencies. The patterns suggest a difference between bank interventions and corporate interventions. Banks appear to intervene in firms with poor stock performance and difficulty meeting their financial obligations to the banks. In contrast, other corporation appear to intervene in firms with poor stock performance that is not related to an inability to meet financial obligations. Outside appointments are most closely related to stock performance.

The pattern provide additional support for the view that bank directors are appointed in firms and situations where there is a bank loan to protect. In contrast, the appointment of bank directors is not related to the strength of shareholdings and other relationships. This suggests that banks place less importance in maintaining those relationships. Although stock performance remains significant in the determinants of appointments of corporate directors, share ownership and keiretsu membership are strongly related. These patterns provide additional support for the view that the two types of appointment, although related to performance, serve different purposes and protect different interests. The results suggest that corporate appointments are meant to protect or support intercorporate shareholdings and relationships. Such appointments do not appear to be intended to protect the main bank. Banks, corporate shareholders, and related corporations respond to poor performance by sending directors to oversee or implement responses to that poor performance. The power of a main bank to appoint directors comes from its combined role as

lender, shareholder, and settler of intercorporate payment accounts. The power of corporate shareholders to appoint directors stems from their share ownership and concomitant ability to withhold proxies on the share they own. Under this interpretation, Kaplan and Minton (1994) argue that the bank and intercorporate relationships in Japan play a similar role to outside directors and, particularly, the market for corporate control in the U.S.. There is, however, another interpretation. The injection of an outsider in response to poor performance may be required to signal to suppliers, customers or others that the bank or the group will support the continuation of the business. According to this view, the main bank recoups any costs of such insurance in normal times by charging above market fees for services. Similarly, corporate managers are willing to agree to such an insurance scheme in order to maintain their positions. The second interpretation suggests that the primary role for the outside appointment is as insurance rather than as discipline or monitoring. The insurance and monitoring interpretations have different implications for incumbent management. If the relationships serve to insure managers, then the appointment of an outsider should not affect executive turnover. Alternatively, if the relationships replace the control mechanisms familiar to the U.S., then outside interventions should be costly for incumbent management.

The results can be interpreted as strong evidence that both types of outsider appointments are disciplinary - top executive turnover, particular that of representative directors, increase substantially in the same period. The fact that the outsiders tend to be appointed to the director level suggests that outside appointments oversee that transfer of control from one internal management team to another. Outside interventions have a disciplinary effect on top executives. Overall, these results suggests that bank directors are appointed to firms that are in financial distress or in the process of contracting. After the bank directors arrive, these firms continue to contract, but their performance - as measured by stock returns and earnings - does not deteriorate. Other corporations appear to send directors in response to different problems. After the corporate directors arrive, the firm sales and asset growth rebound, and their performance - as measured by stock returns and earnings - do not deteriorate, and, if anything, improve.

As a consequence, the results suggest that the relationship-based corporate governance in Japanese firms substitutes for the more market-based in the U.S. Appointments of outsiders increase significantly with poor stock performance; those of bank outsiders also increase with negative current income. Strong evidence is found that both types of outsider appointment are disciplinary - top executive turnover increase substantially in the same year. The results suggests that bank directors are sent to manage contraction or financial distress, while corporate directors are sent to manage reverse temporary problems. Current earnings and, particularly, current stock returns are important determinants of outside appointments. It can be concluded that a firm's current stock price plays an important role as a good measure of a firm's current and future prospects in Japanese firms

3.3 Reducing Cost of Financial Distress

Financial distress is costly because free-rider problems and information asymmetries make it difficult for firm to renegotiate problems with their creditors in times of distress. As Gertner and Scharfstein (1990) point out that free-rider problems reduce the incentive for creditors to grant financial relief or extend credit: an individual creditor bears the full costs, but shares the benefits. When there are many creditors it is difficult to negotiate with all of them simultaneously. Holdout creditors can then free-ride on others. Difficulties in negotiating with creditors may lead to underinvestment and inefficient liquidation. Even if the firm has valuable investment opportunities, an individual creditor may be reluctant to finance them because part of the greater future cash flows accrue to the holdout creditors. Similarly, even if it is efficient for creditors collectively to write down the debt, a sole creditor may be unwilling to do so because he bears all the cost and receives only part of the benefit. Moreover, when credit is diffusely held, bondholders are not likely to be well informed about the firm and may not know whether it is profitable to provide new capital or to give interest and principal concessions. In this case it is difficult to raise capital from one creditor, let alone get numerous creditors to agree to a financial restructuring that promotes investment and avoids inefficient liquidation. These problems can also spill over and disrupt supplies and sales: supplier may not be willing to

provide trade credit and make long-term commitments; and customers may be wary about whether the firm will be able to meet its implicit and explicit warranties.

Such problems are probably less severe for firms with strong relationships to banks. Because substantial debt and equity stakes are held by just a few financial institutions, free-rider problems are less prevalent. In addition, since the main bank is well informed about the firm and its prospects, problems stemming from asymmetric information between creditors and firms are likely to be small. A more subtle reason that free-rider problems may be less severe stems from the repeated participation of banks in lending consortiums. For example, one main bank may be the main bank for a firm in the group, but the firm will typically borrow from banks outside the group as well. This bank will in turn participate in lending consortiums headed by other banks that serve as the main lenders to firms outside the group. It is clear to all members of the consortium that the main bank is responsible for helping the firm in times of distress. Repeated participation in these consortiums ensures that main bank fulfills its implicit contract to provide relief even though doing so may not seem best in the short run. Furthermore, the customers and suppliers in the industrial group in which they own equity are more likely to maintain their trade relationships. The firm's main bank may also be the main bank for the suppliers and customers. This financial network could make suppliers more willing to extend trade credit and invest in long-term supply relationships, and customers more willing to buy from the firm.

Hoshi, Kashyap, and Scharfstein (1990a) show that firms with capital structures in which free-rider and asymmetric information problems are likely to be small perform better than other firms after the onset of distress. In particular, they show that Japanese firms in keiretsu invest and sell more after the onset of distress than non-group-affiliated firms. Moreover, firms that are not in the group, but nevertheless have close relationship with a main bank, also invest and sell more than firms without close bank relationship. When member of the group help troubled firms they do not only infuse funds, but also try actively to restructure the firm. If a firm is financially distressed, it performs better than other financially distressed firms if its capital structure makes it relatively easy to renegotiate its liabilities. The

findings suggest that, when financial claims are spread among many creditors, financial distress is more costly than when they are concentrated.

In the United States, debt is more diffusely held, with large firms relying more heavily on bond financing. Hoshi, Kashyap, and Scharfstein (1990a) argues that this form of financing exacerbates problems stemming from financial distress and suggests it may have been wise for U.S. firms to refrain from high debt levels. Japanese firms have taken on a larger amount of risky debt, but have established an institutional structure to cope with high leverage. Gilson, John and Lang (1990) find that financially distressed firms in the U.S. that rely heavily on bank debt are more likely to avoid costly bankruptcy filing and thus more likely to restructure out of court². Sheard (1992) identifies major features of the main bank's role and its behavior when corporate clients are financially distressed by examining a large number of cases. The major roles of the main bank are coordinating, overseeing, and in some cases in effect carrying out an informal reorganization of the firm. This typically involves some combination of refinancing of existing debt, provision of bridging finance, dispatching directors and in severe cases a more comprehensive trouble-shooting team that works closely with promising managers in the firm. It may also involve the displacing or demotion of senior incumbent managers and the formulation and implementation of a restructuring plan centering on a program of asset disposal, repayment of bank borrowing, and organizational re-arrangement.³ The main bank, by replacing incumbent managers with despatching its personnel, turns to be an active participant in the corporate restructuring process directing and implementing various measures. This aspect of the main bank's role is characterization of bankruptcy

2 The U.S. banks may abandon borrowers because they cannot cheaply save them. Given that courts sometimes punish a bank for intervening in its debtors' affairs, the bank may find rescues more often unprofitable. American judges have looked skeptically at creditors who intervene in a debtors' business. They reason that intervening creditors may try to restructure the debtor to their private interests. Thus, its claims are often subject to subordination. One does not see in the cases equivalent of equitable subordination in Japan - any series of decisions where judges voided security interests to punish a major secured creditor who intervened in the debtor's affairs (Ramseyer 1992).

3 Large numbers of firms in Japan fail regularly. Average of 13,260 firms with debt of over 10 million yen went bankruptcy every year during 1985-89 (Bank of Japan 1994).

via the debt contract triggering a shift in control from the incumbent managers to the creditor.

One of the peculiar characteristics of the main bank system is that the main bank often behaves as if it were a kind of residual risk-bearer among creditors and even among security-holders as a whole. Sheard (1989) suggests that residual risk-bearing is part of an incentive structure which serves to economize on the agency cost of the delegated monitoring relationship between main and non-main banks. When bank assistance is directed towards a struggling firm or when losses are incurred as a result of the firm's failure, the main bank commonly assumes a significantly larger burden than would be expected. In cases of bankruptcy or major restructuring under main bank intervention, the main bank will typically absorb a share of losses exceeding its loan share. The main bank bearing a disproportionately large share of the assistance burden to firms that are in the process of undergoing adjustment. This may just reflect that the main bank possesses superior information as a result of its past and current monitoring and negligence problems with transferring information to other banks. At a more general level it might be claimed that there must be a sense in which the main bank is given the correct incentives not to shirk on its monitoring. The implicit convention in Japan that the main bank bears a disproportionately large share of any losses incurred can be viewed as part of an incentive mechanism which economizes on the agency costs of having one set of bank delegate monitoring to one bank.

What are the incentives of the main bank to behave as it does? The main bank is better informed than any other lender. If the main bank refuses to refinance the firm, it must be because its information tells it that it is not profitable to do so. But if it is not profitable for the main bank, who already has prior claims that must be senior to any new finance, then it cannot be profitable for the supplier of incremental funds. The only time that a main bank would want to cut off finance would be when the firm is a bad prospect; inferring this, no other lender will extend finance. The decision on whether a client firm that needs an injection of finance to remain afloat obtains the required funds or not rests with the main bank. To the extent that main bank assumes special responsibilities when a client firm is in financial distress, it must be adequately compensated for the additional costs

involved. When the firm is normal times, the main bank enjoys special benefits associated with its position as main bank, not available to other lenders. In particular, it is widely believed that the main bank is able to acquire a disproportionately large share of various banking-related business such as placement of corporate bank deposits, operation of settlement accounts, involvement in bond issues as trustee administer and co-underwriter, handling of foreign exchange transactions, and access to banking business of related firms.⁴

One can argue that Japanese banks may rescue large borrowers because they cannot credibly threaten to let them fail. Given that Japanese courts will let a bank rescue a borrower without jeopardizing its rights in bankruptcy, the bank may find some rescues profitable ex post. The U.S. banks may abandon borrowers because they cannot cheaply save them. Given that U.S. courts sometimes punish a bank for intervening in its debtors' affairs, the bank may find rescue more often unprofitable even ex post. If the U.S. banks do threaten to let troubled firms die, they may be able to do so because of the bankruptcy law they face. At stake is the doctrine of equitable subordination: for the

4 Ramseyer (1991) argues that within the continuing relationships, the legal structure also matters. Japanese banks and firms bargain over the legal framework that will govern their deals and work hard to manipulate that framework to their private advantage. The extensive use of mortgages and guarantees suggests that banks and customers consider the rules critically important. Willing to make credible their promise to repay their loans, customers regularly acquiesce. The bank use the measures to improve their bargaining position should their customers later default. The customer use the measures to obtain a better deal now. The only merit to mortgages and guarantees lies in the legal protection they give the borrower. These security interests were not required by law. Banks demand mortgages and guarantees to gain the power to negotiate a more favorable contract should the borrower default.

Banks can also strengthen their position by keeping the terms of their loan short. By negotiating shorter contractual terms, it can use the law to retain the right to refuse to renew the loan and thereby protect itself. Its principal advantage from the shorter contractual term is its ability to reduce the default risks from its borrower's opportunistic behavior. Average of 46% of the funds Japanese banks lend come due within an year for years 1985-89, compared with the fact that the proportion of bank loan with terms over one year in the United States is the much less (Bank of Japan 1995). Banks seem to be concerned about the chance their clients will increase the risk of the project ex post. If firms did not trust their banks to cooperate and borrowed their money through short-term contracts, they would then need to protect themselves against opportunistic behavior that bank could take at the renewal. One way they could do so is by maintaining close ties with several other banks. Japanese firms diversify their credit sources broadly: most obtain less than half of their bank loans from their main bank (Fuji Research Institute Corporation 1993).

sake of fairness, a judge may subordinate the claims of a creditor than intervenes before Chapter 11 in its debtor's affairs. A bank can lose its priority whenever the bank has taken control of the debtor, thus assuming the fiduciary duties of a controlling shareholders, and then breached those duties to the injury of general creditors. Equitable subordination does not make bank rescue impossible; it does make them more costly. When a firm hits bad times, creditors will seldom lend more money without controlling the way it uses it. Under the U.S. law, they can do so before a Chapter 11 filing only by gambling all: if the firm succeeds, the bank recovers its claim; if the firm fails and the other creditors convince the judge the bank indulged its private interests, it potentially loses all. For the sake of making credible threats, perhaps that risk often suffices. Because of this ex post risk to intervention, the U.S. banks may be more able to credibly threaten to abandon defaulting debtors ex ante. Japanese judges use no doctrine analogous to equitable subordination. Whether in the U.S. or Japan, in bankruptcy cases judges wield enormous discretion. Although they may phrase it differently, Japanese judges exercise this discretion in ways that resemble a bit the American judicial concerns for equity. Although they may phrase it differently, Japanese judges exercise this discretion in ways that resemble somewhat the American judicial concerns for equity (Ramseyer 1992).

3.4 Development of the Main Bank System

Hoshi (1993) describes the development of the main bank system, and argues that the main bank system emerged from the wartime financial system during the World War II. For many large firms, the main bank system is a part of a larger industrial group called *kigyo shudan* or corporate groups. Some *kigyo shudan* have their origins in prewar conglomerates called *zaibatsu*, but there are some important differences between *zaibatsu* and *kigyo shudan*, especially in their financial arrangement. By focusing on the evolution of bank-firm relationships from prewar period to postwar period, he also describes how the prewar *zaibatsu* were transformed into the postwar *kigyo shudan*.

In order to respond to increasing demand for loans for war-related industries, commercial banks started to form lending consortium to share the risk and coordinate their lending. Lending consortium during

this period developed into the main bank system in the postwar period. Although the wartime lending consortium was mainly a device for risk diversification, the postwar main bank system added another role of delegated monitoring among banks. By letting a main bank be responsible for monitoring its clients and avoiding the duplication of monitoring by other lenders, the de facto lending consortium under the main bank system provided an efficient monitoring mechanism. The government assigned a major bank to each munitions company to take care of the firm's financial needs by law. In many cases, a lending consortium was formed around the designated bank to serve the munitions company. Most designations are likely to have been based on the past relations through loans, shareholdings, and directorship. Thus the assignments often served just to reinforce preexisting ties between banks and firms, especially for those zaibatsu firms and banks. Moreover, some non-zaibatsu firms also started to have close ties to zaibatsu banks as a result of designation. Thus, even for the former zaibatsu banks, there appear to have been new long-lasting relationships formed because of the designation system. The main bank relationships in 1962 were strongly influenced by the designated financial institutions system during the war. The ties through the designated financial institutions system were long lasting even for the other firms which did not have close ties to zaibatsu.

As the firms started to depend more on external funds, especially bank loans, the relative power of shareholders declined somewhat. However, there were also regulatory changes that further limited the power of shareholders: the shareholders' rights to residual income was severely restricted with limiting dividend pay-out. This important restriction on the shareholders' property rights must have reduced their incentive to influence and control the management. It is interesting enough to point that this tendency for firms to pay a nominally fixed amount of dividends has continued to the postwar period in the name of stable dividends policy. The shareholders do not seem to have regained their rights to residual income even in the postwar period. The shift of corporate control away from the shareholders was a result of deliberate government policy, which attempted to organize every aspect of the economy to work efficiently for war purposes. During the war, the government viewed self-interested shareholders, who care more about profits than national

priorities. In addition to these financial regulations that heavily restricted the right of shareholders as residual claimants, the government passed other laws that more directly limited control by the shareholders. In addition to putting the companies under the direct control of the government, the managers are allowed substantial autonomy as long as they were acting in the interests of the nation by trying to increase productivity. Thus the power to control the corporations was largely transferred from shareholders to managers during this period.

As the war ended, Japan inherited a financial system with large banks and close bank- firm relationships. Moreover, the decline of shareholders' power during the war made room for the banks to play important roles in corporate governance. The absence of monitoring that characterized the wartime financing had to be corrected, and the banks had to gain the power to monitor the firms. The swift reorganization of financial institutions reflected the idea of Japanese government and the Allied Forces that they should first make solvent so that they can expect the banks to lead the postwar reconstruction. In the process of restructuring the non- financial firms, each firm had to select a set of "special managers." As a rule, special managers consisted of two representatives from the firm executives and two representatives of the firm's creditors. Thus, in almost all the cases, former munitions companies had representatives from their designated financial institutions as their special managers. The special managers played a central role in the restructuring process. For example, it was their responsibility to determine which assets should be included in the new account. They were required to draw up a restructuring plan, submit it to Minister of Finance, and have it approved. In constructing the restructuring plan, the special managers had to assess the value of remaining assets, make plans for future production and finance, and create forecasts of balance sheets and income statements. Accordingly, the restructuring of special account firms gave the special managers an excellent opportunity to acquire information about the firms. Ultimately, the accumulation of information and the responsibility associated with the restructuring process must have significantly enhanced the monitoring capabilities of the banks.

The second factor that contributed to an increase of bank monitoring was the acute credit crunch during this period. The credit

situation became especially serious after the implementation of Dodge stabilization plan in 1949, which cut off credit expansion by the Reconstruction Bank. In response to these financial problems, many firms turned to banks, and the banks seem to have increased their power over industrial firms. Banks rescued many firms from liquidity crises, and sometimes directly intervened in their management. During this period, however, the banks also suffered from a shortage of funds. The situation was especially serious for large banks in the zaibatsu, which heavily depended on deposits by large zaibatsu firms, because those firms were in the process of restructuring and did not have much money available to deposit. Thus the large banks had to compete for inter-bank loans and Bank of Japan lending to make up for the shortage of deposits. This competition among large banks also seems to have further helped in giving them proper incentive to monitor. Since the banks had their balance sheets cleaned up and were now solvent, they were not inclined to waste money on loans to friendly but unworthy firms. By adding monitoring activities by the banks to a banking system that was already characterized by close bank-firm ties, main bank system started its development. The ties between banks and firms were not broken up during the postwar period so that the wartime and postwar banking system show remarkable continuity. The government of Japan and the Allied Forces failed to fully break up the zaibatsu, and bank-firm ties in zaibatsu reemerged when the former zaibatsu firms were regrouped as *kigyo shudan*, or industrial groups. Second, the bank did not suffer much from the post-war reforms and therefore were well positioned to play a central role in starting up the industrial groups and developing the main bank system. Following the zaibatsu dissolution, however, many of the former zaibatsu firms gradually reunited as *kigyo shudan*. The personal ties among the managers of the former zaibatsu were obviously important in the process of the re-affiliation. While the effort of the Allied Forces to break up zaibatsu was incomplete, the attempt to break up large financial institutions never materialized.

The institutional inertia are combined with the increase of monitoring ability by banks, and the main bank system started to develop. By early 1960s, many of the features of the main bank system were in place. Banks were firmly established as the primary providers of external financing for firms. Bank also had been permitted to hold

equity claims of their clients and were regularly taking an active role in corporate governance. The lack of commitment by the Japanese government and the Allied Forces to break up the close bank-firm relationship insured that many aspects of the wartime corporate finance were carried over to the postwar period. Then the bank gained substantial power to monitor the firms, through their experience in the restructuring of non-financial firms and in the period of severe credit crunch, and the main bank system started to develop (Hoshi 1993).

4 Structural Changes

4.1 Financial Emancipation

Table 3 indicates that liquidity in the form of cash and marketable securities for Japanese firms has been increasing. Furthermore, the Japanese figure is almost 4 times that for the U.S. firms. Historically, a substantial portion of cash positions at Japanese firms represented compensation balances on commercial loans. However, the use of compensation balances has decreased during the 1980s as Japanese lenders have moved toward market-rate loans and fee-based services. Much of this liquidity increase occurred relatively suddenly during the second half of the 1980s in parallel with expansion of money supply, lower interest rates, and rising real estate prices in Japan.

Paralleling the liberalization of Japanese corporate finance has been a dramatic buildup of financial slack on Japanese corporate balance sheets. During Japan's high-growth periods in 1948-73, Japanese firms were confronted with a volume of attractive investment opportunities that vastly exceeded their cash flow and the amount of funds most firms could reasonably expect to raise externally. Throughout this period, Japanese corporate finance served simple function. Financial managers raised the cash necessary to fund the approved projects securing a sufficient volume of external finance. Minimizing capital costs was a secondary concern to most of them.

For all practical purposes, there are only two major sources of external funds: collateralized loans and trade credit. These, in turn, were supplied by essentially the same institutions - banks, insurance companies, and major suppliers - stakeholder that were also major shareholders in their firms. These stakeholder monitored client firms closely, even to the point of occasionally injecting new management to

Table 3
Balance Sheets of Manufacturing Firms in Germany, Japan and the United States
Five-Year Average
(Percentage)

Germany							
	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-91
Assets							
Cash and Equivalents	11.0	10.4	10.5	13.5	13.3	16.9	13.9
Account Receivables	16.4	17.6	20.2	21.3	22.8	24.3	24.8
Inventories	22.6	21.0	22.4	25.2	26.3	23.6	23.6
Tangible Fixed Assets	41.7	39.0	32.8	26.1	22.7	21.1	20.5
Liabilities	58.2	61.0	67.2	69.3	70.7	71.2	72.2
Account Payables	22.9	24.0	26.6	29.2	30.0	28.6	28.8
Short-Term Debt	3.3	4.0	4.0	2.9	3.6	4.3	4.7
Long-Term Debt	23.2	24.7	26.3	25.7	23.7	20.9	19.9
Stockholder's Equity	41.8	39.0	32.8	30.7	29.3	28.8	27.8
Stock	21.6	20.2	16.7	14.8	13.3	12.0	11.3
Japan							
	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-91
Assets							
Cash and Equivalents	10.7	12.8	13.8	14.8	15.3	19.3	17.7
Account Receivables	19.3	25.3	23.4	22.7	23.1	21.7	21.6
Inventories	17.7	15.5	16.7	18.3	18.9	13.6	12.4
Tangible Fixed Assets	34.6	37.4	30.2	26.8	25.1	25.7	25.7
Liabilities	70.2	75.5	80.2	82.1	75.4	67.0	63.3
Account Payables	16.2	18.5	19.0	18.7	19.7	16.3	15.6
Short-Term Debt	18.5	18.7	16.8	18.0	17.0	14.0	9.7
Long-Term Debt	22.3	26.0	28.8	27.7	21.9	22.0	23.6
Stockholder's Equity	29.8	24.5	19.8	17.9	24.6	33.0	36.7
Stock	16.8	13.6	8.6	6.7	6.0	7.5	8.5
U.S.A.							
	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-91
Assets							
Cash and Equivalents	10.2	7.1	5.8	6.9	5.5	5.7	4.6
Account Receivables	16.7	17.6	17.6	16.4	15.5	14.8	13.6
Inventories	23.3	23.7	22.7	20.9	18.3	15.5	14.1
Tangible Fixed Assets	38.7	39.5	38.1	35.2	38.2	35.1	33.6
Liabilities	35.8	42.3	46.9	47.5	51.2	57.1	59.9
Account Payables	9.2	9.7	9.4	9.1	9.2	8.2	7.8
Short-Term Debt	2.8	3.8	4.3	3.3	3.7	3.8	4.2
Long-Term Debt	14.3	18.3	22.2	22.9	25.1	31.0	34.4
Stockholder's Equity	64.2	57.7	53.1	52.5	48.8	42.8	40.2
Stock	25.3	20.1	17.5	15.0	12.5	12.0	12.1

Source: The Bank of Japan, *Comparative Economic and Financial Statistics: Japan and Other Countries*, 1974, 1978, 1986, 1993, 1994.

Source Note: Statistisches Bundesamt, *Unternehmen und Arbeitsstätten*, The Bank of Japan, *Syuyokigyo Keieibunseki* (Business Analysis on Main Enterprises in Japan), The U.S. Department of Commerce, *Quarterly Financial Report for Manufacturing, Mining, and Trade Corporations*

Note: Book values of assets in Japanese firms differs greatly from current values because face values are much lower than market values.

ensure a rational deployment of scarce funds. Thus high growth, the rigors of competition at home and abroad, the heavy use of debt and trade credit, and the ownership of these claims by institutional shareholders that monitored performance closely were sufficient to ensure the deployment of cash in a pattern consistent with the priorities of the suppliers of capital.

Although remarkable growth in Japan had begun to wane even prior to 1973, the oil shock produced a sudden and dramatic reduction in Japanese economic growth. The joint effect of investment reduction and cost improvement was to lessen gradually the external capital needs of the firms. Large firms finance internally from less than 20% in the 1960s and early 1970s to more than 100% by the 1990s. The latter figure reflects the fact that many large Japanese firms were using their enormous cash flow during this period to repay debt and build up liquid assets on the balance sheet rather than to increase dividends for shareholders. As a consequence, Japanese firms have accumulated considerable financial slack in the form of unused debt capacity and temporary investments in marketable securities. The net debt-to-equity ratio by Japan's largest firms has declined more or less steadily since 1978, even becoming negative in 1987. The buildup of financial slack on corporate balance sheets, the persistence of excess cash flow throughout the 1980s, and gradual financial deregulation have led to a kind of financial liberation of Japanese industrial firms from their traditional lenders.

Close, stable relationships between non-financial firms and banks have been essential elements of Japanese corporate finance. As such, they have contributed significantly to the mitigation of takeover activity in Japanese capital market. Today, however, this stability is being shaken by two major changes in the world of finance: the buildup of financial slacks on balance sheets in Japanese corporation and the globalization and deregulation of the Japanese financial system. The former change is altering the nature of business that banks execute with their major industrial clients and generally weakening bank control over these firms. Concurrently, the latter change is causing banks and other institutional owners of equity to demand greater returns on their holdings of client-firm stock. Together these trends are evoking a creeping instability in close financial relationships.

Japanese firms in recent years are in abundance of liquidity found

on most of their balance sheets. It is no mere coincidence that this period of abundance has also been accompanied by weakening firm-bank relationships. The increased availability of internally generated cash to fund projects has reduced the need to raise funds externally, thus diminishing the financial dependence of industrial firms on bank. In addition, the growth and gradual deregulation of capital markets at home and the opening of capital markets abroad have distanced Japanese industrial firms still further from banks. There is a hidden cost to the financial emancipation of past success, however. In the absence of the discipline exerted by capital market, Japanese managers now finds themselves with far greater discretion in the allocation of corporate resources than ever before. Since firms are unwilling to breach long- standing implicit contracts with key stakeholder, especially long-term employment relationships, and unable to execute past strategies of simply growing themselves out of their current situations, they hold the direction to sustain marginal businesses and retain unrelated diversification. Thus, the free cash flow of these corporations may be reallocated from shareholders to other stakeholder, primarily employees. Despite the low priority traditionally accorded to shareholders in Japan, it is unlikely this trend can continue for long. One by- product of the increasingly global market in which Japanese financial institutions must compete, and of their weakening relationship with industrial clients, has been a growing concern for obtaining higher direct returns on their equity investments.

Although borrowing continued to shrink as significant proportion of total funds raised, bank loans continued to dominate security financing in domestic markets. Moreover, lending practices began to change in the wake of overseas financing by Japanese firms and the continued relaxation of domestic financial market regulation. Continued growth in the certificated-deposits market and the introduction of large-denomination money market certificated in 1985 contributed to greater variability in banks' cost of funds. The introduction of a commercial paper market in November 1987 provided another viable alternative for large firms in search of short-term funds and further reduced the dependence of corporation on banks. For all practical purposes, lending to large firms has ceased to be growing business for Japanese major banks.

