

# KOBE ECONOMIC & BUSINESS REVIEW

33rd  
ANNUAL REPORT



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

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# AGENCY PROBLEMS AND ACCOUNTING COMMUNICATION

Isao NAKANO

In the realm of theory of firm, the so-called “agency theory” has emerged and attracted the attention of many scholars. Its influence has outgrown the sphere of economics. Business accounting theory also is being reexamined from the view-point of this new perspective. This article is a report of such a re-consideration on business accounting disclosure.

Our major point is a proposal of “distrust dissolution” accounting. We believe there exist at least three different, though interrelated, financial accounting objectives. But among them, the most fundamental one is “dissolution of the investors’ distrusts”. We will start by analyzing those three social functions of financial accounting measurement.

## **1. Social Functions of Accounting Measurement – Accounting for Distrust Dissolution and Accounting for Provision of Incentives**

There exist many different interest groups around the business firms. Hence, oppositions of their interests occur, and its adjustment becomes necessary. The most important relationship among them, however, may be said to be that between management and investors. The purpose of this section is to pursue the social meaning of accounting measurement by an application of agency theory and to thereby form the foundation and the framework for our accounting theory. We hope, above all, that the idea of distrust dissolution accounting will become the starting-point for our study.

Consider accounting problems due to separation of ownership and management in corporations. As is well known, Husband unfolded an agency approach to business enterprises.<sup>1)</sup> According to it, the corporation is regarded as an agent organization for the investors. The stockholders as investors entrust use of funds to the manager as his agent. And then, it is expected that a profit is obtained by it. Therefore, the manager bears the duty of making accounting reports to the stockholders.

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1) G.R. Husband, “The Entity Concept in Accounting”, *The Accounting Review*, October, 1954.

In this case, what business income concept and what capital maintenance concept are appropriate? The amount of money that should be maintained before recognizing a profit is the nominal monetary capital that the investors have provided and that they expect the firm to return in the future. And it has been insisted that a realized surplus gained exceeding the capital is the enterprise income concept here.

This author insists that three important factors do derive from the capital investors entrusting the use of their money to the management as their agents. They are: (1) absence, (2) distrust and (3) lack of incentives.

First of all, consider absence. This means absence of the investors on the spot of management actions. A shortage of business information occurs for investors because of this absence. For the purpose of decreasing this difficulty and helping their judgments and decision makings, provision of business information is required of the firm. It becomes difficult for the investors to predict if the firm doesn't respond to this requirement. This enlarges the risk burden of the investors excessively, making it difficult for the firm to obtain capital. A business information provision for the judgments and decision makings of the investors has naturally come to be formed as a social system to cope with this problem. We call this "accounting for absence dissolution".

Distrust comes next. The investors entrust the important job of management to the manager who is another person. Therefore, it is quite natural that the investors should embrace the feeling of disbelief or anxiety about the capability, the sincerity and the extent of effort inputted of the agent manager. This distrust is a factor of disutility, which will lower the investors' utilities about the investment compensation from the company. This utility reduction will lower the market price of securities that the manager offers for sale. Consequently, it will be more difficult for the firm to raise capital. Therefore, dissolution of the disbelief of the investors is profitable to the manager, too. Hence, the disclosure of business information has become a social institution so as to function as a "monitoring" device to prevent various aberrant management actions (such as perquisite seeking and shirking, etc.,) as well as to provide managers' bonding against such moral hazards or bonding for their repaying of such losses. We call this accounting function "accounting for distrust dissolution".

Lastly, let us consider the third factor, "a lack of incentives". This is a problem concerning the management entrusted with the managing of the firm. Suppose that managers are working in the absence of investors and other supervisors. And moreover, suppose their compensations do not respond to

their efforts or achievements. We must say that in this situation a lack of incentives does exist which hinders the managers from making sufficient efforts. Then, in actuality, the management result realized in each fiscal year is communicated to the investors and other interested parties as accounting information. This will provide an informational basis for management compensation contracts and payments which will take their efforts and achievements into account, stimulating their self-interests and producing incentives for business activities.

Secondly, reportings on management results function as an a posteriori check (monitoring device) about the managers' capabilities and their input efforts. From this aspect, too, the accounting information will accomplish the function of raising the managers' incentives which are apt to be short under the absence of the investors in the firm. Certainly, the creation and provision of such information is very costly to the enterprise and its investors. But an information reporting of this kind will pay to the investors if an increase of the equity capital value by a stimulus on the management actions should exceed the amount of the cost involved.

As another problem, a strengthening of supervision by an information publication produces a feeling of burden to the managers. But the information reporting is beneficial to the managers, too, because it facilitates formation of a proper management compensation which will correspond to their management efforts and achievements. Therefore, we can suppose rationally that information provision to the investors is being made to the degree that the interests of the investors and the managers come to an equilibrium.

Thus far, we have indicated three aspects of the social meanings of financial accounting. They are: (1) accounting for absence dissolution: (2) accounting for distrust dissolution: (3) accounting for incentive provision. We don't have new findings about the accounting for absence dissolution (accounting for decision making). In the following, we will consider the distrust dissolution functions of accounting by applying agency theory.

## **2. Accounting Measurement for Distrust Dissolution**

The accounting for distrust dissolution aims to decrease the possible distrust on the part of capital investors which arises from separation of ownership and management of the firm. First, we will consider why and in which form the distrust will be generated. Then, we study which role can be taken by accounting for such distrust dissolution.

### (1) Moral Hazards and Agency Costs

First of all, let us define an agency relationship as a starting point. This is a contract where a man employs another man (agent) to request him to perform some services for his benefit. And it contains a transfer to the agent of certain decision making powers.<sup>2)</sup> A manager can be interpreted as the agent and the equity holders (stockholders and creditors) as the principals in the case of a corporation.<sup>3)</sup>

Because of the agency relationship, the investors are generally absent at the spot of management activity, from which the problem of moral hazards occurs. That is, this absence prevents the investors from monitoring the manager actions. The absence has also made it possible for the managers to obtain much superior and richer business information than would be available to the investors. Consequently, the investors naturally suspect that the agent managers may exploit this information asymmetry in an attempt to maximize their own benefits (utilities) at the sacrifice of the capital suppliers. This is called the problem of moral hazards.<sup>4)</sup>

The moral hazards can occur in various forms. For example, frauds and negligence in the work: private consumption of the firm's assets; a pursuit of profit maximization for the manager himself rather than that for the stockholders in selecting the firm's investment projects. Therefore, the moral hazards bring a reduction in the capital value of the enterprise.

In this case, the investors will consider monitoring the management behaviors by expending some money. If this can result in an increase in the firm's capital value which will exceed the above monitoring costs, then the stockholders will decide to bear the expenditure.

On the other hand, from the manager's side, if this expenditure prevents the private consumption of the business assets which occurs from the manager's exploitation of his status, his utility will be reduced to the extent. But a rise of the firm's value occurs simultaneously. Therefore, if he possesses common stocks of the company, he can obtain a gain because of the price rise. Even if he doesn't have any stocks of the company, his non committal of moral hazard deeds will bring about an improvement of people's confidence in him and stabilization of his position as a manager. And it will raise the present value of

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2) M.C. Jensen and W.H. Meckling, "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure", *Journal of Financial Economics*, 3 (1976), p.308.

3) L. Kelly-Newton, *Accounting Policy Formulation: The Role of Corporate Management*, Addison-Wesley, 1980, p.23.

4) W. Beaver, *Financial Accounting: An Accounting Revolution*, Prentice-Hall, 1981, p.48.

his future personal income. If the sum of these profits exceeds the total income from the above unethical actions, management can enjoy a net increase in its utility from those expenditure for preventing the moral hazards. Therefore, management will agree and cooperate to the expenditure for this purpose, too.

If it is so, why doesn't the agent manager stop moral hazard deeds from the first? Agency relation produces moral hazards inevitably irrespective of the manager's determination toward sincerity since it is a relationship between strangers. And that lowers the market value of the firm's securities correspondingly. Therefore, as far as he does not incur the expenditure described above, the manager will inevitably suffer from a fall of the security value.

The investor group must pay peculiar various expenditures in this agency relation.

- (a) Monitoring cost that the investors bear to repress the selfish (egoistic) action of the agents.
- (b) Bonding costs expended to promise that the agent manager will not make any actions disadvantageous to the principals or that he will compensate to the principals the losses from such actions if he did.
- (c) Despite the above two kinds of expenditures made, there would remain a difference between the decisions actually made by the management and those which would maximize the principal's utility. A decrease in the investors' security price arising from this difference is also a cost associated with the agency relationship. This is called a "residual loss". It means that this is an agency cost which remains even after those cost burdens.

Jensen and Meckling call the sum of the above three kinds of costs "agency costs".<sup>5)</sup> As the costs of (a) and (b) are increased, the residual loss (c) will decrease gradually. However, the sum of those three costs, i.e. the agency costs, will be minimized at some finite level of monitoring and bonding costs.

## **(2) The Function of Accounting Information to Reduce Agency Costs**

Management behaviors become more transparent, if the business information that reflects the results of their actions is adequately disclosed to the society. It exposes the moral hazard deeds of managers more easily. And, it will prevent these actions beforehand. This is the management supervision function of business information disclosure. And when the auditing system of disclosed

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5) M.C. Jensen and W.H. Meckling, *op. cit.*, p.308.



accounting information has been introduced, it has made the function of making monitoring on management by information reporting to the public much more effective. In short, establishment of a business accounting system, its operation and auditing can be regarded as facilitating the investors' supervision action on management activities as agent behaviors.

Now, it is equal to assuring the investors of not committing moral hazards in the future, if the managers agreed to an introduction of an financial accounting system. In this sense, an establishment of an accounting system, its operation and its auditing mean provision to the society of the assurance that less moral hazards will be done in the future.

That is, while a business accounting system including auditing and its disclosure is directly a monitoring mechanism on management, it is indirectly a means of bonding on the morals of management actions. In this sense, the cost necessary for such accounting activities can be interpreted as both a monitoring cost and bonding cost simultaneously. It is difficult to classify the expense to a single category.

The moral hazard deeds of a manager will be suppressed by the burden of these accounting cost and by the monitoring and bonding functions of accountancy. In consequence, the risk of asset value reduction of an enterprise will be lowered, and reflecting that, the equity security values (values of stocks and bonds) of the enterprise will rise. In other words, a decrease of residual loss occurs. As far as this evaded loss exceeds the costs of monitoring and bonding, it means a decrease of the total agency costs. Hence, in this case, the monitoring and bonding through accounting measurement and reporting may be said to pay the investors who have to ultimately bear those costs.

Further, if the manager should estimate that his utility loss from detection of his moral hazards would be greater than his utility from his possible private consumption of the business assets, then he would also positively prefer the above stated accounting monitoring and bonding services. And when we consider strictly, the gain that accounting monitoring and bonding will bring to the manager extends beyond what we said above. As Beaver states,

"In the limit, if the concern over moral hazard is sufficiently great, the principal may be unwilling to enter into a contract with the agent. Hence, the demand for the agent's service may increase with the agreement to provide the additional information. As a result, management may be willing to pay for audit".<sup>6)</sup>

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6) W. Beaver, *op. cit.*, p.49.

The emphasis on the reduction function of management's moral hazards and agency costs by the accounting system may be said to conform to our common sense, which has contributed to deepening and developing our implicitly shared ideas. But the most positive contribution of agency theory lies in its success in showing that accounting measurement, its reporting and auditing service can provide net benefit to management as well as to the external interest groups, and hence that management also has a motivation and reason to actively commit itself to social development of business accounting system.

### **(3) Various Aspects of Accounting for Distrust Dissolution**

Agency costs as a value expression of distrusts that occurs because of an agency relationship arise from, above all, the following two sources.

- (a) Relationships between management and investor groups (stockholders and creditors).
- (b) Relationships among groups within the investors, that is, relations between the shareholders and creditors.

On (a) first of all. If there does not exist any assurance to adequately maintain and administer the monetary capital which the stockholders and creditors have contributed to the firm, and if no systems are available to support the assurance, no investors will be motivated to provide capital to the firm. Or alternatively, if they should prefer to invest, they will give the firm's securities those market prices which incorporate the discount reflecting this moral hazards (that is, occurrence of residual loss in the amount of the market price decline). Stated another way, there exists a mechanism in current income calculation that assures the maintenance of invested monetary capital and reports as the distributable profit only a surplus remaining after the maintenance. This monitors the management about the extent of restraint of their moral hazards, and it also gives a measure of prior assurance against those deeds to the society. In consequence, a value reduction of the equity securities of the enterprise is prevented.

(b) Let us consider about depreciation. Fixed assets were once regarded as semipermanent property in the old days. Therefore, annual allocation of depreciation expenses was not done. But when this idea was adopted, the past cost or the replacement cost of the property was charged to the expense at the time of its removal. Therefore, a profit before the scheduled recovery of the invested capital to the fixed assets was calculated in each of the interim years. If a considerable part of this profit was appropriated to dividends, it meant that a corresponding part of the creditors' capital turned out to become the

stockholders' equity through its change into a profit and then into dividends. In this case, a part of the stockholders' invested capital also turned into a profit, of which, however, what was paid as dividends ended by returning to them again. Therefore, no losses exist here for the stockholders. In this way, the non-accrual accounting principle that is founded upon cash flows invites the danger that creditors' capital is often transferred into the hand of the stockholder group.<sup>7)</sup> This can be understood as an unbalance of interests between both groups. But according to another interpretation, we can understand that the creditor group, perceiving this risk, agree to accept the firm's bonds only after a price reduction has been made corresponding to the risk, which results in the occurring of an agency cost (residual loss).

After all, the point is that the historical development from the cash basis to the accrual basis consists in a process of restraining the agency costs from unbalance of interests between the creditors and the stockholders, by bearing the costs of monitoring and bonding which have been generated by the growing complexity of the accounting procedures.

### 3. Conclusion

What are the relationships between our "distrust dissolution" accounting objective and the more prevalent "decision aid" objective?

Consider the every-day fact that the words of unreliable men are never reflected in the decision-makings of others. A prerequisites for useful accounting information, therefore, is that management as the preparer of financial reporting can somehow gain and maintain a sufficient degree of reliability from the investors.

Unreliable men can never influence others and hence cannot achieve any great success in their pursuit of self-interests. Our proposition therefore is that the maximization of one's self-interest requires a certain optimal degree of distrust dissolution. Stated another way, the investors' decision aid cannot be achieved without prior dissolution of their distrusters for managers' possible moral hazard losses.

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7) R. L. Watts and J. L. Zimmerman, "The Demand for and Supply of Accounting Theories: The Demand for Excuses", *The Accounting Review*, April, 1979, p.277.

# STRATEGIC CORPORATE INNOVATION AND JAPANESE MANAGEMENT

Hideki YOSHIHARA

## 1. Aims of the Paper

This paper deals with the diversification of Japanese firms during the post-World War II period and has three main objectives, as follows.

First, based on empirical analysis of diversification of Japanese enterprises, this paper presents new facts concerning the management of Japanese firms. These new facts are related to strategic management and corporate innovation.

Second, this paper explores implications of these new facts for the arguments relating to the management of Japanese firms. The author hopes to add a new dimension to the study of Japanese management.

Third, by comparing Japanese and American firms, this paper attempts to make clear the distinctive features of strategic management at Japanese firms. The author wants to approach the study of management of Japanese companies from the standpoint of an international comparison.

## 2. Missing Elements in the Theories of Japanese Management

As Japanese enterprises have grown to take a very active role in international markets, Japanese management has become a focus of attention for researchers, both Japanese and foreign. What are the specific characteristics of Japanese management which emerge from such studies?

At first, attention was concentrated on cultural and social aspects of Japanese management. The so-called three sacred tools of Japanese management, i.e., lifetime employment, seniority system, and company unions, became the subject of active arguments. These characteristics are rooted in Japanese culture, history and society. Abegglen, in the early days, and, recently, Ryushi Iwata are representative scholars of this school of thought.<sup>1)</sup>

Subsequently, when Japanese factories started to produce highly competitive

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1) Abegglen (1958), Iwata (1977).

products in fields such as consumer electronics, automobiles, and office machines, the attention of scholars was centered on the Japanese factory. QC circle activities, constant presence of management in the plant, maintaining cleanliness and order, great attention to detail, etc. were singled out as reasons for success.<sup>2)</sup>

Japanese management is good at motivating workers not only to do their operating jobs, but also to think in order to improve their jobs. Japanese style factory management may be labeled bottom-up management or "mass mobilization management."

A recent development in the field of Japanese management is evolutionary management. According to this view, middle management plays, or should play, a central role in innovation, particularly new product development.<sup>3)</sup> Since in the Japanese firm the "kacho" (chief of a section) is the representative of middle management, evolutionary management is on occasions called "kacho management."

Up to now, we have been looking at main theories on Japanese management, but in all of them there is a missing element. It is a role of top management. Since World War II Japanese businesses have experienced remarkable growth. What has been the role of top management in the growth process? Has it been the role for top management to build an harmonious organizational climate and cooperative labor relations? Or, has it been its role to create suitable conditions for middle and lower management? Has not Japanese top management, by exercising its own leadership, been deeply involved in the process of initiating, designing and implementing strategy?

### 3. Growth through Diversification

#### **Diversification Strategy as Growth Strategy**

Table 1 shows the trends in diversification for the largest 118 industrial companies for the 15-year-high growth period from 1958 to 1973.

Single-business companies are those which derive 95% or more of total sales from one field of business, i.e., they are non-diversified enterprises. During the 15-year period, the component ratio of these companies decreased

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2) Research was done by Yoshihara (1985), Hayes (1981), Schonberger (1982), White and Trevor (1983), among others.

3) Nonaka (1985) and Kagono (1983) can be mentioned among the advocates of evolutionary management.

by 9.4%. On the other hand, the ratio of companies which actively pursued diversification into related fields (RC, RL) and unrelated fields (U) shows a fair increase from 39.5% in 1958 to 46.6% in 1973. In 1973, 55 companies, comprising almost half of the largest 118, were rather highly diversified.

We might ask then, what was the result of diversification?

**Table 1. Strategy Composition**

Strategy Type	Year	1958 # of firms (percentage)	1963	1968	1973	U.S.A. (1949)	U.S.A. (1959)	U.S.A. (1969)
S		30 (26.3%)	29 (24.6%)	23 (19.5%)	20 (16.9%)	34.5%	16.2%	6.2%
V		15 (13.2)	18 (15.3)	22 (18.6)	22 (18.6)	15.7	14.8	15.6
DC		17 (14.9)	13 (11.0)	12 (10.2)	13 (11.0)	18.0	16.0	7.1
DL		7 (6.1)	7 (5.9)	10 (8.5)	8 (6.8)	1.8	6.4	6.5
RC		17 (14.9)	23 (19.5)	17 (14.4)	17 (14.4)	18.8	29.1	21.6
RL		18 (15.8)	19 (16.1)	26 (22.0)	30 (25.4)	7.9	10.9	23.6
U		10 (8.8)	9 (7.6)	8 (6.8)	8 (6.8)	3.4	6.5	19.4
Non-conglomerate						3.4	5.3	8.5
Conglomerate						0.0	1.2	10.9
Total		114 (100.0)	118 (100.0)	118 (100.0)	118 (100.0)	100.0	100.0	100.0

- Notes: 1. S: Single Business, V: Vertical Integration, DC: Dominant-Constrained, DL: Dominant-Linked, RC: Related-Constrained, RL: Related-Linked, U: Unrelated  
2. To compare with Japanese data, Rumelt's DLU is combined into DL and DV is shown as V.  
3. Data sources: Japanese data are from Yoshihara et al. (1981) and US data from Rumelt (1974).

Companies which diversified following a related-concentrated (RC) strategy experienced the highest rate of growth in sales, whereas companies pursuing a related-linked (RL) strategy experienced the highest rate of growth in profits (operating profits). Against this, single-business and vertically integrated companies showed lower rates of growth in both sales and profits.<sup>4)</sup>

4) If we consider various factors other than diversification strategy, and look at the net effect of the diversification strategy on performance, a somewhat different conclusion can be reached. Nonetheless, there is no change as far as the following fact: the performance of diversified firms is better than that of single-business and vertically integrated firms. For details, see Yoshihara et al. (1981, Ch. 4).

In brief, diversification contributed to the growth of the firm. Diversification was a growth strategy.

### **Three Key Success Factors for Diversification**

The author's case studies on the diversification of five companies revealed the following three key success factors.<sup>5)</sup>

- ① Dynamic synergy of managerial resources
- ② Unconventional strategy
- ③ Top management leadership

First, taking as a basis its existing managerial resources, a company branches out into new business fields. While conducting business in these new fields, it accumulates new managerial resources. Now, taking as a basis both the original and newly developed managerial resources, the company branches out again into new fields. Among those companies which realized high growth in the long term through diversification, there are many which followed this cycle: diversification → accumulation of resources → diversification. This is diversification through dynamic synergy of managerial resources, and is a desirable diversification process.<sup>6)</sup>

Second, successful companies generally have unique strategies different from the conventional practices in the industry and the generally accepted ideas in society. The uniqueness can be seen in the choice of product markets that should be penetrated, the timing for the entrance into new markets, or the competitive strategy to be pursued.

Third, top management leadership is another key success factor for diversification. Groupism and bottom-up management are often mentioned as characteristics of the Japanese management style. It is unusual, according to the common view, for top management to elaborate an idea, hand the decision down, and have it forcefully implemented in a top-down style.

Some scholars point out that Japanese executives are not analysts and do not formulate strategies clearly.<sup>7)</sup> It is rare for a specific individual such as a company president to go out to the front and display strong leadership. For this reason, it is not uncommon that top management leadership is invisible, not

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5) See Yoshihara (1986). The five companies are Risho Kogyo, Yoshikawa Oil and Fat, Hoya, Iriden and Canon.

6) The concept of dynamic synergy has been developed by H. Itami (1984, p. 247-253).

7) Okumura (1982).

only to outsiders, but to the company employees as well. Thus, it is argued that “invisible leadership” is a typical feature of Japanese style top management leadership.

However, as evidenced by my case studies of five different companies, top management leadership is essential in order to conduct successful diversification moves. In what follows, I will try to elaborate on the reasons why top management leadership is important in the diversification process.

#### **4. The Importance of Top Management Leadership**

##### **Diversification as Corporate Innovation**

The term “diversification” is used with a variety of meanings such as market diversification, product diversification, etc. Diversification may be generally defined as “an increase in product or business components of a company.” In this paper, diversification refers to product line diversification or to business-field diversification.

In Japan, diversification is practically synonymous with entering a new field of business. It is possible for a firm to enter a new field while at the same time withdrawing from its existing line of business. But, in practice, this withdrawal rarely happens, due to a variety of reasons, such as employment problems and long-term quasi-organizational relations with suppliers and distributors. Moreover, the market for buying and selling a part of a firm is not well developed. For these reasons, in most cases, new businesses are added to existing ones.

Incidentally, innovations that take place in the firm are not limited to diversification. There are at least two other types of innovation.

The first one consists of improvements in existing products or in the manufacturing process. These are small innovations. The second type of innovation involves new product development. If we compare it with the first type of innovation, i.e., product improvement or process improvement, it implies a higher level of innovation, whose impact extends over a wider sphere of influence. But if we compare it with diversification, then the level of innovation is lower, and its impact weaker and smaller.

Since, as we have already defined, diversification means entrance into new business fields, diversification brings about, first of all, changes at product-market level. Next, when entering new business fields, changes begin to occur in technology and marketing. Furthermore, while dealing with the new businesses and striving to make them successful, changes in the organizational culture are



very often required. The new culture is born as a result of entering new business fields, and this new culture is more or less different from the previous organizational culture.

Thus, diversification usually produces three types of changes at the same time: ① product line or business changes, ② technological and marketing changes, and ③ changes in the organization's culture. As a result, diversification often alters the enterprise as a whole in a fundamental way. When that occurs, diversification means corporate innovation.<sup>8)</sup>

### **Resistance to Change**

An essential feature of diversification is that it demands change. Maintenance or expansion of existing businesses may be seen as continuance, but, in contrast, diversification means change. And, as we have already seen, it is not just a small change, but a big, fundamental change.

Human beings, and consequently organizations, often avoid change and oppose it.<sup>9)</sup> Due to this resistance to change, diversification does not occur naturally. If left alone, organizations tend to preserve and expand their existing businesses. In organizations, a kind of inertia is at work and exercises a powerful effect. In order to overcome resistance to change and organizational inertia and to be able to bring about in an organization a change as important as diversification, strong power is required. One element of this strong power is top management leadership. For this reason we can argue that top management leadership is one of the key success factors for diversification.

## **5. Strategic Management vs. Evolutionary Management**

### **Corporate Innovation and Product Innovation**

One of the influential new theories in the field of business administration is the theory of evolutionary management. It argues that middle management plays a central role in conducting innovation in organizations.

However, findings from the author's case studies on diversification contradict the assertion of evolutionary management; that is, the central role in

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8) Yoshihara (1986, p. 224).

9) The viewpoint that organizations often avoid and oppose change is based on H.A. Simon's view on organizations. As for the principle of satisfying human behavior, see March and Simon (1958).

innovation is not played by middle management, but rather by the president of the company and other members of top management. One of the key success factors for diversification is leadership from top management.

Thus, strategic management and evolutionary management differ in their view of who plays the central role in deciding and performing innovation in the firm. Why do we find these opposite statements concerning who plays the central role in innovation?

One reason is that the concept of innovation differs in the two theories. In strategic management, innovation is concretely diversification. As we have seen before, diversification implies large innovation. It brings about not only changes in product lines or business fields, but also in technology and marketing, and in the organization's culture. Diversification fundamentally changes the organization as a whole; it means corporate innovation.

On the other hand, the type of innovation that evolutionary management considers is centered around new product development.<sup>10)</sup> As opposed to diversification, which is a large innovation, we can say that new product development is innovation of medium range. In this connection, product and process improvements are small innovations.

Let us take as an example Hoya, one of the companies included in my case studies, and compare the two types of innovation in order to highlight the relationship between the two.<sup>11)</sup> In 1962, the company made its entry into the business of eyeglass lenses. The diversification decision was handed down by President Suzuki. The innovation which is the focal point of strategic management is this type of diversification decision.

After the decision to enter the eyeglass lenses business was made, they not only dealt with ordinary lenses, but also developed, produced and marketed specialized products such as coated lenses, progressive lenses, photochromic lenses, high-refractive index glass lenses, plastic lenses, and contrast lenses. These individual product developments are the main object of discussion in evolutionary management. As a matter of fact, at Hoya, the central role in product development was played by managers and engineers belonging to middle management; President Suzuki did not actively participate in the development process.

When the development teams were about to work on new product development, President Suzuki spelled out basic directions based on the

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10) See Ishii et al. (1985, p. 243).

11) For details, see Yoshihara (1986, p. 86-87, p. 231-232).

company's competitive strategy. The company's strength was rooted in the technology of optical glass. Based on this technological advantage, President Suzuki thought the company should develop functionally differentiated lenses. Thus, R & D people did not develop things in an autonomous and independent way. Creative ideas produced by engineers indeed played an important role in the new product development process, but their creative ideas basically had to follow the strategic directions decided by the president.

### **Differences in the Organizational View**

Another difference between strategic management and evolutionary management can be seen in their respective views of organizations.

According to the theory of strategic management, there are many reasons that produce resistance to change and for these reasons big changes such as diversification do not take place if the company is left to run by itself. In initiating and implementing diversification moves, top management leadership and its strategic decisions are essential.

On the other hand, evolutionary management considers that organizations, or the people who belong to them, are intrinsically endowed with creativity. If the purpose is to allow this creativity to be fostered, management and control may be detrimental, and creativity can be much better promoted by leaving people's creative capacities so that they can operate in a natural way. One of the key concepts of evolutionary management is self-organization. In its extreme view, it asserts that ideal management should be the lack of management or the lack of control.<sup>12)</sup>

Differences between strategic management and evolutionary management are also found in the way each theory looks at the environment. According to the theory of strategic management, it is not so difficult to forecast the long term general situation of the environment surrounding the company. For example, forecasting the long term trend of the company's business – will the businesses grow in the long run?, will they reach a mature stage? or will they decline? – is not very difficult. Also, one can rather easily predict such broad macro changes: globalization, development in information technology including computers, growth of the service industry, advances in female social participation, etc. Strategic decisions such as diversification are made on the

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12) Nonaka (1985, p. 264–265). Recently a few changes have occurred and the role of top management is beginning to get more attention than in the past. See Takeuchi et al. (1986).

basis of this kind of long term forecasting of the general environmental situation.