Over the past two decades, capital market liberalization in Japan

has made available financial instruments not previously available to corporate borrowers. Firms are now free to raise investment funds through a variety of equity, bond, and hybrid mechanisms, and in both domestic and overseas markets. Many large Japanese firms have taken advantage of these opportunities, and the results has been a substantial decline in the proportion of external corporate capital coming from traditional sources such as bank loans. With the decreasing proportion of total capital allocation channeled through the traditional prime rate system, the Ministry of Finance and the Bank of Japan are no longer able to exercise the same degree of control over financial markets that they once could. It is also true that, with the new reliance on securities-based finance, Japanese major securities firms are now more important in financial markets than in the past. Furthermore, even as banks and other financial institutions account for an increasing share of securities-based capital, the ability of highly performing non-financial firms to fund their investments through retained earnings has reduced their overall external capital dependency and shifted the balance of bargaining power with lending firms in their direction.

Whereas most firms indicated that their corporate plans and investments were closely examined by banks during the 1950-80 period, none reported being subjected to such scrutiny today. Although meeting with the main bank is still held semiannually or at least annually to discuss performance, these have apparently evolved into largely perfunctory presentations of past performance rather than substantive discussions of future capital investment. Banks are now more interested in tracking the overall return earned on their total investment in client firms rather than monitoring and influencing managerial decision making. The exchange of information historically fostered by placing retiring bank officers in senior management positions at client firms also appears to be waning. Major banks have begun to experience difficulties in placing retiring employees in second careers.

As constraints on corporate finance relax and capital and financial markets deregulate in Japan, competition among banks has further weakened traditional firm-bank relationships. The securitization of Japanese corporate finance had made financing increasingly price-sensitive transactions in which past relationships count for little. A firm's main bank may win a mandate to lead-manage a deal, but only if it offers a better idea or a competitive quote. Nonetheless, although

Japanese non-financial firms may be distancing themselves from banks, Japanese banks and other financial institutions still own considerable fractions of these firms' outstanding shares. However diminished the need by no-financial corporations for a close banking relationship, the Japanese bank will maintain that strong relationships with their clients are still central to the success of their institutions. Even though large no-financial firms no longer rely heavily on intermediated credit to meet financing needs, financial institutions still look to these firms for access to affiliated firms of commercial lending, access to employees for retail banking and insurance underwriting, and as customers for new products and service offered on a fee basis.

Since newer or smaller firms continue to depend heavily on bank loans shown in Table 4, they may derive an important advantage from the main bank system. However, financial liberalization tends to undermine the main bank system because major non-financial firms have greater access to market debt as well as borrowing from foreign financial institutions. This makes it potentially much more difficult for the main bank to monitor and control clients' behavior. Consequently, the key to an effective main bank system under these circumstances seems to be an enforceable agreement or mechanism which restricts the

Table 4
External Sources of Funds by Size of Firm in Japan
(Percentage)

	1975	1980	1985	1990
Loans				
Large Firms	73.6	69.8	21.4	67.2
Small and Medium Firms	91.2	89.2	97.1	94.2
Bonds				
Large Firms	16.3	6.3	38.6	13.1
Small and Medium Firms	0.1	0.1	0.2	0.3
Stock Issues				
Large Firms	10.1	23.9	40.0	19.7
Small and Medium Firms	8.8	10.8	2.7	5.5

Source: Economic Planning Agency, *Keizai Hakusho*, 1992 (Economic Survey of Japan, 1992).

Source Note: Ministry of Finance, *Houjinkigyō Toukei Nenpō* (Annual Statistics of Corporations), 1975, 1980, 1985, 1990.

Note: Size of firms is based on their stocks. Large firms have more than 1 billion yen value of stocks.

access of heavy borrowers to alternative debt sources. If this condition can be satisfied, the main bank system should continue to be viable and advantageous for firms which need strong bank support.

Hoshi, Kashyap, and Scharfstein (1990b) examine the investment behavior of Japanese firms before and after financial deregulation. In the period before deregulation all of the firms in their sample had close ties to a bank or set of banks. After deregulation, some of these firms loosened their ties to banks and relied more heavily on direct capital-market financing. Another set maintained their close banking ties. They found that the firms that have significantly reduced their bank borrowing and increased their direct capital-market financing, exhibit a strong sensitivity of investment to cash flow after deregulation. By contrast, the firms that maintained bank ties show no sensitivity of investment to cash flow in both periods- before and after deregulation. If bank monitoring overcomes information problems and relaxes liquidity constraints, why did some firms weaken their bank ties? Diamond (1991) argues that young firms, or older ones that have done poorly, will borrow mainly from banks and that older, more successful firms will use public debt. The idea is that successful firms have more capital of reputation in performance at stake and hence have more to lose by taking inefficient actions. These firms do not need to incur the monitoring costs associated with bank borrowing. By contrast, younger firms have not yet developed a reputation and older, less successful firms do not have a good reputation to lose. It is therefore efficient for these firms to incur the costs of bank monitoring.

The results presented here suggest that monitoring and other costs associated with bank financing must be large. Otherwise, firms would not have chosen to weaken their bank relationships until they had enough collateral to be able to get around liquidity constraints. The first cost stems from regulations requiring banks to hold a fraction of their assets in non- interest-bearing accounts. This reserve requirement means that the costs of funds to banks exceed those of individual investors; as a result, they will require a higher gross rate of return on their investment. In addition, bank loans are generally less liquid than publicly traded debt. The difficulty that bank facing adjusting their loan portfolio may also mean that they will require a higher gross return. Finally, a more subtle cost of bank financing may arise from the different objectives of banks, managers, and shareholders.

Since banks mainly hold debt claims, they receive little of gain from unusually good firm performance. Shareholders, in contrast, care only about maximize the gain. This conflict may result in excessively conservative investment policies if bank control corporate investment decisions. It may therefore be efficient to reduce bank ties to avoid this problem at the expense of becoming more liquidity constrained. As firms generate more cash from ongoing operations, they may be more willing to make this transition. In addition, managers may prefer to have more control over operating decisions than a bank is willing to allow. Managers may choose to weaken the firms' bank ties and incur greater financing costs because it gives them more control despite the fact that it inefficient to do so. Again, as firm become more liquid, managers may be more willing to incur these costs (Hoshi, Kashyap, and Scharfstein 1990a).

4.2 Financial Deregulation

It is clear that the ongoing financial deregulation in Japan is having important effects on corporate financing practices. In some respects, financial liberalization has been taking place since the 1960s; however, the process accelerated dramatically in the 1980s. The revised Foreign Exchange and Foreign Trade Control Law in December 1980 removed major impediments to offshore financing by Japanese firms and improved access by foreigners to Japanese financial markets. Beginning around 1984, the liberalization process accelerated with a number of regulatory changes which were at least partially in response to external pressure for greater openness of Japanese financial markets. Since then a stream of regulatory changes have eliminated a variety of interest rate restrictions, allowed trading in new types of securities, relaxed controls on both domestic and foreign financial institutions, and generally promoted freer and more flexible financial markets. However, some regulations and practices which cause distortions and result in unusual financing patterns still remain. The elimination of one restrictive regulation results in a regulatory arbitrage opportunity with market participants using their increased freedom to profitably exploit another, still-existing regulation. This continues until the consequent pressure on the second restriction forces its elimination or modification. Consequently, the liberalization process tends to produce windows of opportunity permitting firms to earn

additional profits by exploiting regulatory differences.⁵

There have been several dramatic shifts in funding patterns which can be traced to regulatory changes. It is also important to understand that the government's own financing needs have been an important influence on market regulations as well as the general character of the domestic bond market. Indeed, that market has been dominated by government issues since the mid-1970s with corporate issues representing a relatively small fraction of the total market. For example, during the 1986-1990 period, straight corporate bond issues accounted for just 3% of total bond issues in Japan. Table 5 provides additional data on domestic bond issues by Japanese firms during 1960-1993. In recent years, other Japanese firms have essentially forsaken the domestic straight debt market in favor of other funding sources, including offshore bond issues. This striking aversion to domestic issues has produced enormous pressure for regulatory and procedural changes.

To a large extent, the underlying problems for domestic corporate bond issues have to do with who determines issue terms and collateral requirements. It was only after 1979, that Japanese firms were allowed to issue unsecured bonds for the first time since the 1930s. Initially, only two firms were eligible to make unsecured issues. This situation continued until January 1983, when the restrictions on convertible bonds were further relaxed so that some 30 firms become eligible to issue such bonds without collateral. Subsequently, restrictions for both

5 The "sushi bond" provides a classic example of such regulatory arbitrage. The sushi bond was a foreign currency bond issued offshore by Japanese firms and purchased by Japanese insurance companies at higher prices than other potential buyers were prepared to pay. The differentiating characteristic of a sushi bond was that Japanese firms were on both sides of the transaction. The motivation for sushi bonds was a Ministry of Finance regulation which limited the foreign currency investments of insurance companies to 10% of total assets; however, foreign currency issues by Japanese firms were not subject to that restriction. Consequently, such issues commanded a premium from Japanese insurance companies desiring to increase their foreign currency position beyond the 10% limit.

As Japanese firms became able to issue foreign currency bonds offshore and swap the proceeds into yen, they discovered that this was less costly than a comparable domestic yen borrowing. Apparently some borrowers simply re-lent the proceeds of their sushi bond issues at an arbitrage profit. The resulting surge in sushi bond issues caused Ministry of Finance to relax the restriction on insurance companies' foreign currency assets. As a consequence, Japanese insurance companies were no longer prepared to accept the lower yields on sushi bonds. Then, issuance of such bonds ceased almost immediately (Hodder and Tschoegl 1992).

convertibles and straight bonds were relaxed in stage until several hundred firms were eligible for unsecured issues as of November 1988. The official logic for a collateral requirement has been the protection of investors. However, this restriction has also made bond issuance in Japan relatively unattractive. Not only did corporate issuers have to pay management fees and underwriting commissions, but they also had to compensate a trustee for a variety of services which substantially increased issue costs. Firms also has to obtain approval on the terms and timing of issues from a committee dominated by a group of large banks. This procedure is cumbersome and lacks flexibility regarding issue terms. This bond issuing procedure endowed the Japanese banks with considerable control over non-financial firms' access to debt markets. Under the main bank lending system, such control was

Table 5
Direct Financing of Public Firms in Japan
Five-Year Average
(Percentage)

	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-93
Stock Issues							
No. of Cases	63.7	38.4	60.0	53.3	43.2	38.3	37.6
Amounts	72.2	36.4	43.8	31.2	29.6	24.3	12.2
Straight Bonds							
Domestic							
No. of Cases	35.7	61.0	33.4	29.0	15.0	3.1	7.9
Amounts	25.7	58.9	42.1	43.0	22.7	4.6	22.5
Overseas							
No. of Cases	0.2	0.2	0.3	5.1	8.4	8.3	20.9
Amounts	0.4	2.9	0.7	6.9	8.9	7.6	24.7
Convertible Bonds							
Domestic							
No. of Cases	0.1	0.1	6.1	5.0	9.6	22.3	8.8
Amounts	0.1	0.4	12.9	8.7	14.2	30.8	12.4
Overseas							
No. of Cases	0.3	0.3	0.2	7.6	20.3	9.6	4.3
Amounts	1.6	1.4	0.5	10.2	21.0	7.0	3.7
Warrants Bonds							
Domestic							
No. of Cases	n.a.	n.a.	n.a.	n.a.	0.6	0.5	1.0
Amounts	n.a.	n.a.	n.a.	n.a.	0.4	0.7	2.7
Overseas							
No. of Cases	n.a.	n.a.	n.a.	n.a.	2.9	17.9	19.5
Amounts	n.a.	n.a.	n.a.	n.a.	3.2	25.0	21.8

Sources: Tokyo Stock Exchange, *Annual Securities Statistics*, 1993.

important for dealing with highly levered clients. In recent years, financially sound firms have naturally tended to view this process as an expensive nuisance. Consequently, offshore issues have been attractive as a way around cumbersome and expensive procedures in the domestic market.

Table 6 illustrates the rapid growth in offshore bond issues by Japanese firms over the last decade. It was not until the early 1980s and Japanese participation no longer required permission of Ministry of Finance that the offshore market began to really take off. Total corporate issues during the 1985-1993 period were greater in the offshore market than domestically. The fact that a very large fraction of offshore issues would up in Japanese investors' portfolios provides a strong indication that the domestic market was inefficient.

In the domestic market, convertible bonds have dominated straight issues since 1983. There seem to be several reasons for this. First, collateral requirements have been relaxed more rapidly on convertibles - resulting in lower effective issue costs for more firms. Second, issuing terms on straight corporate debt have been tied to government bond yields in ways which made many corporate issues relatively unattractive for initial purchasers. In contrast, terms on convertibles were more easily adjusted to make them attractive for purchasers. Third, the lower coupon rate on a convertible coupled with the generally low dividend yield on shares after conversion implies a lower cash flow drain relative to issuing straight debt. Fourth, historically, a firm could not issue bonds in excess of its paid in capital plus reserves. The June 1990 revision to the Commercial Code roughly doubled the limit; but even this relaxed constraint can be binding for a rapidly growing firm needing external funds. A convertible issue provided immediate funding but, as it was converted into shares, enhanced a firm's ability to issue additional bonds in the future.

The main concern for corporate bond issues during the last decade has been the shift to issuing overseas. This is clearly due to reduced regulatory constraints on access to offshore markets where there is greater flexibility and lower costs. The rise of the offshore primary market has, however, seriously undermined the domestic primary market. Consequently, efforts are currently underway to reform domestic bond issuance procedures and make them more competitive with offshore markets. This will presumably require more flexibility

Table 6
Direct Financing of Public Firms in Japan
Five-Year Average
(Billion Yen)

	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-93
Stock Issues							
No. of Cases	3,014	1,366	2,342	1,623	1,227	2,106	1,356
Amounts	2,673	1,352	3,743	4,463	6,173	18,376	5,843
Straight Bonds							
Domestic							
No. of Cases	1,689	2,172	1,304	884	427	171	287
Amounts	953	2,187	3,598	6,152	4,725	3,478	10,721
Overseas							
No. of Cases	8	8	10	155	240	455	754
Amounts	17	109	55	988	1,848	5,785	11,775
Convertible Bonds							
Domestic							
No. of Cases	3	3	237	153	272	1,227	317
Amounts	1	15	1,106	1,246	2,951	23,360	5,923
Overseas							
No. of Cases	15	9	9	230	575	529	156
Amounts	61	52	46	1,456	4,364	5,311	1,761
Warrants Bonds							
Domestic							
No. of Cases	n.a.	n.a.	n.a.	n.a.	16	26	35
Amounts	n.a.	n.a.	n.a.	n.a.	87	544	1,307
Overseas							
No. of Cases	n.a.	n.a.	n.a.	n.a.	81	983	704
Amounts	n.a.	n.a.	n.a.	n.a.	678	18,934	10,377
Sub-Total of Bonds							
Domestic							
No. of Cases	1,692	2,175	1,541	1,037	715	1,424	639
Amounts	954	2,202	4,704	7,397	7,763	27,382	17,950
Overseas							
No. of Cases	23	17	19	385	896	1,967	1,614
Amounts	78	160	101	2,444	6,890	30,030	23,913
Grand Total							
No. of Cases	4,729	3,558	3,902	3,045	2,838	5,497	3,609
Amounts	3,704	3,715	8,548	14,303	20,826	75,788	47,705

Sources: Tokyo Stock Exchange, *Annual Securities Statistics*, 1993.

with regard to pricing and issue terms as well as largely eliminating the additional costs imposed by the commissioned bank system. Otherwise the dominance of the offshore markets is likely to continue (Hodder and Tschoegl 1992).

4.3 Reorientations of Financial Institutions

The securitization and globalization of Japanese corporate finance dramatically changed the business of major banks in Japan. As non-financial firms have been changing the sources of funds, Japanese major banks have aggressively sought to offer product-oriented, fee-based banking services such as currency and interest swaps, leveraged lease arrangement, and M&A advisory work. The rapid growth and low profitability of Japanese banks has led to concern about their capital adequacy. Foreign banks have sought protection from the onslaught of Japanese competition by calling for Japanese banks to operate with capital ratios comparable to those required in the United States and Europe. Japanese banks are watching their financial performance carefully. In contrast to the low-margin, volume-oriented banking practices, Japanese banks are now restraining growth and carefully tracking the profitability of their relationships with clients. Increasingly, clients are being ranked by banks according to the profitability of the relationship with them. Just as industrial clients are now short listing the banks with which they do business, banks are now beginning to identify and terminate relationships with clients that do not provide them with sufficiently attractive rates of return.

Competition for corporate pension fund management has also fueled the rising performance orientation of both insurance companies and trust banks in the management of equity investments. Historically, corporate pension funds were almost insignificant size and fund managers, who were restricted to trust banks and insurance companies only, were selected on the basis of business relationships. According to the practice of a particular firm, for example, pension funds were allocated to institutional managers on the basis of their share of loan volume to a particular firms, the extent of their equity ownership, and the volume of their purchase from it. Until relatively recently, fund performance was not a factor since there was virtually no difference in performance among the trust banks and insurance companies.

Today, however, pension fund management has become a

substantial, rapidly growing business vital to the long-term prosperity of the trust banks, which have also has to find the new sources of growth and profitability to replace their plateauing loan demand. At the end of the 1988 fiscal year, corporate pension fund assets under management amounted to 26.3 trillion yen and were growing at an annual rate in excess of 15%. Corporate pension fund owners have also become more demanding today. Corporations were indicating their search for better fund performance by steadily shifting assets away from trust banks to insurance companies. The upshot of this sort of activism by pension fund owners has been an aggressive pursuit of short-term capital gains by fund managers; the proportion of pension fund assets invested in equities doubled from 12.7% in 1981 to 25.8% in 1988 (Kester 1991).

The shifting patterns of Japanese corporate finance, and the competitive and regulatory pressures on Japanese financial institutions to increase their return on assets, are collectively resulting in a gradual unbundling of claims held against non-financial firms. Rather than being key shareholders, lead lenders, and primary vendors of financial services in long-term relationships with clients, Japanese banks are now being reduced to the position of minority shareholders that must compete fiercely for a client's business on a transaction-by-transaction basis.

5 Conclusions

Corporate financial patterns and practices in Japan appear quite different, particularly in comparison with those in the United States. In large part, these differences are due to differing institutional and regulatory environments. Then, a peculiar financing pattern turns out to be the rational economic response to a constraining regulation. The key to understanding such patterns is identifying the underlying structure of constraints.

Japanese financial institutions may hold equity and debt at the same time. Besides strengthening the long-term relationship between the financial institutions and the firm, the simultaneous holding of debt and equity clearly reduces the scope for conflict between stockholders and debtholders over the choice of policies, particularly in situations of financial distress. The significance of the main bank system is the close

information-sharing relationship that exists between the bank and the firm. It is possible to view the main bank system as functioning as a substitute for the kind of screening and monitoring institutions that are prevalent in other capital markets such as bond and credit-rating institutions and security analysis agencies. The close association that the main bank has with the firm means that the bank is able to obtain inside access to the firm and its management which is not readily available to the external capital market.

The main bank system can be also characterized in terms of banks themselves delegating the monitoring of a particular firm to one particular bank: the main bank. The bank delegated to be monitoring is not only the bank with the largest loan share but also holds a significant stake in the firm as a shareholder. Having a sufficient large loan share may be the way in which the bank ensures that it obtains an adequate return on its monitoring outlays. In this regard, it is worth noting the free-rider problem may be mitigated somewhat by virtue of the fact that non-monitoring banks will not be able to imitate the loan portfolio of the main bank in size. It can be argued that this function of the main bank provides an important substitute mechanism for what in effect is inactive market for corporate control in Japan. Main bank intervention can take a number of forms, ranging on the one hand from cases where the main bank stipulates certain measures that requires the firm to take in exchange for the bank's support during a period of financial difficulty to cases where the bank sends officers to take over the management and carry out the reorganization of a firm that is on the verge of bankruptcy on the other. As a consequence, one can suggest that the relationship-based corporate governance in Japanese firms substitutes for the more market-based in the U.S.

Much of corporate finance in Japan have evolved around the main bank relationship. This is changing for many firms. Indeed, financial liberalization in Japan has created serious difficulties for the main bank system. Nevertheless, that system seems likely to adapt and continue to provide valuable support for rapidly growing firms. Exactly how this will come about is not yet clear; however, there are substantial incentives for preserving the system's advantages. More generally, the effects of financial liberalization over the last decades have been enormous. The process of change will continue, both because

of continuing liberalization and because some financial patterns change sluggishly. Increasing financial sophistication and ability to exploit opportunities arising from regulatory changes will also continue to alter corporate financial practices for some time to come. It is reasonable to expect that the role of offshore financing will not decline. Untangling the web of domestic regulations, traditional practices, and conflicting interests of various financial constituencies will take time. During that period, offshore financing will probably grow substantially; and we will continue to observe arbitrage situations bring about market efficiency.

Financial liberalization tends to undermine the main bank system because major non-financial firms have greater access to market debt as well as borrowing from foreign financial institutions. This makes it potentially much more difficult for the main bank to monitor and control clients' behavior. Consequently, the key to an effective main bank system under these circumstances seems to be an enforceable agreement or mechanism which restricts the access of heavy borrowers to alternative debt sources. If this condition can be satisfied, the main bank system should continue to be viable and advantageous for firms which need strong bank support.

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Structural Adjustment and Economic Growth in Mexico: With Comparisons to Indonesia

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Those who do not remember the past are condemned to repeat it--
Descartes

1. Introduction

In the month of December, 1994, Mexico experienced a financial crisis that rocked not just the country, but the entire hemisphere, including the United States. The value of the new peso fell from 5 to nearly 7.8 to the dollar. Foreign exchange reserves reached critical levels, down from nearly \$26 billion in the first quarter of 1994. Growth of the Gross Domestic Product (GDP), which had been forecast at four to five percent in 1995, will now be negative in 1995, as a new round of import restrictions, interest rate hikes, and public spending cuts are imposed to try to stabilize the economy.

The tragic part of the scenario is that this crisis is so similar to the many that have come before, despite changing international circumstances. Notwithstanding the significant trade liberalizations that were undertaken in the late 1980, effective deregulation and privatization campaigns, and the signing of NAFTA, exchange rate overvaluation and destabilizing capital inflows led to capital flight, balance of payments crisis, and macroeconomic collapse. The elusive pursuit of growth with macroeconomic stability had clearly failed once again.

This paper is an attempt to identify and prioritize the reasons for Mexico's macroeconomic instability and projected negative growth rate for 1995 as well as past disappointments, in contrast to the apparently more effective and beneficial stabilization efforts in Asia. Particularly in Indonesia, a country that has many similarities to Mexico,

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stabilization efforts seem to have been more effective in rapidly reducing inflation and reestablishing macroeconomic balance. The stabilization achieved seems to have been more beneficial, in terms of higher rates of GNP growth, increased wages and consumption levels, and rates of increase in total investment (foreign and domestic). And the stabilization, once achieved, has been maintained; Indonesia has now enjoyed a decade of stability, in contrast to repeated requirements for stabilization and austerity in Mexico.

Several factors will be considered as being responsible for the difference in the experiences of these two important countries. Economic preconditions will be examined. Did the difference in performance during and after the periods of stabilization lie in the difference in levels of development, structure of production, employment, or trade, or economic institutions? To address this possibility, a brief historical background of the Mexican economy is presented in section 2.1, the crucial choice made in Mexico in 1970 and its implications for the problems of the 1980s is discussed in section 2.2, and some comparisons to Indonesia's experience follows in section 2.3. Alternatively, it could be that the design and implementation of "stabilization policies" differed substantially in the two instances. In addition to the policies themselves, covered in sections 3.1 (1982-88) and 3.4 (1988-94), included in this broad category of factors is the intangible "commitment to liberalization" as it relates to the proper sequencing of reforms (section 3.2) and business/government relations and stabilization (section 3.3). A third possibility is that the two economies may have experienced different responses to similar stimuli and incentives, accounting for the subsequent differences in performance. Part of this difference may lie in different external situations, and Mexico's participation in NAFTA is an obvious example. Section 4.1 considers the differences in the international context of the different stabilization periods and the nature and magnitude of exogenous shocks, with NAFTA given special treatment in section 4.2. The two countries are examined in the context of the economic performance of a larger group of developing countries in section 4.3. A fourth possibility not explicitly dealt with in this paper is that differences in political systems and institutions explain the differences in both the stabilization periods and their macroeconomic impact. Conclusions are presented in section five, along with some implication

of the current Mexican crisis for other developing countries.

2. Economic Preconditions

2.1 Historical Background--The Mexican Economy to 1970

Mexico's economic history is characterized by boom and bust, and the recent economic and political turbulence is nothing new. After the Mexican revolution in 1910, the economy stagnated until the start of the second world war. The revolution itself was a response to a period of rapid economic growth, but of the wrong kind, growth with increasing inequality and political repression. From 1940 to 1970 came the period now known as the "Mexican economic miracle."² This period can be further decomposed into a "take-off" phase from 1940-54 and a period of stable growth from 1954-70. As shown in table 1, the first period was characterized by nearly 6 percent annual gross domestic product (GDP) growth, moderate inflation, a modest fiscal surplus, and a manageable current account deficit. The combination of rapid growth and the settlement of a number of claims from the nationalization of the assets of foreign oil companies reduced the debt/GDP ratio from over 40 percent to the modest 11.3 percent shown in table 1. Growth was motivated by a combination of infrastructure investments (especially in power generation and transmission and irrigation) and private sector dynamism.

The period from 1954-70 was even more remarkable, in that the rate of GDP growth increased to 6.8 percent, while average annual inflation dropped to under 5 percent. The only danger signs apparent in the macroeconomic figures were the shift of the public sector balance into deficit and the mounting increase in the current account deficit. Even at the new, higher level, the foreign resources required to support the rapid growth rates were modest, and the external debt grew at roughly the same rate as GDP, keeping the ratio constant. However, three more insidious problems were developing in the Mexican economy during that time. The nominal exchange rate was pegged at 12.5 pesos to the dollar over the entire period; thus, part of the increase in the current account deficit was a result of a creeping overvaluation of the peso. More fundamentally, the limits of the so-called first stage of

2 For details of this period, see Reynolds 1970.

import substitution were reached by 1970. The choice was then whether to advance from the production of fairly simple consumer goods under tariffs for the home market to either production of the same goods for the world market (the choice being made at about the same time by Korea and Taiwan) or to move into the second, more difficult stage of import substitution, the production of more sophisticated intermediate and capital goods. Mexico chose the latter option. The third problem, which is common to the import substituting industrialization (ISI) development model, was that the quality of domestic manufactures was low and prices were high, by international standards. While these factors (among a wealth of other nationalistic and populist reasons) may have been seen as reasons to continue ISI rather than attempt to penetrate developed country markets, the movement into more advanced intermediate products and capital goods in the ISI model exacerbates the problems of high cost and low quality. For instance, if domestic steel is high cost and domestic machine tools are of low quality, *any* product made with those inputs will be high cost and low quality.

Another crucial problem with the ISI growth model is that the overvalued exchange rate distorts the relative prices of labor and imported capital goods. This problem is often intensified by government regulation of the labor market in an attempt to protect workers, in the form of high minimum wages and protection against lay-offs. In 1970, it was apparent that Mexico's private sector could not possibly employ the new labor force entrants, much less absorb the estimated 20 to 40 percent underemployment in agriculture and traditional services. To make matters worse, population growth in predominantly Roman Catholic Mexico during the 1960-70 period averaged 3.3 percent, so it was clear that the labor force would be growing by at least that rate in the next decade. Yet another problem was that growth was worsening the distribution of income, leading to student unrest and rumblings among certain factions within the PRI. Reynolds summarizes as follows: "Apparent successes of the economy during the 'stabilizing development' of the 1960s caused the deferral of difficult solutions to underlying fiscal, financial and social problems. (Mexican President) Echeverria's 'shared development' policies heightened the instability of the economy by avoiding tax reforms, postponing inevitable peso devaluation and failing to implement measures to reduce social

inequalities.”³ The flaws and instabilities of the earlier “development models” must be acknowledged by internal and external critics of the economic performance in recent years.

2.2 1970: The Choice

At this critical juncture, Mexican policymakers were faced with a choice. They could have attempted to broaden participation in economic growth through liberalization, deregulation, and trade policy reforms, but these were seen as increasing their dependence on the international system (in particular, the United States) for trade and investment linkages; however, the sentiment of academics and populists was to move in the other direction. Political considerations argued for quick action, not a slow improvement through “trickle down” that might not boost the economic well-being of key factions within the PRI in time for the 1976 presidential elections.