Evolutionary management has a different view on the environment. The environment is filled with uncertainty. Identifying relevant changes that will take place in the environment, and forecasting what kind of impact these changes will exert on the company is very difficult, and an accurate forecast is nearly impossible. Since the level of environmental uncertainty is high and forecasting is difficult, a large number of middle level managers and technicians forecast the environment in various ways, instead of adopting a method that allows one or a few individuals to forecast the environment. One of the reasons why evolutionary management asserts that innovations are initiated and implemented by a large number of middle managers, rather than by a few top managers, is this way of viewing environmental uncertainty.

## **6. Comparison of Japanese and American Strategic Management**

### **Gradualism vs. Radicalism**

Table 1 shows data on diversification strategies of Japanese and American companies. There are differences in the distribution pattern of strategic types, as well as differences in the speed at which the company proceeds to diversify. Also, there is a considerable difference in the degree of diversification, with American companies diversifying to a considerable extent more than Japanese companies.

One of the remarkable differences lies in the existence or non-existence of conglomerate diversification. In the case of Japanese companies, the component percentage of unrelated diversification does not reach 10%. In the case of the U.S., in 1949, unrelated diversification accounted for a mere 3.4% of the total, but 20 years later, in 1969, it had shown a marked increase to 19.4%. Looking in more detail at this diversification strategy, one can see that in 1949 conglomerate diversification was zero, but by 1969 it had expanded to reach more than 10% of the total. Conglomerate diversification has considerable weight among the total number of diversification moves done by American firms.<sup>13)</sup>

The conglomerate diversification basically has two features. The first one is

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13) The conglomerate diversification is treated in some detail below since the author thinks that the existence and the non-existence of this type of diversification represent differences between Japanese and US diversification.

the diversification into unrelated fields. Diversifying into fields that bear no (or nearly no) relationship to the company's existing business, technology or marketing system is conglomerate diversification. The second feature is the acquisition of an existing company as a method to advance into new businesses.

A number of other related features emerge in connection with these two basic features of conglomerate diversification. One of them is the speed of diversification. If a company acquires an existing company, diversification speed can be higher than in the case of a company that diversifies into new businesses by developing internally on the basis of its existing managerial resources such as marketing and technological capabilities. It is possible to enter a new business on a rather large scale in a short period of time.

Another feature is that the company's business portfolio can be drastically changed. Recently, restructuring is being pursued. Restructuring represents fundamentally changing the structure of the company's businesses. In conglomerate diversification it is not unusual for a company to buy an existing business, but also at the same time to sell off some of its existing businesses. By buying and selling, the business portfolio of the firm can be greatly changed in a relatively short period of time.

On the other hand, in the case of the internal development approach taken by most Japanese companies, a relatively long time period is required. Since it is an internal development, it normally takes 5 to 10 years for a new business to reach the point where it contributes 10 or 20% to the company's total sales.

And, in the case of companies that do not sell off an existing business, even if it is stagnant, it is not unusual to continue its activities for long periods of time. A company's business portfolio can change by adding new businesses to the existing ones, or by giving relatively less weight to stagnant businesses and relatively more weight to growing ones.

Thus, compared with American companies, not only the speed of change in the business portfolio composition is slower in the Japanese case, but also there is almost no room for drastic changes such as restructuring. Japanese firms change their business portfolio in an incremental way.

Another difference is that, in the case of American companies, financial considerations are very important at the time of deciding diversification, but for Japanese firms, this is not the case. The important consideration for Japanese firms in the diversification decision is related to managerial resources, to the use of existing technical and marketing know-how already accumulated, and to the desire to acquire new know-how. To say it simply, diversification of American companies has a strong financially-oriented character, whereas that of

Japanese companies is heavily oriented towards actions aimed at using and accumulating managerial resources.

### **Reasons for the Differences in Strategic Management**

Up to this point, we have looked at a number of differences in the diversification of Japanese companies compared with American companies. Now, let us see why these differences exist.

One of the reasons lies in the differences regarding economic growth. During the period of this study, since the 1950's to the early 1970's, there was a considerable difference regarding rates of economic growth; the Japanese rate being higher. In Japan, which as a whole was attaining high growth rates, companies were able, in general, to grow within their existing businesses, and for this reason there was not a strong need to pursue diversification. On the other hand, the American economy as a whole was experiencing a lower growth rate, and in that environment companies with a zest and ability to grow found strong motives to diversify into new high growth fields.<sup>14)</sup>

After the first oil shock in 1973, Japanese economic growth decreased sharply, and given the recent conditions of low economic growth, many more Japanese firms, in comparison with the past, are actively promoting diversification. Also, Japanese firms have recently reached a stage of diversification that has, to a considerable extent, the characteristics that we previously attributed to the diversification of American firms. Many companies are entering business fields that are quite different from their existing field. Also there are more and more cases of companies taking action leading to a restructuring of their business portfolio by buying growth businesses and selling or withdrawing from stagnant businesses.

The second reason is related to differences in the degree of capital market development as well as differences in the character of the capital markets.<sup>15)</sup> One of the reasons for the large number of cases in which American companies diversify through acquisition of other companies is the fact that capital markets are well developed in America and they facilitate buying other companies or businesses that are part of a company. Since that kind of capital market is not as yet as developed in Japan, diversification through acquisition is difficult.

As a third reason we can mention differences in the labor markets. In the

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14) See Yoshihara et al. (1981, p. 58).

15) Kagono et al. (1985).

case of Japan, due to the so-called life-time employment system, it is not possible to simply lay off employees just because they become surplus labor. As a consequence, it is almost impossible in a short time period to drastically change the business structure of a company.

In the fourth place we can mention differences in vertical business relationships within the two countries. There are considerable differences between the US and Japan in the business relationships with distributors or suppliers of parts and raw materials. In the case of US firms, both suppliers and distributors are independent companies that maintain a business relationship resting upon terms of equality with the manufacturing firm.

On the other hand, the vertical relations that can be seen in Japanese companies are of a different nature. There exists a quasi-organizational and tightly knit relationship between a specific manufacturing firm and specific distributors. Also, regarding the relationship between a manufacturing firm and its suppliers of parts and raw materials, it can be said that they are cooperative subcontractor-type relations which are not relations on an equal footing between independent companies. Rather it is a hierarchical or quasi-organizational type of relationship.

Vertical and quasi-organizational links among firms are not simple to dissolve. Vertical relationships among firms in Japan are one of the important reasons for resistance to change. It is not rare for a firm to continue its stagnant businesses due to the relationship with its distributors or subcontracting suppliers.

The aforementioned four differences, i.e., differences in growth rates, capital markets, labor markets, and vertical interfirm relationships, are differences in the environment in which the firm operates.

One more reason which causes differences in diversification patterns between American and Japanese firms can be attributed to the different orientation of top management in both countries. There are many finance-oriented people among American executives. They manage the firm from a financial standpoint and think of the firm as a collection of just one managerial resource: money. The management's basic problem is how to invest that money in the most efficient way. Of course, this description of American management is open to the charge of oversimplifying, but nonetheless it is probably true to a considerable extent.

What would be the reason for this basic financial orientation of American top management? One of the reasons that can be mentioned is that, among American executives, there are few that, in their youth, worked in production

activities at the factory floor level or in sales activities in the sales department. There are many people who, immediately after graduating from business schools such as Harvard and Stanford, are assigned to the finance or planning departments, and later reach the top echelons of the firm without having had direct experience with production and sales.

On the other hand, Japanese top management is basically operation-oriented. Japanese executives think that their job is to manage the business adequately. The company embodies different managerial resources, such as people, equipment, production facilities, money, information, etc., but money does not enjoy the highest priority. Rather great importance is attached to resources that have a strong bearing on operations, such as human resources, technology and marketing know-how.

The roots of this operation orientation of Japanese executives can be found in their career paths. After graduating from college and joining a firm, they are first assigned to the field, be it the factory, the sales department, the laboratory, etc. Then, in these kind of posts, they are exposed during rather long periods to production activities, sales activities, R & D activities, and so on, and they acquire valuable experience. Japanese top management is basically field-oriented. In contrast with American executives, many of whom do not have field experience, Japanese executives with no field experience are the exception.

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# FINANCIAL DEREGULATION AND FINANCIAL RELATIONSHIPS BETWEEN JAPAN AND AUSTRALIA\*

Kenichi ISHIGAKI

## I Introduction

In the 1960s the basis of the Japan-Australia economic relationship was the trade relationship. Recently, however, some important changes have occurred. Although Japan is still the most important trade partner for Australia and Australia is also an important trade partner for Japan, their importance to each other is declining except for Japanese export to Australia. On the other hand, capital and, in particular, the financial relationship between the two countries is becoming more important.

These changes are closely related to the deregulation of the financial system in both countries. For example, this deregulation, especially Australia, has made it possible for banks to establish local banks or branches in each country and conduct banking business.

The main purposes of this paper are as follows; ① to review the content of deregulation in both countries (part II) and examine its effects on financial flows between the countries (part III); ② to make clear the banking business of Australian banks in Tokyo and Japanese banks in Australia, and examine the problems which they are facing now (part IV and V-1~3); ③ to find out the

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effects of the entry of banks especially Japanese banks into the Australian market on Australia-Japan economic relationships (part V – 4).

## **II Financial Deregulation in Australia and Japan**

One of most remarkable and common economic changes in Australia and Japan during the last decade is deregulation of the financial system in both countries.

### **II – 1 Australian Case**

Australian monetary authorities had strictly controlled financial institutions, especially banks up until the end of the 1970's. At the same time, the State governments had not so severely restricted activities of non-bank financial institutions such as finance companies, building societies, credit unions and so on. This asymmetry of regulation on banks and non-bank financial institutions resulted not only in the decrease of importance of the former as financial intermediaries and increased the importance of the latter but also decreased the efficiency of resource allocation because of restrictions on competition among financial institutions. Government securities market and the foreign exchange market also were regulated strictly by the authorities. In addition, the circumstances surrounding the Australian financial system had changed very drastically during the preceeding three decades. The Australian economy had enjoyed prosperity during the 60s, however it suffered from high inflation and severe unemployment during the 70s. The high inflation rate induced high interest rates. The effects of the development of international financial markets and financial innovation were permeating into the Australian financial markets. Money supply control policy, which was adopted in replacement of a Keynesian type monetary policy in 1976, was not conducted particularly well under the regulated financial system.

Against this background, the Conservative Government established the Committee of Inquiry into the Australian Financial System (the Campbell Committee) in January 1979. Since then, both the Liberal and Labor government have advanced deregulation of the Australian financial system very rapidly. The deregulation is divided into three main parts; banking sector, government securities market and foreign exchange market.<sup>1)</sup>

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1) See Committee of Inquiry into the Australian Financial System [1], [2] and the Review Group [14].

a. Deregulation of Banking Activities

The main deregulations on banking activities which have been implemented since 1979 are deregulation of interest rates, maturity of deposits, bank portfolios and entry to banking.

At the beginning of the 1980s, the Australian monetary authorities decided to take steps to liberalize the financial system. The first big step, in Dec. 80, was to abolish the ceiling on interest rates on bank deposits except checking accounts. The abolition of the ceiling resulted in a narrowing of the margin between market interest rates and interest rates on bank deposit. In August 1984, the prohibition of bearing interest on checking accounts was lifted. Now both trading banks and savings banks can freely set interest rates on all deposits.

The Reserve Bank of Australia had controlled interest rates of lending, especially overdrafts, as well as interest rates on deposits although its controls on the former were not as strict as on the latter. Traditionally, Australian banks provided finance to customers through overdraft, and the Reserve Bank had imposed a ceiling on the interest rate. The Reserve Bank gradually eased its controls on the interest rate of lending, and in April 1985, it advised banks that these remaining ceilings on their lending interest rate other than for housing loans had been removed. Finally in 1986, the ceiling on housing loan were abolished.

For many years the Reserve Bank had controlled maturities of fixed deposits between 3 months and 24 months. However, with the deregulation of finance in the 80s, maturity controls on fixed deposits of trading banks and saving banks were eased and finally abolished in August 1984. This deregulation made it possible for banks to raise funds at the market interest rate in the short term money market and manage their liabilities very flexibly and efficiently.

Monetary authorities had controlled bank portfolios in various ways in order to implement monetary policy. Direct controls on portfolios of trading banks and saving banks through the quantitative guidance on lending of trading banks and SRD/LGS control very severely restricted lending activities and portfolio management of both banks. However almost all these controls were eased during the first half of the 1980s. Trading and savings banks have extended financial activities and improved the management of assets and liabilities since the deregulation of financial activities.

The Australian Government had prohibited foreign banks' entry into the Australian banking sector except for the Bank of New Zealand and the National

de Paris which had been permitted to enter into banking business before World War II. In addition, there was no bank entry from domestic interest until the 70s. At the end of the 1970s, there were only six major trading banks and six small banks. Furthermore, monetary authorities controlled the price of their products and restricted their activities. Therefore the Australian banking market was a typical conservative oligopolistic market.

However the establishment of the Campbell Committee, together with other factors, made it feasible for foreign banks and domestic interests to enter into the banking market. The Australian Bank was established in February 1981. The process and development of the investigation and discussion at the Committee revealed that the Committee and the monetary authorities had a positive attitude toward foreign bank entry into the banking system. Taking account of possible invasion of powerful foreign banks, after complicated negotiation, the two big mergers finally occurred in 1981. One was the merger between the Bank of NSW and the Commercial Bank of Australia, and the other was the merger between the National Bank of Australia and the Commercial Banking Company of Sydney. The former is now named Westpac Banking Corporation, the latter the National Australia Bank. ANZ Bank, who did not succeed in merging with domestic bank, took over an English bank, the Grindly bank in 1983 in order to strengthen its international banking business.

On the recommendation of the Campbell Report in 1981 and the Martin Report in 1984, the Treasurer issued a statement in February 1985 that following consideration of 42 applications, the Government had selected 16 new banks including 3 Japanese banks which would be invited to establish local banks rather than branches in Australia. The Australian government had particular regard to the need to secure an appropriate regional distribution taking account of trade and other economic factors, foreign relations and reciprocity consideration. In September 1985, the Chase Manhattan/AMP bank started its banking business as the first new foreign bank entry and was followed by Barclays Bank in the October, the Bank of Tokyo in November, and City Bank in December 1985. Now 16 new foreign banks including the bank of China are doing banking business in Australia.<sup>2)</sup>

At the same time, the Australian Government temporarily eased regulations on foreign investment of merchant banks and authorized 65 new foreign merchant banks in Australia.

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2) 16 new foreign banks were authorized to conduct banking business, but the Morgan Bank does not start the business yet. Besides them, Bank of China was permitted to open its branch and it already started banking business in Australia.

In addition to entry of foreign interests to the banking market, new entries from domestic interests occurred. In February of 1985, the NSW Building Society submitted a plan to become a savings bank (Advanced Australian Bank) and was authorized by Treasurer. In March of 1983, a merchant bank, Hill Samuel Australia started its trading banking business as the Macquarie Bank. New entries from both domestic and foreign interests, together with other deregulations of the financial market, contributed to the change from non-competitive oligopolistic banking market to a competitive one.

#### b. Deregulation of Foreign Exchange Market

The second major aspect of the deregulation of the Australian financial system is related to the government intervention into the foreign exchange rate and transactions in the foreign exchange market. At the beginning of the 70s, major countries adopted a floating exchange rate system in place of a fixed exchange rate system. The Australian exchange rate system also changed during the 70s, but the system was not the same as a floating rate system because the exchange rate was not determined by the supply and demand for foreign exchange in the market but by the monetary authorities. They intervened in both spot and forward market in order to restrict the speculative and disturbing movement of short-term capital flow. Exchange controls on the spot market included 30 days rule, variable deposit requirement, embargo on short-term borrowing, restriction on foreign investment by Australian residents, control on interest-bearing investments in Australia by nonresidents, and so on. Exchange control on forward markets included 7 days rule, embargo on entry to forward markets by nonresidents, prohibition of risk cover with capital transaction in official market.

In the 70s and the early part of the 1980s, however, the need for and effectiveness of exchange controls came to be widely questioned. In addition, monetary authorities had recognized the conflict between the money supply control policy and the foreign exchange policy.

The first big step toward liberalization of the foreign exchange market was in October 1983. The Reserve Bank phased itself out of direct involvement in forward exchange. The next big step was the Government's decision to float the Australian dollar and to abolish a major part of the existing exchange control in December 1983. The third big step was in June of 1984. Forty companies were authorized to deal in foreign exchanges on the same term as bank dealers. Apart from the tax screening provision and foreign investment policy, the only controls retained in terms of the Banking (Foreign Exchange) Regulations as at

the end of June 1984 related to investments in Australia by foreign governments, their agencies and foreign banks including central banks and on the carrying or sending of Australian notes and coins out of Australia.

These three steps toward the liberalization of the foreign exchange market made the Australian foreign exchange market wider, deeper and more flexible and increased freedom of capital flow in and out of Australia.

### c. Deregulation of Government Securities Market

The third major aspect of deregulation of the Australian financial system is related to the government securities market. The Australian Government's intervention was based on its willingness to depress the interest rate below the market rate which would prevail otherwise. This system had some merit if the monetary authorities conducted monetary policy based on interest rate targeting. However, they abandoned the interest rate targeting policy and adopted monetary targeting policy in 1976 because of high inflation and unemployment at the time.

In December 1979, the Treasurer notified the change in the issuing system for Treasury notes from a tap system to a tender system. The next step in April 1980 was the change in the issuing system of Treasury bonds, that is medium and long term government bonds, from a periodical issues system to a tap system. It was followed by the Loan Council's determination in June 1982 to manage the issuing method of Treasury bonds from a tap system to a tender system. The Loan Council approved that the Treasurer would determine the timing of the tenders and the quantity of the Treasury bonds sold. Prior to this, the Loan Council had determined aggregate annual borrowing programmes of the authorities of the Commonwealth and State Government as well as of those of governments themselves. It prescribed maximum terms and conditions for various categories of public sector borrowing, determined the allocation of programmes between States, regulated the timing of public loans in Australia and approved the term, conditions and timing of overseas borrowing. However, after some easing of those regulations, in June 1983, the Loan Council freed all the larger semi-government borrowers from its control as to the term, conditions and timing of their borrowing. Although the overall annual total would still be set, a former chairman described the changes as 'a de facto dissolution of the Loan Council'.

In addition to the deregulation of the issuing market of government securities, the Treasury liberalized their secondary markets, especially the easing of compulsory or tax induced holding of government securities by

financial institutions such as authorized money market dealers, life insurance companies, savings banks. Further, transaction arrangements between the Reserve Bank and financial institutions have changed. Until the end of 1984, the Bank dealt in government securities with the authorized money market dealers alone. In January 1985, the Bank started to deal in securities beyond one year maturity through a variety of financial institutions selected from amongst the trading banks, merchant banks, life insurance companies and authorized dealers.

The deregulation of government securities transactions together with the introduction of the new arrangement for transactions means that the interest rates of government securities are determined in the market and it stimulates the width, depth and flexibility of the government securities market.

## **II – 2 Japanese Case**

In Japan as well as in Australia, deregulation of the financial system has advanced during the last decade. The driving forces behind the deregulation of the Japanese financial system is the issues of a large amount of government deficit bonds since 1975 and internationalization of the financial system. The first step toward deregulation was induced by the issue of a large amount of national bonds and the development of a secondary market for national bonds. In the 1980s, while the national bond problem is still significant, internationalization of finance has begun to make wide and deep effects on the deregulation of the financial system.

The deregulation of the financial system in Japan is divided into three main parts; (1) interest rate control, (2) demarcation of financial institutions and entry of foreign financial institutions to the market, (3) international capital flow.<sup>3)</sup>

### **a. Deregulation of Interest Rate**

Since 1975, the Government has been offering massive amount of bonds to cover big budget deficits, acting as the largest borrower in the market. A number of measures have been taken to help in the floating of government bonds (Table 1). In the process, issuing interest rates have become more and more consistent with the prevailing market yields. This deregulation of the interest rate on government bonds has stimulated the liberalization of interest rates in the banking business. While lending rates except the prime rate were not regulated by the government, interest rates on all kinds of deposits were controlled strictly by the government. In addition, Japanese customers have

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3) See Kinyu Mondai Kenkyukai [5], Ministry of Finance [6]



**Table 1. Measures Taken to Help  
Offering Government Bonds**

Dec. '75	• Issue of deficit-financing bonds started.
Jan. '77	• Five-year discount notes were first offered.
Apr. '77	• Resale of deficit-financing bonds held by syndicate banks were allowed. (one year or more after issue, the same measure was taken for construction bonds in Oct. '77.)
June '78	• Auction of three-year government notes started (two-year notes and four-year notes followed in June '79 and June '80, respectively)
Dec. '79	• Bank accounting rule was changed to allow the choice between the cost method and the lower-of-cost-or-market method for valuation of government bond holdings.
Jan. '80	• Medium-term government bond fund was introduced by securities companies.
May '80	• Restriction on resale was eased. (7-9 months after issue)
Apr. '81	• Restriction on resale was eased. (around 100 days after issue)
Fed. '83	• Fifteen-year floating rate bonds were first offered to trust banks.
Apr. '83	• Direct sale of government bonds by syndicate banks to individuals were allowed. (long-term bonds only, resale of other bonds were allowed in Oct.)
Sept. '83	• Twenty-year fixed rate bonds were first offered to life insurance companies.
June '84	• Banks were allowed to act as dealers in the markets. (bonds with maturity of less than two years only)
June '85	• Full-scale bank dealing started.
Oct. '85	• Government bond futures were introduced.
Feb. '86	• Treasury bills were first auctioned.
Mar. '86	• Long-term government bond fund was introduced.
Apr. '86	• Restriction on resale by banks was eased. (around 10 days for dealing account, around 40 days for investment account.)

Source; Nomura Research Centre [7]

**Table 2. Deregulating Capital Flows**

Dec. '80	• Relaxation of Foreign Exchange Control Law.
June, July '82	• Insurance companies are allowed to hold foreign CPs and CDs.
Nov. '83	• Finance Ministers of the U.S. and Japan agreed to set up the so-called Yen-Dollar Committee to promote internationalization and deregulation of the Japanese Financial Markets.
Apr. '84	• Real-demand rule in forward exchange contracts was abolished. • Domestic sales of foreign CPs and CDs were allowed. • Restrictions on the issue of Yen-denominated foreign bonds were eased.
May '84	• Final report of the Yen-Dollar Committee was submitted.
June '84	• Swap quotas were removed. • Short-term Euro-yen loans were permitted.
July '84	• Restrictions on the issue of Yen-denominated foreign bonds were relaxed.
Nov. '84	• Foreign currency, exposure limit of authorized forex banks were raised.
Dec. '84	• Short-term Euro-yen CD issues were allowed. • The eligibility standard for non-residents Euro-yen Bond issues was eased.
Apr. '85	• Long-term Euro-yen loans to non-residents were permitted.
June '85	• Dual currency bond, floating rate bond, etc., were allowed to issue.
Jan. '86	• Domestic sales of warrants issued by Japanese companies were permitted.
June '86	• Foreign commercial banks were allowed to issue Euro-yen bonds.
Dec. '86	• Tokyo Offshore Markets (JOM) started.

Source; Nomura Research Center [7]

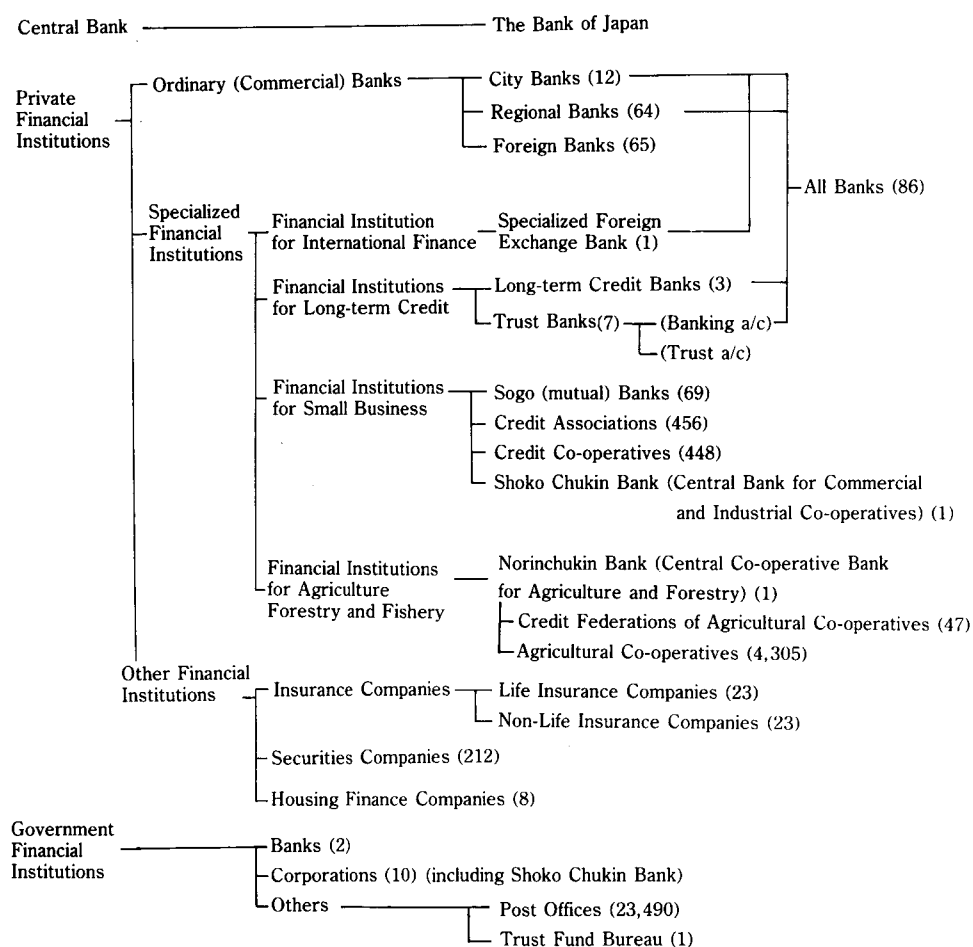
become sensitive to interest rates when they chose their portfolios. Banks have recognized that if they are not able to offer attractive interest rates to customers, they will lose deposits. CD, of which interest rate are not regulated by the government, were first issued in 1979. In April 1985, the minimum unit of CD were reduced from 300 million yen to 100 million yen and the maturity of CD was extended from 3~6 months to 1~12 months. Secondly, in March 1985 MMC (Money Market Certificated), of which interest rate is linked with CD rate, were issued. Initially their minimum unit was 50 million yen, and was reduced to 20 million yen at the beginning of 1987. Regulation on large size time deposits above 1 billion yen with maturity of more than 2 years was abolished in 1985. The minimum unit is gradually being decreased to 100 million yen. At the same time, monetary authorities are also deregulating interbank deposits (as well as large size time deposit). However regulation on small size deposits still remain. With deregulation of interest rates, the short term money market has also developed. However, in comparison with the US money market, the size of the market is still small relatively. In addition, the interbank market in Japan is not as flexible as the US Federal Fund market. The call market serves as a vehicle for the settlement of banks reserve position, while the bill discount market serves the longer term needs ranging from one to four months, of participating financial institutions. These markets are part of the larger short-term money market and, as such, differ from the CD and Gensaki market in that they are closely involved in monetary and credit control by the Bank of Japan, as well as the fact that participation is limited to financial institutions. The rates are influenced by the BOJ's basic monetary policy. Thus compared to other short-term money markets, these markets are relatively closed to arbitrage activities.

b. Deregulation of the Line of Demarcation between Financial Institutions

Japanese banking system has a structure based on ordinary commercial banks – 13 city banks and 64 regional banks – as its nucleus and various specialized financial institutions in charge of international finance, long-term credit, small business finance, and credit for agriculture, forestry, and fishery. In the same way as in the United States, but unlike in European countries, there is a sharp distinction between banking business and securities business based on the Article of the Security Transaction Law in Japan, except for the underwriting and dealings of public bonds such as government bonds. Insurance is also a separate area (Chart 1). However recent developments in the deregulation of the financial market and changes in financial structure are contributing to

**Chart 1. Organization Map of Principal Financial Institutions**

(As of the end of 1984)



Note: The number of institutions appears in the parenthesis. Source: Federation of Bankers

Associations of Japan [3]

blurring the line of demarcation. The line of demarcation between financial institutions providing short-term credit such as ordinary banks, mutual banks and credit association and financial institutions providing long-term credit such as long-term credit banks and trust banks is gradually blurring. The former are extending long-term credit and the latter are enlarging short-term credit. In addition the line of demarcation between financial institutions for small business and other financial institutions is also blurring. The weight of small business loans from the former is declining and rising the latter. Finally the line of demarcation between the banking business and the securities business is blurring. Securities companies were authorized to introduce medium-term government bond funds, similar to time deposits, in January 1980. On the other hand, direct sale of government bonds by syndicate banks to individuals was permitted in April 1983, and banks were allowed to act as dealers in the market.

Although the Japanese Government had authorized seventy-seven foreign banks including four Australian banks to establish their branches in Japan based on reciprocity, it had not permitted them to participate in trust banking in Japan. Access of foreign banks to the Japanese financial market, however, has gradually come to be eased. The Government authorized nine foreign banks to operate trust banking in Japan in 1985.

In addition, access to the securities business and membership to the Tokyo Stock Exchange has also been eased recently. At the end of 1984, there were only 10 foreign securities companies in Japan. Thirty-eight foreign securities companies opened their branches in 1987. Although Article 65 of the Security Transaction Law prohibits banks from operating securities business, the Japanese Government authorized some foreign banks to establish Tokyo branches of affiliated securities companies of which they own no more than 50 percent of capital.

Although lines of demarcation, as mentioned above, are blurring in Japan, deregulation is not advancing very rapidly. Differences in financial systems based on historical circumstances and laws between Japan and foreign countries are producing some financial conflicts.

### c. Deregulation of International Capital Flows

The deregulation of capital transactions, mainly direct investment into and from Japan proceeded during the 70's, but the Japanese Government, based on foreign exchange control laws controlled portfolio investment and short-term capital flows very strictly. Relaxation of the Exchange Control Law in December 1980, made capital inflow and outflow free in principle except in special cases

(Table 2). It abolished controls on impact loans and promoted foreign currency deposit transactions and enlarged the Tokyo dollar market. In July 1982, insurance companies were allowed to hold foreign CPs and CDs. Finance ministers of the U.S. and Japan agreed to set up the so-call the Yen-Dollar Committee to promote internationalization and deregulation of the Japanese financial markets in November 1983. In 1984, real-demand rule for forward exchange contracts was abolished. Domestic sales of foreign CPs and CDs were allowed and banks including foreign banks were able to make yen denominated foreign loans without any controls.

The Final Report of the Yen-Dollar Committee recommended the deregulation of Euro-yen market. Short-term Euro-yen loans to residents, and short-term Euro-yen CD issue were allowed, and the eligibility standard for nonresident Euro-yen bond issues was eased in 1984. Long-term Euro-yen loans to nonresidents were allowed and foreign commercial banks were allowed to issue Euro-yen bonds. In addition, the Japan Offshore Market started to promote internationalization of yen. Deposits in the market are not subject to interest rate control, regulation of deposit insurance or reserve requirements. However income and local tax rate is relative high (52~54%) and stamp duty is necessary. Deregulation of international capital flows by the authorities tapped huge liquidity into foreign securities. Outstanding foreign securities held by financial institutions reached ¥32 trillion or US\$ 202 billion at the end of 1986.

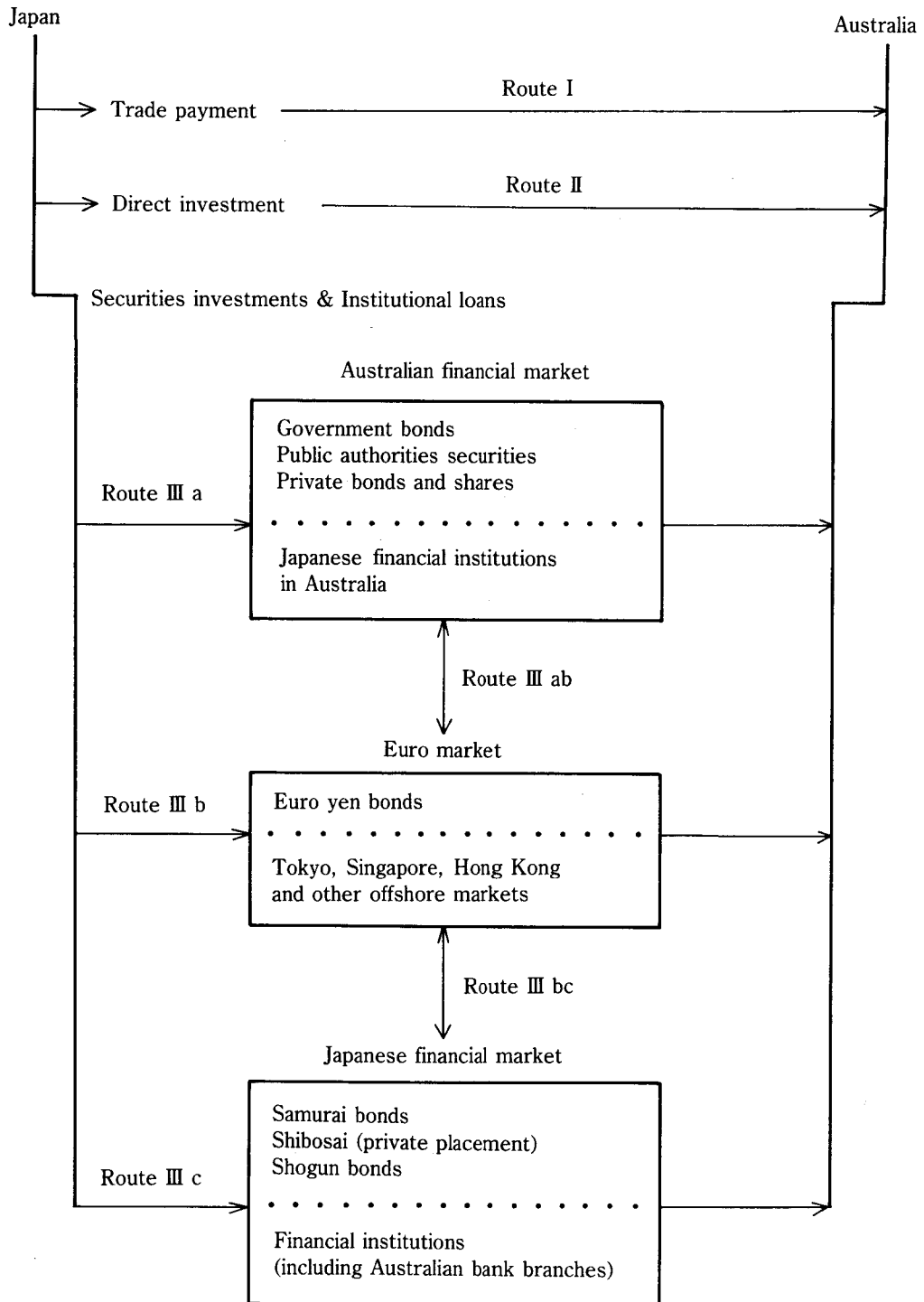
### **III Financial Aspects of Japan-Australia Economic Relationship**

Chart 2 shows a simplified flow chart of funds between Australia and Japan. There are three main routes of fund flow: (1) flow with trade payments (Route I), (2) flow with direct investment (Route II), (3) flow with portfolio investment and institutional loans (Route III). The third one is divided into three smaller routes; (1) route through the Australian financial market (Route III a), (2) route through the Euro market (Route III b), (3) route through the Japanese market (Route III c). It should be noted that these three markets are not separated but linked (Route III ab, Route III bc and Route III ac).

#### **III - 1 Financial Flow with Trade Payments (Route I)**

Substantial complementarity in resource endowments, a strong interdependence in industry and trade structures and a shared recognition of the benefits of stable economic growth have been central to the development of Australia-Japan

**Chart 2. Flow of Funds between Japan and Australia**



economic relationship over the last thirty years. However, the long-term restructuring of Japanese economy and the slow down in Japanese economic growth impacted on Australia export performance to Japan. Australia's share of total Japanese imports (by value) has fallen from a peak of 9.4% in 1972 to around 5% in the period since 1980. Although Australia is still important to Japan as a supplier of specific commodities such as coal, iron ore, beef and wool, the importance is declining. Australian trade surplus with Japan is decreasing. While it was US\$ 3050 million in 1976, it was US\$ 1750 million in 1986. Net flow of funds with trade payments is shrinking gradually.

### **III - 2 Direct Investment and Portfolio Investment from Japan to Australia (Route II and Route III)**

The importance of direct investment and other portfolio investment from Japan and the financial relationship between the two countries has been increasing. Japanese direct investment in Australian enterprises increased gradually during 1960s and 1970s, and it increased more rapidly from US\$ 146 million in 1977 to US\$ 566 million in 1979 because of increase in investment in the manufacturing industry and mining industry. It remained at a high level in 1980-82. However it drastically declined in 1983 and 84 because of recessions in Australia and the rest of the world.

Japan's relative importance as a source of direct investment in Australian enterprises has remained largely unchanged since the late 1970s, ranking third behind U.K. and U.S.

The main thrust of Japanese direct investment in Australian enterprises is still directed towards mineral and energy exploration and development. However other investments have recently shifted from manufacturing toward service industries such as finance and insurance, and the tourism industry. Of the total stock of Japanese foreign investments in the Oceanian Area, where Australia is main country, at the end of 1985, US\$ 1351 million (33%) was in the mining sector, US\$ 1551 million (37%) in the service industry, and US\$ 1054 million (25%) in the manufacturing industry.

However the main route of financial flows from Japan to Australia is not direct investment (Route II) but portfolio investment and institutional loans (Route III a). As Table 3 shows, Japanese direct investment in Australian enterprises is only 30% of total Japanese investment in Australia and the share seems to be declining. The main form of capital flow is now the portfolio investment and institutional loans. It comprises mainly of borrowing (96%), with the remainder in corporate equities (3%).

**Table 3. Japanese Foreign Investment in Australian Enterprises 1974-75 to 1983-84**

	<i>Japanese direct investment in Australian enterprises</i>		<i>Japanese portfolio investment and institutional loans in Australian enterprises</i>		<i>Total Japanese investment In Australian enterprises</i>	
	<i>Share of total Japanese investment in Australian enterprises</i>	<i>Japan's share of direct foreign investment in Australian enterprises</i>	<i>Share of total Japanese investment in Australian enterprises</i>	<i>Japan's share of portfolio foreign investment in Australian enterprises</i>	<i>Japan's share of total foreign investment in Australian enterprises</i>	
	\$m	Percent	Percent	\$m	Percent	Percent
1974-75 .....	55	82.1	8.4	12	17.9	3.5
1975-76 .....	84	85.7	14.6	14	14.3	5.0
1976-77 .....	85	61.6	8.0	53	38.4	11.0
1977-78 .....	119	60.4	11.4	78	39.6	28.0
1978-79 .....	66	23.7	4.9	213	76.3	34.4
1979-80 .....	218	51.7	14.2	204	48.3	13.8
1980-81 .....	320	40.7	13.4	466	59.3	12.8
1981-82 .....	427	34.7	19.5	801	65.2	11.1
1982-83 .....	405	18.5	45.4	1786	81.5	23.4
1983-84 .....	394	34.4	17.8	750	65.6	11.6
Ten Year Total .....	2173	33.2	15.6	4377	66.8	15.4
						6551
						15.5

Source; Treasury [16]



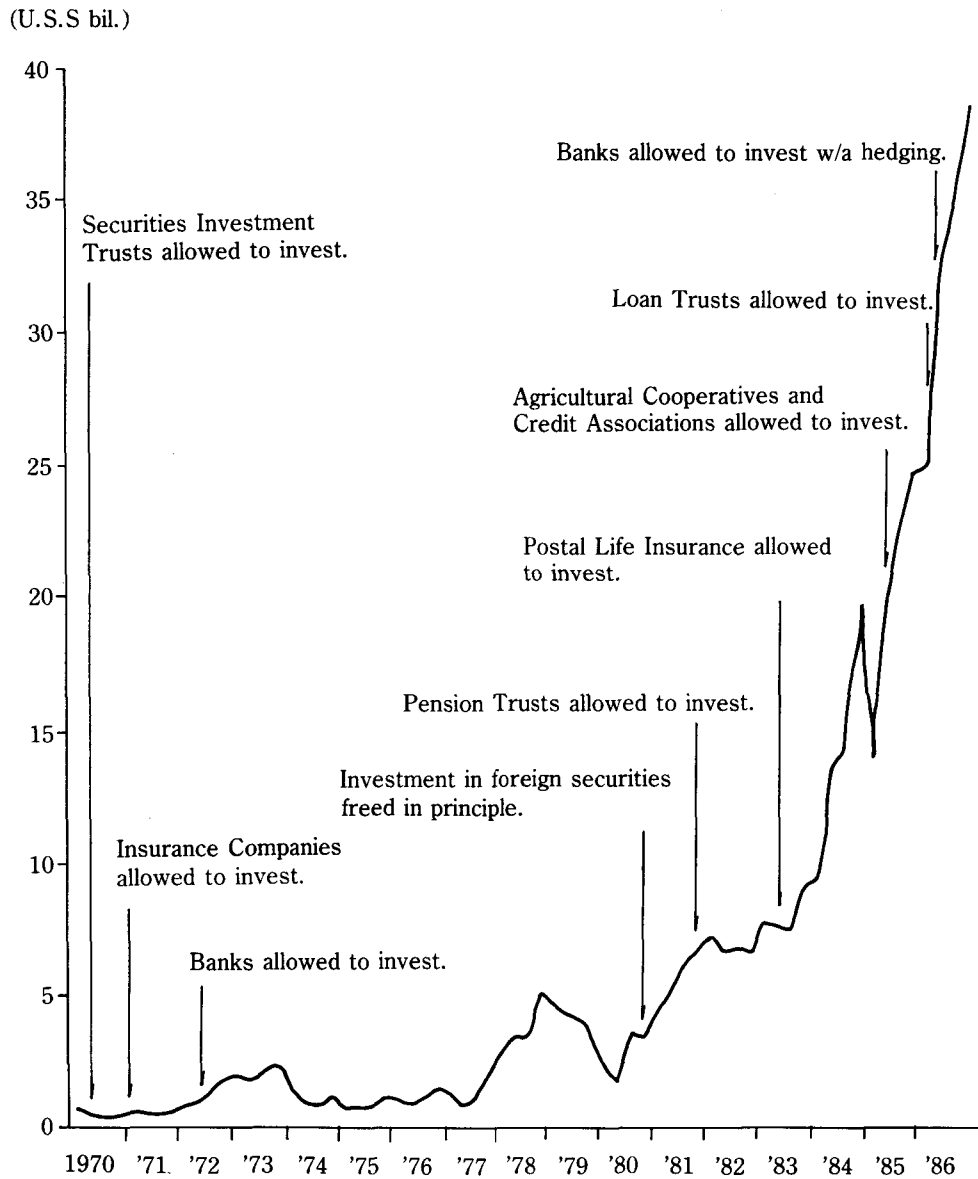
One of features of recent Japanese investments including direct investment in Australian enterprises is the sharp decrease in corporate equity holding. It reflects the lack of domestically available capital for big energy and resource development projects and large increase in borrowing by public authorities. It also indicates that foreign investors including Japanese prefer bonds to equities in view of high interest rates on bonds and relative low profits rate on equity because of recession in the first half of 1980s.

Another feature of recent Japanese investments in Australia is increase in investment in the Australian dollar securities in the form of bonds issued by Australian public authorities and the Australian Government. Prior to 1982, Japanese institutional investors were not very interested in Australian dollar securities. In 1981, they invested only US\$ 148 million in Australian dollar securities, only 1.4% of total Japanese investment in foreign currency securities. However in 1982, they invested US\$ 1906 million, 10.5%. Since then investment remained at a high level although the share is declining. Japanese investment in Australian dollar denominated public sector securities has represented a substantial proportion of all foreign investments in such securities. As of 30 June 1984, Japanese investments in Commonwealth government securities were AU\$ 1066 million, 69% of total investments in such securities by overseas investors. The main Japanese buyers are life insurance companies, general insurance companies and trust banks.

Reasons for the huge increase in investment in Australian dollar denominated securities are as follows. Firstly, in 1980-82, major Japanese insurance companies and trust banks established representative offices in Australia and they gathered information about the Australian economy and Australian securities. Secondly, in contrast with the rise in the credit risk of developing countries, Australia's name and credit standing was still high. Japanese investors recognized that not many countries had such a low country risk as Australia. Thirdly, taking into consideration expectation of exchange rates and interest rates, Japanese investors preferred Australian securities to other foreign bonds. Fourthly, in the beginning of the 1980s the Japanese Government amended the Foreign Exchange Control Law and deregulated investment in foreign currency denominated securities (Table 2, Fig. 1).

The Australian public sector has raised funds not only in domestic markets but also in overseas markets. In 1972 the Australian Government initially issued government bonds in the Samurai market in Japan (Route III c). Until the end of 1985, a total of 9 yen-denominated borrowings by Australian Government amounted to ¥340 billion. It also had a total of 5 yen syndicated institutional

**Fig. 1 Deregulation of Foreign Securities Investment**



Source; Nomura Research Institute [9]

**Table 4. Australian Bond Issue Related with Japan**

① Australian Bond in Yen (Samurai Bond, Public Issue)						
	Date	Amount (100ml)	C.R. (%)	Issue Price (Yen)	Term (Year)	Yield (%)
Australian National Bond (No.1)	1972. 7	100	6.90	100.00	10	6.900
(No.2)	1978. 2	500	6.60	99.30	12	6.705
(No.3)	1978. 12	300	5.60	99.75	5	5.664
		200	6.50	99.25	10	6.624
(No.4)	1979. 12	300	8.20	99.50	12	8.283
(No.5)	1981. 6	200	8.50	99.45	12	8.593
(No.6)	1982. 5	200	8.00	99.95	10	8.009
(No.7)	1983. 6	200	8.00	100.00	10	8.000
(No.8)	1984. 8	500	7.70	99.75	10	7.744
Victoria P. A. F. A.	1985. 2	300	6.70	100.00	10	6.700
Australian National Bond (No.9)	1985. 10	900	6.40	100.00	12	6.400
② Australian Bond in Yen (Shibosai, Private Placement)						
Qantas	1979. 10	30	7.80	100.00	5	7.800
		42	8.00	100.00	8	8.000
		30	8.20	100.00	12	8.200
P. A. (W. A)	1981. 3	75	8.70	99.40	15	8.792
P. A. (Qu)	1982. 1	100	8.60	99.75	12	8.642
P. A. (Vic)	1982. 6	100	8.50	100.00	12	8.500
P. A. (NSW)	1982. 11	50	9.00	100.00	10	9.000
P. A. (W. A)	1983. 1	50	8.70	100.00	10	8.700
P. A. (Qui)	1983. 6	50	8.50	100.00	10	8.500
P. A. (Qu)	1984. 6	50	7.90	100.00	10	7.900
P. A. (Melborne)	1984. 12	50	7.50	99.45	10	7.596
P. A. (W. A)	1985. 10	100	6.50	100.00	10	6.500
③ Euro Australian Bond in Yen						
Australian National Bond (No.1)	1981. 7	150	8.50	100.00	10	8.500 (London)
(No.2)	1982. 10	150	8.625	100.00	10	8.625 (London)

Source; Ministry of Finance [6]

loans amounting to ¥240 billion. The Victorian Public Authorities Finance Agency also issued Samurai bonds in the market in 1985 (Table 4-①).

In addition to public issues in the Samurai market, Australian public authorities raised Yen funds through private placement of 'Shibosai' bonds in Japan. In 1979 Qantas initially issued Shibosai amounting to ¥72.7 billion at the end of 1985.

Borrowing by public authorities in international capital markets including the yen market had been controlled by the Australian Loan Council. If first permitted access to overseas markets in conjunction with the adoption of a system of 'global' limits on both their domestic and overseas borrowings in 1984. Access to the Samurai market by public authorities was permitted in September 1984.

At the same time, the Samurai market began operating under more liberal guidelines designed to achieve further internationalization of the yen. The Japanese government had strictly controlled the size and frequency of bond issue and maturity of Samurai bonds. However the recent deregulation in Japan relaxed the issue conditions, especially issue amount and timing. This also benefitted Australian public and private borrowers.

Commonwealth Government raised funds not only in the Japanese capital market but also in the Euro market (Route III b). It raised funds in 1981 and in 1982 (Table 4-③). Since then, the Australian Government has not raised funds in this market. However the Euro yen bond market has been growing very rapidly, especially since 1985. At the end of 1984, the Japanese Government relaxed non-resident bond issues in the Euro yen market. Previously, only international organizations and sovereign governments ranked 'AAA' by the US credit rating agencies and who had accessed the Samurai market on at least three occasions were able to borrow in this market. From 1 December 1984, non-resident private corporation, sovereign government, government agencies and international organization were allowed to issue bonds in the market and Japanese and foreign banks were permitted to issue Euro yen CDs. In April 1985 the Japanese government further eased restrictions in the Euro yen market. As a result, the amount of issues of Euro yen bonds increased drastically from ¥227 billion in 1984 to ¥1446 billion in 1985.

Shogun Bonds (foreign currency denominated bonds) market (Route III c) in Japan was reopened in 1985 reflecting a rapid increase in Japanese investment in foreign securities. This opening enabled issuers including Australian borrowers to directly tap Japanese demand for foreign currency denominated bonds. Unlike Samurai and Shibosai issue, there are no fixed rules regarding

Shogun bonds as to issue amounts, maturities, coupon rates, and the currency. However they are subject to approval by Japanese authorities. Three Australian authorities and one trading bank issued Shogun bonds in this market in 1985 and 86 (Table 5).

#### **IV Activities of Australian Banks in Japan<sup>4)</sup>**

##### **IV – 1 Establishment of Tokyo Branches by Australian Banks**

Four branches of Australian banks, that is Westpac, ANZ, NAB, CBA are now operating in Tokyo. The Westpac branch was the first to be established in September 1985, followed by ANZ and NAB in December 1985, and CBA in June 1986. These establishments were based on the reciprocity that the Australian Treasurer authorized 16 foreign banks including 3 Japanese banks, namely Mitsubishi Bank Ltd., (in partnership with The City Mutual Life Assurance Society limited and Howard Smith Limited), and The Industrial Bank of Japan Limited (in partnership with Western Australian Development Corporation, Town and Country Western Australian Building Society and The State Government Insurance Office of Western Australia) and the Bank of Tokyo Limited (a wholly-owned subsidiary), to establish full banking operations in Australia.

The main purposes and motives for the establishment of these branches are as follows. Firstly, Japan is a major trading partner and Australian banks have had strong customer relationship with Japanese companies in Australia. One of main purposes of establishing a branch in Tokyo is not only to strengthen customer relationship with Japanese corporations in Japan but also to protect business relationship with Japanese customers in Australia. Secondly, since the Tokyo market is one of most important international finance centres, the establishment of branch makes it possible to take business chances and expand their financial activities. Thirdly, the establishment of a Tokyo branch is connected with the global strategy of Australian banks. In the 1980s, Australian banks have expanded their international banking in the world. In addition to the traditional London and New York, four major Australian trading banks have established new branches and subsidiaries in Singapore, Hong Kong, Los Angeles and so on. The extension of their international network is one of the key elements for banks survival in the severe competition stimulated by the

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4) This part is mainly based on my interviews to Australian bankers in Tokyo.

**Table 5. Issue List of Shogun Bonds**

	Signing Date	Closing Date	Amount (mil.)	Maturity (years)	Coupon Rate (%)
World Bank	7/26	8/15	US\$300	10	10.5
Student Loan Marketing Association	8/22	8/29	US\$100	5	9.75
European Investment Bank	9/3	9/18	ECU100	10	8.875
* Victorian Public Authorities					
Finance Agency (Vicfin)	9/20	10/4	A\$60	7	13.625
* New South Wales Treasury Corp.	9/27	10/9	US\$100	7	10.375
Bank of China	9/27	10/18	US\$150	10	10.0
Southern California Edison Company	10/30	11/7	US\$100	8	10.5
China International Trust and Investment Corporation	12/19	12/27	US\$100	10	9.625
Farm Credit Corp.	3/12	3/19	Can\$90	10	9.125
Federal National Mortgage Association	3/26	4/3	¥27,000 (D)	10	7.2
Bank of China	3/26	4/3	¥20,000 (D)	10	7.2
* State Bank of New South Wales	4/24	5/14	US\$100	7	7.125
Hydro-Quebec	7/18	7/31	C\$150	10	9.25
Federal Business Development Bank	8/7	8/14	C\$75	5	9.0
World Bank	8/28	9/3	C\$100	10	9.0
* New South Wales Treasury Corp.	10/17	11/12	US\$100	7	7.75
World Bank	12/10	12/19	US\$200	7	7.375
The Standard Oil Company	12/19	'87 1/13	US\$50	10	7.875
The Standard Oil Company	12/19	'87 1/13	¥8,000 (D)	7	7.875
China International Trust and Investment Corporation	'87 1/13	1/21	¥20,000 (D)	5	7.875
Ciba-Geigy International					
Nederland B. V.	1/28	2/4	US\$50	7	7.5
FHLB	2/13	2/26	US\$200	10	7.75
GTE Finance Corporation	2/18	3/3	US\$100	7	8.0

(D): Dual Currency

\* Australian Issues

Source: Nomura Research Institute [8]

development of the Euro market and the liberalization of financial systems in many countries including Australia and Japan. A Tokyo branch is a very important link for global strategy for Australian banks because of Japan's position in world economy.

Each chief or general manager of the Tokyo branches is Australian. The number of employees of each branch is 66, 62, 40, 28 including 3, 4, 4, 5 Australians respectively. Some branches also employ a few English. The number of employees seems to depend on scales, character of banking business of the Tokyo branch and the date of its establishment.

#### **IV – 2 Banking Business Operation in Japan**

##### **a. Fund Raising**

In March 1987, 79 foreign banks conducted business through 115 branches. Total loans and discounts are ¥5602 billion, which is equal to only 2.0% of total loans and discounts of all Japanese banks. Total deposits of foreign banks are only 0.8% of total deposits of all Japanese banks. Although these figures have not changed significantly over the last ten years, the former figure has been declining recently. This means that the position of foreign banks in the Japanese financial market is still a marginal one.

One of distinctive features of the banking business of foreign banks in Japan, especially funds raising is that, in comparison with Japanese banks, the proportion of deposit and CD is very low and the proportion of call money is very high. Table 6 shows that the proportion of fund raising of foreign banks by deposits is only 12.0% in contrast with 58.2% of all Japanese banks. The main sources of funds for the foreign banks in Japan are short term money market raising – mainly call money –, and overseas branch borrowing. Although the weight of the two sources is different for each foreign bank, on average, the latter is rather larger than the former. The figure for city banks, which are the most internationalized Japanese banks is very interesting. More than 70% of funds are raised in Japanese market.