A three part economic program was put in place over the next twelve years that served to magnify rather than reduce the structural problems in the Mexican economy. The first part was the decision to move into the next stage of ISI, raising tariffs on basic manufactures such as steel, cement, and capital goods. Secondly, as in India, the state took responsibility for the “commanding heights” of the economy, leading to a massive expansion in the government payroll, in part through the development of many state-owned enterprises (SOE). The third pillar of the economic program was the sharp restrictions on new foreign investments (and indeed all private investment) embodied in the *Law to Promote Mexican Investment and to Regulate Foreign Investment* of May, 1973. In addition to restricting foreign ownership to 49 percent of equity, all private investment was banned from certain economic activities (oil, petrochemicals, some mining activities, some transportation and communication areas) and foreign investors were further restricted from participating in forestry, other transportation and communication fields, and gas distribution.⁴ These policies, and the nationalist and statist rhetoric used to justify and support them, served to make the private sector highly suspicious of the motives of government, and intensified the mistrust of pursuit of profits in general and foreign investment in particular as agents of economic growth.

³ Reynolds (1978), p.1005.

⁴ For more details, see Whiting (1992).

This mutual mistrust, escalated by the nationalization of the banks and the forced conversion of Mexican dollar-denominated accounts into pesos at ruinous exchange rates⁵, seriously hampered the stabilization efforts themselves and delayed the subsequent return to growth.

These policies had a number of unfortunate consequences, although they apparently accomplished the short-term goal of continued political stability under the PRI rule. For instance, the political benefits of having many more people directly dependent on the government for their livelihood came at a large economic cost: a burgeoning government deficit that rose from 2 percent of GDP in 1969 to 16.9 percent in 1981 (see table 1). Also, the apparent increase in sovereignty from lower foreign investment was more than offset by the ballooning foreign debt, which grew from less than \$5 billion to nearly \$60 billion. Growth was maintained at 6 percent per annum, but at the expense of stability, with both inflation and peso devaluation running at about 20 percent per year. This does not mean that the real exchange rate was constant, however. Large devaluations in 1976 and 1982 meant that the peso was subject to wide swings of over and undervaluation. Each large devaluation heralded the end of a period of current account crisis and macroeconomic imbalance. The first

Table 1
Growth and Stability of the Mexican Economy, 1940-1991

Macroeconomic variables	Take-off 1940-1954	Stable Growth 1954-1970	Unstable Populism 1970-1982	Stabilization 1982-1989	Stability? 1989-1991
Real GDP growth rate	5.8	6.8	6.2	0.6	4.0
Inflation					
average	10.5	4.7	19.8	74.5	25.1
period end	10.8	4.4	61.2	26.5	17.5
Public Deficit/GDP					
average	-1.4 ¹	1.2	7.6	11.7	3.7
period end	1.2	2.0	16.9	5.5	1.5
Peso-Dollar exchange rate					
period end	12.5	12.5	148.5	2681.0	3100.0
average annual depreciation	6.2	0.0	22.9	51.2	5.0

Source: Adapted from OECD 1992, p.14.

¹ Federal only until the 1960s. Minus sign indicates surplus.

⁵ These 1982 policy actions are discussed in more detail in the following section.

prompted incoming president Lopez Portillo to adopt an International Monetary Fund (IMF) program of stabilization and austerity. However, the large oil finds in the Gulf of Mexico led to an abandoning of the plan and an intensification of the state-led ISI development plan. Foreign borrowing against future oil revenues (on the assumption of ever higher prices) fueled massive government spending programs and 8 percent average GDP growth.

When real interest rates moved strongly positive, after being negative in much of the 1970s, and oil prices weakened, a possible crisis was perceived. Strong action was called for, including immediate devaluation and other measures to restore the confidence of investors and wealth holders in the economy, combined with spending reductions and interest rate hikes to slow the overheated economy. Yet the Portillo administration was loath to take such unpopular measures in the last months of its rule, and took a desperate gamble that it could hold out until the change of administrations in December of 1982. Because everyone knew the actions that ultimately had to be taken, even though policymakers were reluctant to take those action for political reasons, capital flight quickly stripped the country of its foreign exchange reserves. By late 1981, the overvaluation of the exchange rate was so acute that: (1) oil constituted about three-fourths of exports; (2) virtually all of the \$20 billion in new borrowing that year left the country as capital flight; (3) in combination with government controlled prices, the incentives to produce agricultural products were so distorted that Mexico had to import \$8 billion worth of grains, in contrast to surpluses in the 1970s; and (4) the protected and heavily regulated auto industry alone accounted for about half of the \$4.9 billion trade deficit, despite a 1977 decree that exports and imports must balance for each firm in the industry.

In December of 1981, responsibility for economic management was transferred from the politicians to the technocrats. At this point, the situation was critical, with perhaps as little as three weeks of reserves remaining.⁶ The technocrats made the correct economic move, but without fully understanding the politics of the situation. They elected to devalue by more than 40 percent in January, reasoning that since the 30 percent overvaluation of the peso was responsible for the capital

⁶ Based on private conversations with Jaime Serra-Puche, former Secretary of Commerce and Finance under President Salinas.

flight, then the "extra" ten percent devaluation would trigger an immediate return flow of capital to Mexico. The failure of the "mega-devaluation" to restore stability, confidence, and thus reverse the flow of flight capital is one key to understanding the subsequent policy responses and economic problems.

2.3 The Contrasting Historical Background of Indonesia

Modern economic history in Indonesia dates from the ascendance to power of President Suharto and the "New Order" government. The last years of President Sukarno, in the mid-1960s, were marred by high inflation, stagnation in GDP and exports, and ethnic violence under the guise of suppressing communist insurgency. Thus the initial phase of the Suharto rule was as much an exercise in national building as in stabilization and economic reform.

By 1970, macroeconomic stability had been achieved and growth was starting. Although inflation averaged 17 percent per annum in the decade of the 1970s, this was stable relative to the turbulent 1960s. GDP growth averaged 7.6 percent, and industrial production averaged a whopping 12 percent, significantly exceeded only by South Korea. Positive DFI flows returned, particularly in the oil sector.

Considerable structural change accompanied this rapid growth. The agricultural sector declined in relative terms, even though yields increased. From 55 percent of the labor force in 1970, agriculture employed less than one-third of the labor force in 1980. Export growth exceeded output growth, with both being spurred by huge increases in oil prices and modest increases in production and export levels.

In comparing Indonesia and Mexico in 1980, two important similarities and two crucial differences should be noted. Both countries were highly reliant on oil revenues in total exports, production, and government revenues. In fact, the fraction of oil in total exports, GDP, and government revenues was somewhat higher in Indonesia, despite the complete government control of the petroleum sector in Mexico, in contrast to the significant role of multinationals in Indonesia. The second clear similarity is the strategic importance of each in their respective geopolitical regions. In addition to being "safe" suppliers of oil to the United States and Japan, at least relative to the Middle East, Indonesia controls the Straights of Malacca, a crucial trade route for Japan and East Asia, while Mexico shares the longest land border

between countries at very different levels of development. Economic and political stability in those two countries thus carries important collateral benefits to the United States and Japan.

The most important differences were in the overall level of development, and the structure of production, particularly the development of the manufacturing sector. At market exchange rates, Mexico's GDP per capita was more than 6 times Indonesia's level, and the difference narrows only to 4-1 when looking at purchasing power parity figures for 1990.⁷ As mentioned above, Mexico had largely exhausted the "simple" economic gains from absorbing surplus agricultural labor into import substituting manufacturing of simple consumer goods by 1970. In 1980, Indonesia was still enjoying productivity gains from transferring labor from lower productivity agricultural work into first stage import substitution, and the reduced growth rates of manufacturing output observed in Indonesia were more a function of growing domestic monopolies, protected by trade and investment regulations.⁸ In addition to the large oil sector, other natural resources are important in Indonesia's production and export pattern, including wood and wood products, rubber, coffee, and some minerals. Thus the manufacturing sector still constituted less than 15 percent of GDP in 1980, despite the rapid growth in the 1970s. Mexico's manufacturing sector was larger in both absolute and relative terms, and produced a wider range of products, including more capital-intensive and technologically sophisticated goods.

Although the Indonesian economy was fairly open, measured by trade as a share of GDP, the manufacturing sector in particular was rife with tariff and non-tariff barriers and restrictions on both domestic and foreign investment. This system of protection and regulation was firmly entrenched, with the institutions and departments administering the programs protective of the power and opportunities for rent-seeking available under the system. Furthermore, it seemed difficult or even counter-productive to battle these entrenched interests piecemeal, since, for instance, large distortions in financial systems, tax system, exchange rates, investment, and trade made the welfare

7 Computed from data in OECD (1992), McCleery (1991 and 1992a), IMF (1994 and 1995), and the World Bank (1994).

8 Barichello and Flatters (1991).

implications of any given reform uncertain.⁹

In terms of political system, the stability brought by the Suharto regime, balancing military, industrial, and religious factions, prevented the political-economy cycles observed in Mexico. Yet it complicated the structural adjustment process, as the privileges of key elements of the coalition had to be preserved, at least in the short run.

Indonesia's status as a low income developing country and its strategic importance combined to give it access to concessional financing. As a former Dutch Colony supplying oil to East Asia produced by American and other multinationals, it was in a special position with regards to international donor agencies. Mexico had no such opportunities; its borrowing was largely from commercial banks at market rates of interest. In fact, once the crisis began in late 1991, what commercial loans that were available were short term and at a substantial premium over the London Inter-Bank Offer Rate.

3. Designing and Implementing the Reforms

3.1 Stabilization Policies: 1982-88

The reaction in Mexico to the mega-devaluation in January of 1982 can best be described as panic. In part because of the poor business-government relations, the devaluation did not trigger a return of capital flight; it led instead to a crisis of confidence, continued capital flight, and a moratorium on the repayment of the public sector's foreign debt in August 1982. Inflation rose from 20 percent in 1981 to over 100 percent per year, annualized, by the end of 1982.

In response to the unexpected deterioration of the situation, the economic technocrats were once again discounted. Two important moves were made, for primarily political reasons, with further alienated and disquieted private business and private investment. First, all private banks were nationalized, in an emotional speech that laid the blame for capital flight, devaluation, and assorted other economic ill squarely at the feet of the "greedy" bankers. Secondly, in August a dual exchange rate system was introduced; a preferential rate was used for official transactions (government imports and debt service), while private business had to import raw materials, intermediate goods,

⁹ Devarajan and Lewis (1991).

and capital goods at the more expensive, "market" rate. At the same time, the government took the rather short-sighted measure of freezing all "Mex-dollar" holdings and converting them to pesos at the official exchange rate.¹⁰ Thus forced conversion effectively taxed asset holders who had not engaged in capital flight, and forced them to hold dollars abroad if they were afraid of further currency risk. A third move, motivated by both political mistrust and the severe current account problems, was the introduction of many new quantitative restrictions on foreign trade. One result of these policies was further devaluation until rates were controlled in September, 1982. The peso fell from 26 to more than 100 to the dollar in less than 12 months.

The stabilization plan introduced by the incoming de la Madrid administration was called the "Immediate Program for Economic Re-ordering" or PIRE. Its aims were to correct the massive fiscal and current account imbalances and reduce the runaway inflation rate. Two important instruments in this correction were the official exchange rate, which was devalued by 90 percent in 1983, and administered prices, which had not been raised in years, despite rapid inflation (see section 3.5 under *privatization* for a detailed discussion of the affects of adjusting administered prices). The two greatest accomplishments of the 1982-83 period were both related to austerity and adjustment, rather than stabilization. Austerity and adjustment were evident in the sharp reduction of the public sector deficit and the shift of the current account balance from large deficit to large surplus, a turnaround of 8 percent of GDP, through a combination of aggregate demand reduction and direct import restriction. These measures imposed large costs on the economy, especially workers. GDP contracted by 4 percent and unemployment rose, but the largest adjustment was borne by the real wage, which fell nearly 40 percent.

The continuing austerity appeared to be paying off in 1984. Inflation fell to 60 percent and real GDP growth was 3 percent. The only major disappointment was the failure to continue the deficit reduction begun in 1983; the budget deficit remained over 8 percent of GDP, well above the target level of under 6 percent. In 1985, the public deficit and inflation both began to worsen, the IMF support program

10 Mex-dollars were holdings in dollar-denominated accounts in Mexico that had provided Mexican nationals with a way to hedge against the risk of devaluation without engaging in capital flight.

lapsed, and the result was another crisis of confidence and financial market panic. It appears that the problems of capital flight, peso devaluation, and loss of reserves were already surfacing before the destructive earthquake that rocked Mexico City in September of 1985 (see section 3 for details). Mexican policymakers at the time spoke of the "inertia" of inflation, the difficulty in purging the inflationary expectations of the people. As a result of these problems, Mexico did not come close to meeting its PIRE targets for inflation reduction, deficit cutting, or real GDP growth (see table 2).

The start of 1986 brought more bad news. Oil prices, which had been weakening since 1982, dropped sharply in 1986. Mexico, which had insulated itself somewhat from earlier price reductions with longer-term contracts, found the average price it received for oil down 50 percent in 1986, costing the country about \$8 billion, or 4 percent of GDP and about 13 percent of government revenues.¹¹

Once again, Mexico proved better at implementing austerity than stabilization. Reestablishing external balance required a contraction in real GDP of 3.8 percent, while inflation increased to over 100 percent for the second time in four years. The only positive result that may have arisen from the oil price fall and recession in the Mexican

Table 2
PIRE Targets and Actual Performance, 1983-85.

	1982	1983	1984	1985
Real GDP Growth (percent)				
Plan	—	0.0	3.0	6.0
Actual	-0.6	-4.2	3.7	2.6
Inflation (CPI change, December year on year)				
Plan	—	55	30	18
Actual	99	82	59	64
Current Account (percent of GDP)				
Plan	—	-2.2	-1.8	-1.2
Actual	-2.7	5.4	4.2	1.2
Public Sector Balance (percent of GDP)				
Plan	—	-8.5	-5.5	-3.5
Actual	-16.9	-8.6	-8.5	-9.6

Sources and Notes: From OECD 1992 and Lustig 1992. PIRE targets reflect joint forecasts by the Mexican government and the IMF, which contributed \$3.7 billion during the period.

¹¹ OECD (1992), p.31.

economy is that everyone, inside Mexico and abroad, now realized that the country faced not a "liquidity crisis" but a structural one. If that realization had come in 1985, it is possible that the disastrous relaxation of stabilization measures in response to improving economic conditions would not have taken place.¹² One example of this realization is the acceleration of progress on debt relief through the "Baker Plan." The negotiations resulted in about \$10 billion in new money, and additional rescheduling and interest rate reductions on other debt, but did not alter the basic fact that some 6 percent of Mexico's GDP was being transferred abroad each year. Other indications include Mexico's entry into the GATT, and in fact, the ambitious reform efforts begun in 1987-88 and discussed in section 2.4 below.

In 1987, Mexico saw a return to a modest rate of real GDP growth, but little progress in reducing inflation. In fact, nominal interest rates rose in 1987, indicating that the high inflation surprised no one, unlike 1986. By 1987, the official position in Mexico was that "conventional" stabilization policies had not been effective over a five year period. Technocrats decided that the problem was the conventional wisdom on the sequencing of reforms. Pedro Aspe, Minister of Finance of Mexico under President Salinas, stated the case as follows: "...countries that carefully followed these (conventional stabilization) measures usually came up against great costs in terms of output, with little or no success in price stability....The conceptualization and implementation of these types of programs (heterodox stabilization plans adding micro adjustments in the form of trade liberalization and "income policies" to conventional fiscal and monetary controls) stem from the idea that although monetary and fiscal adjustments are necessary conditions for stabilization, these are not sufficient."¹³ These ideas comprise the primary difference between the Pact of Stability and Economic Growth (PECE or Pacto in Spanish), begun by de la Madrid in 1987 and accelerated by President Salinas in 1988, and the earlier PIRE. Before covering that period's policies and performance, an examination of Indonesia's reform process and some relevant theory is appropriate.

12 Of course, another interpretation of events that cannot be completely discredited is that without the shocks of 1985 and 1986 Mexico could have gotten away with or even speeded up the return to growth with the relaxation of controls in 1985.

13 Aspe (1992), pp.320-328.

3.2 Stabilization and Reform in Indonesia 1983-86: A Contrast

Several strong contrasts can be drawn between the early Mexican and Indonesian reforms that followed. However, it should first be emphasized that the basic thrust of the reforms was the same in both countries: (1) To reduce public spending and decrease the dependence on oil in total tax revenues; (2) To stimulate non-oil exports through trade policy reforms; (3) Take any other necessary and appropriate measures to stabilize consumer prices and the exchange rate in hopes of restoring domestic and foreign investment.

The differences between the reform policies can be summarized as follows:

(1) "The most remarkable aspect of Indonesia's policy response to the oil crisis is that it was undertaken voluntarily, quickly, and in a balanced fashion."¹⁴ In contrast, Mexico's reforms were imposed, to some extent, by international lenders through the IMF, postponed for as long as possible to try to make someone else take or share the blame, and designed without direct regard for distributional considerations. Partly as a result of these differences, particularly in the greater commitment to reform that comes from designing the reforms one's self, Indonesia's reforms were inherently more sustainable.

(2) Further aspects of the timing of reforms are that a domestic consensus can be reached and consistent signals can be sent if the reforms are not rushed into the breach in the midst of crisis. For instance, every liberalization in Mexico in the 1983-87 period followed a crack-down; trade liberalization in 1985-87 followed tighter import controls in 1982-83, financial liberalization followed the bank nationalization of 1982, etc.

(3) Tighter coordination of reforms took place in Indonesia, both among agencies and ministries in government and across policies. For instance, the two most successful trade policy reform packages in Indonesia, announced in April 1985 and May 1986, transferred responsibilities for tariff setting and other administrative functions away from the regulating agency to a new deregulation agency, since regulators have proven to be poor deregulators.¹⁵ Secondly, close coordination was maintained between technocrats and administrators

¹⁴ Thorbecke (1991).

¹⁵ Barichello and Flatters (1991), pp.280, 284, and 290.

responsible for taxation policy reforms, financial market liberalization, and trade policy reforms in Indonesia. No such policy coordination was evident in the Mexican case, and the implicit competition among Secretaries of Finance, Trade, Budget, etc. for the next presidential nomination makes such coordination and cooperation politically difficult.

(4) The importance of this point is debateable, but much less genuine trade liberalization took place in Indonesia, compared to Mexico. The reform of the customs service, the shift from non-tariff to tariff protection, and the devaluation all were important factors in stimulating exports and allowing exporters to operate in a near-free trade environment, but none of these measures reduced the level of effective protection in Indonesian industry. One possible argument is that Mexico's rapid trade liberalization may have hampered its adjustment in the short run, necessitating sophisticated adjustments that its private sector, already overwhelmed with external shocks and fluctuating relative prices, could not handle. A second possibility is that Indonesia, being at a lower level in terms of the development and sophistication of domestic industry, needed further protection for most of its manufacturing firms; the time had not yet come for significant trade liberalization. Fifteen years later, trade liberalization under AFTA and APEC may be appropriate in sustaining growth with stability into the next century.

3.3 Digression on the Ordering of Reforms

Few serious economic analyses have been conducted on the optimal sequencing of economic reforms.¹⁶ Many feel that the sequencing is country dependent; others believe that political considerations dominate economic efficiency arguments such that governments should do as much as they can, when they can. One piece of "conventional wisdom" that has developed is that macroeconomic stabilization should precede microeconomic adjustment, such as trade liberalization. "In countries with acute macroeconomic problems, structural reforms designed to increase efficiency and restore growth, whose own efficiency depends on a predictable macroeconomic situation, should be initiated only when sufficient progress has been made in reducing the macroeconomic

¹⁶ One exception, though somewhat dated now, is Mussa (1986).

imbalances...The importance of this sequence--first reforms oriented mainly towards reducing severe macroeconomic imbalances and then reforms aimed at improving the allocation of resources and the restoration of growth--has become increasingly clear with experience."¹⁷ But in many recent cases, including Mexico since 1987, Bolivia since 1985, Poland since 1990, Argentina since 1991, and Israel, this advice was not followed.¹⁸ Trade liberalization accompanied stabilization in each of these cases, and followed the early stages of stabilization in Indonesia in 1985-87.

The conventional wisdom relies on three primary arguments. It is generally accepted that trade liberalization is particularly difficult in times of crisis, since increased imports always precede increased exports, worsening the current account deficit, and the loss of tariff revenues would also hurt government revenues, as most developing country governments are heavily dependent on indirect tax revenues. Second, high inflation generally means highly variable relative prices, and "getting prices right" is extremely difficult in such an environment; thus the benefits from increased allocative efficiency through the correcting of microeconomic distortions are seen as quite limited. Thirdly, trade liberalization generally requires a sharp devaluation, in part, due to the balance of payments considerations mentioned above, and also because wages are sticky, so real wages can only be adjusted quickly through the exchange rate, which can be inflationary.¹⁹

On closer inspection, the arguments seem rather weak, and counterarguments can be made in support of simultaneous or near simultaneous microeconomic reform along with macroeconomic stabilization. Taking the arguments one at a time, we know that tariffication of NTBs can sharply raise revenues, as can eliminating loopholes, increasing transparency, and reforming the customs service²⁰. Lower tariff rates and tightened customs procedures reduce the

17 Corbo and Fischer (1992), p.7.

18 Enumerated in Rodrik (1993b), and Aspe (1992), *op.cit.* The excellent paper by Rodrik makes many of the same points introduced below in detailed and well-supported fashion.

19 For more detailed discussions of the above ideas, particularly using the nominal exchange rate as an anchor for reducing inflation, see Sachs (1987), and Edwards (1992).

20 Note the extreme case of Indonesia's experience with trade liberalization accomplished along with a shift to the Swiss firm SGS handling customs, discussed in Barichello and Flatters (1991).

incentives and ability to smuggle, so duties may be collected on goods that had entered illegally in the past. Overall, considering also the likely increase in trade levels, tariff collections are as likely to rise as to fall; this ambiguity is confirmed in empirical work.²¹

The second argument, while correctly pointing out that the benefits of trade liberalization may be less in the absence of macroeconomic stability, does not imply any direct cost to such liberalization. Indeed, two arguments can be made to support not waiting for macroeconomic stability. On purely economic grounds, once the decision has been made to liberalize, any delay in proceeding merely continues the misallocation of resources, if any new investment is taking place. The longer it takes to "stop the bleeding" of resources to inefficient sectors, the more costly is the subsequent adjustment.²² In a political economy sense, often the government will have more resolve and independence from interest groups in times of crisis, thus being able to push through more comprehensive and deeper reforms than would be possible once macroeconomic stability is achieved.

The third argument is more difficult to refute. "The problem arises here from the constraint that the exchange-rate can be used in only one of two ways: *either* as an instrument to achieve a real target (the trade balance or employment), *or* as a nominal anchor for the domestic price level...."²³ In fact, theory tells us that both are possible; either an initial mega-devaluation or a crawling peg could make export competitiveness consistent with an anchor against high inflation.²⁴ Yet once again the key is the credibility of the government commitment to the peg or crawling peg.²⁵ As I argue elsewhere, it is possible to do everything "right" and fail; if you do not have sufficient credibility, the pessimism of private sector and foreign actors will be self-fulfilling and

21 Greenway and Milner (1991), pp.96-132.

22 This is not necessarily an argument for a "big bang" liberalization. If the government is credible, it can stem the misallocation of resources (except for the highest yielding, short-term projects) by announcing a comprehensive liberalization plan and sticking to it.

23 Rodrik (1993b), p.3, author's emphasis.

24 For a detailed argument on the consistency of a sliding or crawling peg and reducing inflation, see Krueger 1978. An opposing view is taken by Kenen 1992.

25 Rodrik (1993b) both recognizes this fact, saying "Therefore a commitment to a pegged exchange rate can, *if credible*, actually solve rather than intensify the potential conflict between trade liberalization and exchange-rate stability." (page 6, emphasis added) and goes beyond it to consider "...a crucial question: how does early trade liberalization affect the credibility of the disinflation itself?" (page 24), but no general conclusions can be reached.

the reforms will at best lead to stabilization or growth, but not both.

What do the above arguments mean for Mexico's attempt to liberalize trade and simultaneously reduce inflation? More evidence will be introduced before conclusions are drawn regarding the specifics of the Mexican case, but on a theoretical basis, heterodox stabilization was no less likely to succeed. For one thing, policy makers were much happier with this set of reforms, compared to those pushed by the IMF in 1982-86, and this acceptance alone can translate into more effective and sustainable reform. Indeed, combining stabilization and trade liberalization in some ways increases both the potential gains of successful stabilization and the potential risks to failure. In fact, once you have "doubled your bets," the credibility of government policymakers may increase, as the costs of abandoning the program rise.

3.4 Intangibles--Business/Government Relations and the Credibility of Reforms

Why weren't the commitments to reform by the Mexican government believed by the private sector? Credibility is critically important in areas like investment, where profitability depends on a number of assumptions about the time paths of economic variables like wages, prices, and interest rates. Furthermore, the inflation demon is much more difficult to exorcise when inflationary expectations are firmly rooted in the actions of the private sector. Rudiger Dornbusch raises some of these questions in a paper on the post-stabilization capital repatriation problem.²⁶ Consider the decision facing investors who pulled out of Mexico before or during an economic crisis. They must choose between reinvesting in Mexico (which, in this simple model, earns them either return r^a or r^b corresponding to good and bad outcomes of the stabilization process) or taking the safe return of r^* in the United States. Although each individual investor takes the probability q of instability persisting in the next period as exogenous, the probability may depend crucially on the amount of return investment that takes place, in aggregate. Thus, if investors in Mexico were more pessimistic than investors in Indonesia, after their respective stabilization plans (one reason would be if the Indonesian government

26 Dornbusch (1990), pp.143-147.

was seen as more committed to and/or better able to ensure macroeconomic stability), a larger premium ($r^* - r^*$) would be required to stimulate capital inflows in Mexico. Dornbusch suggests that there may be two equilibriums, one where pessimism leads to failure and another where optimism leads to success.

Going beyond the Dornbusch model, we see additional problems in the case of Mexico. Remember that real interest rates are only visible ex-post. Suppose, after a year of 100 percent inflation, that Mexico announces that nominal interest rates on treasury bills for the following year will be 70 percent, which will be a 10 percent real return, since inflation will fall to 60 percent. This is quite a risky proposition, since much depends on the credibility of the government to act in its long term interest. In the short term, it would be better to extract an inflation tax from government bondholders by allowing inflation to stay high. Only the fact that these negotiations will have to be repeated over and over again during and after the crisis give the government an incentive to be credible. Thus, stable, long-term governments have a big advantage in terms of credibility relative to unstable governments or governments that are facing elections.

Finally, consider that the discussion above pictures only one half of the government's problem. What are called "investors" above are bondholders; what about those considering investment in plant and equipment? They want: (1) macroeconomic stability, which reduces the risk associated with long-term investments (and makes productive investments more attractive relative to rent-seeking or inflation hedges like gold) for risk-averse investors and (2) low real interest rates, so that they can raise funds in capital markets and still make a profit. Abstracting from international capital markets, which were closed to the Mexican private sector for most of the decade of the 1980s, the second point brings investors in plant and equipment solidly in conflict with the interests of the bond-holders, since they have to compete with the government for limited funds in domestic financial markets. Furthermore, high real interest rates and other, complementary austerity measures lower aggregate demand, reducing the initial sales and profits on new productive investments. In the above example, suppose inflation really is 60 percent next period. Then the level of private investment will depend critically on whether the government convinced bond-holders of this and were able to raise the capital they

needed at nominal interest rates of about 62-63 percent, or if bond-holders required nominal rates of 70 percent or higher to compensate them for the risk of failed stabilization. Depending on the government's track record and credibility, there may not exist a nominal interest rate that is acceptable to both bond-holders and private investors. In that case, stabilization must be chosen over growth, in the hopes that successful stabilization will improve the credibility of government to the point where an equilibrium with growth is possible.²⁷

Table 3
Historical Perspectives on Savings and Investment in Mexico

	Ordaz 1965-70	Echev 1971-6	Portillo 1977-82	la Madrid 1983-88	Salinas 1989-1991
<i>Total Savings</i>	21.3	21.8	25.1	19.7	21.4
<u>External Savings</u>	2.9	3.7	3.1	-1.4	3.8
Foreign Capital Inflows	2.9	4.8	5.4	1.9	
Domestic Capital Outflows	(0.0)	(1.1)	(2.3)	(3.3)	
<u>Domestic Savings</u>	18.4	18.1	22.1	21.1	17.6
Public	3.7	3.0	5.0	7.7	7.9
Private	14.8	15.2	17.0	13.4	9.7
<i>Total Domestic Investment</i>	21.3	21.8	25.1	19.7	21.4
Public	5.2	7.0	9.7	6.1	5.5
Private	15.7	14.9	15.4	13.6	15.9

Sources and Notes: From Ize 1991 and OECD 1992. Column titles are the Mexican presidents and their periods of rule, as given by Ize 1991. More complete names, as they were known, are Diaz-Ordaz, Echeverria, Lopez-Portillo, de la Madrid, and Salinas de Gortari.