This feature is reflected in Australian banks activities in Japan. The proportion of deposit and CD in total liability of Australian banks is only 3.5%. This is very small in comparison with not only the figure for Japanese banks but also the figure for all foreign banks in Japan. Australian banks can not receive enough deposits because they are new comers and are not familiar to Japanese customers, even though interest rate ceilings on large size deposits and CD were abolished. They can not collect yen deposits easily not only in the wholesale deposit market but also in the retail market. Some Australian banks,

Table 6. Balance sheet of banks in Japan (31 March, 1987)

	ANZ		WP		NAB		C. B. A.		TOTAL		Foreign banks in JP		All banks in JP	
	(¥100ml)	%	(¥100ml)	%	(¥100ml)	%	(¥100ml)	%	(¥100ml)	%	(¥10bl)	%	(¥10bl)	%
Asset														
cash & deposit with other banks	71	6.0	401	27.9	98	14.1	237	28.4	808	19.5	375	22.5	371	8.2
call loans	124	10.6	102	7.1	26	3.7	192	23.0	445	10.7	185	11.1	158	3.5
bill purchased	20	1.7	30	2.0	—	—	—	—	50	1.2	80	4.8	4	0.1
securities	165	14.1	126	8.8	72	10.3	1	0.0	363	8.7	90	5.4	736	16.3
loan & discount	199	17.0	661	46.0	440	62.9	261	31.2	1561	37.7	560	33.7	2743	60.8
foreign exchange	42	3.6	48	3.4	3	0.5	1	0.1	95	2.3	41	2.5	49	1.0
Sundry accounts	27	2.3	32	2.2	12	16.9	17	2.0	88	2.1	44	2.6	169	3.7
real estates etc.	5	0.4	4	0.3	6	0.8	2	0.3	18	0.4	7	0.4	33	0.7
customers's liability unders acep & guarantee	448	41.6	13	0.9	16	2.3	11	1.3	528	12.7	74	4.4	213	4.7
loans to other branches (Head office and branch)	31	2.6	18	1.2	26	3.7	113	13.6	188	4.5	205	12.2	3	—
others	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total Assets	1171	100.0	1437	100.0	699	100.0	836	100.0	4143	100.0	1660	100.0	4509	100.0
Liabilities & Net worth														
deposits	68	5.8	15	1.0	19	2.7	44	5.2	145	3.5	199	12.0	2624	58.2
CD	—	—	—	—	—	—	—	—	—	—	19	1.0	95	2.1
call money	215	18.3	541	37.6	285	40.8	210	25.1	1250	30.2	450	27.0	210	4.7
bill sold	18	1.5	30	2.1	50	7.2	—	—	98	2.4	37	2.2	153	3.4
borrowed money	145	12.3	99	6.9	148	21.2	60	7.2	451	10.9	173	10.4	50	1.1
foreign exchange accounts	5	0.4	1	0.1	3	—	0	—	7	0.1	8	0.5	7	0.2
Sundry accounts	25	2.1	291	20.2	8	1.1	17	2.0	341	8.2	51	3.1	285	6.3
reserve for loan loss etc.	2	0.2	3	0.2	2	0.2	1	0.2	8	0.2	6	0.3	34	0.8
acceptance & guarantee	488	41.6	13	1.0	16	2.3	11	1.2	528	12.7	74	4.4	213	4.7
borrowings from other branches	206	17.6	445	31.0	171	24.5	496	59.3	1317	31.8	642	38.9	233	5.2
others	—	—	—	—	—	—	—	—	—	—	—	—	481	10.7
Total	1171	99.9	1437	99.9	699	99.9	839	100.4	4145	100.0	1657	99.9	4385	97.2
capital	—	—	—	—	—	—	—	—	—	—	—	—	26	0.6
reserve profits	52	0.04	44	0.03	16	0.02	-4	-0.4	-300	-0.1	2	0.1	84	1.9
others	—	—	—	—	—	—	—	—	—	—	—	—	14	0.3
Grand total	1171	100.0	1437	100.0	699	100.0	836	100.0	4143	100.0	1660	100.0	4509	100.0



however, try to take advantage of retailing AU dollar deposits and NZ dollar deposits to Japanese customers. All banks can sell foreign currency deposits without any regulation of the interest rate. ANZ bank in particular offers attractive high interest rates on AU dollar and NZ dollar time deposit, of which maturity is between one month to 2 years. Although the development of this business depends directly on the movement of interest rates and exchange rates, it may become a profitable business in the future because of high Japanese saving ratio and diversification of their portfolios. Australian banks in Japan raise funds mainly from call money and bill sold, borrowings from their overseas branches and loans from Japanese financial markets. Call money and bill sold means short-term interbank raising through the interbank market. The Japanese short-term money market is composed of two parts. One is a interbank market where only banks and other financial institutions can participate and the other is an open market where not only banks and financial institutions but also general corporations and institutions are participants. Australian banks raise a third of their funds through this interbank market. The other main route of fund raising is borrowing from their overseas branches. Banks can now take Euro yen borrowing from their overseas branches or take Euro dollar borrowings and convert them into yen fund in the exchange market without any government restriction. They arbitrate borrowing in domestic short term markets and in overseas market such as Singapore, Hong Kong, London, New York (Route III bc). Other route, which is not as important as the above two routes, is borrowing directly from Japanese banks and non-bank financial institutions such insurance companies and securities companies. This borrowing includes long-term borrowings.

A very distinguishing feature is that foreign banks depend on funds raised not through deposits but short term money market borrowing in the Japanese domestic market and Euro currency market in comparison with the behaviour of Japanese banks. The share of deposits in total funds of Australian banks is very low (3.5%) even in comparison with foreign banks (12.0%). This means that Australian banks are new comers and, therefore markets do not know them very well.

#### b. Use of Funds

The Australian banks invest raised funds mainly in loans and discount (37.7%). According to my interviews at Australian banks, their main customers for loans are Japanese companies, other foreign companies in Japan, other banks in Japan and overseas branches and companies. One of the distinguishing features of

their loan activity is that they can not have Australian customers in Japan. This contrasts with Japanese banks activities in foreign countries such as Australia. Japanese banks are able to have Japanese companies as important customers from the outset of business in foreign countries. This fact is reflected in the motive to establish a Tokyo branch, one of which is to protect business relationship with Japanese customers in Australia and to strengthen business relationships with Japanese companies in Japan. It is, however, not an easy task for Australian banks to penetrate the Japanese loan market where Japanese banks have had strong customer relationship with Japanese companies and the demand for loans are not so strong as in 1960s. Although Australian banks face difficulties, their main assets are loans and discounts and its share is on average, above that of foreign banks. The short term loans are dominant in their loans. Some banks replied that 90% of their loans are short term. This means that the maturity composition of loans is matched to the maturity composition of their funds.

The second largest asset of Australian banks, on average, is cash and deposits with other banks. The assets are reserve assets and very short term deposits. The third largest is customers' liability for acceptance and guarantee. Call loans are also important (10.7%). Foreign banks including Australian banks are not only active borrowers in the interbank market but also active lenders. They arbitrage very eagerly various short-term money markets in Japan and the Euro market and try to take very small margins between lending rates and borrowing rates. Fifth is securities although one Australian bank had only a very small amount of securities. Japanese government securities are most important for Australian banks and shares are not held by them. Some quantities of bills and short term securities and private bonds are held.

### c. Foreign Exchange Dealing

Banks conduct other business such as dealing in foreign exchange besides lending and borrowing although the business is not necessarily presented on their balance sheets. It is a very important business especially for Australian banks in Japan. Foreign exchange dealings of an Australian bank in Tokyo is composed of dealing in US dollar-yen, AU dollar-yen, NZ dollar-yen, mark-yen and so on. US dollar-yen dealing is dominant, occupying approximately 80% of total foreign exchange dealing, and AU dollar-yen dealing is about 10%.

#### **IV – 3 Some Problems for Australian Banks in Japan**

##### **a. Risk Problem**

In operating banking business such as fund raisings, lending and dealing in foreign exchange, they have to face risk mainly exchange risk, interest rate risk and default risk. Australian banks in Tokyo are supervised by Japanese monetary authorities and subject to some limits on exposure to exchange risk. In addition, they are subject to rigid internal limits in order to avoid exchange loss. They are exposed to exchange risk during inter day and overnight.

They also carefully watch interest rate risk which resulted from mismatching of maturity of borrowings and lendings. Australian banks try to match the maturity structures of lendings and borrowings to avert interest rate risk. However, if they match completely maturity structures, they are not able to make profits. Therefore they undertake some mismatching of maturity structure only within short term, that is six months.

Generally speaking, default risk is very important and common for in banking now but the Japanese economy is still comparatively stable and the main part of loans and discounts of Australian banks are short term, therefore default risk is not explicit.

##### **b. Main Business and Profits Problem**

What is the main business for Australian banks in Japan? The most dominant and profitable business is dealing in foreign exchange. Trade finance and corporate lendings business follows. Table 7 shows statements of incomes and expenses of Australian banks and all foreign banks. If we neglect operating expenses, net incomes from lendings and borrowings of four Australian banks in the 1986 fiscal year is only ¥1505 million. Net incomes from lendings and borrowings of all foreign banks (Table 7, (B + C + D)-(G + H)) is only ¥34600 million. On the other hand, net non interest incomes of Australian banks and all foreign banks in Japan (Table 7, E-J), the main part of which is composed of foreign exchange dealing income, is respectively ¥21100, 102900 million.

If exact data on incomes from dealings of foreign exchange and cost components were available, net profits attributable to foreign exchange dealings could be calculated. Unfortunately, we can not get this information. However, the above data and my interviews with Australian bank officials suggests that the margin of lendings and borrowings business for foreign banks including Australian banks is thin (around 0.1%) and foreign exchange business is now

**Table 7. Statement of incomes and expenses (1st April 1986~ 31 March 1987)**

(¥10 mn) (\*100 mn)

	ANZ	W.P.	NAB	CAB	Total	Foreign bank*
(A) Total ordinary incomes	698	802	319	287	2107	9462
(B) Interest on loans	145	267	111	74	596	3042
(C) Interest and dividends on securities	139	130	40		309	529
(D) Other interest income	264	258	117	180	819	4404
(E) Other ordinary income	151	147	50	34	383	1485
(F) Total ordinary expenses	629	777	316	325	2047	9275
(G) Interest on deposits	14	5	9	46	74	984
(H) Other interest expenses	528	538	236	198	1499	6645
(I) Operating expenses	80	107	52	65	304	1189
(J) Other ordinary expenses	7	128	19	17	170	456
(K) Ordinary profits	69	25	4	-38	59	187
(L) Extraordinary profits and loss	8	1	—	—	9	179
(M) Extraordinary losses	35	2	—	—	36	43
(N) Profits before tax	42	25	4	-38	32	323
(O) Reserve for tax	39	17	3	—	59	194
(P) Profits for the term	3	8	1	-38	-26	129
(B + C + D) - (G + H)	4	112	24	10	151	346
(E) - (J)	144	19	31	17	211	1029

dominant in Japan. It also should be noted that eighteen of all foreign banks and one of four Australian banks made losses in Japan in the 1986 fiscal year.

The data mentioned above indicates that it is not easy for Australian banks and other foreign banks to operate banking business and make profits in Japan. What kind of difficulties and limitations of Australian banks face in promoting banking business in Tokyo? How does the deregulation of the Japanese financial system effect their business? Prior to the deregulation in the 1980s, foreign banks had some privilege in comparison with Japanese banks. Japanese authorities authorized foreign banks to take impact loans from overseas market and gave preferential treatment of yen conversion to them. They enjoyed their business in the regulated market. However, the deregulation of the financial system, especially deregulation of foreign exchange dealings by the amendment of the Foreign Exchange Control Law in December 1980, deprive these privilege of them.

Foreign banks arbitrate between these short term market and Euro yen or Euro dollar markets. However Japanese call market and bill market are not so developed as the Federal Fund market in the USA. One of reason is that interest rates in the interbank market are not necessarily determined by market forces. Sometimes the Bank of Japan intervenes in order to implement monetary policy through money market companies and leaving dissatisfied borrowers in the market. Foreign banks are usually marginal borrowers. Therefore they often become dissatisfied borrowers. In addition, when they want to borrow money in the interbank market, they have to prepare collaterals or, they have to pay a higher interest rate. Usually Australian banks don't have enough collaterals, can not raise funds in the bill discount market or have to pay higher interest rates in the call market. Otherwise, they have to go to the Euro market even when interest rates in the Euro market are relatively high. Under these conditions foreign banks in Japan can not make sufficient profit. Therefore, from foreign banks' point of view, one of the most important problem in doing business is the underdeveloped nature of the short-term money market.

Another problem for foreign banks is that customer relationship between lender and borrowers is very strong in Japan. It is important not only in the loans market but also in the deposit market. If foreign banks offer the same interest rate on deposit as Japanese banks, they do not necessarily get the same quantity of deposits. The ceiling on interest rate of CD and large size deposits was abolished, therefore theoretically even foreign banks might receive enough deposit if they offered an attractive interest rate on deposits. However

the spread of interest rates between lending and borrowing is very thin and even if they succeed in obtaining a large amount of deposits, it is not so easy for them to seek out profitable borrowers without a strong customer relationship. Australian banks are rather new and there are not many Australian companies and individuals in Japan through various ways such as making use of their customer relationship with Japanese companies in Australia and trade relations with Japan and Australia and their international network of branches.

The third problem for Australian banks in Tokyo is that Australian banks are not able to conduct securities business in Japan because of Article 65 of the Securities Transaction Law. In Australia, banks can deal in public bonds. In Japan, Japanese banks and some foreign banks can deal in government securities but Australian banks are not permitted to deal in both Japanese government securities and Australian government securities in Japan. Some Australian banks wish to sell Australian government securities in Japan. The future of dealings in securities depend on the amendment of Article 65 of the Security Transaction Law.<sup>5)</sup>

Australian banks in Japan have some problems as mentioned above. However it seems they are not too pessimistic about their business in Japan. The reasons are as follows. Firstly while they recognize that it is not easy to penetrate the market, the Japanese market is so big that there are many potential business opportunities. Secondly, although they are facing difficult problems as mentioned above, three of four Australian banks, in fact, made a profit in the 1986 fiscal year even though it was the first year of accounting in Japan. One bank made a loss in the year but we can discount this because it just started business in June 1986. Thirdly, their Japanese branch is an important link in their international banking network. International lendings and borrowings, foreign exchange dealings, financial futures are activities that operate continuously around the clock and around the world. An individual bank as a whole may not be able to make a profit in the international banking business without an international business network. Even if the Tokyo branch itself does not make enough profit, the branch contributes to profit of the bank as a whole. Fourthly, they think that the deregulation of the Japanese financial system will advance more in the furture and this will be benefical for their business in Japan.

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5) Recently Ministry of Finance has deregulated securities business, especially acceptance and dealing in public bonds, of foreign banks. In addition, it authorized some foreign banks to establish securities companies subject to no more than 50% ownership. At this stage, Australian banks are not authorized to conduct securities business in Japan. If they apply for public bonds business in near future, they will be expected to be authorized to conduct the business.

## **V Activities of Japanese banks in Australia<sup>6)</sup>**

### **V -1 Establishment of Japanese Trading Banks and Merchant Banks**

As shown in Table 8, there are three Japanese trading banks, namely Bank of Tokyo Australia (BTA), Mistubishi Bank of Australia (MBA) and IBJ (Industrial Bank of Japan) Australia. In addition, twenty-five Japanese merchant banks are in operation. Almost all of these trading banks and merchant banks were established after deregulation in 1985. Since then, many foreign banks and financial institutions have established banks and merchant banks in Australia. Now there are twenty-eight trading banks and more than 150 merchant banks in Australia.

The purposes and motives for the establishment of Japanese financial institutions in Australia are as follows. Firstly, the Australia-Japan trade relationship has been very important, and trade finance including foreign exchange dealings is attractive for Japanese banks. Secondly, Japanese direct investments have increased steadily since the 1970s and many Japanese companies already have been operating business. Thirdly, Australia is a resource rich country and resource-related developments would be expected to increase in the future, therefore it is attractive for Japanese financial institutions. Fourthly, especially in the case of merchant banks of Japanese securities companies, they have the chance to sell Japanese shares and convertible bonds in Australia. Fifth, there is one hour or two hours time difference between Tokyo and Sydney or Melbourne. Sixth, deregulation of entry of foreign financial institutions to the Australian market has had most important direct effects on decisions to establish financial institutions in Australia. Especially, ease of merchant banks entry was thought as one year temporary measure so that many Japanese financial institutions hastened to establish their fully owned financial institutions.

Of three Japanese-owned trading banks, only Bank of Tokyo Australia is fully owned by its parent bank, Bank of Tokyo. MBA and IBJA are jointly owned by their parents bank and Australian companies. On the other hand, almost all Japanese merchant banks are fully owned by Japanese financial institutions. As showned in Table 9, the number of employees at three trading banks is 95, 52 and 65 including 11, 8, 8, Japanese staff respectively. The average number of employees of merchant banks 34 is less than trading banks, but some merchant bank such as Sanwa Australia have a large number

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6) This part is mainly based on my interviews to Japanese bankers and staffs of Reserve Bank of Australia and the Treasury in Australia.

**Table 8. Establishment of Japanese trading banks and merchant banks in Australia**

	Trading Bank	Merchant Bank
City Bank	2	12
Long-term Credit Bank	1	3
Trust Bank		5
Securities Company		4
Life Insurance Company		1
Total	3	25

**Table 9. Employees of Japanese trading banks and merchant banks**

	Total Number	Japanese staff	Local staff
Bank of Tokyo Aus.	95	11	84
Mitsubishi B. A.	52	8	44
IBJ. A.	65	8	57
Average	70	9	61
Nikko Secu.	10	6	4
Nomura Secu.	21	4	17
Sanwa Aus.	120	3	117
Sumitomo	26	3	23
Taiyo Kobe	9	3	6
Nippon Cred.	17	4	13
Average	34	4	30
	17	4	13*
Japan Life Ins. (rep)	4	2	2

\* exclude Sanwa



employees 120. On the other hand, some merchant bank such as Taiyo Kobe Australia have less than 10 members. The variance in the number of staff of merchant banks is very large compared with trading banks. These figure reflect not only the difference in business character of trading bank and merchant bank but also existence of a large variety of business among merchant banks themselves. Merchant banks are permitted to do everything which trading banks can do except checking account business. Although they are subject to the general company Law and supervision of the National Companies and Securities Commission, they are not controlled by the Reserve Bank of Australia.

## **V – 2 Financial Activities of Japanese-Owned Trading Banks in Australia**

### **a. Fund Raising**

Main sources of funds for Japanese-owned trading bank is raising of money market funds and raising of Euro money funds in the overseas market. They borrow funds in domestic short-term money market, of which players are not only financial institutions such as trading and merchant banks but also general companies. They also raise short-term funds and sometimes long term funds in Euro market such as Singapore, Tokyo and Europe. They convert foreign currency funds, typically US dollars into Australian dollars by swap. They actively arbitrage domestic finance and Euro market finance.

Japanese trading banks also take deposits denominated in AU dollar, Japanese yen and US dollar mainly in the wholesale market. In retail market it is very difficult for Japanese banks to take deposits from Australian customers. Their balance sheets in 1986 show that, except for Mitsubishi Bank Australia, deposits are approximate 30% of total assets. Almost all of these deposits are collected in wholesale markets and short-term deposits. In the wholesale market, in fact, deposit taking is not different from borrowing in the short-term market. An important point is that Japanese trading banks are not able to penetrate retail deposit market at this stage therefore they have to raise almost all funds through the short-term domestic market and Euro money market.

### **b. Use of Funds**

The balance sheets of Japanese trading banks in 1986 indicate that their main assets are loans and advances. The share of loans to total assets of BTA, MBA, IBJ is 68%, 59%, 65% respectively. According to my interview at Japanese trading banks, their main customers are not only Japanese companies

but also Australian companies. Both types of customers have similar weight in their loans. Their loans to Japanese companies and Australian customer fundamentally is based on Australia-Japan trade relations, however they are trying to expand their loans to new Australian customers, especially semi-top Australian companies because the top Australian companies have already strong customer relationship with the four major domestic trading banks and have access to overseas market.

These loans are composed of mainly short-term loans, they need to raise long-term funds. When they are not able to raise long-term funds, they try to borrow short and lend long, if short-term interest rates are lower than long-term interest rates. Actually however, short-term interest rates have been higher than long term interest rates during 1980s. Therefore they have had to limit their loans to short-term loans.

They also invest some funds in securities including government securities and semi government securities, however the ratio is not very large. Instead of holding the securities as a portfolio for long period, they deal in the securities actively. They have few private bonds and share except their subsidiaries shares.

#### c. Foreign Exchange Dealings

Before the floating of AU dollar and the associated removal of almost all exchange control in 1983, turnover in this market was thought to be around \$ 2 billion dollars per day. Now the total turnover in the Australian market is \$ 30 billion dollars (US\$ 20 billion) per day. This market size rates well in comparison with the London market (US\$ 90 billion per day), New York market (US\$ 60 billion) and Tokyo market (US\$ 50 billion). Along with this development of the foreign exchange market, the market itself is becoming very competitive. Before deregulation, trading banks -14 in all- were the only authorized dealers of foreign exchange. There are now 89 authorized foreign exchange dealers. Interbank spread of foreign exchange dealing was reduced from 10 points pre-float to 7 points in early 1984 and now is five points. Under this severe competition, Japanese banks try to deal in foreign exchange actively. Foreign exchange dealings of one Japanese banks is composed of 70% AU dollar – US dollar, and 30% AU dollar-Yen dealing.

#### d. Main Business of Japanese Trading Banks

The most important business for Japanese trading banks in Australia is loans, especially short-term. This is confirmed by balance sheet as mentioned above

and statement of Incomes and Expenses (Table 10). Net interest income of Japanese trading banks, on average, is higher than non-interest incomes which were earned from non-borrowing-lending business, that is off-balance business. However each bank's performance is different. BTA's main source of income is non-interest income rather than interest income. On the other hand, IJBA's interest income and expenses are huge compared with two other banks and its net interest income is larger than non-interest income. Interest income and expense of MTB is not as large as IJBA, but its net interest income is larger than its non-interest income. Comparatively speaking, BTA concentrates on fee base business or off balance business more than the other two banks.

At this stage, the main business of Japanese trading banks, as a whole is lending rather than off balance business such as dealing in foreign exchange and government securities. This performance contrasts with the performance of Australian banks in Japan. The latter's most important and profitable business is foreign exchange dealing (See Table 10).

### **V - 3 Some Problems for Japanese-Owned Trading Banks in Australia**

Since the second half of 1985, fifteen new foreign banks have begun trading bank business. Recently the performance of these new foreign banks have been published. According to this data, five of the fifteen new banks including one Japanese bank (IBJ Australia) made losses in 1986. The other ten new banks made profits, however the amount of profit is small except for Bankers Trust (Australia).

This poor performance of new foreign banks indicates that it is not an easy task for new Japanese trading banks to do business in Australia. What kind of difficulties and limitations do Japanese trading banks face now in Australia?

#### **a. Small Market Size and Severe Competition**

The Australian financial market, especially, the foreign exchange market has developed since the deregulation, but the Australian economy itself shows slow growth so that financial demand from real sector is still weak and real market size is still not very large. Many trading banks, merchant banks, finance companies, building societies etc. are competing very severely for the same cake which is not getting any bigger. As a result, the margin between lending rate and borrowing rate has been 1%~3%, however it declined to 0.5~0.7% and is now 0.3%. In addition, as mentioned above, dealing fee is also declining. Under these conditions, some new banks actively deal in government securities and foreign exchange on their own accounts. Sometimes these business, make big

Table 10. Incomes, Expenses and profits of J.T.B. and A.T.B.

Japanese Trading Banks in Aust.	(I) Total Asset	(II) Interest Incomes	(III) Interest Expenses	(IV) Net Interest Incomes	(V) Non Interest Incomes	(VI) Operating Expenses	(VII) Pre-tax Profits
Bank of Tokyo A.	276.7	16.0	10.5	5.5	7.6	10.4	2.6
IBJ Australia	309.9	49.5	41.3	8.2	1.5	13.3	-3.3
Mitsubishi B. A.	245.1	20.8	16.8	4.0	1.9	5.4	0.4
Average	278.0	29.0	22.3	6.3	3.7	9.7	-0.08
Aust. Trading Banks in Japan							
A. N. Z.	1171.4	54.8	54.2	0.6	15.1	8.7	7.0
W. P.	1437.0	65.5	54.3	11.2	14.7	23.5	2.4
N. A. B.	698.8	26.8	24.5	2.3	5.0	7.1	0.2
C. B. A.	835.5	25.4	24.4	1.0	3.4	8.2	-3.8
Average	1035.6	43.1	39.4	3.7	9.6	11.8	1.5

(AU\$ million)

profits, but other times take serious losses. For example, National Mutual Royal Bank suffered an unpleasant loss because of government bond dealing. Under severe competition, a lot of pressure on staff to do well forced them to take extra risk.

#### b. Risk Problem

Japanese trading banks face some risk such as interest rate risk, default risk and exchange risk. As mentioned above, their main assets are short term loans and their main liabilities are short-term liabilities. They match the short term and long term maturity between assets and liabilities. Even if there are some mismatching of maturity between liabilities and assets, they are able to avoid interest rate risk by floating rate loans. In this sense, they avoid almost all interest rate risk. They take the risk of mismatching only within short-term borrowing and lending. On the other hand, they try to deal in short-term government securities and make profits through these dealing on their own account. In this case, they also take some risk.

Japanese trading banks make loans not only to Japanese affiliated companies but also to Australian companies. Japanese trading banks are new comers and do not have enough information of Australian companies. In addition, in Australia there are not high-quality rating companies such as the Moodies Investor Companies in USA. Japanese trading banks have to face default risk and estimate it by themselves. They collect information about the borrowing firm and send it to head office in Japan. Head office makes the final decision on the loan. However sometimes they do not have enough information about borrowing companies and severe competition forces them to take extra risk. Default risk problem under a deregulated and very competitive market is very important for new Japanese trading banks.

Japanese trading banks deal in foreign exchange actively. If the dealings is based on customers' order, they earn dealing fee and they do not take any risk. However, they some times try to take a risk on their own accounts. Sometimes, this risk is very high.

#### c. Regulation on Trading Banks

The Reserve Bank of Australia imposes prudential controls on trading banks even under the deregulated financial system. They are minimum capital ratio to total assets (6.5% for new banks, 6.0% for the established trading banks), PAR (Prime Asset Ratio) control, SRD (Statutory Reserve Deposit) regulation and limitation on large credit exposure (30% of Total Assets). These prudential

controls have an effect on the cost of fund-raising and limits scope on financial activities in Australia. In addition, such controls are not imposed on merchant banks so that these regulations weaken the competitive position of trading banks. However it should be noted that the status of trading banks make it possible for them to raise funds at the lower cost than merchant banks in short-term money markets.

#### d. Joint Concern Problem

Two of three Japanese trading banks are owned partly by local companies. Mitsubishi Bank owns 77.5% of shares of Mitsubishi Bank of Australia, and Industrial Bank of Japan owns 75% of shares of IBJ Australia. This joint concern has two different effects. One is the problem of management related to joint concern. Even if the Japanese bank has final decision making power, the management within a joint concern is not as simple as in the case of a fully owned bank. It might take a long time for management to reach a final decision. On the other hand, in the case of a joint concern, Australian companies which partly own the bank are able to contribute to the business through their information on and relationship with Australian customers. It is not clear at this stage which effect is dominant for the Japanese trading bank. In the long term, they must solve the problem.

Japanese trading banks in Australia have some problems as mentioned above, however almost all of the problem are not applicable for only to Japanese banks but to for all new foreign banks. On the other hand, Japanese trading banks have a comparative advantage over other foreign banks. The Japan-Australia trade relationship is most important for Australia. In addition, Japanese direct investment is now increasing. Japanese trading banks expand their loan business to Japanese companies and Australian companies based on this relationship. In the retail market, they do not have a strong position, however they focus on the wholesale market and they are constructing a lending base, especially trade finance.

On the other hand, their fee base business seems to be not as developed as other foreign banks. They are trying to strengthen this business. At this stage, the performance of Japanese trading banks compared with other foreign banks is not very favorable. However the problems should not persist in the long-term. Some Japanese banks have modest confidence in their ability to penetrate Australian market in the long-term.

#### **V -4 Some Implications of Financial Deregulation, Especially Entry of Japanese Trading Banks for Japan-Australia Economic Relationship**

There are two separate effects, a direct effect and an indirect effect of the entry of Japanese trading banks on Japan-Australia economic relationship.

##### **a. Direct Effect**

- (1) Direct investment into the financial sector increases employment by more than 500 persons.
- (2) Direct investment and overseas borrowing by Japanese banks contribute to Australian capital account.
- (3) Trade finance services by Japanese trading banks contribute to Australia-Japan trade because their main business in Australia is loans and discount related to trade.
- (4) Accumulation of macro and micro level information on the Australian economy through banking business, especially loan business may make effects on direct investment such as recent real estate investment.
- (5) Entry of Japanese trading banks introduces innovation in management and new finance techniques etc.

##### **b. Indirect Effect**

Indirect effect means that the effect is difficult to be separated from others because financial deregulation or entry of foreign banks is a general phenomenon.

- (1) It contributes to increase of efficiency in the financial market; margin between lending and borrowing and spread of dealings between selling and buying becomes narrower. On the other hand, if deregulation promotes speculative movement which in turn leads to a collapse, market efficiency itself vanish. At this stage, the first is occurring, but nobody knows whether the second will or not.
- (2) We can think of a scenario that if other conditions remain unchanged, financial deregulation increases competition in the market and reduces the cost of finance, that is interest rate on borrowing and financial fees, and increases real investment. As a result, domestic business conditions improve and Australia-Japan trade and direct investment from Japan increases. However, in my opinion, the scenario stops on the way. The effect of change in the monetary sector still remain inside its sector and has only a weak effects on the real sector.

## **VI Conclusion**

Japan and Australian financial relationships have been becoming closer and closer against a background that Japan became a big capital export country and financial systems in both countries have been deregulated recently. Financial deregulation has increased capital flow such as portfolio investment from Japan to Australia. Australia can raise more easily her needed funds in the deregulated Tokyo market and Japan is able to invest more freely her excess savings to Australia. It does contribute increase of welfare of people in both countries.

In addition, financial deregulation in both countries made it possible for banks in each other countries. A main business of Japanese banks in Australia is loan business, especially related to trade, to Japanese subsidiaries and local customers in Australia. They also intend to expand fee base business, however it is not necessarily successful at this stage. On the other hand, Australian banks in Tokyo are conducting mainly international banking business such as foreign exchange business rather than traditional banking business such as loans to Japanese customers. More than half of their profits is based on non borrowing-lending business.

They expected a scenario that financial deregulation increases competition in a market and reduces the cost of finance and, as a result, increases real investment and international trade between the two countries. However it stops on the way. At this stage, financial deregulation did contribute capital flow such as portfolio investments from Japan to Australia, but it did not necessarily result in increases of trade and real direct investment between two countries.



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# KEYNES' USER COST AND THE THEORY OF INTERNATIONAL TRADE\*

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## Abstract

A unit-cost function is generated from the constant-returns technology in which exhaustible resources are indispensable as factors of production. It depends on expected as well as current factor prices. By using the unit-cost function, we construct a general equilibrium model involving exhaustible resources in terms of cost functions and examine how the expected variables may affect factor price, the outputs and the pattern of international trade.

## 1. Introduction

The purpose of this paper is to present a fairly simple model of international trade involving exhaustible resources. So far there have been a lot of contributions to the topic of exhaustible resources, and we do not insist on the novelty of the topic itself. The emphasis is laid rather on the way we deal with the topic.

Now let us outline our main idea. Suppose that there is a firm which owns some finite volume of an exhaustible resource (say, crude oil) and which produces a good (say, refined oil) by combining the resource with non-exhaustible inputs (say, capital and labour). Then, the following question emerges: what cost should the firm incur at each period? In a word, what is the average cost of the product which becomes equal to the price of the product under competition?

It is obvious that what the firm has to pay for the current employments of

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the non-exhaustible factors of production is at least a part of the current cost. However, it needs further consideration to answer the question of whether this payment is the whole of the current cost.

Now, in order to make our argument clearer, we assume, for the time being, that the firm cannot either sell or purchase the exhaustible resource from outside. That is to say, the firm can use only the initial stock of the resource for the future as well as present production. Then, if the firm raises the level of present production and if, as a result, more of the resource is consumed during the current period, then the future production-possibility of the firm might be reduced. As a result, the capital-value of the firm at the end of the current period might be also reduced. This reduction must be regarded as the other part of the current cost. Even if the firm is supposed to be able to buy and to sell the resource, the foregoing argument can be established as far as the expected prices take on some particular values, as will be stated.

This cost concept is not entirely novel. It is nothing but the one which J.M. Keynes regarded as *user cost* 50 years ago. See Chapter 6 and its Supplement in Keynes' *General Theory*.

By using the current cost which is the sum of the two cost-concepts just mentioned, one can construct a fairly simple general equilibrium model in terms of cost functions and then one may be tempted to examine the implications of exhaustible resources for some important relationships between the terms of trade and the rewards of the non-exhaustible factors of production and between the volumes of the products and the (non-exhaustible) factor-endowments. Furthermore, one may wish to know how the existence of the exhaustible resource affects the pattern of international trade. These things are considered in this paper.

In Section 2, the cost function of the firm involving exhaustible resources and, based on the function, its supply curve are obtained. In Section 3, a two-commodity, two-primary factor and one-exhaustible resource model is formulated, and some comparative statics propositions are obtained.

## 2. Cost Function

Now, suppose that the firm exemplified in the previous section stands at the beginning of the current period (say, period 0) with the initial stock of the exhaustible resource,  $M_0$ . The firm, as a price-taker, is facing with the current price of its product,  $p_0$ , the current wage rate,  $w_0$ , the current rental rate,  $r_0$ , the current resource price,  $q_0$ , and their expected variables in subsequent

periods;  $p_t, w_t, n_t$ , and  $q_t$ ,  $t \geq 1$ . In what follows, the technology of production is supposed to be unchanged over time and to be described by the production function

$$(1) \quad Y_t = F[L_t, K_t, E_t] \quad t \geq 0$$

where  $Y_t$  the output of the firm at period  $t$ ,  $L_t$  the volume of labour employed by the firm at period  $t$ ,  $K_t$  the volume of capital hired and  $E_t$  the volume of the resource extracted at period  $t$ . The production function is assumed to be a concave, constant-returns function.

As stated in the previous section,  $W_0 L_0 + r_0 K_0$  is no longer the whole of the current cost. Consider the optimum problem

$$[P_0] \quad \max_{\substack{L_t, K_t, E_t; t \geq 1 \\ X_t; t \geq 0}} \bar{V} \equiv \sum_{t=1}^{\infty} R^t \{p_t F[L_t, K_t, E_t] - w_t L_t - r_t K_t - q_t X_t\} - q_0 X_0$$

$$\text{sub. to } M_t = M_{t-1} + X_{t-1} - E_{t-1} \quad t \geq 1$$

$$M_0, E_0; \text{ given, } L_t \geq 0, K_t \geq 0, E_t \geq 0, X_t \geq 0$$

where  $R \equiv \frac{1}{1+\rho}$  and  $\rho$  is the rate of time preference ( $> 0$ ).  $X_t$  is the net purchase of the exhaustible resource at period  $t$ . Note that in this problem  $E_0$  is regarded as a parameter. The optimum value of the objective function  $\bar{V}$  is, if exists, the capital-value of the firm, which is measured (evaluated) at the beginning (the end) of the current period, under the condition that the firm spends  $E_0$ -amount of the resource; The optimum value may be represented at  $\bar{V}[M_0 - E_0]$ . Thus,  $\bar{V}[M_0] - \bar{V}[M_0 - E_0]$  can be regarded as the other part of the current cost. Thus, the current cost is

$$(2) \quad C \equiv W_0 L_0 + r_0 K_0 + \{\bar{V}[M_0] - \bar{V}[M_0 - E_0]\}$$

*REMARK:* Using Keynes' terminology in *General Theory*, (2) is *prime cost*. The first two terms of the RHS are *factor cost*, and the last one is *user cost*. In fact, the last one exactly corresponds to his definition of user cost. See Chapter 6 in *General Theory*.

Now, let us obtain  $\{\bar{V}[M_0] - \bar{V}[M_0 - E_0]\}$ . Defining

$$f[l_t, k_t] \equiv F[l_t, k_t, 1]$$

$$l_t \equiv \frac{L_t}{E_t}$$

and

$$k_t \equiv \frac{K_t}{E_t}$$

one can reformulate  $[P_0]$  as

$$\begin{aligned}
[P_0]' \quad \max_{\substack{X_t, t \geq 0 \\ E_t, t \geq 1}} \bar{V} &\equiv \sum_{t=1}^{\infty} R^t \{ \beta_t E_t - q_t X_t \} - q_0 X_0 \\
\text{sub. to } M_t &= M_{t-1} + X_{t-1} - E_{t-1} \quad t \geq 1 \\
M_t &\geq 0, X_t \geq 0 \\
M_0, E_0 &\text{; given}
\end{aligned}$$

where

$$\beta_t \equiv \max_{l_t, k_t} \{ p_t f[l_t, k_t] - w_t l_t - r_t k_t \}$$

Let us concentrate on  $[P_0]'$ . The first problem which we come across is under what conditions the optimal  $\bar{V}$  can be finite.

LEMMA 1 The optimal  $\bar{V}$  is finite if the following condition is satisfied;

[A] For  $t \geq 1$ ,

either  $q_t$  or  $\beta_t$  is not greater than

$$\min\{q_t, R^{-1}q_{t-1}, \dots, R^{-t}q_0\}$$

Proof At first, suppose that [A] is not satisfied.

That is,

(i) there exists  $t^*(\geq 1)$  such that

$$\beta_{t^*} > \min\{q_{t^*}, R^{-1}q_{t^*-1}, \dots, R^{-t^*}q_0\}$$

and/or

(ii) there exists  $t^{**}(\geq 1)$  such that

$$q_{t^{**}} > \min\{R^{-1}q_{t^{**}-1}, \dots, R^{-t^{**}}q_0\}$$

If (i) is established, then for some integer  $k, 0 \leq k < t^*, \beta_{t^*} > R^{-(t^*-k)}q_k$ .

Therefore,  $\bar{V}$  can be infinite by buying an unlimited amount of the resource during period  $k$  and using it in production during period  $t^*$ . On the other hand, if (ii) is established, then for some integer  $k, 0 \leq k < t^{**}, q_{t^{**}} > R^{-(t^{**}-k)}q_k$ . Therefore,  $\bar{V}$  can be infinite by buying an unlimited amount of the resource during period  $k$  and selling it during period  $t^{**}$ .

Next, suppose that [A] is satisfied. Suppose also that for some  $\bar{t} \geq 1, X_{\bar{t}} < 0$ . We have two possibilities:

(a)  $R^{\bar{t}}q_{\bar{t}} = R^{\bar{t}-1}q_{\bar{t}-1} = \dots = q_0$

(b)  $R^{\bar{t}}q_{\bar{t}} \leq R^{\bar{t}-1}q_{\bar{t}-1} \leq \dots \leq q_0$  and for some  $k; 0 \leq k < \bar{t}$ ,

$$R^{\bar{t}-k}q_{\bar{t}-k} < R^{\bar{t}-k-1}q_{\bar{t}-k-1}$$

If (b), then one can choose new  $(E_t, X_t)$  which makes  $\bar{V}$  greater. That is, by letting  $X_{\bar{t}}^{\text{new}}$  be zero and letting  $X_{\bar{t}-k-1}^{\text{new}} = X_{\bar{t}-k-1}^{\text{old}} + X_{\bar{t}}^{\text{old}}$ ,  $\bar{V}^{\text{new}}$  becomes greater than

$\bar{V}^{\text{old}}$ . Let us repeat this as far as there exists  $\bar{t}$  such that  $X_{\bar{t}} < 0$  with (b). Moreover, since for any  $t \geq 1$  there exists  $\bar{t} (> t)$  such that  $E_{\bar{t}} - X_{\bar{t}} \geq 0$  (otherwise  $\bar{V}$  will be finite), one can easily let  $E_t - X_t \geq 0$  for any  $t \geq 1$  by changing  $X_t$  properly and without reducing the level of  $\bar{V}$ . Then, we arrive at  $(X_t, E_t)$  where for  $X_t \geq 1$

(a)  $X_t \geq 0$  or  $X_t < 0$  with (a)

and

(b)  $E_t - X_t \geq 0$  for any  $t \geq 1$

For this  $(X_t, E_t)$ , we have

$$\begin{aligned}\bar{V} &= \sum_{t=1}^{\infty} [R^t \beta_t E_t - R^t q_t X_t] - q_0 X_0 \\ &\leq \sum_{t=1}^{\infty} R^t q_t [E_t - X_t] - q_0 X_0 \\ &\leq q_0 [\sum_{t=1}^{\infty} E_t - \sum_{t=1}^{\infty} X_t - X_0] \\ &\leq q_0 [M_0 - E_0] < \infty\end{aligned}$$

as was to be proved.

Q.E.D.

Let us suppose that condition [A] holds, which implies that  $q_0 \geq x \equiv Rq_1$ . If  $q_0 > x$  then, referring back to problem  $[P_0]'$ , the best thing the firm can do is sell  $M_0 - E_0$  during the current period. Thus, "user cost" must be  $\bar{V}[M_0] - \bar{V}[M_0 - E_0] = q_0 E_0$ . Next, let  $q_0$  be equal to  $x$ . Then, it makes no difference in  $\bar{V}$  whether or not some portion of  $M_0 - E_0$  is kept for future sale or production. Hence, we have the following lemma.

LEMMA 2 Suppose that [A] in LEMMA 1 holds. Then

$$(3) \quad \bar{V}[M_0] - \bar{V}[M_0 - E_0] = q_0 E_0$$

From (2) and (3), the current cost is

$$(4) \quad C = W_0 L_0 + r_0 K_0 + q_0 E_0$$

One can obtain the current cost function by solving the optimum problem

$$[P_1] \quad \min_{L_0, K_0, E_0} \quad (4)$$

$$\text{sub. to } Y_0 \leq F[L_0, K_0, E_0]$$

$[P_1]$  is simple enough to yield the following proposition.

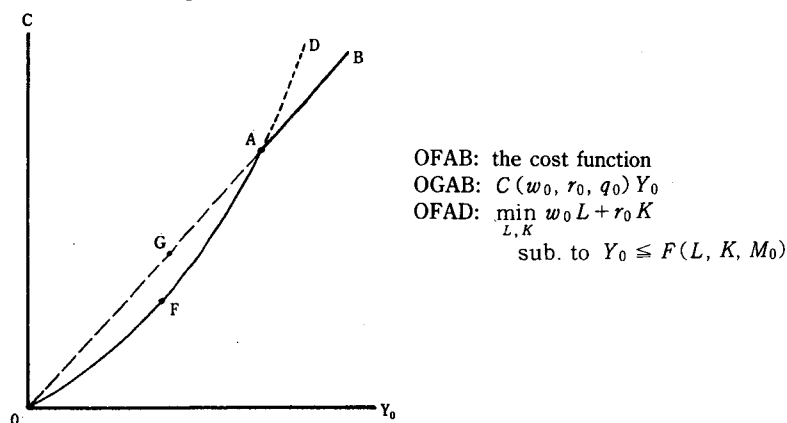
PROPOSITION 1 Under condition [A] of LEMMA 1 the current cost function is

$$(5) \quad C[w_0, r_0, q_0, Y_0] = c[w_0, r_0, q_0] Y_0$$

where  $c[w_0, r_0, q_0] \equiv \min_{L, K, E} w_0 L + r_0 K + q_0 E$  sub to  $1 \leq F[L, K, E]$ .

Intuitively, it may be obvious that the cost function can be depicted as in Figure 1.

Figure 1



### 3. A General Equilibrium Model

Based on the cost function presented in the previous section, let us construct a simple general equilibrium model of a small open economy. Suppose there are two industries in the economy. The first industry produces a good (the first good) by spending an exhaustible resource with the aid of labour and capital, and the second industry the second good with the aid of labour and capital. Thus the general equilibrium model to be examined is just the ordinary Heckscher-Ohlin-Samuelson model except for the additional assumption that this is the first-industry-specific exhaustible resource. That is, each firm in the first industry owns some amount of the exhaustible resource and it can be sold and bought within the firms in the first industry.

Now let us formulate the model mathematically. Suppose that condition [A] in LEMMA 1 holds. There can exist the following types of general equilibrium.

$$\begin{aligned}
 [a] \quad p &= c^1(w_0, r_0, q_0) \\
 1 &= c^2(w_0, r_0) \\
 L &= c_w^1(w_0, r_0, q_0)Y_1 + c_w^2(w_0, r_0)Y_2 \\
 K &= c_r^1(w_0, r_0, q_0)Y_1 + c_r^2(w_0, r_0)Y_2 \\
 E &= \phi_q^1(w_0, r_0, q_0)Y_1 = M_0, \quad q_0 > x \\
 &\text{unknowns ; } w_0, r_0, q_0, Y_1, Y_2, E
 \end{aligned}$$

$$\begin{aligned}
[b] \quad p &= c^1(w_0, r_0, q_0) \\
1 &= c^2(w_0, r_0) \\
L &= c_w^1(w_0, r_0, q_0) Y_1 + c_w^2(w_0, r_0) Y_2 \\
K &= c_r^1(w_0, r_0, q_0) Y_1 + c_r^2(w_0, r_0) Y_2 \\
q_0 &= x \\
E &= \phi_q^1(w_0, r_0, q_0) Y_1 < M_0 \\
&\text{unknowns ; } w_0, r_0, q_0, Y_1, Y_2, E
\end{aligned}$$

where  $p$  the price of the first good measured by the second good.

$w$  the wage rate measured by the second good

$r$  the rental rate measured by the second good

$c_y^i \equiv \frac{\partial c^i}{\partial y}$ ,  $i = 1, 2$   $y = w_0, r_0, q_0$

$L$  the workforce

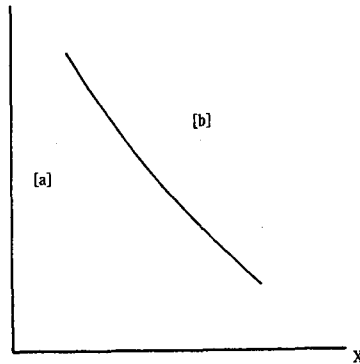
$K$  the volume of capital

$E$  the current extraction of the exhaustible resource

$Y_i, i = 1, 2$ , the volume of output

Which equilibrium system [a] or [b] is established depends on the levels of  $M_0$  and  $x$ . As will be shown, there exists a border on  $(M_0, x)$  plane which decides which of [a] or [b] is established. See Figure 2.

Figure 2



Although both [a] and [b] are possible, [a] is not so interesting as [b]. For, [a] implies that the whole initial stock of the resource is used up within the current period. Thus, in what follows, let us concentrate on [b].

**REMARK** Let condition [A] not hold. If  $q_0 < x$  then there is the excess-demand for the resource, and  $q_0$  must rise until  $q_0 \geq x$ . As in [a], the whole initial stock of the resource is used up within the current period.



Focussing on [b], one may verify that the two relationships, the one between commodity prices and factor-rewards and the other between the volume of products and the factor endowments, depend on the (non-exhaustible) factor-intensity-conditions. That is, if  $p$  rises, then the reward of the (non-exhaustible) factor which is intensively used rises. However, there is no "magnification effect." For  $c^1(\cdot)$  is not homogeneous in  $w_0$  and  $r_0$ .

In what follows, let us examine the implications of  $x$ , for factor rewards, the volume of products, the volume of current extraction and the pattern of trade. Totally differentiating the equations in [b],

[b]

$$(6) \quad \begin{bmatrix} c_w^1 & c_r^1 & 0 & 0 & 0 \\ c_w^2 & c_r^2 & 0 & 0 & 0 \\ c_{ww}^1 Y_1 + c_{ww}^2 Y_2 & c_{wr}^1 Y_1 + c_{wr}^2 Y_2 & c_w^1 & c_w^2 & 0 \\ c_{rw}^1 Y_1 + c_{rw}^2 Y_2 & c_{rr}^1 Y_1 + c_{rr}^2 Y_2 & c_r^1 & c_r^2 & 0 \\ c_{qw}^1 Y_1 & c_{qr}^1 Y_1 & c_q^1 & 0 & -1 \end{bmatrix} \begin{bmatrix} dw_0 \\ dr_0 \\ dY_1 \\ dY_2 \\ dE \end{bmatrix} = \begin{bmatrix} -c_q^1 \\ 0 \\ -c_{wq}^1 Y_1 \\ -c_{rq}^1 Y_1 \\ -c_{qq}^1 Y_1 \end{bmatrix} dq_0$$

$$= \begin{bmatrix} -c_q^1 \\ 0 \\ -c_{wq}^1 Y_1 \\ -c_{rq}^1 Y_1 \end{bmatrix} dx$$

$$\text{where } c_{xy}^i \equiv \frac{\partial^2 c^i}{\partial XY}, \quad i = 1, 2; X, Y = w, r, q.$$

Factor rewards From (6), we have

$$(7) \quad \frac{dw_0}{dx} = \frac{-c_q^1 c_r^2}{c_w^1 c_r^2 - c_w^2 c_r^1}$$

$$\frac{dr_0}{dx} = \frac{c_q^1 c_r^2}{c_w^1 c_r^2 - c_w^2 c_r^1}$$

Noting that  $c_q^1 > 0$ , one may immediately obtain the proposition.

**PROPOSITION 2** The change of expectation which causes the rise of  $x$  makes the reward of the factor which is intensively used in the first industry *decline* and the reward of the factor which is not intensively used in the first industry *rise*.

Volume of products From (6), we have

$$(8) \quad \frac{dY_1}{dx} = \frac{-c_q}{\Delta} \begin{vmatrix} 0 & c_w^2 & c_r^2 \\ c_w^2 & c_{ww}^1 Y_1 + c_{ww}^2 Y_2 & c_{wr}^1 Y_1 + c_{wr}^2 Y_2 \\ c_r^2 & c_{rw}^1 Y_1 + c_{rw}^2 Y_2 & c_{rr}^1 Y_1 + c_{rr}^2 Y_2 \end{vmatrix} \\ - \frac{[\sigma_{wq}^1 c_w^1 c_r^2 - \sigma_{rq}^1 c_w^2 c_r^1]}{[c_w^1 c_r^2 - c_w^2 c_r^1]} \cdot \frac{c_q^1 Y_1}{c^1}$$

where  $\Delta \equiv [c_w^1 c_r^2 - c_r^1 c_w^2]^2 > 0$  and  $\sigma_{xy}^1$  is the Allen-Uzawa elasticity of substitution. One can prove that the first term on the RHS of (8) is negative. This term represents the effect of  $x$  in  $p = c^1[w_0, r_0, x]$  on  $Y_1$ . The effects of  $x$  in the third and fourth equations in [b] on  $Y_1$  are represented by the second term on the RHS of (8), which is negative if  $\sigma_{wq}^1 = \sigma_{rq}^1 > 0$ .

$$(9) \quad \frac{dY_2}{dx} = \frac{c_q^1}{\Delta} \begin{vmatrix} 0 & c_w^2 & c_r^2 \\ c_w^1 & c_{ww}^1 Y_1 + c_{ww}^2 Y_2 & c_{rw}^1 Y_1 + c_{rw}^2 Y_2 \\ c_r^1 & c_{wr}^1 Y_1 + c_{wr}^2 Y_2 & c_{rr}^1 Y_1 + c_{rr}^2 Y_2 \end{vmatrix} \\ - \frac{[\sigma_{rq}^1 - \sigma_{wq}^1] c_q^1 c_r^1 c_w^1}{[c_w^1 c_r^2 - c_w^2 c_r^1] c^1}$$

One can prove that if  $\sigma_{wr}^1$  is positive then the first term of the RHS of (16) is positive.

**PROPOSITION 3** If  $\sigma_{xy}^1 > 0$ ,  $X, Y = w, r, q$ ,  $X = Y$  and  $\sigma_{wq}^1 = \sigma_{rq}^1$ , then the change of expectation which causes the rise of  $x$  makes the volume of the first (second) good decrease (increase).

Volume of Current Extraction From (6), we have

$$(10) \quad \frac{dE}{dx} = \frac{-1}{w^2 \Delta} \begin{vmatrix} 0 & c_r^1 - p c_r^2 & c_q^1 \\ c_r^1 - p c_r^2 & c_{rr}^1 Y_1 + c_{rr}^2 Y_2 & c_{rq}^1 Y_1 \\ c_q^1 & c_{rq}^1 Y_1 & c_{rr}^1 Y_1 \end{vmatrix}$$

which can be proved to be negative. Thus, one obtains Figure 2.

**PROPOSITION 4** The change of expectation which causes the rise of  $x$  makes the current extraction of the resource decline.

Pattern of Trade Assuming homothetic preferences for the two commodities, we have

$$(11) \quad D(p) = \frac{Y_2}{Y_1}, \quad D' > 0$$

as the autarkic equilibrium condition. See Figure 3.  $\frac{Y_2}{Y_1}$  can be regarded as a decreasing function of  $p (= \frac{p_1}{p_2})$ . Thus, the equilibrium can be shown by the point  $E$  in Figure 3. Now, suppose that  $x$  rises. Then from Proposition 3,  $\frac{Y_2}{Y_1}$  must rise for given  $p$ . Thus, the new equilibrium can be shown by a point like  $E'$  in

Figure 3

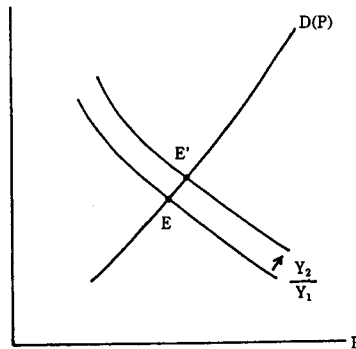


Figure 3. Thus, we have

$$(12) \quad \frac{dp}{dx} > 0$$

Now suppose that there are two countries in the world, with the same preferences, technology and (non-exhaustible) factor endowment and suppose that each country does not use up the whole amount of its stock of the exhaustible resource during the current period. Then (12) implies that if  $x$  is greater at home than abroad then the home country exports the second good and imports the first good.

**PROPOSITION 5** If the firms in the home country expect the future  $p$  ( $w$  and  $r$ ) to be greater (smaller) than the foreign firms expect, then the home country imports (exports) the first good.

#### 4. A Final Remark

Kemp and Long [Essay 13, 14 and 15 in *Exhaustible Resources, Optimality and Trade*] exemplified the implications of exhaustible resources for the theory of international trade. In the present paper the way of examining this topic is different from theirs, i.e. we adopt a cost-function approach.

Compared with Kemp and Long, the production technology which is assumed here is more general. For, they assume that production functions are of a partially-separable constant-returns kind. In the present paper, some propositions are established under fairly general production functions and almost all propositions are under some slight restrictions on the Allen-Uzawa elasticity of substitution.

The model constructed in the present paper is of a temporary equilibrium

kind; well-known from Hick's *Value and Capital*. As a result, the implications of exhaustible resources for current variables are entirely represented by an expected variable,  $x$ , which is regarded as *exogenous*. On the other hand, Kemp and Longs' model is of a perfect-foresight kind, and the expected variables are, as it were, *endogenous*.

### References

- [1] Kemp, M.C. and N.V. Long (1980), *Exhaustible Resources, Optimality and Trade* (North-Holland).
- [2] Keynes, J.M. (1936), *The General Theory of Employment Interest and Money* (Macmillan).

# A NOTE ON INTERNATIONAL TRANSMISSION OF DISTURBANCES AND POLICY INTERDEPENDENCE UNDER FLEXIBLE EXCHANGE RATES\*

Hideki IZAWA

## I. Introduction

Many countries have undoubtedly become more and more interdependent through international trade and finance. After the collapse of the Bretton Woods system, several advanced countries adopted the flexible exchange rate system in the early 1970's. The flexible regime has not performed as well as had been expected. It could not insulate the domestic country from monetary and real shocks abroad. The policy-maker in each country can not ignore these disturbances transmitted from other countries.

Hamada recognized the importance of the interactions between two countries and analyzed the strategic behavior of monetary interdependence, applying concepts of game theory. Canzoneri and Gray (1985) developed the game theoretic aspects that are played by the monetary authorities in two countries because of the existence of spillover effects of monetary policy.

It is well known that in the absence of policy coordination or binding precommitment with punishment, the non-cooperative Nash solution is inferior to the cooperative Pareto optimum. However, each player has an incentive to defect from the Pareto solution. There is a difficulty in agreeing with and enforcing international policy coordination; for example, historical incidents such as the competitive devaluation in the 1930's and the beggar-thy-neighbor policy.