It is worth mentioning that savings rates were fairly constant in Mexico (see table 3).²⁸ Domestic savings were actually higher in the 1982-88 period than in the 1965-71 or 1972-76 periods. Total savings were only marginally lower, at 20 percent instead of 21 or 22 percent; that difference is completely explained by the negative foreign savings. The problem was converting domestic savings into domestic investment. There are three basic reasons for the decline in investment: the relative price of imported capital goods is much higher during this period of

²⁷ This, of course, is an economist's perspective; a government facing a closely contested election may see a very different mandate.

²⁸ The table is drawn from Ize (1991), which discusses the savings and investment performance of the Mexican economy during these periods in more detail.

general (but not consistent) undervaluation of the peso; ex post rates of return were higher in the U.S. during parts of the period; and the climate of halting growth and limited government credibility contributed to high levels of risk. It is no wonder that a significant part of a Mexican investor's portfolio consisted of U.S. financial assets, real estate, etc. Yet even the differential in investment rates explains only a small part of the relative growth performance in the five periods.

Note that "political stability" may have worked against economic stability, as it took several years for the de la Madrid administration to distance itself from the policies pursued in the last year of the Lopez Portillo administration, and until 1988 to actually reverse the policies. "These two government actions (nationalization of the banks and exchange controls) produced the worse conflict between the private and public sectors in over 50 years and fueled unprecedented capital flight."²⁹ Salinas' reputation as architect of the de la Madrid administration's stabilization plans from his position as Secretary of Budget and Planning aided the smooth transition in 1988-89. The immediate vilification of Salinas by his successor President Zedillo, which the Mexican people have apparently taken to heart, as a way to try to establish instant credibility (or at least a blank slate) by repudiating past policies is a new development in Mexican political economy. Of course, the designated successor to President Salinas, Mr. Colosio, was shot and killed before the election, so President Zedillo is clearly a second choice.

In East Asia, government-business relations are much more cordial and this sort of mutual mistrust is not evident. From the side of government, business is seen as the heart and soul of the country, representing the wealth of the people, employment, and the industrial base that signifies strength and importance in the international arena. Business sees the government as providing important services in return for taxes collected, including managing markets to some extent and negotiating the best possible terms for foreign market access, in addition to the normal functions of maintaining macroeconomic stability and stable relative prices. Of course, in Indonesia a number of key business leaders are close relatives of President Suharto, and this

29 Humberto Vera Ferrer (1991), p.43.

problem of government-business mistrust and friction is unlikely to arise.³⁰

Issues relating to NAFTA are covered briefly in section 4.2, but it is worth mentioning here that NAFTA clearly had an effect on the credibility of reforms in the Mexican case. But just as clearly, the euphoria of the 1991-93 period led to policy miscalculations, and when the collapse came, it was a fall from a greater height than would have been possible without NAFTA.

3.5 Stability and Growth: 1988-1994

As mentioned above, the last year of the de la Madrid administration and the early years of President Salinas represent a departure from conventional stabilization programs. This section covers the policies of those years in some detail, with particular attention paid to the writings of Mexican policymakers themselves. Some factors leading to the latest crisis will also be identified.

The PSE plan of de la Madrid, which developed into the "Pacto," was a comprehensive set of austerity measures, liberalization, and structural reforms. Fiscal reforms, privatization, financial market reforms, debt agreements, trade and exchange rate measures, and other deregulation measures were pursued in concert, although not always in a perfectly orchestrated fashion. Each set of measures will be dealt with briefly below.

Fiscal reforms were a high priority, both for improving fiscal balance and control and for improving the equity of the tax system. Mexico was able to increase direct tax revenues while reducing maximum tax rates, primarily by broadening the tax base. The marked increase in the number of taxpayers also reflected the understanding that the government could not be run solely on oil revenues. It was clear that everyone, including the agricultural and transportation sectors which had been exempted for technical and political reasons, had to pay their share. Indexation of taxes to inflation, elimination of

30 Of course, from an American perspective, the "cozy" government-business relations in Asia create their own, different problems in the form of lack of adequate regulation, standards, etc. Regardless of whether one favors the "hand-in-hand" East Asian method or the "arms length" American system, it seems clear that the "adversarial" approach in much of Latin America, South Asia, and Sub-Saharan Africa must take a share of the blame for their slow and halting economic growth and stagnation in living conditions.

some tax credits for large companies, and a sharp rise in the prosecution of tax evaders also increased the perception of the fairness of the system. In addition, a two percent asset tax addressed the problem of 70 percent of all corporate tax returns declaring no tax liability.³¹ Lastly, the inflationary bias toward debt finance and against equity finance was cut by making only the real component of interest payments tax deductible (see *financial reforms* below for the impact on equity markets). Real tax revenues substantially outpaced real GDP growth in the 1988-91 period.³²

Privatization was a difficult but necessary element of the program. Twelve years of populist policies, followed by six more years of the government acting as "employer of last resort" during recessions left the legacy of a bloated public sector. Some limited privatization efforts had been underway in the early years of the de la Madrid administration, but in 1986 state-owned enterprises (SOE) excluding PEMEX (which alone contributed 7.1 percent of GDP) accounted for rising shares of GDP and employment (5.8 and 5.2 percent, respectively), although the share of SOE in total investment had fallen from 30 percent in 1982 to 20 percent in 1986.³³

The share of GDP grossly understates the importance of SOE in the economy. First, some government production or distribution activities had negative value added, and thus actually *reduced* the fraction of SOE value added in GDP. One example is CONASUPO, a distribution agency whose mandate was to buy food at market prices (or government determined support prices) and sell to the poor at subsidized prices. The agency targeted the poor only by locating stores in poorer neighborhoods; anyone could walk in and buy food there. And everyone did, making it consistently one of the five largest SOE by sales volume. The underpricing of output, which affects virtually all SOE, is a symptom of a more general problem, namely the attempt to

31 OECD (1992).

32 The figures given in Aspe (1992), while somewhat ambiguous (terms like "last year" are used), indicate that real tax revenues rose by about 30 percent, 2.5 times the approximately 12 percentage point rise in real GDP, over the 1988-91 period.

33 Figures from the Secretary of Budget and Planning (SPP in Spanish), reported in Humberto Vera Ferrer (1991). In Ferrer's words, "If we accept the second definition (Privatization reflects the state's recognition that it cannot effectively perform economic activities and that private sector is more efficient-hence the transfer of public enterprises to this sector), then there has been no privatization in Mexico (through 1987)."

satisfy the conflicting goals of increasing equity, providing a social safety net, and promoting efficiency. A further problem is the compartmentalizing of decision making, such that the pricing decisions are made independently of employment and output decisions. This can lead to massive losses, as production strives to meet near infinite demand and fixed nominal prices approach zero in real terms. For instance, at various times in the early to mid 1980s the prices of a telephone call fell to 1/10th of a cent, the price of a subway ride to 1 cent, and energy subsidies (in large part a highly regressive gasoline subsidy, but also extremely low rates for electricity and all other energy, with the goal of increased industrialization) alone accounted for nearly half the government deficit in 1981-82. It is not uncommon for the cost of running an SOE to far outweigh the benefits to its customers, making it preferable on efficiency *and* equity grounds to close the SOE and replace it by a direct subsidy. Thus the losses of SOE as a fraction of GDP might better show their weight in the economy. From over 6.5 percent of GDP in 1980, those losses rose to 11 percent in 1981 before dipping to 9 percent in 1982.

Massive losses from SOE can be addressed in three basic ways. They can be privatized (51 percent or more sold to the private sector), corporatized (incentives created and personnel hired so that they are run like businesses despite government ownership), or closed down. If either of the first two methods are tried, reforms of the regulatory environment (in addition to macroeconomic stability) may be needed to make the operations commercially viable, much less attractive enough to the private sector to raise significant revenues through their sale.

Mexico handled this tricky problem extremely well. From 1983-86, there was little room for privatization *per se*, due to the lack of macroeconomic stability and low levels of private investment. Thus progress was slow and concentrated on phasing out or merging small, non-viable entities. From 1986 to 1988, some of the smaller firms were sold, allowing the relevant government agencies to acquire experience in the process. By 1989, the number of SOE had been reduced to 379 from 1155 in 1982 and 737 in 1986. In the context of relative stability and growth, (inflation of 20-30 percent and 3-4 percent real GDP growth), deregulation of the telecommunications and transportation industries, further deregulation in banking, and the establishment of a good regulatory system in mining, substantial and lucrative privatization

took place in 1989-90. By May of 1992, the number of SOE had been reduced to 223 and about \$12 billion had been raised through privatization, or about 6.3 percent of GDP per year.³⁴ Rather than risk spending increases based on this inherently transitory revenue source, the government created a special fund dedicated to reducing the public debt.

In concert with privatization, which increased the role of the private sector in the economy, came a reinterpretation, then revision, of the restrictive foreign investment law. Beginning with the IBM case in 1985, exceptions to the "49 percent rule" for foreign equity had been implemented on a case by case basis. The transparency of the regulatory regime was improved by major revisions in the law in 1990-91, including the opening of a number of petrochemical sectors to foreign investment. The NAFTA negotiations further modified the regulatory environment in the direction of more openness to foreign investment.

Financial market reforms accompanied the privatization of the banks. Indeed, the banks could not have been sold for more than book value unless the crushing reserve requirements had been reduced, controls on interest rates and the allocation of credit greatly loosened, and other changes made. May 1987 marked a substantial lowering of the high reserve requirements and the fraction of reserves that had to be used to purchase government debt from 58 percent to 35 percent³⁵. Even after this change, banks were subject to various implicit taxes estimated at 0.7 percent of GDP in 1988, and only about 30 percent of bank credit was free from sectoral restrictions and interest rate controls.³⁶ Bank credit ceilings were used as a way to control money supply growth until 1989. Controlled deposit rates and high inflation caused negative real interest rates and financial disintermediation. Depositors turned to non-bank financial institutions such as investment houses and insurance companies, while large investors had the options of dealing directly in government financial instruments or investing abroad.

As mentioned above, the main commercial banks were privatized beginning in 1990, after an increase in competition and a reduction in

34 Aspe (1992) and OECD (1992).

35 The Economist Intelligence Unit (EIU) (1987).

36 OECD (1992).

regulations. In particular, compulsory (additional) reserve requirements and interest rate ceilings were abolished in April of 1989. The national development banks also underwent significant reform. Equity markets boomed, fueled in part by foreign investors.

Debt agreements were reached with its major creditors through the Brady Plan in 1989. The turnaround was dramatic, with foreign investment inflows and new lending shifting the net resource outflow of 6 percent of GDP in 1988 to a net resource *inflow* of nearly 2 percent in 1990. As a result of growth, debt relief, and sound management the external debt fell from almost 74 percent of GDP in 1987 to just over 30 percent in 1991 (see table 4).

Table 4
More Mexican Macroeconomic Data, 1982-91.

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Gross Capital Formation (1)	22.9	20.8	19.9	21.2	18.3	19.3	20.5	21.6	21.8	22.2
National Savings (2)	19.3	25.3	22.5	22.0	16.9	22.2	19.1	18.6	18.8	17.5
Private ¹	14.4	16.6	15.3	15.8	12.9	14.5	17.9	16.0	12.8	10.9
Public ²	4.9	8.7	7.2	6.2	4.0	7.7	1.2	2.6	6.0	6.6
Foreign Savings (1-2)	3.6	-4.5	-2.6	-0.8	1.4	-2.9	1.4	3.0	3.0	4.7
Total External Debt (percent of GDP)	49	63	54	52	76	74	59	45	38	30
Monetary Policy Indicators										
Change in Monetary base/GDP	3.2	-2.6	-1.1	-4.4	-1.4	-3.1	-2.4	-0.6	1.4	
Real Interest Rates	-20.0	-14.9	-6.3	6.4	-0.1	10.1	11.5	21.1	8.4	
Inflation	98.8	80.8	59.2	63.7	105.7	159.2	51.6	19.7	29.9	
Real GDP Growth	-0.6	-4.2	3.6	2.6	-3.8	1.7	1.4	3.1	3.9	
Social Spending Human Resources										
Public Expenditure on Education, Health, and Welfare (% of GDP)	8.4 ³		6.4 ⁴				5.6	6.0	6.3	7.4
Total Education Expenditure	5.3	3.8	4.2	4.0	3.9	3.7	3.5	3.7	4.2	
Wages, Income Distribution and Poverty										
Rebl Wage Index (1980=100)	99	77	73	73	66	64	58	61	62	
Wage Share of GDP	35.2	29.4	28.7	28.7	28.5	26.6	25.9	25.5	24.7	
Income share of poorest fifth			4.8					4.4		
Income share of richest fifth			49.5					53.5		
Terms of Trade (percent change)	-6	-21	1	-5	-28	7	4	6	10	

Sources and Notes: Data from Aspe 1992 and OECD 1992.

1 Adjusted for inflation.

2 Federal government, including SOE under budgetary control.

3 1981-82 average.

4 1983-84 average.

Trade and exchange rate policies were pursued that greatly increased the openness of the economy to foreign goods and capital. In the first stage (1985-87) most non-tariff barriers (NTB) had been removed, a process known as tariffication. This process is extremely important, because even when an NTB is converted to a tariff rate that leaves imports unchanged, the *allocation* of imports is now done by the market in a transparent fashion, rather than through political connections, rent seeking, etc. In the latter period, tariffs were rapidly reduced, first to the world then further by treaty to Latin America, Chile, and the United States and Canada through NAFTA. Tariffs fell from a maximum of 100 percent in 1982 to a maximum of 20 percent and average of 11 percent in 1991. Since 1989, most items have been subject to a uniform 10 percent tariff and customs procedures have been simplified and harmonized to international standards (remember that Mexico only joined the GATT in 1986).

International economists are in agreement that tariff reduction promotes efficiency and growth in an economy. But many have asked if Mexico's pace of liberalization was too fast. This may be true. Economic models generally examine comparative statics: in other words, they compare the current situation in the economy with a hypothetical situation in which macro variables such as labor force, money supply, capital stock, etc. are at the same level, but tariffs have changed, and the economy has fully adjusted to the changes. Thus the process of adjustment is ignored, and little can be said about it. In short, the more flexible the economy is (defined by how well expanding sectors can make use of labor and capital released by contracting sectors), the quicker and less painful the adjustment process will be. Ideally, policymakers would like to gear the speed of liberalization to the flexibility of the economy, but at the same time, announce the final targets of the program in order to limit new investment in areas in which competitiveness in the domestic market hinges critically on protection that will be phased out in the future. But this requires credibility beyond what the Mexican government had, either for political or historical reasons. Thus President Salinas felt that trade liberalization had to be rapid.

One lesson from the East Asian experience that Indonesia has taken to heart is that export promotion and import substitution can be pursued simultaneously, in different sectors. For instance, Japan,

Korea, Taiwan, etc. all reduced (but not eliminated) protection for their electronics and garment industries once they became established, shifting protection to heavy and chemical industries, then again reducing protection in those industries to move into higher technology areas. Additionally, East Asian countries were careful not to force exporters to use low quality or high priced domestic inputs, and promptly refunded import duties on intermediate goods that were reexported. Thus exporters operated in essentially a free trade environment, while domestic consumers were discouraged from purchasing foreign products. A uniform ten percent tariff removes the policy discretion to support developing industries while forcing mature industries to compete in world markets. Additionally, a uniform tariff provides less effective protection to final goods producers and more to primary product and intermediate goods producers, which is generally the opposite of the goals of industrial promotion policies.

Exchange rate policies centered on using the nominal exchange rate as an anchor against run-away inflation. This can be justified as a short-term policy when inflation is out of control, but Mexico continued its policy of devaluing at a rate considerably under the differential in inflation rates between it and its trading partners (essentially the United States) even after inflation had fallen to a 6.7 percent annualized rate in August of 1994. One justification for this policy, which apparently contributed significantly to the crisis in early 1995 was that although the real exchange rate was considerably overvalued considering the changes in the price levels, if wages were used as the deflator in computing the real exchange rate, the real exchange rate was at about the right level. On the export side, it does appear that the overvaluation was not yet severe enough to stop the growth in non-oil exports, but on the import side, it seems that import growth of 6 to 7 percent *per quarter* in late 1993-early 1994 contained a large component of consumer goods, generated by the strong peso.

4. Differential Responses

4.1 External Factors: Mexico's Bad Luck?

Mexico was affected much more strongly than Indonesia by the interest rate shock of 1981-83 (see below). Mexico's growth was being financed by commercial bank borrowing, while Indonesia relied more

heavily on concessionary finance (aid from a consortium of countries and international organizations and yen loans from Japan) and direct foreign investment, especially in the oil and gas sector. In retrospect, Indonesia's approach looks "correct," but further analysis is needed. First, Mexico as a higher income country did not seek or qualify for concessionary lending. Second, Mexico is squarely in the U.S. sphere of influence, while Indonesia can play the U.S. and Japan against each other in some cases.³⁷ Third, for better or for worse, Mexico did not allow private investment in any part of the oil and gas sector (see note 3), and thus bore considerably more risk. Fourth, real interest rates on commercial debt were negative through much of the 1970s, and the rise to extremely high levels by historical standards in the early 80s took everyone by surprise.³⁸ Mexico was more vulnerable to the interest rate increases, having a debt that was larger and composed more of short term debt at market rates.

Two external events marred the steady reduction in the public sector primary deficit between 1982 and 1988: the 1985 earthquake and the drop in oil prices in 1986. These two events both lengthened the necessary adjustment period and deepened the necessary economic contraction. For instance, the direct cost of the earthquake and its aftermath (primary reconstruction, not counting lost tax revenues, decreased tourism, and production losses) was more than \$3 billion.³⁹ The fall in oil prices dealt an even sharper blow to the government's balance sheet and thus to stabilization efforts. One estimate has the primary surplus falling by 1.8 percent of GDP in 1986, versus an expected rise of 1.4 percent in the absence of the shock.⁴⁰

The third exogenous shock in three years hit Mexican financial markets in October of 1987. The sharp drop in U.S. stock prices spilled over into the Mexico market, setting off a collapse in stock prices and

37 An indirect advantage of location is that rapid economic growth in surrounding countries benefits you through trade and investment linkages (the "contagion effect" in Petri 1992) and successful policies are observed and emulated (the "demonstration effect"). See Naya and McCleery (1994) for details.

38 Indonesia has received its own unpleasant surprise, as yen appreciation against the dollar, the currency in which an overwhelming percentage of Indonesia's exports are invoiced, has increased the effective interest rate on yen loans by two, three, or even four times the stated three percent rate of interest.

39 EIU (1985).

40 OECD (1992).

another burst of capital flight.⁴¹ The collapse of equity markets, coming before the liberalization of financial markets was well underway, had a contractionary effect on private investment.

Was the timing of the crisis important? Mexico's first crisis since 1950 surfaced in 1976, but was postponed by oil discoveries and borrowing until 1981-82. The crisis was particularly bad because of global recession, tight money, and a virtual halt in financial flows to developing countries. By the time of Indonesia's crisis (Mexico's third), some foreign assistance was available through Bretton Woods institutions, bank lending, and private capital flows. Also, by this time Indonesia's credibility was much higher than Mexico's, given Mexico's failed stabilization attempts and economic stagnation in the past.

Much of the growth of Mexican manufactured exports to the United States rested on the strength of the California economy. California and the American Southwest had been essentially recession-proof since the second world war, until the 1991-92 recession. In fact, California's diversification away from direct dependence on military expenditure and its strong commercial links to Asia were put forward as reasons why the 1991-92 recession would "not affect the state in the long term so deeply as many others, so that those Mexican activities linked to California also need not be threatened."⁴² In fact, both the direct and indirect impact of military cutbacks hit the state hard, as did a reduction in other federal transfers as part of the deficit reduction programs, and a strong middle-class exodus in response to higher taxes and a perceived "Mexicanization" of the state all contributed to make the California recession *deeper* than that experienced by the country as a whole. By most accounts, the state's economy just emerged from recession in early 1995, two years after the economic recovery in the country as a whole. Thus, at the critical time for the Mexican economic transition, the California economy was not an effective engine of growth and source of expansion in the manufacturing sector. Instead of capital from savvy border investors directed to the expansion of vibrant manufacturing concerns, what Mexico got was mutual fund capital, engineering a run-up of stock prices and the creation of paper profits, new financial instruments for

41 OECD (1992). Repurchases of public debt at market prices by the government agency FICORCA also contributed to the capital outflows.

42 Harris (1993), p. 157.

wealthy investors and individuals, and support for an unsustainable level of the peso.

4.2 NAFTA

Many good summaries of the NAFTA provisions and their likely impact on the Mexican economy have been written, and I will not review them here.⁴³ The deregulation and trade liberalization mandated under NAFTA over the next 5-15 years (the phase-in periods for different sectors) do not constitute a major break with the policies implemented since 1989. In some cases there is a significant acceleration of processes that were already underway, such as provisions for opening certain areas of transportation and financial services to foreign participation and investment, and the revision in land laws and phasing-out of support programs in agriculture. It has been said that Mexico gave away too much in negotiations, particularly in areas like banking and corn production, where domestic firms cannot yet compete on equal footing with U.S. firms. Yet all of the provision of NAFTA should help the Mexican economy in the long run.

NAFTA predictably generated a spurt of foreign capital flows, and the failure to sterilize these flows led to appreciation of the currency. So NAFTA can indirectly take some of the blame for the current crisis. Yet NAFTA also changes the external support situation (see section 5.1, (1) below). At this time, it is too early to tell what the effects of the \$50 billion stabilization package, put together with strong U.S. support, will be in terms of the achievement of macroeconomic stability and a prompt return to growth. But in October of 1995 it appears that investor confidence is still shaky and the apparent rapid return to normal may have disguised deeper problems.

4.3 Mexico and Indonesia: Economic Performance in an International Context

All developing countries suffered shocks in the 1979-86 period from the wide fluctuations in oil prices and interest rates. Yet their economic performances show clear distinctions. "These differences (in economic performance) are commonly attributed (in the literature) to four factors: the size of the external shock to which countries were

43 For instance, see Lustig et al (1992), Hufbauer and Schott (1992 and 1993), etc.

subjected, their historical experience with inflation, the extent to which their economies were outwardly oriented, and the degree to which their governments were authoritarian and thus presumably could control economic policy.”⁴⁴

Taking these four factors one at a time, we see that the interest rate shock of 1982-83 was large for Mexico and non-existent for Indonesia, as Indonesia had very little commercial bank or variable rate debt at the time. Mexico's real imports in 1983 were down 26 percent from 1978, while Indonesia's imports were 46 percent higher. Yet Cooper says that the correlation between the size of the shock and economic growth in the 1980s is negative but not significant. It may be that his sample of 18 countries is too small or not representative of the universe of developing countries. He concludes that although the size of the shock does define the size of the adjustment problem, how quickly and how well adjustment was carried out was perhaps more important.

Next he considers inflation. Again, he finds a negative correlation between past inflation and growth in the 1980s, but not a statistically significant one (he does not present the forms of regressions, coefficients, or t-statistics in this paper). The negative correlation of growth with prior inflation (in the period 1965-80) comes, he claims, solely from the inclusion of two extremely high inflation countries that experienced low growth in the 1980s--Argentina and Chile. Although it is hardly proper to exclude two countries from an already very small sample just because they are not representative, the relatively strong performance of the two countries since the study was done seems to validate his conclusions. But another possibility is that inflation in the recent past (perhaps a moving average of inflation in the past ten years) may be negatively related to growth. He does find what he judges to be a statistically and economically significant negative correlation between the *variability* of inflation and economic growth. Mexico's inflation was higher and more variable than Indonesia's during the 1980s, while the two countries had remarkably similar experiences with inflation in the 1973-80 period. Cooper might argue that Mexico's high inflation in the 1980s was not the cause of its poor economic performance, but a symptom of its adjustment problems.

⁴⁴ Cooper (1991), p.69. His paper is based on research done for a major World Bank study, along with Max Corden, Ian Little, and Sarth Rajapatiraha. Section 3.2 follows his discussion on pages 69-81, in highly condensed form.

Does having an open economy help a country to better adjust to external shocks? Cooper finds no significant correlation between openness and growth, either. Others have found such a correlation (Dollar 1992, Edwards 1992, and Easterly 1992), and one's results seem to depend critically on both the measure of openness selected (Pritchett 1991) and the functional form of the regression (Levine and Renelt 1992).⁴⁵ Indeed, his objections rest on statements such as "But some of the relatively open countries, such as Cote d'Ivoire and Nigeria, also had a difficult time during the 1980s."⁴⁶ He then looks further at a sample of nine countries that have substantially changed their degree of openness in the 1974-85 period. Once again he finds that increased openness is no guarantee of improved growth performance.⁴⁷

The final candidate is the difference in political systems. Briefly, Cooper considers both an index of relative political freedom (which in itself is subject to at least as much criticism as indices of openness) and a categorization of political stability (*ex post*, thus with Sri Lanka and Mexico classified as "stable") and finds no strong relationship with economic growth.

After discrediting, to some extent, the conventional wisdom, he searches for alternative reasons. First, he separates the shock (terms of trade deterioration in percent and debt service increase as a percent of GDP) from the import contraction resulting from the shock, and notes that there is imperfect correlation between the magnitude of the shock and the magnitude of the contraction (reduction in imports and total aggregate demand). This was a key difference between the

45 An extended discussion of these points is found in Rodrick (1991a).

46 Nigeria is actually one of the most distorted economies in the world, although tariff protection is not the main source of distortion. It is "open" only in the sense of high trade share of GDP, from exports of oil and a few other primary products and imports of everything else. In an interesting if somewhat exaggerated story, it is said that Nigeria, with a combination of exchange rate overvaluation, corruption and inefficiency in customs, and trade taxes made neighboring Benin one the leading exporters of cacao in the world-although virtually none is grown in Benin! From 1983 to 1987 Nigeria's cacao exports fell from \$361 million to \$156 million, while Benin's rose from \$2 million to \$47 million (and exports of Nigeria's eastern neighbor, Cameroon, rose by about \$50 million from \$150 million to \$200 million). Goods were smuggled out of Nigeria and exported from former French colony, whose participation in the CFA franc system prevented such severe distortions. Data from UN (1986 and 1990).

47 A careful examination of Cooper's language indicates that he does not dispute a general relationship between the two variables in the expected direction, but merely wants to point out that notable exceptions to the rule exist.

experiences of Mexico and Indonesia. Cooper does not follow up on the observation to note that external capital flows are the main reason countries like Mexico had to make massive adjustment while Indonesia's adjustments and subsequent loss of production were more modest. Yet no causality can be inferred from this argument, since at least private capital flows are themselves predictions of whether or not a successful adjustment will be made. Was Indonesia's adjustment successful because it was supported by foreign capital, or was it supported by foreign capital because it was expected to be successful, or both?

Cooper also considers the level and stability of the real exchange rate to be factors that influence growth rates.⁴⁸ However, since both Indonesia and Mexico had alternatively over and undervalued exchange rates during the 1980s (Indonesia's coefficient of variation on the real exchange rate was actually higher than Mexico's, 26 to 20, during the period 1978-88, as shown in table 5), this factor does not explain the difference in economic performance.

Table 5
Mexico and Indonesia: Some Macroeconomic Comparisons

	1972	1976	1980	1984	1988	Average						
Government Deficit (percent of GDP)												
Mexico	2.8	4.4	3.0	7.1	9.7	5.4						
Indonesia	2.3	1.4	2.2	0.6	1.6 ¹	1.6						
							Coef. of					
	<u>1978</u>	<u>1979</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>var.</u>	
Real Effective Exchange Rates (1980=100)												
Mexico	84	89	114	82	72	84	86	60	56	69	20	
Indonesia	122	93	109	118	95	92	90	69	51	49	26	

Sources and Notes: From Cooper, 1991, who uses IMF data.

1 1987.