The purpose of this paper is to examine the insulation effect in a small open and two-country macro models under flexible exchange rates and rational expectations. Then the role of wage indexation is emphasized, extending Gray's paper (1976) on the closed economy. In the following sections, (i) the asymmetric model consisting of a large country and a small open country and (ii)

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\* I would like to thank Carl Christ, Louis Maccini for helpful comments and suggestions. Remaining errors are my own.

the symmetric, identical two-country model are presented. The main conclusions and further research suggestions are given in the last section.

## II. The Asymmetric Economies Model

We shall assume that there is one large country which is treated as if it were a closed economy, and one small open country which does not affect the variables in a large country. Also, there exists perfectly integrated goods and bond markets. Thus purchasing power parity and uncovered interest rate parity hold over time.

The model is as follows. The behavior of the system is expressed in deviations from an initial steady-state equilibrium.

### The Large Country

$$Y_t^* = \alpha_1 Y_t^* - \alpha_2 [I_t^* - (E_t P_{t+1}^* - P_t^*)] + u_t^*$$

$$\alpha_1 = \text{marginal propensity to consume } 0 < \alpha_1 < 1 \quad (\text{A})$$

$$M_t^* - P_t^* = \beta_1 Y_t^* - \beta_2 I_t^*$$

$$Y_t^* = \gamma [P_t^* - E_{t-1} P_t^*] + w_t^*$$

### The Small Open Country

$$P_t = P_t^* + S_t$$

$$M_t - P_t = \eta_1 Y_t - \eta_2 I_t \quad (\text{B})$$

$$I_t = I_t^* + E_t S_{t+1} - S_t$$

$$Y_t = \delta [P_t - E_{t-1} P_t] + w_t$$

### Notation:

- $Y$  = real output as a deviation from the natural rate level;
- $P$  = price of domestic output;
- $S$  = exchange rate (measured in terms of units of domestic currency per unit of foreign currency);
- $I$  = nominal interest rate;
- $M$  = nominal money supply;
- $E$  = mathematical expectation operator;
- $u$  = demand shock;
- $w$  = supply shock.

$u^*$ ,  $w$ , and  $w^*$  have zero means and constant variances. Each is serially uncorrelated and statistically independent of the other.

Foreign variables are denoted with asterisks.

All variables except interest rates are expressed in logarithms.

$I^*$  and  $P_t^*$  are exogenous to the small open country.

The system (A) can be expressed in matrix form.

$$\begin{bmatrix} 1-\alpha_1 & \alpha_2 & \alpha_2 \\ \beta_1 & 1 & -\beta_2 \\ 1 & -r & 0 \end{bmatrix} \begin{bmatrix} Y_t^* \\ P_t^* \\ I_t^* \end{bmatrix} = \begin{bmatrix} \alpha_2 E_t P_{t+1}^* + u_t^* \\ M_t^* \\ -r E_{t-1} P_t^* + w_t^* \end{bmatrix}$$

Assuming  $E_{t-1} P_{t+i}^* = 0$  for  $i = 0, 1, \dots$ , for all  $t$  in order to obtain a stable rational expectations solution for  $P_t^*$ .

The solutions are the following:

$$\begin{aligned} Y_t^* &= \frac{1}{\Delta} \{ r\alpha_2 M_t^* + r\beta_2 u_t^* + \alpha_2(1+\beta_2)w_t^* \} \\ P_t^* &= \frac{1}{\Delta} \{ \alpha_2 M_t^* + \beta_2 u_t^* - [(1-\alpha_1)\beta_2 + \alpha_2\beta_1]w_t^* \} \\ I_t^* &= -\frac{1}{\Delta} \{ [\alpha_2 + r(1-\alpha_1)]M_t^* - (1+r\beta_1)u_t^* \\ &\quad + [(1-\alpha_1) - \alpha_2\beta_1]w_t^* \} \end{aligned}$$

where  $\Delta = \alpha_2(1+\beta_2+r\beta_1) + r(1-\alpha_1)\beta_2 > 0$ .

The system (B) can be expressed in the following form:

$$\begin{bmatrix} 0 & 1 & -1 \\ \eta_1 & 1 & \eta_2 \\ 1 & -\delta & 0 \end{bmatrix} \begin{bmatrix} Y_t \\ P_t \\ S_t \end{bmatrix} = \begin{bmatrix} P_t^* \\ M_t + \eta_2 I_t^* + \eta_2 E_t S_{t+1} \\ -\delta E_{t-1} P_t + w_t \end{bmatrix}$$

We know that  $P_t^*$  is identically and independently distributed for all  $t$ . Hence,

$$E_{t-1} P_t = E_{t-1} S_t \quad (E_{t-1} P_t^* = 0)$$

$P_t$  and  $S_t$  are generated by a simple stochastic process consistent with rational expectations. It implies  $E_{t-1} P_t = 0$ ,  $E_t S_{t+1} = 0$ .

Solving for  $Y_t$ ,  $P_t$ , and  $S_t$ ,

$$Y_t = \frac{1}{D} [\eta_2 \delta P_t^* + \eta_2 \delta I_t^* + \delta M_t + (1 + \eta_2) w_t]$$

$$P_t = \frac{1}{D} [\eta_2 P_t^* + \eta_2 I_t^* + M_t - \eta_1 w_t]$$

$$S_t = \frac{1}{D} [-(1 + \eta_1 \delta) P_t^* + \eta_2 I_t^* + M_t - \eta_1 w_t]$$

where  $D = 1 + \eta_2 + \eta_1 \delta > 0$ .

Substituting  $P_t^*$  and  $I_t^*$ ,

$$Y_t = \phi_1 M_t + \phi_2 M_t^* + \phi_3 u_t^* + \phi_4 w_t + \phi_5 w_t^*$$

where  $\phi_1 = \frac{\delta}{D} > 0$

$$\phi_2 = -\frac{\eta_2 \delta r}{D \cdot A} (1 - \alpha_1) < 0$$

$$\phi_3 = \frac{\eta_2 \delta}{D \cdot A} (1 + \beta_2 + r \beta_1) > 0$$

$$\phi_4 = \frac{1 + \eta_2}{D} > 0$$

$$\phi_5 = -\frac{\eta_2 \delta}{D \cdot A} (1 - \alpha_1) (1 + \beta_2) < 0$$

$$P_t = \xi_1 M_t + \xi_2 M_t^* + \xi_3 u_t^* + \xi_4 w_t + \xi_5 w_t^*$$

where  $\xi_1 = \frac{1}{D} > 0$

$$\xi_2 = -\frac{\eta_2 r}{D \cdot A} (1 - \alpha_1) < 0$$

$$\xi_3 = \frac{\eta_2}{D \cdot A} (1 + \beta_2 + r \beta_1) > 0$$

$$\xi_4 = -\frac{\eta_1}{D} < 0$$

$$\xi_5 = -\frac{\eta_2}{D \cdot A} (1 - \alpha_1) (1 + \beta_2) < 0$$

$$S_t = \mu_1 M_t + \mu_2 M_t^* + \mu_3 u_t^* + \mu_4 w_t + \mu_5 w_t^*$$



$$\begin{aligned}
 \text{where } \mu_1 &= \frac{1}{D} > 0 \\
 \mu_2 &= -\frac{1}{D \cdot A} \{ \eta_2 [\alpha_2 + r(1 - \alpha_1)] + \alpha_2(1 + \eta_1 \delta) \} < 0 \\
 \mu_3 &= \frac{1}{D \cdot A} \{ \eta_2(1 + r\beta_1) - \beta_2(1 + \eta_1 \delta) \} \geq 0 \\
 \mu_4 &= \frac{\eta_1}{A} > 0 \\
 \mu_5 &= -\frac{1}{D \cdot A} \{ \eta_2(1 - \alpha_1 - \alpha_2 \beta_1) - (1 + \eta_1 \delta) \cdot \\
 &\quad (\beta_2 - \alpha_1 \beta_2 + \alpha_2 \beta_1) \} \geq 0
 \end{aligned}$$

The increase in  $M$  leads to increases in  $Y$  and  $P$  and depreciation of the exchange rate. On the other hand, the increase in  $M^*$  leads to decreases in  $Y$  and  $P$  and appreciation of the exchange rate. It follows that the increase in  $M^*$  causes an increase in  $P^*$  and a decrease in  $I^*$ , but the impact of  $M^*$  on  $I^*$  is larger than the impact of  $M^*$  on  $P^*$ . Therefore, the decrease in  $I^*$  results in decreases in both  $Y$  and  $P$  through appreciation of the exchange rate.

We assume that the monetary authority in the small open country chooses its money supply so as to minimize the following loss function, taking the money supply in the large country as given.

The optimization problem is

$$\text{Min}_{M_t} L = \theta Y_t^2 + (1 - \theta) P_t^2 \quad 0 < \theta < 1.$$

The first order condition is

$$\frac{\partial L}{\partial M} = \omega_1 M_t + \omega_2 M_t^* + \omega_3 u_t^* + \omega_4 w_t + \omega_5 w_t^* = 0$$

$$\text{where } \omega_i = \theta \phi_i \phi_i + (1 - \theta) \xi_i \xi_i \quad (i = 1, \dots, 5)$$

$$\omega_1 > 0, \quad \omega_2 < 0, \quad \omega_3 > 0, \quad \omega_4 \geq 0, \quad \omega_5 < 0.$$

The optimal monetary policy rule is

$$\tilde{M}_t = -\frac{1}{\omega_1} (\omega_2 M_t^* + \omega_3 u_t^* + \omega_4 w_t + \omega_5 w_t^*)$$

And the reaction function for the small open country is

$$\frac{\partial \tilde{M}_t}{\partial M_t^*} = -\frac{\omega_2}{\omega_1} > 0.$$

The reaction function has a positive slope. It implies that a monetary expansion in the large country induces a monetary expansion in the small country in order to stabilize the economy. It is noteworthy that the large country is by definition independent of the monetary policy in the small open country.

We have employed a Lucas supply function. However, as Flood (1979) pointed out, the assumption of a Lucas island model may be inappropriate for the open economy. Rather, the aggregate supply function may be justified in terms of the wage contract model based on Gray (1976). It still gives us an aggregate supply function which resembles a Lucas supply function, but the coefficient ( $\delta$ ) of the unanticipated price movement depends on the degree of indexation,  $\lambda$  (see Appendix). In turn, the slope of the aggregate supply function has important implications on whether the flexible exchange rate regime effectively can insulate domestic output from foreign disturbances.

We can determine what degree of wage indexation will minimize the loss function (arbitrarily chosen as a variance of  $Y_t$ ) for the small open country under the flexible exchange rate regime, following the paper by Flood and Marion (1982).

$$\begin{aligned} \text{Min}_\lambda L &= E(Y_t^2) && \text{assuming zero covariances} \\ &= \frac{1}{D^2 \cdot \Delta^2} \{ \Delta^2 \delta^2 \sigma_m^2 + \eta_2^2 \delta^2 r^2 (1 - \alpha_1)^2 \sigma_{m*}^2 \\ &\quad + \eta_2^2 \delta^2 (1 + \beta_2 + r\beta_1)^2 \sigma_{u*}^2 + \Delta^2 (1 + \eta_2)^2 \sigma_w^2 \\ &\quad + \eta_2^2 \delta^2 (1 - \alpha_1)^2 (1 + \beta_2)^2 \sigma_{w*}^2 \} \end{aligned}$$

where  $\sigma^2$  stands for a variance.

Since  $\delta$  is a linear function of  $\lambda$ , choosing the optimal value of  $\lambda$  is equivalent to choosing the optimal value of  $\delta$ . So, setting  $\frac{\partial L}{\partial \delta} = 0$ , the optimal value of  $\delta$  is

$$\hat{\delta} = \frac{\eta_1 \Delta^2 (1 + \eta_2) \sigma_w^2}{\Delta^2 \sigma_m^2 + \eta_2^2 r^2 (1 - \alpha_1)^2 \sigma_{m*}^2 + \eta_2^2 (1 + \beta_2 + r\beta_1)^2 \sigma_{u*}^2 + \eta_2^2 (1 - \alpha_1)^2 (1 + \beta_2)^2 \sigma_{w*}^2}$$

From  $\delta = \frac{1-\alpha}{\alpha} (1-\lambda)$ , the optimal degree of wage indexation is obtained by

$$\hat{\lambda} = 1 - \frac{\alpha}{1-\alpha} \hat{\delta}.$$

Because of  $0 < \hat{\delta} < 1$ ,  $\hat{\lambda} \neq 1$  means that the optimal degree of wage indexation is not complete but partial. If  $\lambda$  takes a value of unity, then  $\delta$  becomes zero and an unanticipated price prediction error does not affect  $Y_t$ ; only domestic supply disturbance affects  $Y_t$ . In this case, full indexation permits the domestic economy to be insulated from all foreign disturbances, but does not minimize the variance of output. On the other hand, the optimal partial wage indexation does not provide the full insulation effect, but can minimize the loss function. We will proceed to the symmetric two-country model.

### III. The Symmetric Two-Country Model

The theoretical framework is based on Turnovsky and d'Orey (1986b) but different in terms of incorporating wage indexation. It deals with two perfectly symmetric, identical countries with imperfect substitutability of goods and perfect substitutability of bonds.

The system is expressed in deviation form, subtracting the steady-state equilibrium.

$$Y_t = \alpha_1 Y_t - \alpha_2 \{I_t - [E_t C_{t+1} - C_t]\} + \alpha_3 (P_t^* + S_t - P_t) + u_t. \quad (1)$$

$$Y_t^* = \alpha_1 Y_t^* - \alpha_2 \{I_t^* - [E_t C_{t+1}^* - C_t^*]\} - \alpha_3 (P_t^* + S_t - P_t) + u_t^*. \quad (1')$$

$$0 < \alpha_1 < 1, \quad \alpha_2 > 0, \quad \alpha_3 > 0$$

$$M_t - P_t = Y_t - \beta_2 I_t + v_t. \quad (2)$$

$$M_t^* - P_t^* = Y_t^* - \beta_2 I_t^* + v_t^*. \quad \beta_2 > 0 \quad (2')$$

$$I_t = I_t^* + E_t S_{t+1} - S_t. \quad (3)$$

$$Y_t = \gamma_1 (P_t - E_{t-1} P_t) + \gamma_2 (E_{t-1} P_t - E_{t-1} C_t) - \lambda \gamma_1 (C_t - E_{t-1} C_t) + w_t. \quad (4)$$

$$Y_t^* = \gamma_1 (P_t^* - E_{t-1} P_t^*) + \gamma_2 (E_{t-1} P_t^* - E_{t-1} C_t^*) - \lambda \gamma_1 (C_t^* - E_{t-1} C_t^*) + w_t^*. \quad (4')$$

$$\gamma_1 = \frac{1-\alpha}{\alpha}$$

$$C_t = \theta P_t + (1-\theta)(P_t^* + S_t). \quad (5)$$

$$C_t^* = \theta P_t^* + (1-\theta)(P_t - S_t). \quad (5')$$

Endogenous variables:  $Y_t, Y_t^*, I_t, I_t^*, P_t, P_t^*, S_t, C_t, C_t^*$ .

Notation:

- $Y$  = real output as a deviation from the natural rate level;
- $P$  = price of domestic output;
- $C$  = consumer price index;
- $S$  = exchange rate (measured in terms of units of domestic currency per unit of foreign currency);
- $I$  = nominal interest rate;
- $M$  = nominal money supply;
- $E$  = mathematical expectation operator;
- $u$  = demand shock in output market;
- $v$  = demand shock in money market;
- $w$  = supply shock in output market;
- $\lambda$  = a degree of wage indexation;

$u$ ,  $v$ , and  $w$  have zero means and constant variances. Each is serially uncorrelated and statistically independent of the other. Foreign variables are denoted with asterisks.

All variables except interest rates are expressed in logarithms.

Equations (1) and (1') represent the goods market equilibrium conditions. Demand for output depends on the income in the home country, the expected real interest rate, terms of trade (or relative price), and stochastic disturbance in demand. Equations (2) and (2') describe the money market equilibrium conditions. The money supply is determined exogenously by the monetary authority under a flexible exchange rate regime. We assume that the elasticity of money demand with respect to income is unity and that the residents of each country do not hold the foreign currency. I use here  $C(C^*)$  as a deflator instead of  $P(P^*)$  which they employed, although they state, "Little would be changed, except for additional detail." Equation (3) describes the uncovered interest rate parity condition. Equation (4) and (4') describe aggregate supply functions. (See my another paper in this Review). A stochastic disturbance in supply is included additively.

An assumption of rational expectations yields, in deviation form,

$$E_t P_{t+1} = E_t P_{t+1}^* = E_t S_{t+1} = 0 \quad \text{for all } t$$

The solutions for  $P_t, P_t^*$ , and  $S_t$  can be expressed by the following matrix.

$$\begin{bmatrix} a & b & b \\ b & a & -b \\ c & -c & d \end{bmatrix} \begin{bmatrix} P \\ P^* \\ S \end{bmatrix} = \begin{bmatrix} u - \frac{\alpha_2}{\beta_2}(-M+v) - \left(1 - \alpha_1 + \frac{\alpha_2}{\beta_2}\right)w \\ u^* - \frac{\alpha_2}{\beta_2}(-M^*+v^*) - \left(1 - \alpha_1 + \frac{\alpha_2}{\beta_2}\right)w^* \\ (M-M^*) - (v-v^*) - (w-w^*) \end{bmatrix}$$

where  $a = \left(1 - \alpha_1 + \frac{\alpha_2}{\beta_2}\right)r_1(1 - \lambda\theta) + \alpha_2\left(\frac{1}{\beta_2} + \theta\right) + \alpha_3 > 0$   
 $b = -\left(1 - \alpha_1 + \frac{\alpha_2}{\beta_2}\right)r_1\lambda(1 - \theta) + \alpha_2(1 - \theta) - \alpha_3 < 0$  assuming  
 $c = 1 + r_1(1 - \lambda\theta) + r_1\lambda(1 - \theta) > 0$   
 $d = -2r_1\lambda(1 - \theta) + \beta_2 > 0$  assuming

Hence,  $\det > 0$ .

Solving for  $P_t, P_t^*$ , and  $S_t$ , we obtain

$$\begin{aligned} P_t &= \phi_1 M_t + \phi_2 M_t^* + \phi_3 u_t + \phi_4 u_t^* - \phi_1 v_t - \phi_2 v_t^* + \phi_5 w_t + \phi_6 w_t^* \\ P_t^* &= \phi_2 M_t + \phi_1 M_t^* + \phi_4 u_t + \phi_3 u_t^* - \phi_2 v_t - \phi_1 v_t^* + \phi_6 w_t + \phi_5 w_t^* \\ S_t &= \eta_1(M_t - M_t^*) + \eta_2(u_t - u_t^*) - \eta_1(v_t - v_t^*) + \eta_3(w_t - w_t^*). \end{aligned}$$

where  $\phi_1 = \frac{1}{\det} \left\{ \frac{\alpha_2}{\beta_2}(ad - bc) - b(a + b) \right\} > 0$   
 $\phi_2 = \frac{-1}{\det} \left\{ \frac{\alpha_2}{\beta_2}b(c + d) - b(a + b) \right\} < 0$   
 $\phi_1 > |\phi_2|$   
 $\phi_3 = \frac{1}{\det} (ad - bc) > 0$   
 $\phi_4 = \frac{-1}{\det} b(c + d) > 0$   
 $\phi_5 = \frac{-1}{\det} \left\{ \left(1 - \alpha_1 + \frac{\alpha_2}{\beta_2}\right)(ad - bc) - b(a + b) \right\} < 0$   
 $\phi_6 = \frac{1}{\det} \left\{ \left(1 - \alpha_1 + \frac{\alpha_2}{\beta_2}\right)b(c + d) - b(a + b) \right\} < 0$

$$\begin{aligned}\eta_1 &= \frac{1}{det} \left\{ (a+b) \left( -\frac{\alpha_2}{\beta_2} c + a - b \right) \right\} > 0 \\ \eta_2 &= \frac{-1}{det} c(a+b) < 0 \\ \eta_3 &= \frac{1}{det} \left\{ (a+b) \left[ \left( 1 - \alpha_1 + \frac{\alpha_2}{\beta_2} \right) c - (a-b) \right] \right\} \geq 0\end{aligned}$$

Solving for  $Y_t$  and  $Y_t^*$ ,

$$\begin{aligned}Y_t &= \mu_1 M_t + \mu_2 M_t^* + \mu_3 u_t + \mu_4 u_t^* - \mu_1 v_t - \mu_2 v_t^* \\ &\quad + \mu_5 w_t + \mu_6 w_t^* \\ Y_t^* &= \mu_2 M_t + \mu_1 M_t^* + \mu_4 u_t + \mu_3 u_t^* - \mu_2 v_t - \mu_1 v_t^* \\ &\quad + \mu_6 w_t + \mu_5 w_t^*\end{aligned}$$

where

$$\begin{aligned}\mu_1 &= \gamma_1 \{ (1-\lambda\theta)\phi_1 - \lambda(1-\theta)(\phi_2 + \eta_1) \} \geq 0 \\ \mu_2 &= \gamma_1 \{ (1-\lambda\theta)\phi_2 - \lambda(1-\theta)(\phi_1 - \eta_1) \} \geq 0 \\ \mu_3 &= \gamma_1 \{ (1-\lambda\theta)\phi_3 - \lambda(1-\theta)(\phi_4 + \eta_2) \} \\ \mu_4 &= \gamma_1 \{ (1-\lambda\theta)\phi_4 - \lambda(1-\theta)(\phi_3 - \eta_2) \} \\ \mu_5 &= \gamma_1 \{ (1-\lambda\theta)\phi_5 - \lambda(1-\theta)(\phi_6 + \eta_3) \} + 1 \\ \mu_6 &= \gamma_1 \{ (1-\lambda\theta)\phi_6 - \lambda(1-\theta)(\phi_5 - \eta_3) \}\end{aligned}$$

It is seen that output in each country depends on domestic money, stochastic demand and supply shocks as well as those shocks abroad. The coefficients are symmetric given the structure of symmetric economies. The signs are ambiguous. As Canzoneri and Gray (1985) specified, there are cases of symmetric-positive spillover (locomotive) effect of monetary policy and symmetric-negative spillover (beggar-thy-neighbor) effect. The sign of the spillover effect ( $\mu_2$ ) depends on the relative importance of some channels through which a country's monetary policy is transmitted abroad; a channel through terms of trade, a channel through the interest rate because of perfect capital mobility.

An expansionary monetary policy in the domestic country generates inflation and a depreciation of the domestic currency against the foreign currency. In the context of interdependent economies, a game-theoretic strategy of monetary policy results from the lack of independence from foreign disturbances even under the perfectly flexible exchange rate system.

When a degree of wage indexation is full ( $\lambda = 1$ ), both  $\mu_1$ , and  $\mu_2$  become

zero. Then,  $Y_t$  and  $Y_t^*$  are independent of monetary shocks ( $M_t$ ,  $M_t^*$ ,  $v_t$ , and  $v_t^*$ ). However, in the presence of demand shocks ( $u_t$  and  $v_t^*$ ) and supply shocks ( $w_t$  and  $w_t^*$ ), a full wage indexation can not stabilize  $Y$  and  $Y^*$ . An optimal wage indexation must be chosen, depending on the nature of the shock and a loss function, as non-cooperative or cooperative equilibria. We will analyze the problem in details in the near future.

#### IV. Concluding Remarks

We have examined in the asymmetric and symmetric models the international transmission of disturbances and policy interdependence under a flexible exchange rate system. Furthermore, we considered the implication of wage indexation which can minimize the loss function.

We discussed the two country situation. But, there are in the world more than one hundred countries which differ in terms of the size and structure of the economy. If every country cooperates, the member countries are better off in a Pareto optimal sense. However, each individual country has an incentive to cheat on the agreement. In an infinite repeated game rather than a one-shot game, an equilibrium might exist in which the threat of reprisal enforces something close to cooperation. However, these games have many equilibria, and it is not clear that the policy makers unanimously agree with cooperation.

Stable international monetary arrangements or rules of the game are indispensable to all nations engaged in international trade and finance. The international monetary system can be regarded as a kind of global public goods to all the member countries participating in, for example, the IMF. While each member country enjoys the benefits, she must take some burdens as the costs. The free rider problem of adjustment naturally takes place.

It is time to search for not only alternatives to the exchange rate system (e.g., return to the fixed rate, target zone), but also the methods for achieving international policy coordination.

#### APPENDIX

The production function is

$$Y_t = \varepsilon_t \cdot L_t^{1-\alpha} \quad 0 < \alpha < 1$$

$L_t$  = labor input

$\varepsilon_t$  = productivity factor

Taking logarithms,

$$\ln Y_t = y_t = (1-\alpha)l_t + \varepsilon_t$$

The first order condition is

$$MP_L = \frac{\partial Y_t}{\partial L_t} = (1-\alpha)\varepsilon_t L_t^{-\alpha} = \frac{W}{P}$$

The labor demand is

$$l_t^d = -\frac{1}{\alpha}(w_t - p_t) + \frac{1}{\alpha} \ln(1-\alpha) + \frac{1}{\alpha} \varepsilon_t$$

The labor supply is

$$l_t^s = \beta(w_t - p_t) \quad \beta > 0$$

The wage contract scheme is

$$w_t = \bar{w}_t + \lambda(p_t - E_{t-1} p_t)$$

$\bar{w}_t$  is set at time  $t-1$  to equate the expected labor demand and the expected labor supply given  $\varepsilon_t = 0$  to ensure that the labor market is expected to clear under the one-period wage contract setting.

$$\bar{w}_t = E_{t-1} p_t + \frac{\ln(1-\alpha)}{1+\alpha\beta}$$

$w_t$  is the actual nominal wage at time  $t$  and  $\lambda$  is the parameter of wage indexation.

$$w_t = (1-\lambda)E_{t-1} p_t + \lambda p_t + \frac{\ln(1-\alpha)}{1+\alpha\beta}$$

Substituting  $w_t$  into the labor demand function (since labor is demand determined),

$$l_t = \frac{1-\lambda}{\alpha} (p_t - E_{t-1} p_t) + \frac{\beta}{\alpha\beta+1} \cdot \ln(1-\alpha) + \frac{1}{\alpha} \varepsilon_t$$

Substituting  $l_t$  into  $y_t$ ,

$$y_t = (1-\alpha)l_t + \varepsilon_t$$



$$= \frac{(1-\alpha)\beta}{1+\alpha\beta} \ln(1-\alpha) + \frac{(1-\alpha)}{\alpha} (1-\lambda)[p_t - E_{t-1} p_t] + \frac{1}{\alpha} \varepsilon_t$$

$$= \bar{y} + \delta[p_t - E_{t-1} p_t] + w_t$$

where

$$\delta = \frac{1-\alpha}{\alpha} (1-\lambda).$$

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# MONETARY POLICY AND FOREIGN DISTURBANCES IN A SMALL OPEN ECONOMY UNDER FLEXIBLE EXCHANGE RATES AND RATIONAL EXPECTATIONS\*

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## 1. Introduction

The purpose of this paper is to examine the effects of monetary policy and foreign disturbances on a small open economy under flexible exchange rates and rational expectations. We will extend the rational expectation model of the closed economy developed by Lucas (1972), and Sargent and Wallace (1975) into an open economy and investigate whether the so-called policy ineffectiveness proposition holds. Furthermore, we will examine the insulation effect of a flexible exchange rate system from foreign disturbances. When several countries adopted the flexible exchange rate system in the early 1970's, some economists expected it to insulate the economy from foreign disturbances. However, it in fact did not perform as well as had been expected. We will begin with a brief review.

The pioneering works of Mundell (1963) and Fleming (1962) show that under the assumptions of perfect capital mobility and a flexible exchange rate, monetary policy in a small country is effective while fiscal policy is not effective, and vice versa under a fixed rate. They also assume a fixed price level and static expectation of the exchange rate which makes the domestic interest rate be equal to the world interest rate. An expansionary monetary policy is effective in increasing output via depreciation of the real exchange rate and increasing exports (a kind of beggar-thy-neighbor policy). On the other hand, fiscal policy is not effective since an increase in government expenditure leads to appreciation of the exchange rate thereby reducing net exports.

Dornbusch (1976) extended Mundell's model and explained the 'overshooting' phenomenon of the exchange rate due to the slow adjustment of the goods market relative to the asset market. To note, he used regressive expectation of the exchange rate which is consistent with rational expectation about the

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long-run equilibrium exchange rate. In his model, a monetary expansion induces an immediate depreciation in the exchange rate in a small open economy under perfect capital mobility and has the effects on the interest rate, the terms of trade, aggregate demand, and output. In the long-run, a monetary expansion causes and equiproportionate increase in prices and the exchange rate.

Kouri (1976) analyzed the determination of the exchange rate by the monetary approach and emphasized the role of the process of asset accumulation through current account in the dynamic model.

Mathieson (1977) compared under various types of expectation formation the effects of monetary policy and fiscal policy on the exchange rate and the price of the domestic goods, based on Dornbusch's model. However, in his model it is assumed that real income is fixed at the full employment level.

Sachs (1980) shows that the Mundell-Fleming proposition mentioned earlier holds only when real wage can be altered by nominal exchange rate movements, and that if the real wage is rigid, their conclusion is reversed. When the real wage is fixed, fiscal policy improves the terms of trade and raises aggregate supply while monetary policy has no effect on the terms of trade. It demonstrates that more attention must be paid to the wage structure and labor market conditions when we discuss macroeconomic policies for an open economy.

In the next section, the theoretical framework of a small open economy is presented and in the following sections, the effects of monetary policy and the insulation effect of flexible exchange rates from foreign disturbances are examined. In the last section, the conclusion and further research suggestions are briefly mentioned.

## **2. The Small Open Economy Model**

The theoretical framework is based on Turnovsky (1981).<sup>1)</sup> We shall modify the model by adding a foreign income and a foreign interest rate as well as a foreign price, and allowing for wage indexation which he ignores. We deal with a small open economy with imperfect substitutability of goods and perfect substitutability of bonds under a flexible exchange rate system, assumed to be determined by the monetary approach to exchange rate.

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1) A recent survey paper by Marston (1985) is comprehensive. In the section on a model of open economy under rational expectations, he draws most on a study by Turnovsky (1981). So we also concentrate on the paper.

The system is expressed as follows:

$$Y_t = \alpha_1 Y_t - \alpha_2 [I_t - (E_t C_{t+1} - C_t)] + \alpha_3 (P_t^* + S_t - P_t) + \alpha_4 Y_t^* \quad (1)$$

$$0 < \alpha_1 < 1, \quad \alpha_2, \alpha_3, \alpha_4 > 0$$

$$C_t = \theta P_t + (1 - \theta)(P_t^* + S_t) \quad (2)$$

$$0 < \theta < 1$$

$$M_t - C_t = \beta_1 Y_t - \beta_2 I_t \quad (3)$$

$$\beta_1, \beta_2 > 0$$

$$I_t = I_t^* + E_t S_{t+1} - S_t \quad (4)$$

$$Y_t = \bar{Y} + r_1 (P_t - E_{t-1} P_t) + r_2 (E_{t-1} P_t - E_{t-1} C_t) - \delta r_1 (C_t - E_{t-1} C_t) \quad (5)$$

$$r_1, r_2 > 0, \quad 0 \leq \delta \leq 1$$

Endogenous variables:  $Y_t, C_t, I_t, P_t, S_t$

Exogenous variables:  $M_t, Y_t^*, I_t^*, P_t^*$

Notation:

$Y_t$  = real output at time  $t$

$I_t$  = nominal interest rate

$P_t$  = price of output

$S_t$  = spot exchange rate, measured in units of the domestic currency per unit of foreign currency.

$C_t$  = consumer price (cost of living)

$M_t$  = nominal money supply

$E$  = mathematical expectation operator

Foreign variables are denoted with asterisks.

All variables except interest rates are expressed in logarithms.

Equation (1) represents the goods market equilibrium condition. The demand for domestic output depends on domestic income, the expected real rate of interest, the relative price (or the reciprocal of terms of trade), and foreign income. Equation (2) defines the consumer price index as a weighted average of the price of domestic goods and the price of imported goods. Equation (3) describes the money market equilibrium condition. We assume that

domestic residents do not hold foreign currency and we abstract from wealth effects. Equation (4) describes the uncovered interest rate parity condition from the assumption of a perfectly integrated bond market. The domestic nominal interest rate is equal to the world nominal interest rate plus the expected rate of exchange depreciation. Finally, equation (5) represents the aggregate supply function which looks like a Lucas supply function. However, as Flood (1979) pointed out, this rationale for (5) is inappropriate for an open economy where contemporaneous trading between countries is permitted. Rather, it is derived from the wage contract model with wage indexation following Gray (1976). (see Appendix)

The system can be expressed in deviation form, subtracting an initial steady-state equilibrium. Eliminating  $I_t$ ,

$$(1-\alpha_1)y_t = -\alpha_2[(E_t s_{t+1}-s_t)+i_t^*-(E_t c_{t+1}-c_t)] \\ +\alpha_3(p_t^*+s_t-p_t)+\alpha_4 y_t^* \quad (1)'$$

$$c_t = \theta p_t + (1-\theta)(p_t^*+s_t) \quad (2)'$$

$$m_t - c_t = \beta_1 y_t - \beta_2 (E_t s_{t+1} - s_t + i_t^*) \quad (3)'$$

$$y_t = r_1(p_t - E_{t-1} p_t) + r_2(E_{t-1} p_t - E_{t-1} c_t) \\ - \delta r_1(c_t - E_{t-1} c_t) \quad (5)'$$

Eliminating  $c_t$ , the system can be reduced into three equations and expressed in the following matrix.

$$\begin{bmatrix} 1-\alpha_1 & \alpha_3+\alpha_2\theta & -(\alpha_3+\alpha_2\theta) \\ 1 & -r_1(1-\delta\theta) & r_1\delta(1-\theta) \\ \beta_1 & \theta & 1-\theta+\beta_2 \end{bmatrix} \begin{bmatrix} y_t \\ p_t \\ s_t \end{bmatrix} \\ = \begin{bmatrix} -\alpha_2 i_t^* + \alpha_2 \theta E_t z_{t+1} + \alpha_2 E_t p_{t+1}^* \\ + [\alpha_3 - \alpha_2(1-\theta)]p_t^* + \alpha_4 y_t^* \\ -r_1 \delta(1-\theta)p_t^* + [r_1(\delta\theta-1) + r_2(1-\theta)]E_{t-1} z_t \\ + r_1(\delta-1)E_{t-1} p_t^* + r_1(\delta-1)E_{t-1} s_t \\ m_t + \beta_2 i_t^* - (1-\theta)p_t^* + \beta_2 E_t s_{t+1} \end{bmatrix}$$

where  $z_t = p_t - p_t^* - s_t$

$$D = -(1-\alpha_1)\gamma_1\{(1-\theta)+\beta_2(1-\delta\theta)\} \\ -(\alpha_3+\alpha_2\theta)\{1+\beta_2+\beta_1\gamma_1(1-\delta)\} < 0$$

We must first solve for the rational expectation solutions. Taking expectations of the three equations for an arbitrary date  $t$ , formed at an initial period 0:

$$(1-\alpha_1)E_0 y_t = -\alpha_2 E_0 i_t^* + \alpha_4 E_0 y_t^* \\ + \alpha_2 \theta E_0 z_{t+1} - (\alpha_2 \theta + \alpha_3) E_0 z_t \\ + \alpha_2 (E_0 p_{t+1}^* - E_0 p_t^*) \quad (6a)$$

$$E_0 y_t = \gamma_2(1-\theta)E_0 z_t \quad (6b)$$

$$E_0 m_t = -\beta_2 E_0 i_t^* + E_0 p_t^* + (1+\beta_2)E_0 s_t \\ - \beta_2 E_0 s_{t+1} + \theta E_0 z_t + \beta_1 E_0 y_t \quad (6c)$$

Substituting (6b) into (6a), we obtain the first order difference equation.

$$\alpha_2 \theta E_0 z_{t+1} - [\alpha_2 \theta + (1-\alpha_1)\gamma_2(1-\theta) + \alpha_3] E_0 z_t \\ = -\alpha_2 (E_0 p_{t+1}^* - E_0 p_t^*) + \alpha_2 E_0 i_t^* - \alpha_4 E_0 y_t^*$$

The solution is

$$E_0 z_t = \frac{1}{\theta} \sum_{i=1}^{\infty} \mu^i (E_0 p_{t+i}^* - E_0 p_{t+i-1}^*) \\ - \frac{1}{\theta} \sum_{i=1}^{\infty} \mu^i E_0 i_{t+i}^* + \frac{\alpha_4}{\alpha_2 \theta} \sum_{i=1}^{\infty} \mu^i E_0 y_{t+i}^*$$

assuming the transversality condition holds, *i. e.*

$$\lim_{i \rightarrow \infty} \mu^i E_0 z_i = 0$$

where  $\mu = \frac{\alpha_2 \theta}{\alpha_2 \theta + (1-\alpha_1)\gamma_2(1-\theta) + \alpha_3} < 1$

Next, from the equations (6b) and (6c),

$$\beta_2 E_0 s_{t+1} - (1+\beta_2)E_0 s_t = [\theta + \beta_1 \gamma_2(1-\theta)] E_0 z_t \\ - E_0 m_t + E_0 p_t^* - \beta_2 E_0 i_t^*$$

The solution is

$$E_0 s_t = \frac{1}{1+\beta_2} \sum_{j=1}^{\infty} (E_0 m_{t+j} - E_0 p_{t+j}^* + \beta_2 E_0 i_{t+j}^*) \lambda^j \\ - \frac{1}{1+\beta_2} [\theta + \beta_1 r_2 (1-\theta)] \sum_{j=1}^{\infty} \lambda^j E_0 z_{t+j}$$

where  $\lambda = \frac{\beta_2}{1+\beta_2} < 1$

Here we assume stochastic foreign disturbances which have zero means, are serially independent, and uncorrelated with each other.

$$E_0 p_{t+i}^* = E_0 i_{t+i}^* = E_0 y_{t+i}^* = 0 \text{ for all } 0 \text{ and } t+i$$

hence

$$E_0 z_t = 0 \text{ for all } t \\ E_0 s_t = \frac{1}{1+\beta_2} \sum_{j=1}^{\infty} E_0 m_{t+j} \cdot \lambda^j$$

The solutions for  $y_t$ ,  $p_t$ , and  $s_t$  can be expressed.

$$y_t = \frac{r_1}{D} \{ \alpha_2 [(1-\theta) + \beta_2 (1-\delta\theta)] \\ - \beta_2 (1-\delta)(\alpha_3 + \alpha_2 \theta) \} i_t^* \\ + \frac{1}{D} \{ -\alpha_4 r_1 [(1-\theta) + \beta_2 (1-\delta\theta)] \} y_t^* \\ + \frac{r_1}{D} \{ [\alpha_3 - \alpha_2 (1-\theta)] [(1-\theta) + \beta_2 (1-\delta\theta)] \\ + (1-\theta)(\alpha_3 + \alpha_2 \theta)(1+\delta\beta_2) \} p_t^* \\ - \frac{r_1 (1-\delta)(\alpha_3 + \alpha_2 \theta)}{D} \{ (m_t - E_{t-1} m_t) \\ + \sum_{j=1}^{\infty} (E_t m_{t+j} - E_{t-1} m_{t+j}) \lambda^j \} \quad (7)$$

The real output responds to foreign disturbances, forecast errors of money supply, and the revision of forecasts for future periods.



$$\begin{aligned}
 p_t = & \frac{1}{D} \{ \alpha_2 [(1-\theta)(1-\beta_1 r_1 \delta) + \beta_2] \\
 & - \beta_2 [(1-\alpha_1) r_1 \delta (1-\theta) + \alpha_3 + \alpha_2 \theta] \} i_t^* \\
 & - \frac{\alpha_4}{D} [(1-\theta)(1-\beta_1 r_1 \delta) + \beta_2] y_t^* \\
 & + \frac{1}{D} \{ \alpha_2 (1-\theta)(1-\beta_1 r_1 \delta) \\
 & + \beta_2 [\alpha_2 (1-\theta) - \alpha_3 - (1-\theta) r_1 \delta (1-\alpha_1)] \} p_t^* \\
 & - \frac{[(1-\alpha_1) r_1 \delta (1-\theta) + \alpha_3 + \alpha_2 \theta]}{D} \{ (m_t - E_{t-1} m_t) \\
 & + \sum_{j=1}^{\infty} (E_t m_{t+j} - E_{t-1} m_{t+j}) \lambda^j \} \\
 & + \frac{1}{1+\beta_2} \sum_{j=0}^{\infty} E_{t-1} m_{t+j} \cdot \lambda^j
 \end{aligned} \tag{8}$$

$$\begin{aligned}
 s_t = & \frac{-1}{D} \{ \alpha_2 \beta_1 r_1 (1-\delta\theta) + \beta_2 [r_1 (1-\delta\theta)(1-\alpha_1) + \alpha_3] \} i_t^* \\
 & + \frac{\alpha_4}{D} [\theta + \beta_1 r_1 (1-\delta\theta)] y_t^* \\
 & + \frac{1}{D} \{ [\alpha_3 - \alpha_2 (1-\theta)] [\theta + \beta_1 r_1 (1-\delta\theta)] \\
 & + (1-\theta) [r_1 (1-\alpha_1) - (\alpha_3 + \alpha_2 \theta)(1-\delta\beta_1 r_1)] \} p_t^* \\
 & - \frac{[r_1 (1-\delta\theta)(1-\alpha_1) + \alpha_3 + \alpha_2 \theta]}{D} \{ (m_t - E_{t-1} m_t) \\
 & + \sum_{j=1}^{\infty} (E_t m_{t+j} - E_{t-1} m_{t+j}) \lambda^j \} \\
 & + \frac{1}{1+\beta_2} \sum_{j=0}^{\infty} E_{t-1} m_{t+j} \cdot \lambda^j
 \end{aligned} \tag{9}$$

where

$$\begin{aligned}
 D = & -(\alpha_3 + \alpha_2 \theta) [1 + \beta_2 + \beta_1 r_1 (1-\delta)] \\
 & - (1-\alpha_1) r_1 [(1-\theta) + \beta_2 (1-\delta\theta)] < 0
 \end{aligned}$$

### 3. The Effects of Monetary Policy and Foreign Disturbances

We can analyze the effects of various types of domestic monetary expansions and examine whether policy ineffectiveness proposition holds in the small open economy model or not. We will also consider the role of wage indexation ( $\delta$ ).

Case 1. A purely unanticipated increase in money supply, which is not expected to continue beyond the current period  $t$ , i.e.

$$dm_t > 0,$$

$$dE_{t-1} m_{t+j} = 0 \quad \text{for } j = 0, 1, 2, \dots$$

$$dE_t m_{t+j} = 0 \quad \text{for } j = 1, 2, \dots$$

From equations (7), (8), and (9),

$$\frac{\partial y_t}{\partial m_t} = \frac{-r_1(1-\delta)(\alpha_3 + \alpha_2 \theta)}{D} \geq 0$$

$$\frac{\partial p_t}{\partial m_t} = -\frac{(1-\alpha_1)r_1 \delta(1-\theta) + \alpha_3 + \alpha_2 \theta}{D} > 0$$

$$\frac{\partial s_t}{\partial m_t} = -\frac{r_1(1-\delta\theta)(1-\alpha_1) + \alpha_3 + \alpha_2 \theta}{D} > 0$$

An unanticipated, temporary increase in  $m_t$  causes the increases in domestic output and the domestic price, and the depreciation of the exchange rate. The bigger  $\delta$  is, the bigger an increase in  $p_t$  is. But a full indexation ( $\delta = 1$ ) can insulate output from the change in the money supply. From the equation (5)'  $y_t = r_1(1-\theta) z_t$  holds for  $\delta = 1$ .  $p_t$  and  $s_t$  change in the same way, so that  $\partial z_t / \partial m_t = 0$ .

Case 2. An initially unanticipated increase in money supply, which is expected to continue permanently at the time  $t$ . i.e.

$$dm_t = dE_t m_{t+j} > 0 \quad \text{for } j = 1, 2, \dots$$

$$dE_{t-1} m_{t+j} = 0 \quad \text{for } j = 0, 1, 2, \dots$$

$$\begin{aligned} \frac{\partial y_t}{\partial m_t} &= \frac{-r_1(1-\delta)(\alpha_3 + \alpha_2 \theta)}{D} (1 + \sum_{j=1}^{\infty} \lambda^j) \\ &= \frac{-r_1(1-\delta)(\alpha_3 + \alpha_2 \theta)}{D} (1 + \beta_2) \geq 0 \quad (= \text{if } \delta = 1) \end{aligned}$$

$$\frac{\partial p_t}{\partial m_t} = -\frac{(1-\alpha_1)r_1 \delta(1-\theta) + \alpha_3 + \alpha_2 \theta}{D} (1 + \beta_2) > 0$$

$$\frac{\partial s_t}{\partial m_t} = -\frac{r_1(1-\delta\theta)(1-\alpha_1) + \alpha_3 + \alpha_2 \theta}{D} (1 + \beta_2)$$

$$= 1 + \frac{(\alpha_3 + \alpha_2 \theta)[\beta_2 + \beta_1 r_1(1-\delta)] + r_1(1-\alpha_1)[- \theta(1-\delta) + \beta_2(1-\delta\theta)]}{D} > 0$$

Such a monetary disturbance leads to increases in  $y_t$ ,  $p_t$ , and  $s_t$  if  $\delta \neq 1$ . Every effect in case 2 is greater than in case 1. The overshooting of the exchange

rate depends on whether the numerator of the second term is negative or not.

Case 3. An anticipated increase in money supply, which ex ante at time  $t - 1$  is expected to be permanent, but ex post at time  $t$  turns out to be expected to be only transitory, i.e.

$$dm_t = dE_{t-1} m_{t+j} > 0 \quad \text{for } j = 0, 1, 2, \dots$$

$$dE_t m_{t+j} = 0 \quad \text{for } j = 1, 2, \dots$$

$$\frac{\partial y_t}{\partial m_t} = \frac{r_1(1-\delta)(\alpha_3 + \alpha_2 \theta)}{D} \beta_2 \leq 0 \quad (\text{a contractionary effect})$$

Under a full wage indexation, a change in money supply has no effect on  $y_t$ . It is the same result as Gray's.

$$\frac{\partial p_t}{\partial m_t} = \frac{(1-\alpha_1)r_1 \delta(1-\theta) + \alpha_3 + \alpha_2 \theta}{D} \cdot \beta_2 + 1 > 0$$

$$\frac{\partial s_t}{\partial m_t} = \frac{r_1(1-\delta\theta)(1-\alpha_1) + \alpha_3 + \alpha_2 \theta}{D} \cdot \beta_2 + 1 > 0$$

Case 4. A fully anticipated increase in money supply which is expected to be both ex ante and ex post transitory, i.e.

$$dm_t = dE_{t-1} m_t,$$

$$dE_{t-1} m_{t+j} = dE_t m_{t+j} = 0 \quad \text{for } j = 1, \dots$$

$$\frac{\partial y_t}{\partial m_t} = 0 \quad (\text{no real effect})$$

$$\frac{\partial p_t}{\partial m_t} = \frac{1}{1+\beta_2} > 0$$

$$\frac{\partial s_t}{\partial m_t} = \frac{1}{1+\beta_2} > 0$$

Case 5. A fully anticipated increase in money supply which both ex ante and ex post is expected to be permanent, i.e.

$$dm_t = dE_{t-1} m_{t+j} = dE_t m_{t+j}, \quad \text{for } \forall j$$

$$\frac{\partial y_t}{\partial m_t} = 0 \quad (\text{no real effect})$$

$$\frac{\partial p_t}{\partial m_t} = \frac{\partial s_t}{\partial m_t} = 1 \quad (\text{equiproportionate change})$$

Case 6. Suppose that the monetary authority announces at time 0 that it will increase the money supply by  $dm$  permanently at time  $T$  and that the private sector believes the announcement, i.e.

$$\begin{aligned}
 dm_t &= 0 & t &= 1, \dots, T-1 \\
 dE_t m_{t'} &= 0 & t' &= 1, \dots, T-1 \quad t < t' \\
 dm_t &= dm & t &= T, T+1, \dots, \\
 dE_t m_{t'} &= dm & t' &= T, T+1, \dots, \quad t < t' \\
 dy_t &= 0 & t &= 1, \dots, T-1 \\
 &= 0 & t &= T, \dots, \\
 dp_t &= \frac{1}{1+\beta_2} \sum_{j=T-t}^{\infty} dm \lambda^j = \lambda^{T-t} dm & t &= 1, \dots, T-1 \\
 &= \frac{1}{1+\beta_2} \sum_{j=0}^{\infty} dm \lambda^j = dm & t &= T, \dots \\
 ds_t &= \lambda^{T-t} dm & t &= 1, \dots, T-1 \\
 &= dm & t &= T, \dots
 \end{aligned}$$

At time 0, the announcement date itself, real output will be affected since expectations are revised. But, during the transition before time  $T$ , real output remains unaffected since there is no reason to update forecasts. Both the price and the exchange rate increase monotonically and rise at time  $T$  by the same amount ( $dm$ ).

When the private sector attaches partial credibility to an announcement, the effects will be complicated.

We turn now to the effects of foreign disturbances on the domestic economy. By the comparative statics,

$$\frac{\partial y_t}{\partial y_t^*} > 0, \quad \frac{\partial s_t}{\partial i_t^*} > 0, \quad \frac{\partial s_t}{\partial y_t^*} < 0$$

The signs of the other derivatives are ambiguous.

It is clear from the equation (7), (8), and (9) that the small open economy under a perfectly flexible exchange rate cannot be insulated from foreign disturbances which are expected to be transitory.

A full indexation ( $\delta = 1$ ) can not insulate the international transmission of foreign disturbances while it can insulate the output from changes in the money supply. The private sector will choose an optimal degree of wage indexation such that minimizes a loss function which depends on  $y_t$  and  $c_t$ . This is analogous to Gray's idea in the presence of domestic monetary and real shocks.

#### 4. Concluding Remarks

We have seen that the policy ineffectiveness proposition holds also in the small open economy, but a flexible exchange rate system with a full wage indexation can not insulate the economy from foreign disturbances transmitted while a full wage indexation can insulate the economy from domestic monetary shocks.

When we assume that the monetary authority can observe the current stochastic foreign disturbances, we can deal with the issue of optimal foreign exchange market intervention policy, in other words, 'managed' float, as a tool of stabilization policy in a small open economy, subject to such disturbances. This also raises the question of what exchange rate regime is optimal.

The analysis of fiscal policy is left unfinished. Then we will have to incorporate a government budget constraint and consider how government spending is financed. Also, wealth effects were abstracted from this model for simplicity. To note, wealth effects may be a source of non-neutrality of money in the short run.

Finally, domestic bonds and foreign bonds are likely to be imperfect substitutes because of exchange risk, default risk, political risk, and so on. Hence, we should employ the portfolio-balance approach of exchange rate determination as an alternative. These are subjects for future research.

#### Appendix

The production function is

$$Y_t = L_t^{1-a} \quad 0 < a < 1$$

$$\frac{\partial Y_t}{\partial L_t} = (1-a)L_t^{-a} = \frac{W_t}{P_t}$$

$$\ln(1-a) - a l_t^d = w_t - p_t$$

The labor demand is

$$l_t^d = \frac{1}{a} \{ \ln(1-a) - (w_t - p_t) \}$$

$$y_t^s = (1-a) l_t^d = \frac{1-a}{a} \{ \ln(1-a) - (w_t - p_t) \}$$

The labor supply is

$$l_t^s = n_0 + b(w_t - c_t), \quad b > 0$$

The actual wage is

$$w_t = \bar{w}_t + \delta(c_t - E_{t-1} c_t), \quad 0 \leq \delta \leq 1$$

where  $\delta$  is a parameter of indexation.

The contract wage  $\bar{w}_t$  is determined so as to equate expected labor demand and expected labor supply for time  $t$  formed at  $t-1$  because of the one-period length of wage contracts.

$$E_{t-1} l_t^d = \frac{1}{a} \{ \ln(1-a) - (\bar{w}_t - E_{t-1} p_t) \}$$

$$E_{t-1} l_t^s = n_0 + b(\bar{w}_t - E_{t-1} c_t)$$

From  $E_{t-1} l_t^d = E_{t-1} l_t^s$

$$\bar{w}_t = \frac{1}{1+ab} \{ (E_{t-1} p_t + ab E_{t-1} c_t) + \ln(1-a) - n_0 a \}$$

The amount of labor supply is determined by the demand for labor once the labor contract has taken place. Substituting  $w_t$  into  $y_t^s$ , the aggregate supply is

$$y_t^s = \bar{Y} + r_1(p_t - E_{t-1} p_t) + r_2(E_{t-1} p_t - E_{t-1} c_t) - \delta r_1(c_t - E_{t-1} c_t)$$

where  $\bar{Y} = \frac{1-a}{1+ab} \{ b \ln(1-a) + n_0 \}$

$$r_1 = \frac{1-a}{a}$$

$$r_2 = \frac{(1-a)b}{1+ab}$$

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# A SKETCH OF THE THEORY OF TRADE CYCLE

Nobuo OKISHIO

## 1. Problems on the Crisis Theory

In my opinion problems to be solved concerning the crisis theory are the following three.

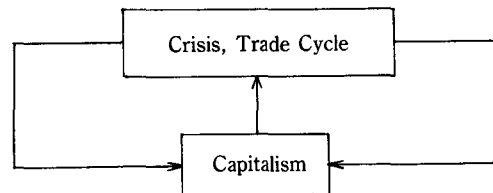
- (1) Crisis and trade cycle are characteristic phenomena in a capitalistic society.
- (2) Crisis and trade cycle are indispensable for the reproduction of capitalistic society.
- (3) Crisis and trade cycle create the conditions to abolish capitalistic society and bring forth new relations of production.

These three subjects are derived from the problems of the political economy of capitalism, whose main problems are to reveal the following three themes. (1) Capitalism is a peculiar social form which appeared on a particular stage in the history of human beings. (2) Capitalism has a self-reproductive mechanism in itself. (3) Capitalism creates conditions to abolish itself and bring forth new social form. By making these themes clear political economy can grasp capitalism historically and totally. To grasp capitalism historically it is not sufficient simply to show that capitalism is a particular historical form of human beings' society. It is also necessary to elucidate that the self-reproductive activity of capitalism brings forth new conditions which are incompatible with the existence of capitalism and then abolish itself. On the other hand to grasp capitalism totally it is necessary to show the very grounds of the existence of capitalism, to make clear the mechanism by which capitalism keeps and reproduces itself, and to show that capitalism creates the conditions to abolish itself.<sup>1)</sup> Illustrating the above three problems, we get the following Figure.

We have had a great amount of literature on crisis theory. Though none of these covered the above three problems explicitly, I think there may be few Marxian economists who have denied these three problems.

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1) The third problem is the most important task of economics. In this point my opinion is different from the so-called "Uno- theory".



Marx stated that the method of his economics was dialectic, and dialectic “includes in its comprehension an affirmative recognition of the existing state of things, at the same time also, the recognition of the negation of that state, of its inevitable breaking up; because it regards every historically developed social form as in fluid movement, its momentary existence”.<sup>2)</sup>

However so far a tremendous emphasis has been laid on problem (1), and problems (2) and (3) have not been treated properly. Though it is natural to emphasize problem (1), which is a basis of the crisis theory, problems (2) and (3), especially the latter, must be explored more deeply to grasp capitalism historically and totally.

## 2. Characteristics of Capitalism

One of the main characteristics by which capitalism is distinguished from other social forms is that capitalism is a class society. Here class society means a society where the decisions on production, (what, how much, how, when and how to dispose) are monopolized by a few members of the society and the other members are excluded from this decision making. People excluded from the decision making are compelled to work subject to the decisions made by privileged few and to be exploited their surplus labour. The decisions on production are exercised in order for them to be exploited by the privileged who monopolize them. Labourers receive only a part of the net output which is the residual of output after deducting the replacement of production goods required to reproduce at the same scale in the next period. And the exploiting class obtain the rest (surplus output) and spend it for their consumption, “non-reproductive exhaustion” to maintain the class society, the additional investment for the increase in the production after the next period, and other waste.