Fiscal and monetary "discipline" is then introduced as an important variable, but Cooper defines it subjectively. "In particular, fiscal discipline is not well measured by the size of the budget deficit... but those who have observed a government in action can readily form a judgment of whether or not strong fiscal discipline is present."⁴⁹ Such

⁴⁸ For theoretical and empirical justification for this belief, see McCleery and James (1992) and Easterly (1992).

⁴⁹ Cooper (1991), p.78.

subjective measures can be manipulated to readily explain past performance, but have no explanatory power for the future, unless they can be codified.

5. Conclusions, Implications, and Call for Further Research

5.1 Conclusions

After reviewing certain theoretical determinants of stabilization and growth, reflecting on the economic policies and performance of the Mexican economy, and looking at the broader international context, are we any closer to evaluating Mexico's performance and understanding why the performance of Indonesia was so different? The above discussions should point out how difficult it is to identify and rank the most important reasons for the different experiences with stabilization policies during and after the periods of stabilization in Mexico and Indonesia. Observed differences before and during the stabilization periods may or may not explain differences in their subsequent economic performance. The following five points are candidates for the best way to explain those differences, in order from most to least important.

(1) Timing of and support for the stabilization program: Sustained import compression was the single most important reason for the fall in output in Mexico, and waiting too long to adjust made the adjustment much more painful. By contrast, "The two Asian countries (Indonesia and Malaysia) managed to reconcile adjustment and equity better than any of the others partly because they adjusted before the crisis. In the first place the imbalances were less serious, so that the reduction in overall demand was less drastic. This had several social consequences:...there was no sharp increase in unemployment...and there was no fall in real wages...we see that a major advantage of anticipated adjustment was that it guaranteed a substantial and continuing flow of foreign capital *before* and *during* the adjustment period...."⁵⁰

50 Morrisson (1992), p.28 (author's emphasis). Of course, nothing can "guarantee" foreign capital inflows, any more than one can "guarantee government stability," which he calls for on page 29. Yet the chances can be increased.

(2) Credibility of the program: Stabilization and adjustment programs were initiated in Mexico in 1976-77, 1982-83, 1988-89, and are being instituted again in 1995. In each case, with the exception of the most effective stabilization and return to growth in 1988-89, a new PRI government bore the brunt of the stabilization efforts. Without a history of credibility, each had to convince various domestic and international constituencies that its policies would be a significant break from past policies (despite the president being hand picked by his predecessor, and the same faces being shuffled around in the cabinet), and that his policies would not be abandoned once the crisis abated (as happened in 1978 with the oil discoveries, in 1991 with the massive private capital inflows that anticipated NAFTA, and to a lesser extent with the return to growth in the twelve months preceding the earthquake in 1985). The credibility problems in Mexico were intensified by the deep mistrust between government and business and exacerbated by the sometimes capricious policies of government, such as the bank nationalizations and exchange controls instituted in 1982.

Indonesia has several advantages in the credibility department. Not only can President Suharto and his advisors clearly afford to take a long-term view of the development process, but the track record of the administration in maintaining economic stability prior to the crisis was excellent. Although there is little love lost between some of the ethnic Chinese business leaders and the administration, an effective market signalling device does exist. In some ways, the position of Suharto's children in Indonesian business circles is a problem, but if their firms take positions that will be highly profitable if stabilization is pursued successfully, can other firms in the economy fail to do the same?

(3) Other historical preconditions: Two decades of strong economic growth and industrialization, followed by twelve years of strong populism and nationalism led to two particular problems for Mexico's stabilization and adjustment in the 1980s. It led to faulty perceptions of what the government could do for its people (on the part of both the government and the people) and to a misperception of the maximum sustainable non-inflationary growth rate of the economy. Many of the mistakes of the 1983-85 stabilization period can be traced to the government trying to do too much (nationalizing banks, instituting exchange controls, etc.), while policy errors may have been committed

in 1985 and 1993-94 in attempts to recapture historical levels of growth⁵¹. Mexico's equilibrium growth level has been estimated at 4.4 percent before NAFTA and about 5 percent with NAFTA.⁵² Many people in both business and government seemed unable to accept the fact that the 8 percent growth rates of 1978-81 were not sustainable then and are not sustainable now. Indonesia, in contrast, still has substantial room for growth from transferring surplus agricultural labor into market activities and the monetization of other activities. Its maximum sustainable growth rate appears to be in the 6 to 6.5 percent range.

(4) Exogenous shocks: Exogenous shocks did play a role in the collapse of Mexico's stabilization efforts in 1985-87, and to a lesser extent in the crisis of 1995, through the predominance of portfolio investments. Even when an event has only a moderate direct fiscal impact, it can have important psychological implications for investors, and lead to additional objects that policymakers must try to pursue using the same instruments. Yet these problems were clearly second order in magnitude relative to (1) and (2) above.

(5) Content and management of the programs: The actual content of the stabilization plans were not so different in the two countries. In fact, the Mexican plan went farther in terms of reforms in equity markets, deregulation, and privatization than did Indonesia. It is true that the bureaucrats were not committed to the first wave of reforms in 1983-85, and this showed in their implementation and management of the early stabilization policies. Yet this foot-dragging and lack of commitment was not evident in the reforms of the 1988-91 period. In

51 As mentioned above and detailed in Reynolds (1978), those historical levels themselves were not achieved without imbalances and instabilities.

52 McCleery (1992). In this model, NAFTA increases investor confidence in the Mexican economy, which reduces the risk premium required on investments in Mexico and generates over \$5 billion in new investment per year. Actual investment in 1992-94 was significantly greater (see table 6), but, as it turned out, not sustainable. But even in 1992, some were forecasting a return to an equilibrium of 6 percent growth with 5 percent inflation by 1995-96 "based on unchanged policies and absence of major shocks" (see OECD 1992, p.82). Another, pre-NAFTA, growth model in 1991 gives a range for Mexico's equilibrium growth rate of 4.4 to 6.3 percent, for low and high levels of foreign savings. As in the McCleery model, actual foreign savings in the 1991-94 period exceed his high-end estimate, implying that growth should have been well in excess of 6 percent.

fact, it can be said that some policies, like deregulation, trade liberalization, and privatization were accelerated in this period, perhaps changing at a pace faster than the private sector could match. Despite the often heard assertion that NAFTA "locked in" the economic reforms in Mexico, it seems that a concerted effort was made to push through as many reforms as possible before the end of the Salinas administration, while the long term vision of the Suharto administration allows more gradual and orderly progress in some area.

Each of these points is influenced by others. For instance (1) and (2) both relate to political stability, while (2) and (5) were both determined in part by the historical situation and preconditions. These problems can also interact in ways that make them worse in combination than the sum of their parts. For instance, one can argue that the earthquake gave policymakers who were not committed to reforms an "excuse" to fail to meet spending reductions and other stabilization targets, while limited international assistance demonstrating the weakness of the international support for Mexico's reforms. Overall, the comparison strengthens the position that sound macroeconomic management and political stability are far more important to both stability and growth than getting domestic relative prices right by eliminating microeconomic distortions.

5.2 Mexico's Development Strategy in Crisis: Implications and Outline for Future Research

As mentioned above, the most recent crisis is remarkably similar to the "standard" Mexican economic crisis, despite the fact that policymakers have had plenty of experience with these problems. Creeping overvaluation of the peso led to expectations of a devaluation, and the capital outflows during 1994 forced the government to do exactly that. Defense of the overvalued peso in an attempt to maintain investor confidence continued for far too long, causing the devaluation to be much sharper than should have been necessary, causing a greater loss of investor confidence than if the government had responded in timely fashion. Interest rates on treasury bills have soared to 90 percent, forcing business loans and mortgage rates over 100 percent. In response to tight money, expensive imports (after the sharp devaluation), and other austerity measures, the Mexican economy will

likely contract by about 4 percent in 1995.⁵³

The current crisis threatens not only stability and growth in Mexico, but has triggered sharp stock market drops in distant and unrelated economies in South America's southern cone. In Asia, both the Thai Baht and the Indonesian Rupiah came under brief speculative attack.⁵⁴ Why is this? The issue at stake is the viability of the "Mexican" foreign capital-led growth model. Was the problem economic mismanagement in Mexico or the inherent instability of reliance on foreign capital, particularly the "hot money" of portfolio investment? The short answer is that Mexico must take most of the responsibility for the crisis and its spill-over to other countries. Again, the fault lies not merely in the failure to sterilize a sufficient fraction of the capital inflows to avoid potential destabilizing outflows or the failure to manage the exchange rate to avoid obvious overvaluation and the expectation of devaluation. Part of the failure lies in the fact that past policy failures reduce the trust investors (both domestic and foreign) place in the government's ability to handle the current crisis.

One can argue that Mexico was on the right track, but proceeding too quickly. Even if imports were destined for expanding production and increasing productivity in the tradeables sector, why were they allowed to expand from \$13.3 billion in 1987 to \$48.2 billion in 1992, reversing a \$7.2 billion trade surplus into a \$20 billion deficit that persisted in 1993 and 1994 (see table 6)? Why were only 4 percent of the \$27 billion of capital inflows sterilized in 1992, and just 19 percent of the \$32 billion in 1993, leaving unsterilized inflows of \$26 billion in each year? After accumulating \$18.6 billion of additional reserves as part of the sterilization process in the four years from 1990-93, why were more than half that total allowed to leave the country in supporting the exchange rate in the second quarter of 1994, fully six months before any significant adjustment was made? Although government spending was well controlled and the government actually ran a surplus of 0.7 percent of GDP in 1992, policymakers have much to explain in terms of their handling of the international trade and

53 As of late 1995, the peso is still unstable and new austerity and stabilization measures may have to be introduced that will delay economic growth once again. Indonesia continues its steady growth rate of 6 percent or more, with the only potential problem being the economic implications of the coming political succession.

54 Crosby Securities, "Quarterly Economic Review," (April 1995).

finance side of the economy.

Mexican policymakers in the Ministry of Finance and Credit and the Central Bank explained their actions as follows in a paper prepared for a conference on September 29-30, 1994.⁵⁵ They state "...the stability of foreign capital inflows, as well as the capacity of the economy to retain domestic savings, largely depends on the determination with which sound and consistent economic policies are implemented. As long as such policies are adopted, *and confidence in the economy is maintained*, there is no reason to expect a sharp fall or reversal of capital inflows."⁵⁶ On the issue of sterilization, they note that the demand for money increased substantially with the stabilization during the 1989-93 period as inflation and interest rates fell and economic activity increased, "Thus, a substantial part of the capital inflows to Mexico has been, in a sense, automatically 'sterilized' by the rise in demand for money."⁵⁷ They do not point out that the reverse is also true, that the additional liquidity in the system is another source of funds for capital flight if confidence is lost. While no one plans for failure, it seems that insufficient attention was paid to the potential problems, and the costs and benefits on the margin of the last few billion dollars in capital inflows were not examined.

Thus pursuit of more moderate foreign capital inflows as a part of an outward-looking development strategy still seems quite reasonable from the perspectives of Argentina, Brazil, and Chile. Their success depends on whether there is guilt by association in the minds of investors to the extent that this option will not be open to them for several years. Asian countries, including Indonesia, have relied much more on equity investment than on the more volatile portfolio investment. Direct investment has the additional advantages of promoting technology transfer, employee training, and long term trade ties with the investing country. But stock market booms have attracted foreign capital to well developed equity markets in Hong Kong, Singapore, Taiwan, and Korea, to star performers like Thailand and China, and even to inconsistent performers like India and the Philippines, without destabilizing those economies.⁵⁸ Why did Mexico

⁵⁵ Garcia-Lopez Loaezo and Guzman Clafell (1994).

⁵⁶ Ibid, p.18, emphasis added.

⁵⁷ Ibid, p.19.

⁵⁸ China and Korea limit foreign participation in their stock markets.

push too far? Does the answer rest in Mexico's rather distinctive political system, institutions, or situation? In the different roles of technocrats in the decision-making process? In any event, some answers seem to lie outside the traditional boundaries of economic analysis, challenging us to further incorporate perspectives from politics, sociology, international relations, and other disciplines in applied work.

One small step towards the answers is to acknowledge the difference between the one party system in Mexico and the one *person* system in Indonesia. Before the Chiapas rebels in 1994, and even before the controversial presidential election of 1988, in which leftist candidate Cardenas drew approximately the same number of votes as Salinas, the PRI candidate, the elite consensus holding the country together was breaking down. Stabilization and liberalization were weakening the power base of the PRI among farmers and unionized labor (including government workers), its two largest support groups. Corresponding gains from the small business sector and urban poor did not materialize, with the former favoring the pro-business PAN, and the latter the populist PDR. The breakdown has led to an exaggeration of the "political business cycle" in Mexico, as simultaneous pressures for stability and growth on one hand and consumption subsidies and real earnings protection on the other hand force the culmination of the cycle prior to presidential elections, with often disastrous results.

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REORGANIZING FOR MULTI-PROJECT MANAGEMENT : TOYOTA'S NEW STRUCTURE OF PRODUCT DEVELOPMENT CENTERS

Kentaro NOBEOKA

Summary

The purpose of this paper is to discuss an emerging organizational structure for new product development at large Japanese automobile firms. This study specifically focuses on describing the purposes and outcomes of changes in product development organization implemented at Toyota in 1992 and 1993. This reorganization is considered to be the most fundamental change in the product development organization Toyota has ever implemented in the last 30 years. The new organization is aimed at the multi-project management, featuring three vehicle development centers in which multiple projects are grouped together, in contrast with either traditional single-project-oriented or function-oriented organization.

This study utilizes a single-case study approach as a research method, based on interviews with three general managers, four product managers, fifteen engineers, and three cost management planners between 1992 and 1994. The primary contribution of this paper to the literature is to propose a conceptual framework for multi-project management organization, as well as to describe processes involved in changing from a heavyweight product manager organization to a multi-project management organization.

Japanese manufacturers including Toyota have become more concerned with efficiency in developing an accelerating flow of new products. A project management system that assigns too much autonomy to each product manager tends to result in the development of too many proprietary components for each project. In order to achieve economies of scale and scope, firms may want to leverage their financial and engineering resource investments on new technologies and designs by effectively sharing these among multiple projects.

Therefore, automobile manufacturers may need an organization that is suitable for managing inter-project coordination, in addition to a strong individual project management. Because most existing studies on the efficiency of a single project, they are not helpful for managers and researchers to understand the management of multiple projects.

A traditional function-oriented, rather than a project-oriented, organization may seem to be more appropriate to manage the inter-project interdependencies. However, the importance of cross-functional integration will never have to be under-evaluated, and function-oriented organizations have a critical problem in this aspect. Therefore, organizations should be aimed at achieving both cross-functional coordination and inter-project coordination simultaneously. This paper focuses on how Toyota's approach has solved the apparent contradiction between these two goals. Toyota's reorganization into the center organization represents one way to manage multiple projects. By establishing three centers, Toyota has improved inter-project coordination among technically related projects. At the same time, Toyota has strengthened the authority of product managers over functional managers, and this has improved cross-functional integration.

1. Introduction

In the automobile industry, the central issues with regard to the product development in the 1980s included speed, efficiency and product quality. Clark and Fujimoto (1991) have found that in order to achieve these goals, product development projects need to utilize project-oriented management, an approach which a few leading Japanese firms have successfully adopted. In recent years, however, the competition in the management of the entire product portfolio at the firm level is becoming a critical factor (Fujimoto, et. al., 1992; Ellison et. al., 1995). For example, effective management of inter-project interdependencies at this level should lead not only to effective sharing but also to the transfer of technologies and technical knowledge among multiple product development projects. However, few studies have explicitly addressed the management of multiple projects within the firm. The purpose of this paper is to discuss an emerging organizational structure that explicitly considers multi-project management.

This study specifically focuses on analyzing the objectives, inherent processes, and outcomes brought about by changes in product development organization implemented at Toyota in 1992 and 1993. Toyota has often been considered to be a leader in adopting new organizational structures and managerial processes in the areas of manufacturing and product development. For example, the Toyota production system, symbolized by its JIT and Kanban systems, has been targeted as one of the best practices in manufacturing by many firms, not only in automobile production but also in other industries. With respect to product development organization, Toyota took the initiative in establishing a project-based management system that aimed at coordinating activities in different functional areas into a well-integrated new product. Clark and Fujimoto (1991) have described this as an organization featuring "heavyweight" product managers, who facilitate quick completion of a project by integrating different functions such as design engineering, manufacturing engineering, and marketing.

This reorganization at Toyota is the most fundamental change in product development organization implemented since it established the Shusa (heavyweight product manager) organization system around 1965. The new organization strives for multi-project management. It consists of three vehicle development centers in which multiple projects are grouped together, in contrast to either traditional single-project-oriented or function-oriented organizations.

In addition to the efficient development of individual products, many studies have shown that Toyota as well as other leading Japanese automobile firms have been developing new products to add new product lines or replace existing products more frequently than U.S. or European competitors (Abegglen and Stalk, 1985; Womack et al., 1990). Their capability in developing individual products efficiently through a project-oriented organization helped implement the strategy of prolific product introductions. This frequency has been considered as one of the sources of Japanese firms' competitive advantage in world markets (Fujimoto and Sheriff, 1989, Nobeoka and Cusumano, 1994). In the past 15 years, for example, the number of passenger vehicle lines at Toyota has more than doubled, rising from 8 to 18. Toyota also has been able to maintain a four-year product life cycle for most of its product lines, which is much shorter than that of

Western firms.

In recent years, however, all Japanese manufacturers, including Toyota, have become more concerned with efficiency in developing new products. In most of their major markets, demand has slowed or even declined, while the cost competitiveness of Japanese firms has considerably decreased because of the appreciation of the yen and improvements by Western competitors. Japanese manufacturers have been facing profitability problems that are related at least in part to the high costs of developing and manufacturing so many new products or product variations. Therefore, Japanese firms are attempting to develop new products more efficiently while maintaining both a high frequency of new product introductions and high design quality in individual projects. Toyota seems to be at the forefront of these efforts with its new multi-project center organization.

In the multi-project organization, companies try to optimize not just one project at a time but a portfolio of projects and technologies. In order to achieve economies of scale and scope in product development as well as in manufacturing, it is common for firms to leverage their financial and engineering resource investments by reusing existing technologies and designs in multiple projects. Firms also have to consider how to share many components among multiple projects without sacrificing an individual product's design quality and distinctiveness. A key challenge facing managers in terms of product development is how to share technology across multiple product lines and across multiple generations of products without overly compromising design quality and competitiveness.

This study utilizes a single-case study approach as a research method. Because a theoretical framework for multi-project management organization is still in an embryonic stage, we believe that a detailed description of a firm's transformation into such an organization is important at this exploratory stage. The primary contribution of this paper to the literature is to propose a conceptual framework for multi-project management, as well as to describe processes involved in changing from a heavyweight product manager organization to a multi-project management organization. This case study is based on seven interview visits to Toyota between 1992 and 1995. The interviewees included three general managers who were involved in the planning and implementation of this reorganization, as

well as four product managers, fifteen vehicle engineers, and three cost management planners. In two of the interviews, the general managers, utilizing internal documents, explained the purposes, processes, and outcomes inherent in the reorganization. In interviews with other development personnel including product managers, engineers, and cost management planners, we made inquiries about their own perspectives regarding the reorganization including specific influences to their own tasks and processes. These procedures played an important role in detecting any potential personal biases of the interviewees.

2. Framework for Multi-Project Management

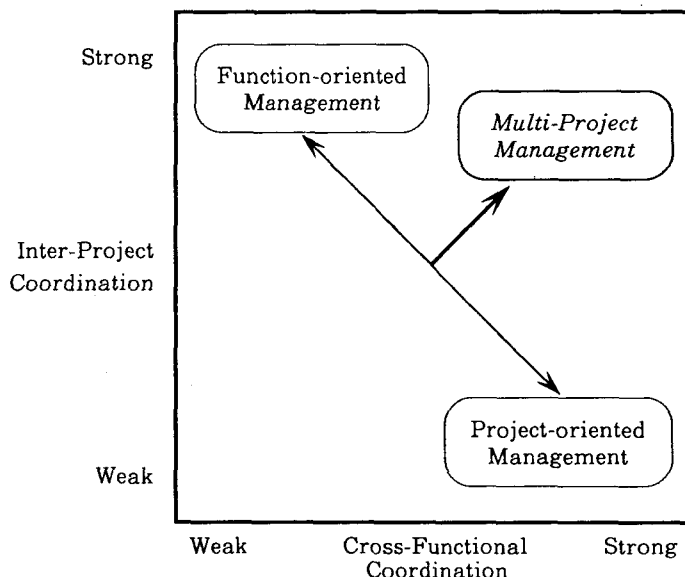
A stream of studies on new product development have discussed the structure of engineering organizations and management. One of the central issues examined is the difference between project-oriented versus function-oriented organizations (Marquis and Straight, 1965; Galbraith, 1974; Davis and Lawrence, 1977; Tushman, 1978; Katz and Allen, 1985; Clark and Fujimoto, 1991). Most studies have argued that product development organizations require two different coordination mechanisms to achieve two major goals. First, in order to increase the quality and quantity of inputs of technical knowledge, a high degree of coordination among technical specialties is needed. Second, in order to integrate all technical knowledge toward well-defined products, a high degree of coordination within a project is required. These two aspects of coordination requirements have primarily been discussed with respect to the balance between project and function orientations in the new product development organization. Past literature, however, has not paid much attention to the management of the inter-project interfaces except for resource-sharing efforts within each function.

Existing studies on automobile product development have concluded that a project-oriented approach, rather than a function-oriented approach, leads to a higher performance in terms of lead time and efficiency for individual projects (Takeuchi and Nonaka, 1986; Clark and Fujimoto, 1991). However, a project management system that assigns too much autonomy to each project may concentrate too heavily on developing multiple new products through relatively autonomous projects. This system tends to result in the development of many proprietary components for each project, and may require

excessive financial and engineering resources.

Firms that try to optimize the management of multiple projects simultaneously need an organization that is suitable for coordinating inter-project interfaces and interdependencies (Nobeoka, 1995; Nobeoka and Cusumano, 1995). Most product-management research that has focused on the management of single projects is not helpful for managers and researchers attempting to understand the complexity of coordinating multiple projects. It may seem that a traditional function-oriented, rather than project-oriented, organization may be more appropriate to manage inter-project interdependencies. However, this type of structure is weak at cross-functional integration. Functional organizations also lack a mechanism to ensure that individual products retain distinctive features and a high degree of product integrity. A product development project is a system consisting of closely coupled multiple engineering functions (Rosenberg, 1982), and an automobile is a typical example of complicated system product. Firms have to manage multiple projects, while recognizing the importance of "product integrity" in each project. Therefore, this paper argues that multi-project management has to consider the coordination beyond that within each function. Effective multi-project organizations may need a product development organization that achieves both cross-functional

Figure 1 Framework for Multi-Project Management



coordination and inter-project coordination.

Figure 1 summarizes the above discussion. Most of the past studies have discussed the need for a balance between project and function orientations. For example, Katz and Allen (1985) discussed the balance of authority that product managers and functional managers should have. On the other hand, a primary issue regarding multi-project management organizations is the simultaneous achievement of cross-functional coordination and inter-project coordination through the way the firm organizes and controls multiple projects. Inter-project interdependencies must be coordinated within the context of a specific project as an integrated system. Cross-functional integrity in each project must be maintained. To share components while retaining the distinctiveness of individual products, firms also need organizational structures and processes that enable system-level coordination across multiple projects. Therefore, firms that consider a new multi-project management organization should use a new framework that moves beyond the balance between project and function orientated organizations.

This case study examines the possibility that Toyota's reorganization into product development centers may represent one way to manage multiple projects. By establishing three centers, each of which contains several vehicle development projects, Toyota has improved inter-project coordination among technically related projects. At the same time, Toyota has strengthened the authority of product managers over functional managers, and this has improved cross-functional integration. This paper focuses on how Toyota's approach has solved the apparent contradiction between these two goals. The next section describes Toyota's multi-project organization and the processes of transformation to such organization.

3. Toyota's Restructuring for Multi-Project Management

3-1 Problems of the Traditional Shusa Organization at Toyota

In 1953, Toyota assigned the first shusa, or product manager, to a new vehicle project (Ikari, 1985)¹. When Toyota started product development for the 1955 Crown, Kenya Nakamura became the first

¹ I referred to Ikari's book with respect to the information regarding the early period of the Shusa organization in the 1950's and 1960's.

shusa to head a project. At that time he was a member of the Engineering Management Division. The shusa organization was strengthened in February 1965 when Toyota formally established the Product Planning Division to organize and support shusas. At that time, there were already ten shusas, and each shusa had five or six staff members, which totaled about 50 members in the division. The basic organizational structure with respect to the roles of the Product Planning Division and shusas did not fundamentally change until 1992, when Toyota introduced the center organization. One of the minor changes before that time was a change in the title name for a product manager from "shusa" to "chief Engineer" in 1989. In order to avoid any confusion, the rest of this paper will consistently use the new term, chief engineer, to refer to this position, rather than shusa or product manager.

After having maintained the same basic structure for more than two decades, in 1990, Toyota decided to evaluate its entire product and technology development organization and to change it if necessary, so that the organization would fit the competitive environment at the end of the twentieth century. Toyota launched an initiative, called the Future Project 21 (FP21), to study any problems in its product development organizational structure and processes. The leader of the project was Yoshiro Kinbara, an executive vice president in charge of product and technology development. A manager at Toyota explained that no specific threats triggered this project. At that time, Toyota was actually doing better than most of its competitors. People at Toyota, however, recognized that organizations sometimes needed to be reviewed and overhauled to continue to be competitive in a changing environment. A consulting firm², which was hired for this project, evaluated the organization performance at Toyota as a starting point of the FP21.

Soon after the FP21 started its studies, the team identified two important problems. These problems led Toyota to conclude that it would need a major reorganization. First, there was an organizational

2 Toyota chose the Nomura Research Institute, a Japanese consulting firm rather than prestigious U.S. based firms such as McKinsey. A person at Toyota mentioned three reasons for this decision: (1) A Japanese consulting firm may know more about Japanese firms. (2) Toyota wanted plans for implementations, rather than grand strategies. And (3) a Japanese consulting firm seemed likely to provide more value per cost than a U.S. firm.

problem. A primary point was that Toyota's product development organization had become less efficient in communication and had come to need more coordination tasks than before to manage new product development. Second, the competitive environment for the Japanese automobile industry started changing drastically around 1990, which seemed to require Toyota to change its product development strategy and organization. Due to various factors such as the appreciation of the yen, the Japanese auto industry faced decreasing competitive advantages against most competitors in the world. The following sections discuss these two problems in more detail.

Organizational Problems

Figure 2 shows Toyota's product development organization before its reorganization in 1992. There were, at that time, as many as sixteen design engineering functional divisions, and each had a functional manager. There were about fifteen projects proceeding concurrently, even though Figure 2, a simplified model, depicts only nine projects. Each project had a chief engineer, who was located in the Product Planning Division under a general manager.

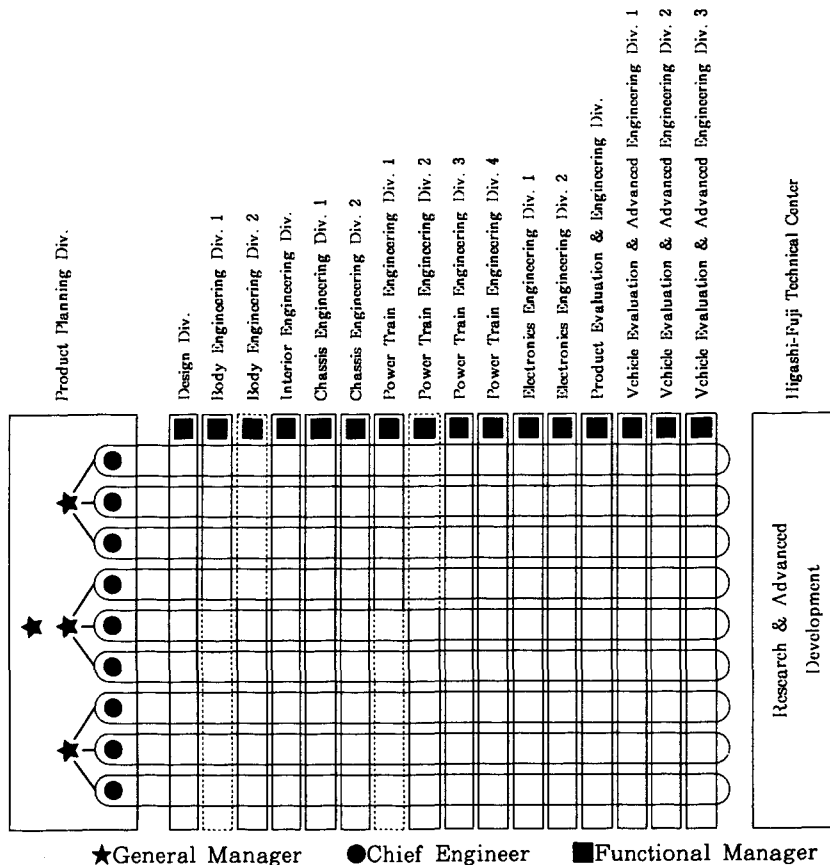
The product development organization was actually a huge matrix organization rather than a project-based organization. Chief engineers and general managers in the Product Planning Division did not directly oversee the engineering divisions in this organization structure. However, chief engineers at Toyota were supposed to have considerable authority over the entire product development process, including different engineering stages, manufacturing, and product concept creation. According to the definition by Clark and Fujimoto (1991), chief engineers at Toyota were supposed to be typical examples of heavyweight product managers.

However, in reality, the product development organization at Toyota had become much larger than before, and chief engineers started to find it difficult to control and integrate different functional divisions when developing a new product. As the number of product development projects increased, the number of engineers also increased. At the same time, the degree of specialization in the engineering divisions had become narrower, reflecting the increasing number of different engineering divisions. As of December 1991, there were about 7000 people in the sixteen product development engineering divisions.

They were working, on average, on fifteen concurrent projects. In addition, Toyota had a Research and Advanced Development Group located at the Higashi-Fuji Technical Center. This had about 2000 additional people³.

In 1991, a chief engineer had to coordinate people in 48 departments in 12 divisions to manage new product development. This estimate comes from Toyota's internal data on the number of frequent participants in meetings a product manager held⁴. In 1976, there were

Figure 2 Toyota's Product Development Organization in 1991



- 3 7000 people in the sixteen engineering divisions and 2000 people in the RAD group added up to 9000. There were, in total, about 11,500 people working on product development. The rest of the people were engaged in supporting activities such as patent management, certification process management, CAD system development, and prototype development.
- 4 Even though there were sixteen design engineering divisions, a chief engineer for a particular project did not necessarily need to manage all of these.

only 5000 people in the entire product development organization. A chief engineer had to coordinate only 23 departments in six divisions. At that time, a chief engineer generally needed to talk with only six division managers to integrate all the design engineering functions. This change indicated that, during the fifteen years, coordination tasks had become much more complicated for chief engineers.

In addition to this added complexity, there was another problem that made it difficult for some chief engineers to manage a new product development project. Some relatively junior chief engineers started to complain that they did not always have enough authority over senior functional managers. Originally, only a limited number of "charismatic" senior managers tended to rise to the position of chief engineer. Toyota people often considered them as "gods" within their projects. However, in recent years, Toyota has assigned relatively junior people to the position of chief engineer. There are two reasons for this change. First, the number of chief engineers required to cover all new vehicle projects had increased. Second, Toyota recognized that people needed particular talents to be excellent chief engineers, and their seniority was not as important as their ability.

Functional managers also found it difficult to spend sufficient time on managing engineering details of all the vehicle projects, because most managers had to oversee about fifteen different projects⁵. They did not have enough time to oversee complicated interfaces and interdependencies between these projects either. Due to the large number of functional divisions and vehicle projects, each chief engineer was able to arrange for regular meetings with all the relevant functional managers only about once every two months.

There was a problem also at the engineering level. Because of their narrow specialization, engineers did not have a "system view" of the entire product. For example, some engineers only knew about the inner body of doors and did not know much about the outer body because interior engineering and body engineering divisions were separate. This kind of excessively narrow specialization had a negative impact on the development of a well-integrated product. In addition,

5 There were a few exceptions. For example, as of 1991, there were already two separate body engineering divisions, each of which was responsible for front-wheel-drive and rear-wheel-drive vehicles, respectively. Therefore, each functional manager was in charge of about a half of the entire vehicle projects.

Toyota realized that the narrow specialization caused another problem for engineers when they were promoted to become a manager in charge of a larger engineering task such as the entire body. It was difficult to train general engineering managers in this organizational structure.

Engineers also found it difficult to have a strong sense of commitment to a specific vehicle development. Because of the narrow specialization and the large number of projects, each engineer frequently had to transfer between unrelated vehicle projects. This may sound useful to transfer technical knowhow between different projects. In reality, however, despite the frequent transfer of engineers, Toyota found that it could not transfer system knowledge in this way. Nor was this structure particularly appropriate for inter-project knowledge transfer.

Toyota's rapid growth in size partially caused these organizational problems. One way to increase the chief engineer's authority and to eliminate problems caused by narrow specialization is to create a pure project team organization, such as the one Chrysler adopted for its LH and Neon projects⁶. In this organization, almost all engineers exclusively work for a single project for its entire duration. However, Toyota did not consider the project team organization efficient. This type of organization can work well for firms with a small number of projects and little technical interdependency between multiple products concurrently being developed. Because Toyota has many projects and a limited number of engineers, it cannot assign engineers to a specific project for the entire duration of the project. The peak period for design engineering work for engineers in a specific project lasts only about one and half or two years out of a four-year project. Therefore, when a project task is outside of the peak, engineers should be transferred to other projects to be utilized efficiently. In addition, a change in the competitive environment discussed in the next section also made the project team approach inappropriate. In the new environment, effective inter-project technology sharing has become more important.

Even the organization at Toyota prior to 1991 had problems with respect to inter-project coordination. One of the policies of Toyota's

6 Many business magazines and industry journals have described the organizational change into the project team at Chrysler. Scott (1994) has summarized these articles and his own interviews at Chrysler.

chief engineer organization was to encourage the autonomy of each chief engineer with respect to his own vehicle project. General managers in the Product Planning Division above chief engineers, therefore, did not supervise chief engineers in the details of individual projects. In addition, the number of vehicle projects was too large for functional managers to deal effectively with multi-project management issues such as resource allocation, technology transfer, and component sharing across all projects.

Finally, there was a problem regarding coordination with the Research and Advanced Development (RAD) Group located at the Higashi-Fuji Technical Center⁷. The center was maintained relatively independent of specific vehicle development projects, so that it could focus on research and advanced engineering. However, both vehicle projects and the RAD group were dissatisfied with this organizational structure. Engineers for specific vehicle projects did not think that the RAD group developed technologies that could be useful for their projects. On the other hand, engineers in the RAD group felt frustrated because vehicle projects did not use technologies that they developed. Toyota reached a conclusion that these two groups needed more integration organizationally.

In summary, Toyota's product development organization had five problems. These caused difficulties in both project integration and inter-project coordination:

1. There were too many functional engineering divisions with too narrow specialization of engineers.
2. There were too many vehicle projects for each functional manager to manage the engineering details of each project as well as inter-project coordination.
3. It had become much more complicated and difficult for chief engineers to oversee all the engineering functions.
4. The chief engineer organization was not appropriate for inter-project coordination.
5. The RAD group and vehicle projects were not sufficiently coordinated.

⁷ Because Research & Advanced Development Group was mainly located in the Higashi-Fuji Technical Center, these two names are interchangeably used. Higashi-Fuji is located about 150 miles east of Toyota's headquarters, which contains the primary functions for product development. This paper uses a shorter name, RAD group, which is original here and is not used at Toyota.

Change in the Competitive Environment

The competitive environment surrounding Japanese automobile firms started changing around 1991. There were two interrelated issues. First, rapid growth in production levels at the Japanese firms virtually ended. The aggressive product strategy of Japanese automobile firms in the 1980's, such as frequent new product introductions and replacements, had been partially based on their assumption of continuous rapid growth. The new environment seemed to require some changes in this strategy, as well as in company organizations. Second, the importance of cost reduction became even more critical for international competition than before. In addition to the appreciation of the yen, Japanese advantages in development and manufacturing productivity have been diminishing. Both factors have had a strong negative impact on the cost advantages they had been enjoying.

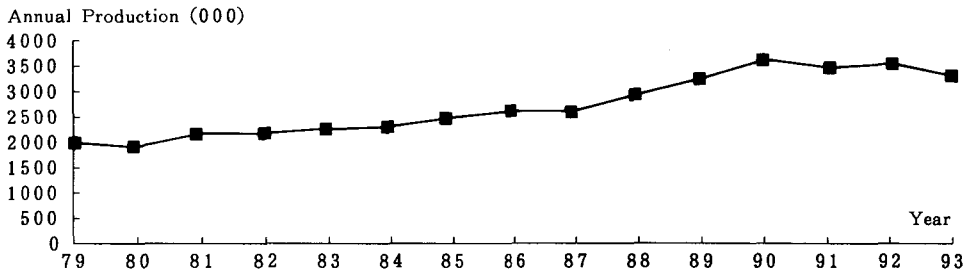
Because of these changes, the traditional chief engineer system, which primarily focused on building the best individual products once at a time, needed to be revised. Chief engineers always thought about the success of only their own projects. A general manager who used to be a chief engineer said, "Each product manager wanted to increase sales of his own project even by developing many new proprietary components and by expanding the target customer segments of his project into other product lines within Toyota." He explained that, during the period when Toyota's production volume was growing rapidly, these characteristics of Toyota's chief engineer system worked well for the Company. Because total production was growing rapidly, cannibalization of individual product lines was not a major problem. The market in each product segment also expanded, and this growth made it possible for each project to expand its target market.

In addition, Toyota was able to sell more of most new products than it had expected. Therefore, high development and production costs caused by many new proprietary components was not much of a problem either. A manager in charge of cost management admitted that, "Prior to 1991, few new products met an original target cost when it was introduced to the market. However, the sales volume for each new product was usually larger than its original plan. The large sales volume lowered the actual production cost compared to its original plan through scale economies. In the end, a new product usually

reached the production cost that had been originally planned, when the entire production during its life cycle was fully considered." Because of a faster depreciation of manufacturing equipment than original plans, production costs also appeared to be lower than expected. Given this common pattern, a chief engineer primarily tried to develop a new product that would sell well, rather than a product that would meet a conservative cost target.

However, starting in 1990, Toyota's production volume stopped growing and even started declining, as shown in Figure 3. Profit from each new product also started decreasing. Under these circumstances, Toyota needed a new product development strategy and organization, particularly with respect to cost management. One particular aspect of the chief engineer system was considered inappropriate in this new environment: The management of each individual project was too independent. Toyota concluded that multiple related projects needed more coordination.

Figure 3 Production Units at Toyota



Source: Automotive Yearbook 1994

First, in the stagnant market, new products should be more carefully positioned to each other so that any cannibalization would not occur. Within a limited total sales volume, the expansion strategy of one product line would easily cannibalize some portion of sales of neighboring products within Toyota. Second, in order to reduce production cost, Toyota needed to increase in commonalty of components and technologies among multiple new products. Sales increase, which used to help cover shortage in cost reduction efforts, could not be expected anymore. Under the Toyota's chief engineer system, there was a tendency that each project overly developed its proprietary components. There are many symptoms of the old product

strategy and organization at Toyota. For example, there are now three distinctive platforms for three products that are similar in size and technology: the Corona/Carina, the Celica/Carina ED, and the Camry. A chief engineer for each project wanted to develop an ideal platform for each product.

In view of these organizational problems and changes in the competitive environmental, Toyota decided to change its product development organization rather extensively. A new organization needed to strengthen the integration mechanisms for engineers in different functions so that they could create a well-integrated new product, as well as to facilitate coordination among different projects so that technologies and components can be effectively transferred and shared. These two objectives are in a sense contradictory, because Toyota needed both to strengthen its project orientation as opposed to function orientation, and to enhance inter-project coordination. For example, a project-oriented team approach might be appropriate for a strong project orientation, but might be inappropriate for inter-project coordination. On the other hand, strengthening the functional orientation to enhance the efficient usage of specific components throughout multiple vehicle projects would be totally unsuitable to enhance an individual product's level of integration or coherence. Therefore, Toyota decided to consider a new organization beyond the mere balance between these two alternatives. Thus, Toyota reached a conclusion that it would fundamentally change its organizational structure for product development.

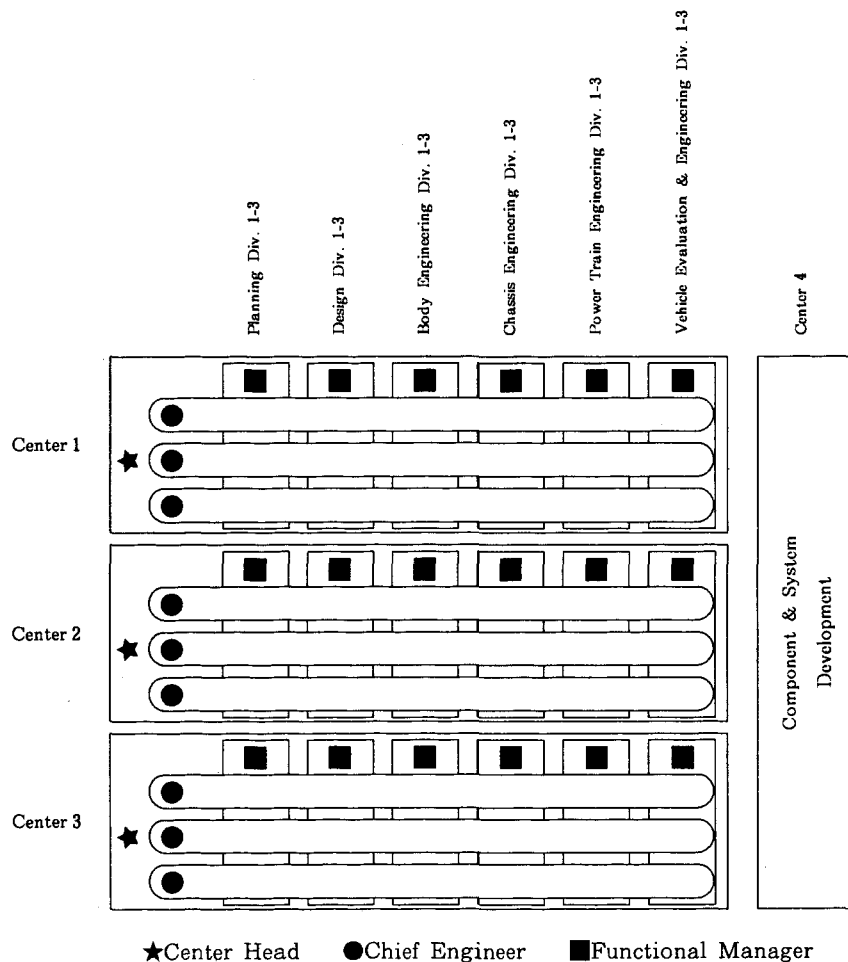
3-2 Establishment of Development Centers

Toyota made two major changes in its product development organization. These changes did not reduce the total number of people working on product development at Toyota. At the end of 1991 before the reorganization, there were about 11,500 people in product development, and the number rose to about 12000 in 1993. Rather the changes specifically targeted the problems discussed in the previous section.

First, in 1992, Toyota divided all of its new product development projects into three centers as shown in Figure 4. The center grouping focuses on the similarity in platform design. Center 1 is responsible for rear-wheel-drive platforms and vehicles, Center 2 for front-wheel-

drive platforms and vehicles, and Center 3 for utility vehicle/van platforms and vehicles. Each center has between 1500 and 1900 people, and works on about five different new vehicle projects simultaneously. Toyota had considered other grouping schemes, such as by product segment (luxury vs. economical vs. sporty cars, or small vs. medium vs. large cars). Toyota chose platform design similarity because this would lead to the highest level of inter-project design interdependencies within a center. In addition, because new platform development requires the most resources, sharing a platform design among multiple product lines would save the most in engineering investment and reduce production costs most effectively.

Figure 4 Toyota's Product Development Organization as of 1992



Second, in 1993, Toyota created Center 4 to develop components and systems for all vehicle projects. It reorganized the Research and Advanced Development Group (the RAD Group), and assigned most people from this to Center 4. While the RAD Group used to work on research and advanced development rather independently, Center 4 closely supports vehicle development by providing specific projects with components and systems. In addition to engineers in the RAD group, Center 4 added engineers working on some components such as electronics and new engines that did not need much daily coordination with a vehicle project.

As discussed earlier, the center organization changes were supposed to improve both project integration and inter-project coordination. This section specifically describes how some key aspects of the reorganization related to improvement in these two areas. Important features of this reorganization include:

- (1) Reduction of the number of functional engineering divisions.
- (2) Reduction of the number of projects for each functional manager.
- (3) Changes in the roles of the center head for multiple vehicle projects.
- (4) Establishment of planning divisions in each center.
- (5) Adoption of a hierarchical organization for chief engineers in related projects.
- (6) The roles of Center 4.

(1) Reduction of Functional Engineering Divisions

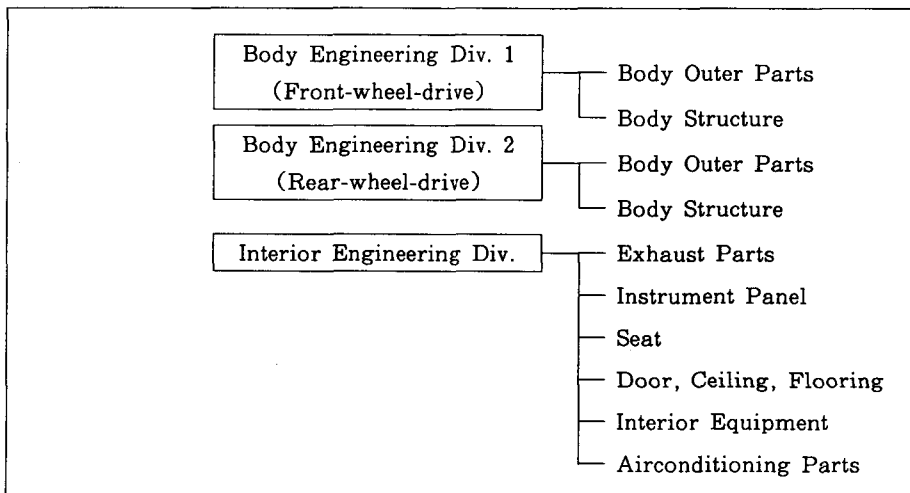
In order to decrease coordination tasks required for a well-integrated vehicle project, Toyota reduced the number of functional divisions for design engineering. The complexity raised by the large number of functional divisions made it difficult for chief engineers to manage vehicle projects. While the old organization had sixteen different functional divisions, each new center has only six engineering divisions.

This simplification into the center organization prompted two other changes. First, specialization in each functional engineering division widened. For example, as shown in Figure 5, Toyota used to have two separate divisions for designing bodies and interior/exterior equipment: the Body Engineering Division and the Interior Engineering

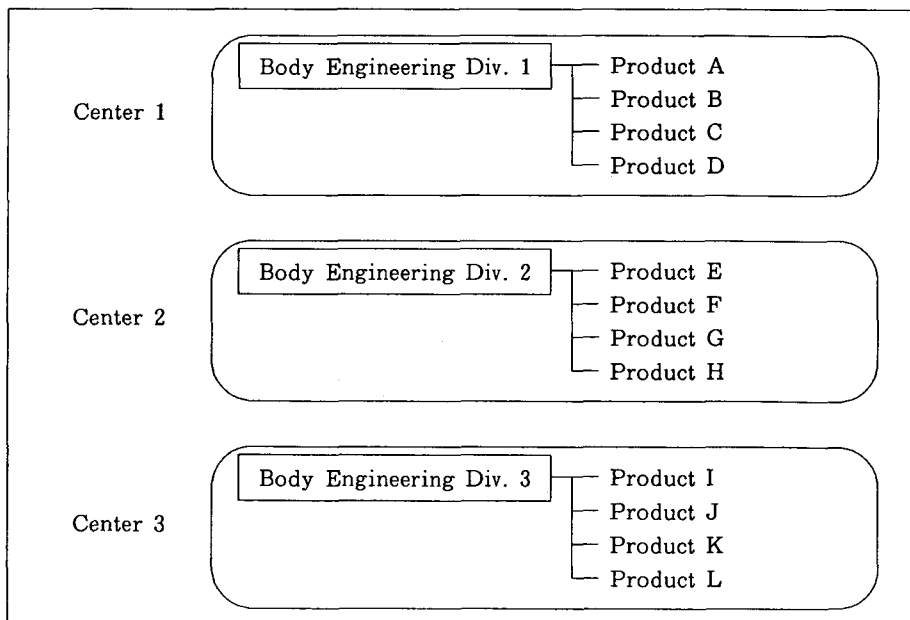
Division. In the new organization, the Interior Engineering Division merged with the Body Engineering Division. Another example is the merger of two different chassis engineering divisions, each of which had been separately responsible for suspension systems and brakes. Each design engineering division now has wider design responsibilities.

Figure 5 Old and New Organizations for the Body Engineering Function

Old Organization (1991)



New Center Organization (1992)



An important point is that this did not enlarge the size of each functional division, because each functional division is now responsible for only a limited number of projects within the center.

Second, Toyota also reduced the number of functional divisions to be managed in a specific vehicle project through the usage of Center 4, the component and system development center. In order to simplify the work of the first three centers, Toyota separated development of some components and systems that can be managed outside specific vehicle projects. Toyota considered three factors to decide whether particular engineering functions should be in a vehicle project or the component center. First, managers decided that components that need to be extensively tailored to each vehicle project should be managed within a project. Second, components that have to be carefully coordinated with other parts of the vehicle design should also be developed within the project. On the other hand, some components with modular characteristics can be developed separately from specific vehicle projects and still be inserted into a product design relatively easily. These may be developed in Center 4. These types of components and systems tend to be shared by multiple vehicle projects, and it is not efficient to develop them in a specific project. Third, component development that needs much new technical knowledge should be developed in Center 4. Such development usually requires a group of technical specialists working together. These types of components also sometimes need a long time to develop and do not fit the time frame of specific vehicle projects.

Following these guidelines, Toyota allocated the development of some components or systems to Center 4. For example, the upper-body design directly visible to the customer has to be differentiated in each product. It should also be extensively interdependent with other parts of the automobile design, such as the chassis and interior. Therefore, the upper-body design should be managed within the project, and Toyota maintained this function within Centers 1-3. On the other hand, components like batteries, audio systems, and air conditioners do not usually need to be tailored to each different vehicle project. Therefore, Toyota moved the Electronics Engineering Divisions that developed these electronic components to Center 4.

The example of the Electronics Engineering Divisions is actually more complicated and indicates the extensive thought and analysis that

Toyota put into implementing this reorganization. Toyota carefully examined characteristics and interdependencies of each component development, so that Centers 1-3 can be simplified and yet contain all relevant components that need extensive coordination within each vehicle project. For example, among the electronics components, the wire harness usually needs to be tailored to each vehicle project and has considerable interdependency with the body structure. Therefore, Toyota merged this engineering function into the Body Engineering Divisions and kept wire harness development within Centers 1-3.

Another example of eliminating activities from the vehicle project centers is the development of totally new engines, which is now located in Center 4. There are many engineering tasks involved in new engine development that are not related to integration tasks within a particular vehicle project. In addition, the time frame of new engine development does not fit that of specific vehicle projects. New engines usually need about six to eight years to develop, which is longer than the 4-year lead time of the average new vehicle project.

In this way, only component engineering that needs extensive project integration remains in the vehicle project centers. In the old organization, part of the product development organization was responsible for both vehicle projects and most component development. This mixture made the old organization complicated and difficult to manage.

In summary, by widening the engineering specialization within each division and by transferring some component development into Center 4, Toyota limited the number of functional divisions in Centers 1-3. In addition, because Toyota divided each function into among three centers, the wider specialization did not require larger functional divisions.

(2) Reduction of the Number of Projects for Each Functional Manager

Each functional manager is responsible for a smaller number of projects in the new center organization. For example, managers in Center 1 can focus only on vehicle projects with rear-wheel-drive platforms. Because, in some functional areas, there used to be too many projects for functional managers to oversee, it was difficult for them to pay careful attention to all the projects. For example, as shown in Figure 5, the functional manager for interior engineering was

responsible for all different vehicle projects, which usually added up to about 15 concurrent projects. In the center organization, all functional managers are responsible for only about five product lines that are all technologically related to each other. Each functional manager now can spend sufficient time on the coordination with each chief engineer. In addition, this reduction of the management scope for each functional manager should result in more effective multi-project management in such areas as resource allocation and technology sharing. Each functional division can also focus on fewer types of vehicle technologies. This focus may lead to more efficient development and accumulation of technical knowledge as a division.

(3) Roles of the Center Head for Multiple Vehicle Projects

Each head of Centers 1-3 officially supervises the entire product development operations, including both chief engineers and design engineering functions within the center. Equivalent to the center heads in the old organization were three deputy general managers above chief engineers in the Product Planning Division. Each of the deputy general managers was in charge of small cars, large cars, and trucks/vans. They reported to the general manager of the Product Planning Division. However, they officially managed only chief engineers, not functional managers and engineers as seen earlier in Figure 2. These general managers above the chief engineers, therefore, were not supposed to manage design engineering in detail. In addition, there were also general managers above the functional managers, and it was not often clear which general managers - those above chief engineers or those above functional managers - had more authority. In the center organization, each of the three center heads manages engineering details for multiple vehicle projects within the center. From these perspectives, while the old organization was officially a matrix organization both at the chief engineer level and at the general manager level, the new one is organized primarily around projects.

Using their positions, the center heads are supposed to play two important roles that have to be deliberately balanced. First, a center head helps each chief engineer integrate different functions. One of the key elements of the Toyota chief engineer system has been the strong leadership of a chief engineer. However, as discussed earlier, chief engineers recently found some difficulties in coordinating all the

functional managers. In the center organization, chief engineers can use the center head's support to manage different functions. Second, each center head is responsible for the coordination of different vehicle projects within the center. A center head can now effectively implement this because he manages all the operations in the center. The separate planning division in each center, discussed next, also helps the center head coordinate projects.

(4) Establishment of Planning Divisions in Each Center

Each center has a planning division to support the management of each center. The Planning Division consists of staff members and three departments: the administration department, the cost planning department, and the product audit department. There are about 170 to 200 people in each planning division of the three centers. The administration department is responsible for personnel management, resource allocation, and the long-term product portfolio planning within each center. It also conducts an advanced concept study for individual projects, before these projects become a formal project and a chief engineer is assigned.

The equivalent of the Planning Divisions in the old organization was the Product Planning Division. One of the major structural differences is that chief engineers used to be located within the Product Planning Division. Most members in the Product Planning Division directly worked for individual chief engineers. For example, most cost management people in the division used to be divided by vehicle project and primarily reported to individual chief engineers. On the other hand, in the new organization, cost management people are more independent of chief engineers and report to the planning division manager and the center head in each center, although they continue to work closely with chief engineers. This reflects one of the central concerns at Toyota, which is that each center needs to reduce development and product costs by efficiently leveraging resources and components across multiple projects.

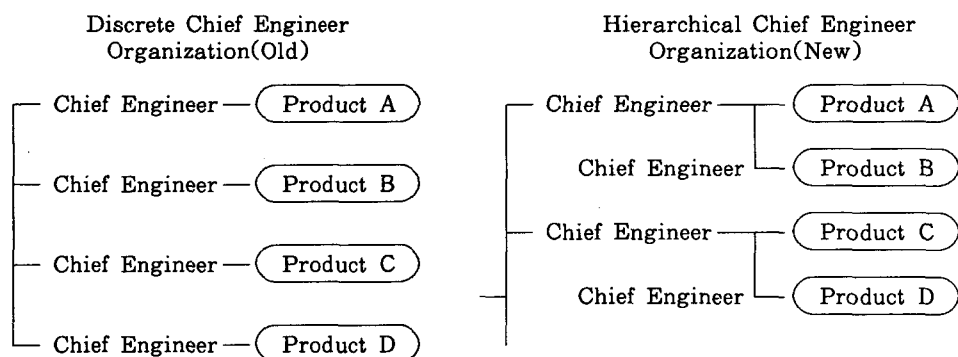
Each center also does long-term product portfolio planning. The management scope used to be so large in the old organization that the project portfolio planning and resource allocation for each project were too complicated to be effectively managed. Now the Planning Division in each center can consider technology sharing and resource allocation

among multiple projects in the present and the future more carefully than before, by focusing on a limited number of closely related projects. This type of center-oriented management support may be critically important to the effective operation of the center organization.

(5) Hierarchical Organization of Chief Engineers

Another feature in the center organization is the hierarchical chief engineer structure for managing product families as shown in Figure 6. This structure also helps strengthen the multi-project perspective of the center organization. For example, there used to be two separate chief engineers for the LS 300 and the Supra projects. Now, there continue to be two chief engineers, but one of the two supervises both the LS 300 and the Supra projects, and primarily manages the LS 300 project. The other chief engineer manages the Supra project and reports to the chief engineer of the LS 300. Toyota also made the same kind of change for another pair of projects: the Tercel and the Starlet. Although this type of structure is not adopted for all projects, Toyota appears to be moving the organization in this direction.

Figure 6 Hierarchical Chief Engineer Organization for Multi-Project Management



Each of these pairs of projects share almost identical platform and drive-train designs, even though these two projects target completely different customer segments and have separate product concepts. For example, the LS 300 is a luxury personal car and the Supra is a sports car. Therefore, it is important to manage the two projects separately, so that each project develops a product that fits with its own customer needs. A planning division manger at Toyota says that it is difficult

for a single chief engineer to develop two products with widely separate concepts and to give the same level of commitment to each of these. However, at the same time, because these two projects should share the same platform design, they need extensive coordination. Therefore, the projects have to achieve differentiation in product characteristics and integration in product development at the same time. The hierarchical chief engineer organization is one way to pursue these two goals simultaneously.

(6) Roles of Center 4

As explained earlier, Toyota based Center 4 primarily on the RAD group in the old organization. As shown in Figure 7, the basic structure of the organization and technical areas have not significantly changed. Technical areas of both the old and new organizations include vehicle (body and chassis), engine and drive train, electronics, and materials. The most important aspect of the change was that, while Center 4 focuses on developing components and systems for vehicle projects, the RAD Group was relatively research-oriented. The relationship between the RAD group and vehicle projects was that between upstream and downstream organizations. Center 4 has virtually become a part of the vehicle development organization, and is responsible for system components that could be better developed outside specific vehicle projects.

The RAD group had about 2000 people, while there are about 4000 in Center 4. As discussed earlier, some components or systems like electronics and new engines can be developed more appropriately outside specific vehicle projects. Centers 1-3 can now focus on achieving project integrity.

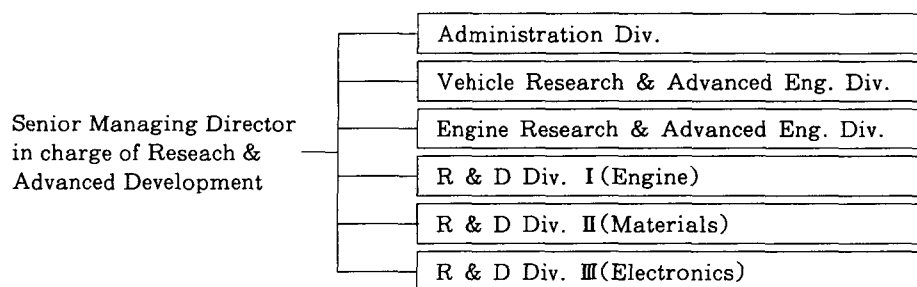
One of the most significant improvements regarding Center 4 was the introduction of a new organizational mechanism, called the cross-area system project. Development of some new systems need new technical knowledge in multiple technical areas. To develop such new systems, Toyota forms project teams containing engineers and researchers from multiple technical areas. These projects are temporarily located in the Planning Division in Center 4, and their leaders are selected and assigned by the head of Center 4. In the old RAD Group, different technical areas usually worked separately and their coordination mechanism was not strong enough to deal with this

type of project.

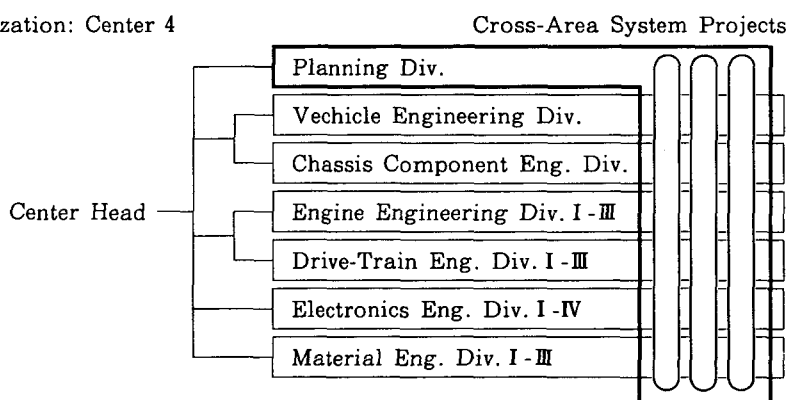
For example, Toyota recently developed a new low-cost anti-lock brake system (ABS). Center 4 was responsible for developing the new ABS. In this case, similar systems could be used for all vehicle projects. It is not efficient if either an individual vehicle project or a product development center develops this type of new system. Its development needed new technologies in the areas of chassis, electronics, and materials. Toyota thus formed a project team including people from these technical areas to develop the new ABS. A manager at Toyota says that the cross-area system project significantly improved the efficiency of developing this type of new system component.

Figure 7 Center 4 and its Original Organization

Old Organization: Research & Advanced Development Group (RAD Group)



New Organization: Center 4



The head of Center 4 is supposed to work on integrating all the divisions of the different technical areas more actively than his predecessor in the old organization. In the old organization, the

division managers of the different technical areas were relatively independent. Because in the RAD group, technical inventions within each technical area were important, top management gave each division relatively strong autonomy with respect to research agenda and time frame. The introduction of the cross-area system projects represents the new orientation of Center 4, as well as the important role of its center head.

Toyota did not completely discard its basic research functions. Toyota Central Research & Development Laboratories, Inc., which has about 1000 researchers, continues to work on basic research as a separate R&D unit. In addition, because Center 4 became less research-oriented, Toyota established a new Research Division internally, and assigned about 500 researchers to this, primarily from the old RAD group.

Summary of the Changes in Organizational Structure

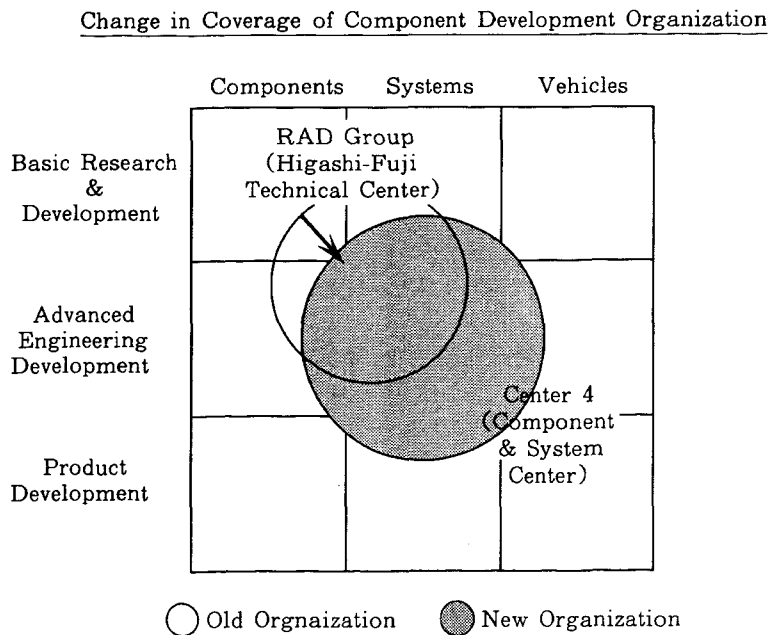
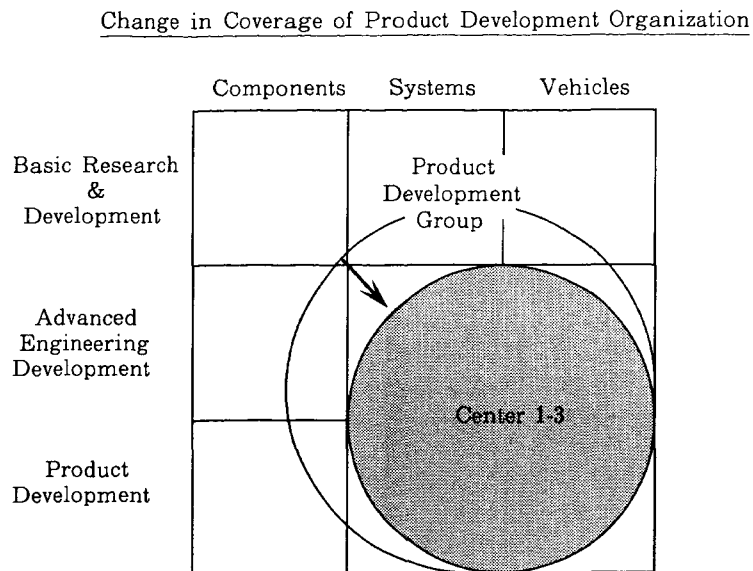
Figure 8 summarizes the changes in the vehicle development organization from the old product development group to Centers 1-3, and in the component/system development organization from the RAD group to Center 4. The product development group was simplified in two ways by the new center organization. First, it excluded some areas of component and system development in order to focus on the integration of product development activities, rather than component and system development. This change reduced the number of people in the core product development organization from about 7000 to 5000. Second, the entire organization was divided into three centers. As a result, each center has only about 1500 to 1900 people. It is a drastic change with respect to management scope, if compared with the original size of 7000 people.

Regarding the component and system development organization, there was a shift in orientation from research to system development. Because Center 4 is responsible for the development of more components and systems than the RAD group, the number of people increased from about 2000 to 4000.

3-3 Outcomes of the Organizational Changes

Because of the introduction of the center organization, Toyota achieved significant improvements in several areas. In particular, it

Figure 8 Changes in the Coverage of the Vehicle Development and the Component/System Development Organizations



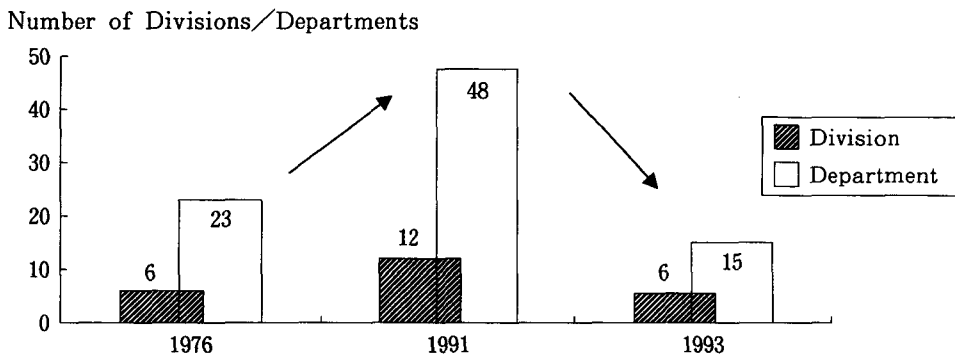
Source: Based on "Outline of Toyota Technical Center", Toyota Motor Corp., 1991 and 1993

simultaneously improved both cross-functional project integration and multi-project integration. This section discusses some important outcomes of the reorganization, focusing on these two perspectives, as well as some potential problems of the reorganization.

Project Integration through Streamlined Structure

Figure 9 summarizes the outcomes of the reorganization with respect to the reduction of coordination tasks for chief engineers to manage different functional groups. As discussed earlier, before the reorganization, each chief manager had to coordinate, on average, 48 departments in 12 divisions to manage new vehicle development. Primarily because of the reduction in the number of functional divisions and departments, in the new organization a chief engineer has to manage only 15 departments in 6 divisions. Toyota also compared these numbers with those back in 1976, when there were only about 5000 people working for product development. At that time, each chief engineer had to communicate with 23 departments in 6 divisions. The change into the new organization reduced the communication complexity down to the level in 1976, when the Shusa organization worked more effectively than the time just before the reorganization.

Figure 9 Changes in the Number of Divisions to be Coordinated



Source: Based on "Activities and Achievements of FP21", Toyota internal document, 1994

Each functional manager and engineer now covers a wider portion of the automobile design. Because of this, cross-functional coordination tasks had naturally decreased among chief engineers as well as engineers, which directly affected the effectiveness and the

efficiency of project integration. In addition, it has become relatively easy for functional managers and engineers to see the entire picture of a vehicle project. This change also solved some other problems in the old organization. Engineers can train on the job for the time when they will be promoted to a manager, because they can now obtain knowledge of a broad scope of component engineering. Engineers can now also obtain more sense of achievement regarding specific vehicle projects. This seems to have positively affected the level of engineers' commitment and job satisfaction.

Because each functional manager is responsible for fewer vehicle projects than before, it has become easier for a chief engineer to communicate frequently with functional managers. There used to be regular meetings among a chief engineer and the entire functional managers only about once every two months. Now, chief engineers and the six functional managers, as well as the center head, have weekly meetings, called the Center Management Meeting.

The introduction of the center heads also greatly contributed to the improvement of project integrity. Chief engineers both in the old and the new organizations have not assumed formal authority over functional managers. On the other hand, center heads oversee all product development projects, including the work of functional managers. The center heads can work directly on integrating different engineering functions. Using this position, they also support chief engineers to coordinate different functions. For example, when a chief engineer encounters difficulty in negotiating with a strong functional manager, he can discuss the issue in the Center Management Meeting, and the center head may support the chief engineer. Decisions made as a center can be smoothly and quickly implemented. In this sense, through the combination with the center head, chief engineers regained the strong authority that the original Shusas used to enjoy.

Table 1 summarizes achievements on some important measurements. The new organization helped reduce development costs on the average project by 30 percent. The number of testing prototypes used in the average product development project decreased by 40 percent. This reduction of prototypes was a primary source for the reduction in development costs. The reduction of the number of testing prototypes has reflected the effective communication in the organization. In order to test many different items in one prototype,

Table 1 Outcomes of the Reorganization to the Center⁸

	Performance change	Major factors
Development cost (average project)	-30%	•Reduction of prototypes •Increase in component sharing
Number of prototypes (average project)	-40%	•Intensive coordination between different engineering and testing functions •Increase in CAE usage
Lead time (average project)	Shortened by a few months	•Reduction of prototypes •More extensive simultaneous engineering

Source: Based on "Activities and Achievements of FP21", Toyota internal document, 1994

an intensive coordination among different design divisions and testing divisions is needed. For example, without appropriate communication, it is difficult to install the testing items for interior equipment and chassis into a single prototype. Because of the simplification of the line of communication and project coordination, Toyota has also increased the extent of simultaneous engineering, which has helped cut project lead time by a few months. Stronger project management supported by the center head may also have contributed to quicker decision making and development processes.

Multi-Project Integration within a Center

The new organization strengthened the multi-project management perspective with the strong leadership of the center head and strong support from the center-oriented planning division. Because of the large number of vehicle projects, it was difficult to manage Toyota's entire project portfolio and inter-project coordination. Now, the weekly Center Management Meetings discuss the details of multi-project management. In addition, each center now has its own building so that all members within a center can be co-located. Co-location at Toyota emphasizes the geographical integration of the center members rather than just the members of an individual project, which is becoming common in the U.S.

⁸ A general manager we interviewed said that these numbers are based on a comparison of similar projects. These numbers include not only direct outcomes of the change in the organization structure but also those of accompanying process changes. In addition, some factors that are not directly related to the reorganization, such as the increase in CAE usage, are also included.

In order to achieve the integration within a center, to begin with, each center defines its own vision and theme for product development. Sharing a basic vision that focuses on projects within the center helps members effectively coordinate engineering activities. The current development themes of each center are:

- Center 1: Development of luxury and high-quality vehicles
- Center 2: Development of innovative low-cost vehicles
- Center 3: Development of recreational vehicles that create new markets.

One example of the changes can be seen in cost management activities. Targets for development and product costs used to be set and managed mostly at the individual project level, led by individual chief engineers. Most cost management staff members used to work directly for chief engineers and their orientation was the cost performance of individual projects. In the new organization, in addition to the cost management at the project level, each center manages the cost target of all the projects within the center, led by the center head. Cost management staff members are now located in the Planning Division in each center and report to the planning division manager and the center head. Through this new organizational setting, cost management is supposed to add the multi-project management perspective. Specifically, each center has been working on more component-sharing among multiple vehicle projects, which is one of the most effective ways to reduce product costs. In order to achieve this, project-level management alone was not sufficient.

With respect to component sharing, one critical issue each center is now working on is the reduction of the number of basic platforms utilized among multiple products. For example, in Center 2, currently there are five distinctive platforms: 1. Celica / Carina ED / Caren, 2. Camry / Vista, 3. Corona / Carina, 4. Corolla / Sprinter, and 5. Tercel / Corsa / Starlet. The planning division manager in Center 2 believes that five different platforms for these compact-size front-wheel-drive models are too many. Center 2 is planning to significantly reduce the number of the platform designs within several years.

People at Toyota tended to think that, because each of the five platform designs had been produced at the level of more than 200,000 units/year, a distinctive design could be justified by economies of

scale. This is true with a distinctive die that is needed for different platform designs, because at that level of production, each die is fully used for its life cycle. However, there are many other areas that could benefit from the reduction of platform designs. Some areas that could expect much cost reduction from platform sharing include prototype production, testing, designing, and component handling. The planning division manager concludes that one of the major challenges for the center in general is to develop multiple products that use as many common components as possible, and still enable each product to provide customers with as much differentiated functions and values as possible. The focus of each Planning Division on the limited number of technically related projects within the firm has facilitated more careful project portfolio management within the center.

With respect to component systems smaller than the platform design, Toyota has started a component sharing program that monitors component and system usage in individual projects. Toyota chose 290 different component systems for this program, which ranges from a system assembly like an instrumental panel to a small component like a door regulator. Toyota makes a list of a limited number of component variations for each component group. A new product development project is then supposed to choose a component from the list. When a vehicle project wants to invest in the development of a new component design, it must come up with a new design with a better cost-value ratio than any of the existing components on the list. When a new component design meets the requirement, it replaces one of the components on the list, so that the total number of variations will not increase within the firm. Because of the center organization, management of this program has become practical and effective. In the old organization, because of the large management scope, this type of sharing was not managed properly.

One of the other signs of the integration of center members is a sense of inter-center competition that center heads and members have begun to possess. The three centers have been competing with each other regarding the percentage of cost reduction compared to past projects that had been developed before the reorganization. This competition has a positive impact on organizational learning. The center head encourages engineers to learn any superior processes from other centers. The competition may have a negative impact on

organizational learning in some other firms, if each center tries not to transfer its good processes. At Toyota, this does not seem to be the case. Each center has its own engineering functional divisions such as body engineering and chassis engineering. Three engineering divisions for the same type of technologies and components are competing. For example, when one body engineering division comes up with an effective idea for cost reduction, the other two divisions are strongly encouraged to learn the idea, so that they will not stay behind other centers.

Other activities have started within each center to strengthen the center integration, which directly or indirectly helps multi-project coordination within the center. For example, Center 1 held a design and engineering competition in which groups of young designers and engineers compete with innovative cars for a motor show. Center 3 has started a program called the "Let's Challenge Program," which encourages center members to submit any interesting and useful ideas for new models. Each center also publishes its own newsletter. These activities and programs enhance the intra-center integration.

Potential Problems of the Center Organization

The planning division manager of Center 2 raised two challenging problems. First, it is difficult to balance the chief engineer's autonomy and the center integration. Extensive guidelines given to each chief engineer from the center management may cause a negative impact on the motivation and commitment of chief engineers. Toyota doesn't want chief engineers to think that they should work only on what the center decides. This planning manager believes that the center management provides basic and critical guidelines, in which chief engineers maintain authority. There are six people who play a critical role in the center management: three center heads and three planning division managers. Except for the planning division manager of Center 3, who used to be an engine design manager, five of the six used to be chief engineers. This personnel assignment may help avoid any unnecessary misunderstanding between the center management and chief engineers.

Second, there may be some problems regarding inter-center coordination. The center grouping based on technology and design relatedness aimed at minimizing the inter-center coordination requirements. For example, the old GM organization, which was based

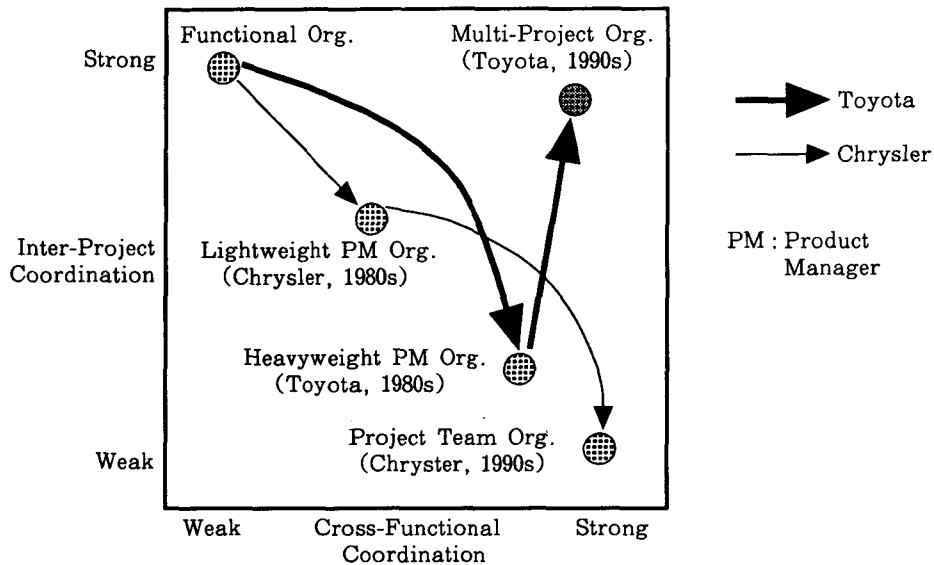
on divisions such as Chevrolet and Buick, created difficulties because similar designs and technologies were utilized by products in different divisions and resulted in excessively similar products. Compared to that kind of grouping, the center organization at Toyota is more appropriate for a product development organization that tries to share components and produce distinctive products. However, there are still some problems. The planning manager in Center 2 mentioned one example. When sports-utility vehicles became a hot segment, all three centers proposed the development of such models. Because Toyota doesn't need to develop three sports-utility vehicles in parallel, inter-center coordination was required. Although inter-center coordination could become the next problem for Toyota, benefits from the inter-project integration within the center seem to surpass the potential problems at this point of time.

4. Discussion and Conclusion

This case study has discussed a new organizational structure that pursues multi-project management by analyzing changes in product development organization at Toyota. There are several important points we can learn from this case. First, this paper confirms that Toyota has shifted beyond a traditional product development organization that is oriented towards either single project or engineering functions. Figure 10 describes this evolution pattern with respect to the organizational orientation in product development. Toyota shifted from a function-oriented to project-oriented matrix structure in the 1960s (Ikari, 1985). As Clark and Fujimoto (1991, p. 276-280) discussed, by the mid-1980s, some other Japanese firms, which had followed Toyota, had also shifted to strong project-oriented management systems.

This paper has come to conclusion that, during 1992 and 1993, Toyota shifted from project-oriented management to multi-project management. One of the most important aspects of effective multi-project management is to improve both cross-functional and inter-project integration simultaneously. The center organization at Toyota improved inter-project coordination among technically related projects. At the same time, Toyota has improved cross-functional integration by strengthening the authority of product managers, who are supported

Figure 10 Evolution Pattern to Multi-Project Management



by center heads, over functional managers. Cross-functional integration tasks were also streamlined so that additional tasks for inter-project integration can be carried out more effectively. The Toyota center organization seems to be an effective multi-project management organization, even though we understand that this paper is limited in terms of generalizability due to the fact that it employs a single-firm case study method.

With respect to organizational evolution, Toyota's movement can be contrasted with the one at Chrysler⁹, which is also described in Figure 10. A primary issue for Chrysler in the 1980s was a lack of cross-functional coordination and integrity. Because Chrysler wanted to strengthen cross-functional integrity, in 1989 it changed the organization from one with lightweight product manager to a project team organization by discarding barriers between engineering functions. Scott (1994) has argued that the new Chrysler organization worked effectively to optimize the development of individual products such as the LH and the Neon. In contrast, because Toyota aimed at multi-project management, it changed its organization into a center organization.

⁹ See Scott (1994) for description concerning the reorganization at Chrysler.

There is one common similarity, though, between organizations at Toyota and Chrysler. Both organizations are not traditional matrix organizations but project organizations. The organization at Chrysler focuses on individual projects, each of which is managed by a product manager, while that at Toyota considers multiple projects, which are managed together by a center head. At Toyota, there remain some aspects of a matrix organization within each center. However, because of the active management roles played by the center heads, who officially supervise all functional engineers, the center organization can also be considered as a project organization covering multiple projects.

Second, this in-depth case study has offered evidence that in order to benefit from the center organization, a structural change of simply grouping some projects together is not sufficient in itself. Other automobile firms in the world also employ some type of product grouping. However, grouping alone does not necessarily lead to effective multi-project management, and organizations at other firms do not seem to work as effectively as at Toyota¹⁰. Toyota made several important changes along with the introduction of the multi-project center organization. For example, first, it reduced the number of engineering functions in Centers 1-3, and added the component and system development center (Center 4). In this way, each center is simplified enough to simultaneously manage multiple projects within the center. The management scope of center heads and planning division manager is small enough to oversee all activities within the center. Second, a powerful planning division with more than 150 people in each center also seems essential to support the center head. Third, clear goal-setting specific to each center helps integrate center activities. Fourth, each center is encouraged to compete with other centers in performance, which leads to effective learning within the firm. The center organization at Toyota works effectively because all of these supporting mechanisms have been carefully designed.

The international competitive environment facing Japanese automobile firms has been in a transitional period (Fujimoto and

10 This statement is based on interviews at Nissan, Mitsubishi, and Mazda. At these firms, one example of the differences from Toyota is that some key functions such as planning, chassis/engine engineering, and cost management are not divided into centers. In this sense, it seems that these firms have been changing organizations in the same direction as Toyota, but has reached only incomplete multi-project organization.

Takeishi, 1994). Toyota has taken the initiative in adopting a new organizational form. Historically, during periods of transition, a few leading firms that achieved early tight fit with the new competitive environment by pioneering a new organizational form were successful (Miles and Snow, 1994). Toyota may have established an organizational structure and process for product development that will set new standards for large international automobile manufacturers. This change has also come at an appropriate time. Because many other competitors have adopted heavyweight product manager system, in which Toyota had enjoyed leadership in the 1980's, Toyota's advantage over its competitors had been disappearing (Ellison, et. al., 1995).

Even though this study has provided a detailed description of an emerging organizational form that Toyota has adopted, there are many questions that remain for further study. First, this paper cannot concisely conclude whether Toyota's approach is the most effective among other organizational options in this new competitive environment. Now, competitors may or may not be following Toyota and adopting a similar style center organization. We need to continue to study similar organizational changes in other automobile firms to be able to carry out more systematic comparative studies. Second, it is also important to examine details of organizational evolution patterns from functional to project, or from project to multi-project organizations. These patterns most likely depend on various factors including competitive environment and product strategy. The role played by management in organizational transitions may also affect the adoption of a new structure and processes.

Lastly, we need to develop further the theoretical framework with respect to the multi-project management organization. For example, more conceptual discussions should clarify theoretical distinctions between the center organization and traditional structures including functional, project, or matrix organizations, as well as divisional organizations.

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PRODUCTION SUBSIDIES, LOCAL CONTENT REQUIREMENTS AND FOREIGN DIRECT INVESTMENT: A THEORETICAL ANALYSIS

Roger N. STRANGE

This paper provides a partial equilibrium analysis of the welfare effects of inward direct investment for the host economy in the presence of domestic production subsidies and local content requirements. The main conclusion is that if a production subsidy is to be used to increase domestic output and employment, then the reduction in national welfare is less if the subsidy is made available to both domestic and foreign firms. Furthermore a production subsidy is a more efficient way of protecting a component industry than a local content requirement on the final-goods industry.

Introduction

This paper provides a partial equilibrium analysis of the welfare effects of inward direct investment for the host economy in the presence of domestic production subsidies and local content requirements. The analysis throughout assumes a "small" domestic economy, which allows terms of trade effects to be disregarded. Partial equilibrium analysis is used to highlight the distribution of the welfare gains/losses from the foreign direct investment (FDI) within the domestic economy - particularly the distribution of producer surplus between domestic and foreign firms. Partial equilibrium analysis focuses on individual industries, but ignores second-order effects arising from changes in relative prices of goods and/or factors of production. Both trade restrictions and FDI, however, have effects on domestic prices, and thus typically give rise to inter-industry movements of factors of production. FDI thus has repercussions throughout the domestic economy beyond the industry directly affected.

The structure of the paper is as follows. The standard welfare effects of production subsidies and local content requirements are first briefly summarised. Then the effects of subsequent FDI are analysed using familiar demand and supply diagrams. The final section

summarises the main conclusions.

The Welfare Effects of Trade Restrictions

Trade protection may be provided in a variety of ways, notably through the use of import tariffs, import quotas, and voluntary export restraints (VERs). The equivalence of import quotas and (suitably calculated) tariffs is a standard result of international trade theory, though several instances have also been identified in the theoretical literature where the equivalence breaks down¹. VERs have also become popular in recent years.

An alternative form of protection is the use of subsidies to promote domestic production. Production subsidies are superior to both tariffs and quantitative trade restrictions on efficiency grounds since their use avoids the consumption costs of protection. Yet, as Baldwin notes, governments typically prefer to assist industries through import protection rather than production subsidies². The reasons for this apparent anomaly are perhaps twofold. First, subsidies require expenditure by the government and this must be funded by borrowing or taxes. In contrast, tariffs and quotas do not impose a fiscal burden, though the welfare loss to the general public is rather greater. The welfare loss is, however, less transparent and thus is likely to elicit less political resistance. If elected officials may be assumed to be motivated by self-interest then they will prefer this line of least resistance. Second, the burden of helping an injured industry through protective measures falls upon the consumers who pay a higher price for the industry's product. A production subsidy spreads the burden across all tax-payers including those who do not consume the imported good.

A local content requirement is usually portrayed as a method of protecting domestic producers of intermediate goods (hereafter referred to as components) but it may well be applied in a way which protects domestic producers of the final good by discriminating against the local production of the good by foreign firms. The requirement is that producers of the final good purchase a minimum specified percentage of their components from domestic producers. If the final-good producers satisfy this requirement, they may then import the

1 See Strange (1995) for a general discussion.

2 Baldwin (1989) p.119.

remaining percentage of their component needs duty-free; if not, they may have to pay a penalty tariff on the imports³. Local content requirements may be specified in either value or volume terms. A volume-based scheme is more likely if the components and final good are reasonably homogeneous; a value-based scheme is almost inevitable if heterogeneous products are involved. In comparison to a tariff/quota on imported components when the final-good producers pay the same price for all units purchased (imported or otherwise), a local content requirement allows the final-good producers to purchase imported units at a lower price than domestically-produced units. If the aim is to protect the domestic components industry, then a local content requirement entails a lower welfare cost than a tariff/quota.

The Welfare Effects of Foreign Direct Investment

In Figure 1 (and the diagrams that follow), S_{dD} refers to the supply schedule for domestic manufacturers of the final good, S_{fF} to the supply schedule (assumed to be infinitely elastic) of goods imported from foreign firms in the foreign country at price p_F , and S_{mD} to the supply

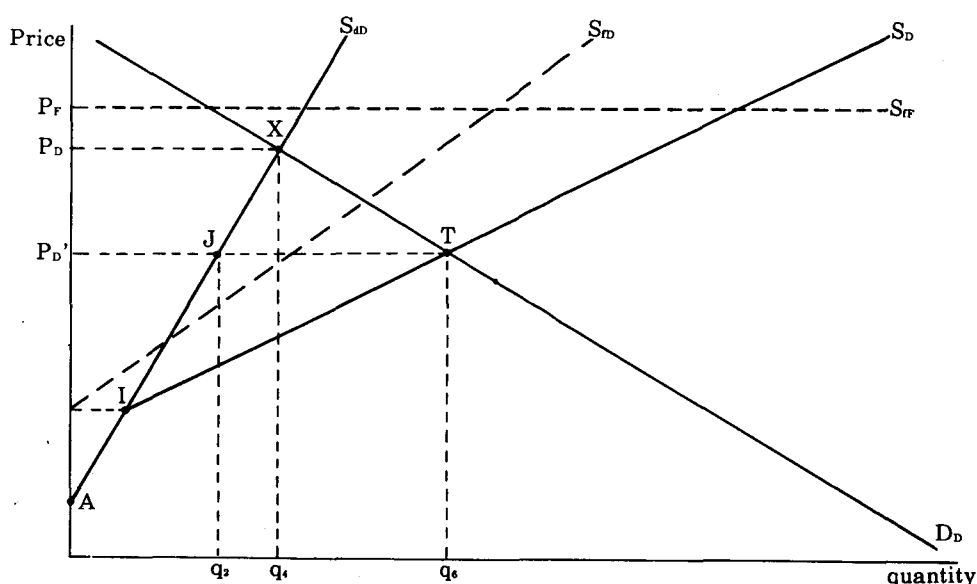


Figure 1 The Welfare Effects of Foreign Direct Investment when Imports are Impossible, Infeasible or Unprofitable

3 Or a penalty tariff may be placed on the price of the final good.

schedule of goods manufactured in the domestic economy by foreign firms. In drawing the supply schedule S_D it is assumed that there are additional fixed costs incurred by the foreign firms, but that their elasticity of supply is rather greater than that of domestic firms⁴. S_D (passing through points line AIT) is thus the effective domestic supply curve. D_D represents domestic demand for the good. It is assumed that neither the foreign nor the domestic suppliers of the good are able to exploit market power, and thus that the market is a competitive one. There are no barriers to entry, and it is further assumed that industry costs do not vary with the level of output - i.e. there are no external economies or diseconomies of scale. The foreign firms' producer surplus is untaxed, and assumed to accrue to residents in the firms' home countries.

The situation depicted in Figure 1 shows a domestic market in which imports play no part, either because they are impossible (e.g. certain services), infeasible (e.g. because short supply lines are required by customers), or unprofitable (e.g. because of high transportation costs). For the sake of argument, suppose that importing is possible but only at a high price, p_F . In the absence of FDI, equilibrium is reached at point X at which q_4 is the quantity of final goods supplied by domestic firms (=domestic demand) and p_D is the domestic price. As $p_D < p_F$ there are no imports. But, at price p_D , it is profitable for foreign firms to manufacture in the domestic economy. The additional domestic supply pushes down the equilibrium market price to p_D' while the quantity demanded increases to q_6 (point T).

The welfare implications of the inflow of FDI are as follows. Consumer surplus increases by area $p_D p_D' TX$. The reduction in the producer surplus of domestic manufacturers is given by area $p_D p_D' JX$, so the domestic welfare gain is area XJT . However, producer surplus equal to area JIT accrues to the foreign firms⁵. The net national welfare effect is thus equal to the difference between areas XJT and JIT , and will depend upon the various supply and demand elasticities. In particular, the more elastic is the supply schedule of final goods

4 These assumptions seem plausible - alternative assumptions could also be investigated.

5 Total producer surplus is given by area $p_D' AITJ$, of which domestic producer surplus is area $p_D' AIJ$. The foreign producer surplus is thus area JIT .

manufactured in the domestic economy by foreign manufacturers (S_{fd}), the greater will be the net welfare benefit of FDI to the host nation.

Now consider the case where the cost of importing final goods from the foreign country is not prohibitive (Figure 2). The free-trade equilibrium is at point H where total market demand is q_s , and the domestic market price is equal to the price, p_F , of imported final goods.

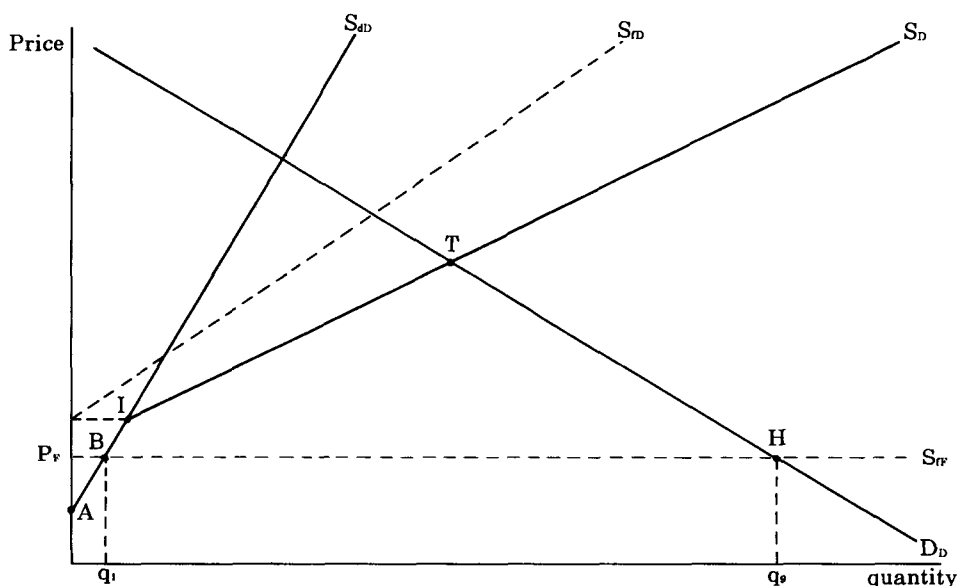


Figure 2 A Domestic Market satisfied through Imports and through Local Production by Domestic Firms.

Domestic manufacturers supply a quantity q_1 , and imports account for $(q_s - q_1)$. There is no incentive for FDI as the supply schedule S_{fd} lies wholly above the domestic price level p_F . The domestic industry now lobbies for protection from imports⁶.

Protection through a Production Subsidy.

Suppose now that protection is provided by means of a production subsidy - see Figure 3. Again the free-trade equilibrium is at point H where total market demand is q_s , and the domestic price is equal to the price (p_F) of imported goods. Domestic firms supply a quantity q_1 , and imports account for $(q_s - q_1)$. There is no FDI.

Assume that the objective of the subsidy is to raise the production

⁶ See Strange (1995) for an analysis of the effects of FDI in the presence of import tariffs, import quotas, and VERs.

of domestic firms from q_1 to q_3 . This can be achieved by a per-unit subsidy for each unit produced and sold by domestic firms, and this would rotate their supply schedule from S_{dD} to S_{dD}' ⁷. If the domestic firms receive a subsidy equal to $(p_2 - p_F)$ in addition to the world price of p_F , they will be prepared to supply a quantity q_3 . Consumers, however, continue to pay the world price p_F and to purchase a quantity q_8 (rather than q_5 if they had to pay a price p_2). The volume of imports falls to $(q_8 - q_3)$ ⁸. The production subsidy thus provides the same level of protection as the equivalent tariff, but avoids the consumption effect of the higher domestic price, and thus may be achieved at lower welfare cost. The cost of the subsidy is equal to area $p_2 p_F C R$, of which $p_2 p_F B R$ is an increase in domestic producer surplus. Only the production effect equal to triangle BCR is a net cost to the economy.

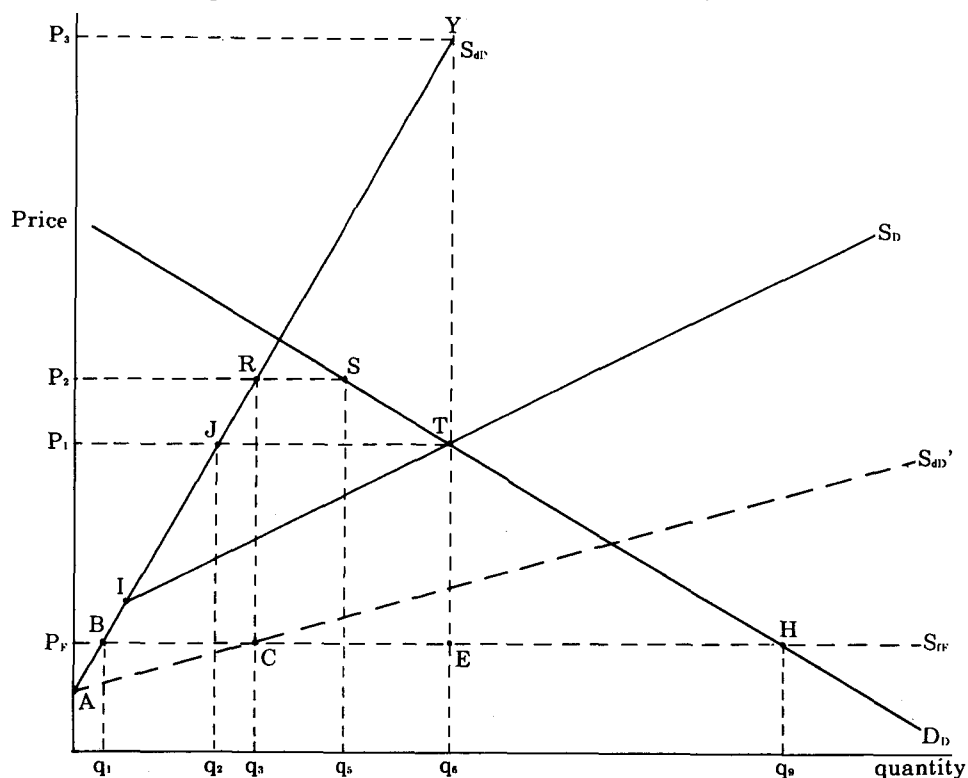


Figure 3 The Welfare Effects of Foreign Direct Investment in the Presence of a Domestic Production Subsidy.

- 7 A lump-sum subsidy would give rise to a rightward, parallel shift of the supply schedule.
- 8 The reduction in imports is smaller than under the equivalent tariff. If the objective of the protection is to reduce imports to a quantity equal to $(q_8 - q_3)$ then a larger subsidy will be required.

The introduction of the subsidy (assuming it is only available to domestic firms) provides no incentive for FDI. The price of final goods in the domestic market (p_D) is still equal to the world price p_F , so foreign firms will still export from their own countries.

Suppose instead that the objective is to increase domestic output to q_6 - i.e. the level of output produced domestically when protection is provided by a tariff of $p_2 - p_F$. This could be achieved either by giving domestic firms a unit subsidy equal to $(p_3 - p_F)$, or by giving a unit subsidy of $(p_1 - p_F)$ for domestic production by both foreign and domestic firms⁹. In the former case, the net welfare cost of the subsidy would be equal to the triangle BEY. In the latter case, there would be an incentive for FDI and the market demand of q_6 would be satisfied partly by imports ($q_3 - q_6$), partly by domestic firms (q_2), and partly through local production by foreign firms ($q_6 - q_2$). The cost of the subsidy to the government is now only $p_1 p_F ET$, of which $p_1 p_F BJ$ is an increase in domestic producer surplus. JIT is the foreign producer surplus and $BETI$ is the deadweight production loss. The net national welfare loss is thus the area $BETJ$, which is less than the triangle BEY. If the objective of the protection is to increase domestic output¹⁰ (and employment?), there should be no discrimination and the subsidy should be offered equally to both foreign and domestic firms. In other words, if subsidies are to be used to promote domestic output, then those subsidies should be given to the most efficient producers irrespective of their nationality. Furthermore, this policy is also preferable to a tariff which gives rise to domestic production of q_6 , as it avoids the deadweight loss equal to triangle HET of the consumption effect.

Protection through a Local Content Requirement

The introduction of a local content requirement will have effects upon both the component industry (industries) to which it provides protection, and upon the final-good industry to which it is applied". As

9 Or by providing a subsidy somewhere between $(p_1 - p_F)$ and $(p_3 - p_F)$ only to foreign firms.

10 A production subsidy could also be used to increase domestic output beyond q_6 to, for example, q_9 where there would be no imports. This objective could not be achieved with any other form of trade restriction, except a quota/VER set equal to zero together with some form of consumption subsidy.

11 The precise effects will depend upon the form of any trade restriction on imports of the final good.

regards the latter, an effective local content requirement will entail firms purchasing more domestically-produced components than they would otherwise choose, and will thus push up their costs. If the local content requirement is applied equally to both domestic and foreign firms producing the final-good in the domestic economy then the effect will be to rotate all the supply schedules anti-clockwise, to push up the domestic price, and to reduce demand for the good. The foreign and domestic firms affected will all reduce output. If the local content requirement is only applied to foreign firms¹², then the effects will be only to rotate the S_{fd} and S_d schedules anti-clockwise, but not to affect the S_{dd} schedule - see Figure 4. Again the domestic price of the final good will rise (from p to p') and this will induce additional output from domestic firms (up from q_d to q_d'). Total market demand, however, will fall (from q_D to q_D') as will output by foreign firms in the domestic economy (from q_f to q_f'). A discriminatory local content

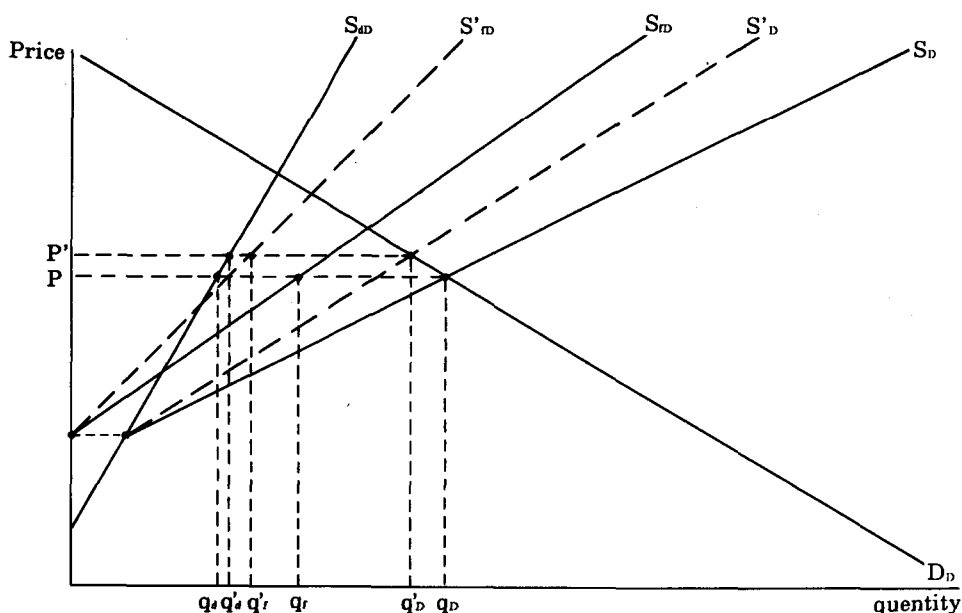


Figure 4 The Effects on Domestic Output of a Discriminatory Local Content Requirement

12 Article III of GATT stipulates that foreign firms must be afforded the same national treatment accorded to domestic producers. The TRIMs accord from the Uruguay Round prohibits the use of local content requirements that are inconsistent with Article III, and existing measures have to be phased out. Until such time as the accord becomes effective though, a local content requirement could be set at such a level that it is only binding for the foreign firms.

requirement may thus be seen as a means of protecting domestic producers of the final good.

As regards the component industry, consider Figure 5¹³. D_D is the final-good producers' demand for components. In the absence of a local content requirement, the domestic price of components will be equal to the price of imported components (p_F), and total demand will be q_8 . Domestic firms will supply q_1 and imports will account for $(q_8 - q_1)$. Assume initially there is no local production of components by foreign firms.

Now suppose that the domestic government imposes a local content requirement which specifies that a proportion k of total component demand must be purchased domestically. The introduction of the local content requirement will push the price of domestically-produced components up to p_D , but will leave the price of imported components at p_F . The demand curve for domestically-produced components is kD_D .¹⁴ Both D_D and kD_D are functions of the average price of components,

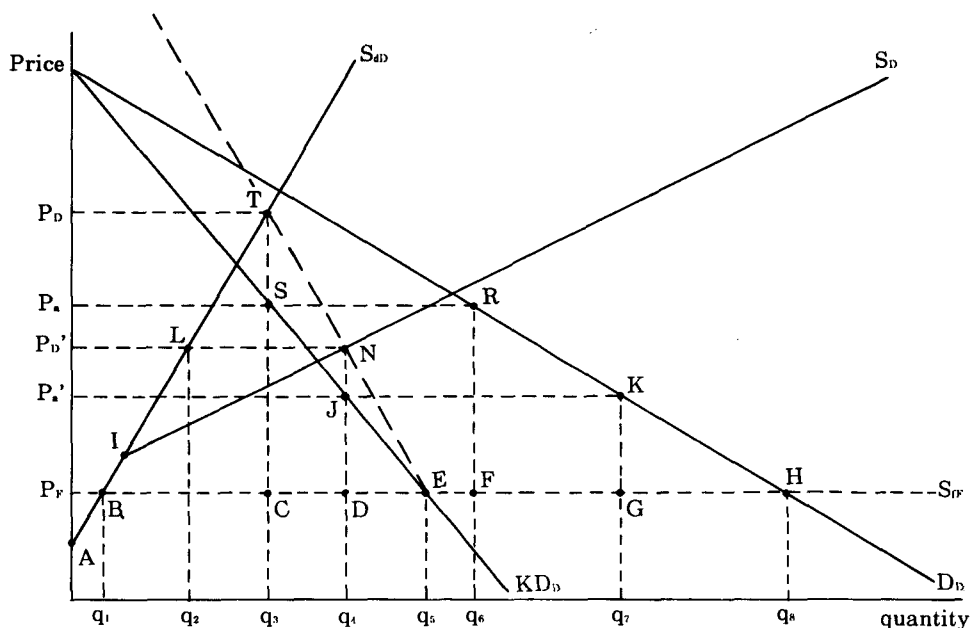


Figure 5 The Welfare Effects of Foreign Direct Investment in the Presence of a Local Content Requirement

13 Note that the prices/quantities identified by letters etc. do not correspond to those in the earlier diagrams.

14 If the local content requirement is only imposed on foreign firms, then the kD_D schedule will be further to the left for any given size and structure of the industry.

where the average price is $p_a = k.p_D + (1-k).p_F$. That is, $k\%$ of components are purchased at price p_D , and the remaining $(1-k)\%$ at price p_F .

At this average price, total demand for components is q_6 (point R), of which q_3 is produced domestically and $(q_6 - q_3)$ is imported. The line ENT shows the price (p_D) that the final-good producers are prepared to pay for domestically-produced components, knowing that the remaining $(1-k)\%$ may be imported at the lower price p_F . Domestic producers are prepared to supply q_3 because they receive the higher domestic price p_D . The introduction of the local content requirement thus gives rise to a loss of consumer surplus equal to area $p_a p_F HR$, offset in part by the gain in producer surplus given by area $p_D p_F BT$. The deadweight loss is equal to triangle BCT (the production effect) plus triangle HFR (the consumption effect)¹⁵.

A tariff to yield domestic output of q_3 would have entailed the final-good producers paying p_D for all components, and thus a much larger consumption effect. On the other hand, if protection of the component industry was the only objective, a direct production subsidy to the industry of $(p_D - p_F)$ would achieve the desired result with no consumption effect.

The high price (p_D) paid for domestically-produced components is sufficient to encourage foreign component manufacturers to establish local production facilities. The effective domestic supply schedule is now S_D (passing through points ABIN). Total domestic component production is now q_4 and demand is q_7 (point K). The average price of

$$\begin{array}{llll}
 15 & \text{As} & p_a & = k.p_D + (1-k).p_F \\
 & \text{then} & (p_a - p_F) & = k.(p_D - p_F) \\
 & \text{and} & (p_D - p_a) & = (1-k).(p_D - p_F) \\
 & \text{therefore} & \frac{(p_D - p_a)}{(p_a - p_F)} & = \frac{(1-k)}{k}
 \end{array}$$

$$\begin{array}{llll}
 \text{Also} & q_3 & = & k.q_6 \\
 \text{therefore} & \frac{(q_6 - q_3)}{q_3} & = & \frac{(1-k)}{k}
 \end{array}$$

$$\begin{array}{llll}
 \text{Hence} & \frac{(p_D - p_a)}{(p_a - p_F)} & = & \frac{(1-k)}{k} = \frac{(q_6 - q_3)}{q_3} \\
 \text{and} & (p_D - p_a).q_3 & = & (p_a - p_F).(q_6 - q_3)
 \end{array}$$

$$\text{i.e. area } p_D p_a ST = \text{area } SCFR$$

components has fallen to p_a' , but the price received by firms (both foreign and domestic) producing locally is p_D' . Domestic firms thus supply q_2 , foreign firms supply $(q_4 - q_2)$, and $(q_7 - q_4)$ is imported. The welfare effects of the FDI in the component industry are unclear. There is a gain in consumer surplus equal to area $p_a p_a' KR$ and a loss of domestic producer surplus equal to area $p_D p_D' LT$. The deadweight production loss is now area $BDNI$ (the production effect) plus triangle HGK (the consumption effect). The consumption effect of the local content requirement is thus reduced as a result of the FDI, but the FDI has an indeterminate effect upon the production effect. The foreign producer surplus is given by area LIN . The net effect on national welfare depends upon the various supply and demand elasticities.

Given that a simple production subsidy would be a superior way to protect the indigenous component industry, what explains the popularity of local content requirements? Part of the answer is given by the political economy arguments above. Part of the answer, however, lies in the fact that local content requirements may be used to protect domestic producers of both components and final goods, and in a way which is not transparent. The interdependence between the components and final-good industries also makes it difficult to offer definite conclusions about the welfare effects of FDI in the presence of local content requirements.

Concluding Remarks

The partial equilibrium analysis of this paper has suggested the following conclusions regarding the welfare effects for a domestic economy which is host to inflows of FDI.

- * a production subsidy can offer the same level of protection to the domestic industry as an equivalent tariff, but at lower welfare cost. If the subsidy is only made available to domestic firms, then its introduction (unlike a tariff) provides no incentive for FDI.
- * if a production subsidy is to be used to increase domestic output and employment, then the reduction in national welfare is less if the subsidy is made available to both domestic and foreign firms.
- * in the presence of a local content requirement on the final-good industry, FDI in the component industry will have an

indeterminate effect on national welfare. A production subsidy would be a superior way of protecting the component industry.

- * positive production externalities may be associated with the inflows of FDI, and their existence will confer welfare benefits on the domestic economy.

Five final points should be made with respect to the theoretical analysis. First, the "small" country assumption allowed terms-of-trade effects to be disregarded. The commercial policy of a "large" country necessarily affects world markets, and the country should no longer be regarded as a "price-taker". In general, any form of trade restriction will lead to an improvement in the terms of trade of a large country. FDI, to the extent that it substitutes local production for imports, will have analogous effects, though these may be offset by increased imports of components etc. These terms-of-trade effects should be incorporated in any full assessment of the welfare effects of FDI.

Second, partial equilibrium analysis has been used to highlight the distribution of the welfare gains/losses from FDI within the domestic economy - particularly the distribution of producer surplus between domestic and foreign firms. The weakness of partial equilibrium analysis is that it ignores second order effects arising from changes in the relative prices of goods and/or factors of production - changes which mean that both trade restrictions and FDI have repercussions not just for the industries directly affected but throughout the economy. General equilibrium analysis captures this interdependence between sectors of the economy, and reveals how resources move in response to price changes, but is more abstract (relying on community indifference curves and production possibilities frontiers). The various welfare effects are thus not so readily identifiable as in partial equilibrium analysis, but it is important to be aware that the general equilibrium effects - however small in certain industries - do exist and should not be ignored¹⁶.

Third, it has been assumed throughout that the foreign producer surplus accrues to residents in the foreign firms' home countries. If this surplus is not repatriated, or is subject to local taxation, then there will be consequent benefits for the domestic economy.

¹⁶ See Strange (1994) for a consideration of the technology transfer aspects of FDI, and for a fuller discussion of the literature on its general equilibrium effects on the host economy.

Fourth, the analysis has assumed throughout that the domestic market is competitive. A dominant domestic firm is forced to charge the world price for its output under free trade, as potential imports provide competition. Quantitative import restrictions remove this constraint on the price charged by a domestic monopolist, with consequent welfare losses for the domestic economy. The possibility of FDI performs a similar role to imports in that it reduces the domestic firm's monopoly power by providing competition if the price is raised too high.

Fifth, the assumption of a competitive domestic market with free entry and constant industry costs is perhaps an over-simplification of the situation in many industries where FDI is commonplace. Industries such as motor vehicles, semiconductors, and pharmaceuticals should rather be categorised as oligopolistic industries subject to increasing returns to scale. This then leads on to questions of the use of strategic trade policy. The issue of trade protection when there are external economies or diseconomies of scale raises additional questions which require further analysis. In support of the approach adopted in this paper, however, it can be argued that the competitive model does provide a limiting position for an imperfectly competitive industry where there is no collusion between firms.

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