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2) K. Marx *Kapital* in volume I, the afterword of the second edition.

Another main characteristic by which capitalism is distinguished from other social forms is that the production of commodities is in prevalence. In spite of the fact that the social division of labour prevails there, means of production in each sector of the division of labour are owned privately, hence decisions on production become private and dispersive and the products are owned privately. Therefore the products are fated to be commodities produced for exchange purposes, and the social and material reproduction is obliged to be carried out through the exchange of commodities. However the overall exchange of commodities is carried out only by the following indirect exchange with the medium of money.<sup>3)</sup>

#### Commodity A – Money – Commodity B

Consequently each exchange is decomposed into the simple exchange (purchase and sale) : Commodity – Money. Any commodities cannot be obtained without money. Labourers, who are alienated from the private ownership of means of production and own nothing but labour power, must exchange their labour power into money, that is, sell it, and they become wage workers. Thus not only all products but also labour power become commodities and they are valued in terms of money and priced. Then the private and dispersive decisions of capitalists are made on the basis of the rate of the profit which is the ratio between the advanced money and profit (proceeds minus cost).

The problem (1) is to derive the inevitability of crisis and trade cycle from the above two characteristics of capitalism.

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3) The owner of commodity A can get commodity B in direct exchange for commodity A, only when the owner of commodity B wants to exchange commodity B for commodity A. But the owner of commodity B may possibly want commodity C. In this case the owner of commodity A may be forced to examine the possibility of getting commodity B in indirect exchange. That is to say, if all goes well, he first exchanges commodity A for commodity C, and next gets commodity B in exchange for commodity C. But if the owner of commodity C wants something else, another indirect exchange is required, then the series of indirect exchanges becomes so long that a lot of information and time is necessary for these exchanges. Therefore such a series of exchanges makes the reproduction of society difficult. But these difficulties can be solved with the simplest way of unified indirect exchange, where all owners exchange their commodities for money. This makes it possible for any commodity to be exchanged for any other.

### 3. Anarchy of Production and Disequilibrium

Social division of labor prevails in capitalism. Various kinds of means of production are necessary to produce a commodity, but those means of production must be produced as commodities in other sectors. Moreover in order to reproduce the labor power daily necessities must be produced in other sectors. These means of production and daily necessities must not only be produced but also be properly assigned in order to make reproduction in the next period possible.

In capitalism, however, there does not exist a central decision on all of production in the society. Each process of the division of labor is left to the private and dispersive decisions of capitalists. Capitalists are obliged to decide production on the basis of profit rates which are predicted on the basis of the limited local information they get.<sup>4)</sup> It is almost a miracle that production decided in such a way just coincides with social equilibrium. Disequilibrium always occurs. Commodities produced may not be able to find demand at the price predicted at the decision of production, and conversely may not fill the demand. Excess demand or excess supply occurs. Labor expended on the basis of private decision (private labor) cannot obtain social recognition on the prior predicted condition, but obtains recognition in the market on better or worse conditions.

But this disequilibrium does not cause crisis and trade cycle immediately. Capitalism has a mechanism which revises this disequilibrium. The prices of commodities in excess demand rise, and reversely the prices of commodities in excess supply fall. This may induce capitalists to alter their decision and may clear the market by increasing production in the former case or by decreasing production in the latter case. Even in the case that prices are inflexible to the tightness of markets, information of unfilled demand in the case of excess demand or goods left unsold in the case of excess supply may induce capitalists to increase production in the former case or decrease production in the latter case. If the mechanism of this sort always works smoothly, the disequilibrium which is caused from the anarchy of production in capitalism is always dissolved without crisis and trade cycle.

Therefore, in order to insist that crisis and trade cycle are inevitable in capitalism, we must show why the disequilibrium which is caused

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4) Since the 1970's, an economic theory based on "Rational Expectation" has prevailed. In such economics all members of capitalism are assumed to behave in perfect expectation of the future economic situation. This theory ignores one of the characteristics of capitalism.

from the anarchy of production in capitalism cannot be smoothly adjusted to equilibrium but cumulates unilaterally in spite of the existence of the mechanism mentioned above.

#### 4. Conditions of Equilibrium

Capitalism is a class society where the production of commodities prevails. The aggregated products must be sold as commodities. A part of these aggregated products is bought by capitalists for the replacement of production goods. A part of the rest (net products) is bought by the wages of labourers. But that is only a part of the net products. Because laborers are exploited, so they cannot repurchase net products totally. The residual which remains after deducting laborers' consumption from net output is surplus products. In order for these to be sold out, consumption demand of capitalists is not enough. This is because the capitalists who are the exploiting class in capitalism, being different from the exploiting class in previous class society, exploit laborers not only for their own consumption but for accumulation of surplus value itself expressed by money. Therefore the consumption demand of capitalists is only a part of the profit, so the surplus products cannot be exhausted by the consumption of capitalists. In order for the surplus products to be realized, another demand of capitalists or accumulation demand (an additional demand to expand production from next period forth) is indispensable.<sup>5)</sup>

The problem here is why disequilibrium becomes cumulative in capitalism. To show this, we shall consider how capitalistic economy must move to keep equilibrium in every period. Marx gave the answer to this problem by his famous scheme of extended reproduction. We shall show in a simpler form.<sup>6)</sup>

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5) We neglect the demand of government and foreign countries.

6) Though Marx gave, as is well known, a reproduction scheme of two sectors, we use here the aggregate scheme for simplicity. Note that though the equation  $C = aX$  means the technical relation, the equation  $V = bX$ , means not only technical relation but exploitation. Denoting living labour and surplus value by  $N$  and  $M$  respectively, we have  $N = V + M$ . And from

$$V = \frac{N}{X} \cdot \frac{V}{N} \cdot X$$

we have

$$b = \frac{N}{X} \cdot \frac{1}{1 + M/V}$$

So  $b$  depends upon technical relation  $N/X$  and the rate of exploitation  $M/V$ .

$$X = C + V + M_k + I \quad (1)$$

$$M_k = k(X - C - V) \quad (2)$$

$$C = aX \quad (3)$$

$$V = bX \quad (4)$$

$$I = (a + b)\Delta X \quad (5)$$

The LHS of equation (1) denotes aggregated products value and the RHS denotes demand.  $C$  is replacement demand,  $V$  is consumption demand of laborers,  $M_k$  is consumption demand of capitalists and  $I$  is accumulation demand. Therefore equation (1) indicates that aggregate supply equals aggregate demand. (2) indicates that consumption of capitalists is a fixed portion of profit. (3) and (4) indicate the normal relations among constant capital, variable capital and aggregated products value. (5) shows that the additional capital procured by accumulation demand in this period works normally next period.  $\Delta X$  denotes the difference between aggregate product of next period and that of this period. In order that commodities supplied are equal to aggregate demand and capital works normally every period, the above five equations must hold. From (1) ~ (5), we have

$$\frac{\Delta X}{X} = \frac{I}{(a + b) X} = \frac{(1 - k)(1 - a - b)}{a + b} \quad (6)$$

The rate of profit  $r$  is given by

$$r = \frac{X - C - V}{C + V}$$

So, (6) can be written as

$$\frac{\Delta X}{X} = \frac{I}{(a + b) X} = r(1 - k) = g^* \quad (7)$$

In order that supply equals demand and capital works normally every period, the growth rate of production and capital must be  $r(1 - k)$ , where  $r$  is profit rate and  $(1 - k)$  is the saving rate of capitalists, which we shall write as  $g^*$  hereafter.

## 5. Cumulative Disequilibrium

Now let us suppose that the growth rate of capital (the rate of capital accumulation) is larger (smaller) than equilibrium rate  $g^*$  given by (6) or (7). What situation will come about?

If the growth rate of capital is greater than  $g^*$ , then by (6)

$$I > (1 - k)(1 - a - b)X,$$

which can be rewritten by (2) ~ (4) as

$$I > X - C - V - M_k,$$

This means

$$X < C + V + M_k + I,$$

which shows that there occurs excess demand. On the contrary if the growth rate of capital is less than  $g^*$ , then we have excess supply in the commodity market.

Thus, the state of the economy definitely depends upon the growth rate of capital. What determines the capitalists' demand for accumulation  $I$ ? Not a few people still insist on the false idea that accumulation demand is identically equal to the residual surplus value after capitalists' consumption.

$$I = M - M_k = (1 - k)(X - C - V)$$

If this is true,  $M = M_k + I$ . Considering  $M = X - C - V$ , the equality  $X = C + V + M_k + I$  holds identically. It means that aggregate demand for commodities is always equal to aggregate supply (Say's "market law"). Therefore, it becomes impossible for general over-production to occur.

These people have the false idea that residual surplus value after capitalist consumption is always directed to additional demand for commodity as accumulation demand. However, those residuals are not always spent for commodity but some of them may take the form of increase in money or financial assets holding. Being financed by credit, accumulation demand for commodities may exceed those residuals ( $M - M_k$ ).

Another cause of their fallacy is that they believe the demand for accumulation in this period is financed by the surplus value which is realized in this period. As shown above, capitalists' consumption and accumulation is necessary in order to realize surplus product in this period. Therefore the realized surplus value in this period depends on demands for accumulation. So it is wrong to say that demand for accumulation in this period depends on realized surplus value in this period.

Capitalists determine accumulation demand expecting realized surplus value in the future and considering various factors: existing capital stock, market situations and finance conditions etc. The most important factor for expectation formation is the latest economic state. They form an expectation by interpreting this state. Factors for expectation formation are the tightness of market, prices, the rate of wage, the rate of profit and so on.

As mentioned above, if the growth rate of capital is larger (smaller) than the equilibrium rate  $g^*$ , excess demand (excess supply) occurs in the commodity markets. When commodity markets are in excess demand (excess supply), prices are higher (lower) relative to the rate of wage and the rate of profit is higher (lower) too. Capitalists will increase (decrease) the growth rate of capital further responding to the excess demand (excess supply) in the commodity market.<sup>7)</sup> Accordingly the degree of excess demand (excess supply) is accelerated. In this way, disequilibrium in the commodity market cumulates.

## 6. Necessity of Crisis and Business Cycle

In capitalism, owing to the prevalence of commodity production, social reproduction wholly depends on realization of commodities at markets. Besides, because of the existence of exploitation, accumulation demand plays a decisive role for realization of commodities. And since this accumulation demand is determined by individual capitalists privately and disintegratedly, the capitalist economy accumulates disequilibrium in spite of the existence of a price adjustment mechanism.<sup>8)</sup>

If such cumulative process of disequilibrium is left as it is, capitalism eventually becomes unable to reproduce itself. The upward cumulative process in which excess demand is accelerating may seem to be happy for everybody. Capitalists experience a high rate of profit, excess demand for their commodities and an abnormally high rate of utilization of their capital. At the same time, labourers experience increasing employment and increasing real wage earning. Indeed seemingly it is the very "prosperity".<sup>9)</sup> But eventually the upward cumulative process of disequilibrium makes reproduction of capitalism impossible, for the department of means of production sector grows faster than consumption goods sector in this process, and the rate of real wage (quantity of consumption goods purchasable with money wage per unit labor)

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7) It is the condition of cumulative disequilibrium that capitalists increase (decrease) the growth rate of capital in response to excess demand (supply). The mere increase (decrease) of the level of accumulation demand does not always accumulate disequilibrium.

8) In capitalism crisis is inevitably caused by cumulative disequilibrium. And the disequilibrium is accumulated, not only because there exists "the production of commodities", but the exploitation and a special way of decision making of accumulation demand. It is important to understand this, when we consider the role which the production of commodities plays in socialism.



begins to decrease. At last the absolute amount of consumption goods which labourers can consume decreases.<sup>10)</sup> Consequently reproduction of labour power becomes impossible. And then reproduction of capitalism becomes impossible.

In the downward cumulative process of disequilibrium in which excess supply accelerates, unemployment increases and the realized rate of profit falls. When the capitalist class loses the ability to employ wage labour, capitalism becomes fragile. The reason why the capitalist class can rule the labour class is that wage labourers cannot live without selling their own labour and that capitalists can buy labour and pay labourers wages by which they can get a means of livelihood.

Therefore, capitalism must switch the cumulative process of disequilibrium in order to reproduce itself. It must switch upward cumulative process into downward cumulative process. And it must switch downward process into upward process. Thus capitalism is obliged to have a business cycle. The necessity of crisis and business cycle are found here.

### **7. Switching of Upward Cumulative Process of Disequilibrium**

The moments to switch upward cumulative process of disequilibrium cannot be predetermined a priori. Most authors on crisis have discussed various moments to switch upward cumulative process and regarded these studies as a proof of the necessity of economic crises. In my opinion, however, a proof of the necessity of economic crises is completely given by showing, as already discussed, that cumulative process of disequilibrium inevitably arises and that the reproduction of capitalistic society becomes impossible unless such a process is reversed.

It is not correct to pick only one specific moment which switches the

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9) In a boom, consumption is always depressed relatively to additional production goods for accumulation. Therefore the boom is a "hard" period in which people are forced the sacrifice for accumulation. But in capitalism the boom appears as a prosperous time for capitalists, and even for labourers because unemployment decreases despite a rise of the exploitation rate.

10) This is easily understood from the following extreme case. In full employment the upward cumulative process is carried out through the shift of labours to the sector of means of production from that of consumption goods. So the amount of product of consumption goods decreases, then consumption goods earned by the working class would decrease even if they could receive all product of consumption goods.

cumulative process and then discuss generally that the cumulative process is necessarily reversed by this moment. We cannot deduce the unique moment to reverse merely from the fundamental characteristics of the capitalistic society. More detailed and concrete studies are needed to identify the moment. That man must necessarily die can be proved from the characteristics of human body. However the moments for death are not necessarily pre-determined. In which moment it takes place, cancer, suicide or killed by nuclear bombs, depends on concrete conditions. Some possible and probable moments are considered here.

(1) a fall in the rate of profit in consumption goods sector

At the beginning of an upward cumulative disequilibrium process, demand exceeds supply and the rate of profit rises in both means of production sector and consumption goods sector. While this process is going on, however, the following circumstances may arise. Accumulation demand being mainly for means of production, in an upward cumulative process, prices of means of production rise faster than the price of consumption goods. Owing to this the rate of profit in consumption goods sector may fall, even if the price of consumption goods rises compared to the money wage rate and the rate of exploitation rises.<sup>11)</sup> Capitalists in consumption goods sector decrease the accumulation demand corresponding to a fall in their profit rate and if the capitalists in means of production sector follow it, then the upward cumulative disequilibrium process may be reversed.

(2) bottleneck of production goods

In an upward cumulative process demand for means of production rapidly increases as a result of accelerated accumulation demand. The amount of means of production which can be used for the purpose of accumulation is, however, restricted by the surplus means of production which remains after deducting displacement demand in both sectors. Production takes time. Therefore the surplus means of production are fixed at a given time. When demand exceeds this, surplus means of production can be increased with time lags but for the time being there arises a bottleneck of means of production and the planned accumulation demand cannot be satisfied totally. This may result in a downward revision of accumulation plans and the corresponding retardation of the

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11) In this case the capitalists of consumption goods sector exploit labourers further, then their surplus value produced increases. However they are squeezed by the capitalists of means of production sector through a rise in its prices, so their surplus value obtained may decrease.

investment demand. Thus the upward cumulative disequilibrium process may be reversed.

(3) restriction of labour force

The rate of unemployment falls and the money wage rate rises in an upward cumulative process. Its effect on the rate of profit depends upon the movement of commodity prices. If commodity prices rise more rapidly than the money wage rate, the real wage rate falls and the rate of profit rises. The movement of commodity prices depends upon the demand-supply conditions in commodity markets. When capitalists accelerate their accumulation demand, commodity prices rise relatively more rapidly than the money wage rate. But after unemployment is totally absorbed, it becomes impossible to increase employment as a whole (although possible to some extent by extending the length of a working day). In order for capitalists in some firms or sectors A to increase their employment they need to pull out workers employed in other firms or sectors B. In order to succeed A must increase the money wage rate enough to make the real wage rate in terms of products B greater than labour productivity in B. In sectors B the capitalists are obliged to part with their workers as a result of rising real wages, there occur idle capacity of equipment and a fall of the rate of profit and thus a decline in the accumulation demand. In sectors A the capitalists succeed in acquiring additional workers, the rate of profit does not necessarily fall and the accumulation demand will continue to increase.<sup>12)</sup> This may, however, bring the cumulative process to a halt as a result of declining accumulation demand in those sectors where workers are pulled out. And this may cause a crisis.

(4) credit restriction

An upward cumulative process is caused by an accelerated increase in accumulation demand by capitalists. This acceleration, however, needs an acceleration in credit, as has already been stated. If the accumulation demand is financed by the remainder of profits which is not spent on consumption,

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12) The rate of profit in some sectors depends upon the real wage rate measured by that sector's product. In the sector deprived of labourers (consumption goods sector) the money wage rate rises relative to prices of consumption goods, then the rate of profit declines. Conversely in the sector depriving of labourers (means of production sector) the price rises relative to money wage rate, then real wage rate measured by means of production may decline.

additional credit is not necessary. In this case, however, even an equilibrium growth cannot be guaranteed<sup>13)</sup> and a downward, not upward, cumulative process follows. Credit expansion is generated by firms and banks. There is a mutual close relationship between credit expansion and the demand-supply condition in commodity markets. Credit expansion guarantees an accelerated increase in accumulation demand and a continuance of excess demand in commodity markets. On the other hand, a continuance of excess demand in commodity markets giving optimistic expectation brings about further credit expansion. Therefore both factors become causes and effects of each other in the upward cumulative process. If credit extension is slowed down for some reason, the interest rate rises and the acceleration of accumulation demand may come to a standstill.

### 8. Switching of Downward Cumulative Process of Disequilibrium

Moments to switch a downward cumulative process of disequilibrium are not predetermined. Some possible and probable moments are listed below.

(1) a rise of profit rate in consumption goods sector

We have already stated the possibility of switching of an upward cumulative process caused by a fall in the rate of profit in the consumption goods sector. There the price of means of production rises faster than that of consumption goods which rises faster than the money wage rate, and this results in a fall in the rate of profit in the consumption goods sector. The exact converse may arise in a downward process. Namely an accelerated contraction in accumulation demand results in excess supply and prices fall in commodity markets. And the price of means of production falls faster than the price of consumption goods which falls faster than the money wage rate. Therefore in the consumption goods sector there may occur a rise in the rate of profit as a result of a relative decrease of the price of means of production to the price of consumption goods, notwithstanding a rise in the real wage rate in terms of consumption goods.

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13) Capitalists certainly decide the amount of demand for their consumption and accumulation in expectation of the profit realized in this period. But such demands cannot be financed by the profit realized in this period. Because the profit of this period are realized by the demands of capitalists' consumption and accumulation of this period. If the demands are financed by the profit realized in the last period, the profit realized in this period is no more than that in the last period. And as the production capacity of this period is larger than that of the last period by the accumulation, there necessarily arises excess supply or under-utilization of capital equipments.

Thus accumulation demand in the consumption goods sector may be increased and for this reason an overall accumulation demand may increase, which switches the downward process into upward.

(2) enforced introduction of new technologies

In a downward cumulative process unemployment increases and the money wage rate decreases. The real wage rate, however, increases as a result of much greater decrease in commodity price caused by the accelerated contraction in accumulation demand. An increase in real wage rate brings about a fall in the rate of exploitation, which eventually diminishes to zero if production technologies remain the same. Here the capitalists are compelled to choose either bankruptcy or introduction of new technologies. The introduction of new technologies requires a minimum fund necessary and the capitalists who cannot afford it are obliged to drop out. Those who can afford to introduce new technologies can prevent the rate of exploitation from declining and even succeed in raising it by increasing labour productivity. An accumulation demand for introducing new technologies results in a recovery and even an increase of aggregate demand, which may reverse the downward cumulative process.

(3) capitalists' consumption demand

In a downward cumulative process such kinds of demand as replacement demand, labourers' consumption and accumulation demand are contracted respectively. Capitalists' consumption demand also decreases according to a fall in realized profits. Capitalists' consumption, however, differs in character from labourers' consumption in the sense that capitalists' consumption is not restricted by their actually realized profit income. Their consumption demand does not decrease beyond some minimum level however severely their realized profits decrease. To this minimum amount of capitalists' consumption there corresponds a certain production level. When capitalistic economy goes down to this extremely low level, there is no replacement demand for durable equipment and capitalists continue to produce using existing equipment. As time goes on, however, existing equipments gradually depreciate and eventually cannot maintain the required level of production which corresponds to the capitalists' consumption. Then the demand for means of production must rise again and this may result in a recovery and an increase of accumulation demand.

## 9. Fundamental Contradiction in Capitalism and Crisis

Capitalism is a class society in which commodity production prevails. In commodity production there arises the problem of realization and disequilibrium inevitably occurs. This is because decisions on production are grasped by individuals privately in spite of the social division of labour. This economic anarchy is a necessary condition for crisis and trade cycle.<sup>14)</sup> However it is not a sufficient condition. For difficulties of realization and disequilibrium do not necessarily induce crisis and trade cycle. Even if disequilibrium occurs, it can be equilibrated by price adjusting mechanism without crisis, unless disequilibrium is cumulative towards one direction.

The cumulativeness of disequilibrium comes from the fact that capitalism is not merely a commodity production society but also a class society too. Decisions on production are grasped by private capitalists, who make decisions for profit with local and short-sighted information. On the other hand labourers are excluded from decision-making and obliged to become wage-labourers condemned to be exploited. As labourers are exploited, in order to realize value of commodities, capitalists' accumulation demand becomes indispensable. And it becomes an important determinant of aggregate demand. As decisions on accumulation demand are grasped by private capitalists, accumulation demand moves so as to cumulate disequilibrium. And this cumulative process must be necessarily switched by crisis and trade cycle for capitalism to be reproduced. Thus crisis becomes inevitable in capitalism.

Usually the "fundamental contradiction of capitalism" is formulated as the contradiction between the social characteristics of production and private capitalistic appropriation. This formulation is considered to be a summary of the two basic characteristics of capitalism: commodity production and class society. Therefore we can say that crisis and trade cycle are an inevitable result of the fundamental contradiction of capitalism.

Most Marxian economists regard "the contradiction between production and consumption" as the most important factor to explain crisis.<sup>15)</sup> It is said that in spite of the fact that capitalists accelerate production seeking for profit, labourers' consumption is depressed owing to exploitation, and capitalists'

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14) K. Marx discussed "the abstract possibility of crisis" in volume I of *Kapital*.

15) "The ultimate reason for all real crises always remains the poverty and restricted consumption of the masses as opposed to the drive of capitalist production to develop productive forces as though only the absolute consuming power of society constituted their limit." K. Marx, *Kapital* in volume III part IV chapter 30.

consumption is limited by accumulation, so inevitably there arises the difficulty of realization of commodity values. However this reasoning is erroneous. Even if production is accelerated to increases and the consumption demands of labourers and capitalists are limited, the difficulty of realization does not necessarily occur. Because, as shown above, accelerated increase of production can be absorbed by a further increase of accumulation demand.

We consider "the contradiction between production and consumption" as a dispensable factor to explain crisis by different reason from the above. First let us interpret "the contradiction" as the existence of gap between production and consumption. Which of the following does "production" mean? (a) Production of consumption goods, (b) Aggregate products including consumption goods and means of production, or (c) Net products which are the remainder of aggregate products after deducting replacement of means of production. If (a), "the contradiction" means production of consumption goods  $>$  consumption demand. But the excess supply in the consumption goods sector cannot be observed always, and the crisis does not necessarily starts from the consumption goods sector. If (b), it means consumption products + production of means of production  $>$  consumption demand. But this inequality must holds in every society, because for reproduction it is necessary to produce means of production to replace the means of production. So it is not a contradiction. Therefore "production" must mean net products (c). Net product  $>$  labourers' consumption + capitalists' consumption implies net products  $>$  labourer's consumption. Assuming labourers' consumption = wage, it means net product  $>$  wage: exploitation. Thus it becomes clear that "the contradiction between production and consumption" thus interpreted is nothing but the existence of exploitation. As repeatedly stated exploitation is a basic factor in causing crisis. Owing to exploitation, capital accumulation demand becomes indispensable to realize commodity values and this is one of the main causes of cumulative disequilibrium.

If we interpret "the contradiction between production and consumption" not as the existence of gap between production and consumption but as the gap between the rate of growth of production and consumption, how can we show the relationship between "the contradiction" and crisis? Here "production" means net product (c). The thus interpreted "contradiction" means increase of the gap between net product and consumption. For this gap to continue to increase, capitalists must increase accumulation demand acceleratively. In the upward cumulative process of disequilibrium we observe this very fact. However, as shown in 7, the thus interpreted "contradiction" can not last

forever, because it makes capitalism unable to reproduce itself. Therefore its switching by crisis becomes inevitable.

### 10. Capitalistic Reproduction and Crisis

Capitalism has the nature to produce a cumulative process of disequilibrium. And unless this process is switched in due time, capitalism cannot reproduce itself. This switching is carried out by crisis and trade cycle. In this sense crisis plays a necessary and indispensable role for capitalistic reproduction. Let us consider this aspect from several aspects.

#### (1) equilibrating "the gap between production and consumption"

Owing to exploitation, capitalism always has a gap between net products and consumption. This gap is acceleratively widened in the upward cumulative process. Unlimited widening of this gap makes capitalism unable to reproduce itself. It is crisis that switches the upward process into downward. By this switching the gap between net product and consumption begins to shrink. In other words an equilibrating process of contradiction between production and consumption starts.

However this equilibrating process is also full of contradictions. In the upward cumulative process, though consumption is depressed, the increasing part of the net product is absorbed by accumulation demand. Accumulation accelerates the increase of productive capacity. When by some moment accumulation demand is contracted, the aggregate demand shrinks and the consumption demand of labourers also decreases. Consequently the production capacity which has been piled up by depressing labourers' consumption (by strengthening exploitation) cannot be utilized normally and there appears an excess supply in the commodity market. Corresponding to this, capitalists decrease accumulation demand further, and aggregate demand and production shrink still more. It is true that the gap between net product and consumption shrinks in this process, however it is done not by increasing consumption but

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- 16) The gap between production and consumption is not smoothly adjusted in capitalism. We can easily understand the peculiar character of the adjustment process if we make a comparison between such processes in socialism and capitalism. The period of accelerated accumulation, as stated in note (10), is a hard time for socialism. And when people require no more accumulation, they decide to utilize the production capacity accumulated till then for their consumption. When the gap between production and consumption disappears, they will have a happy time. On the contrary in capitalism the halt of accumulation causes crisis, downward cumulative process, unemployment and hard living.



by decreasing production which is accompanied by severe unemployment and idle capacity.<sup>16)</sup>

## (2) equalizing profit rates

In the upward cumulative process, owing to accelerative increase of accumulation demand, the degree of excess demand and over-utilization of productive capacity is much severer in the sector of means of production than in the consumption goods sector. Then the rate of profit in the means of production sector rises more rapidly than that in the consumption goods sector. Being guided by these movement of profit rates, the weight of means of production sector increases relatively to consumption goods sector (The so-called preferential progress of means of production sector). When accumulation demand begins to shrink, this movement is switched to the opposite direction. Prices of means of production begin to decrease faster than prices of consumption goods and the money wage rate. The rate of profit in the production means sector declines more rapidly than in the consumption goods sector. And the weight of consumption goods sector increases relatively to the means of production sector. Through such switchings the difference of profit rate in both sectors is prevented from accumulating and rates of profit are approximately equalized.<sup>17)</sup>

## (3) reproduction of wage labour

The most important thing for capitalism to reproduce is that labourers regularly and repeatedly appear at the labour market to sell their labour power. In order to guarantee this it is necessary that real wage and employment are confined within a certain range.<sup>18)</sup> As to real wage, it must not be less than the minimum level determined physically and socially. On the other hand it must not be great

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17) One of the propositions which constitute "the labour theory of value", is that prices of commodities are mainly determined by the value (social standard bestowed labour). This proposition is deduced from the tendency that equalizes the rate of profit of each sector (the theory of production price). However the equal rate of profit is not realized through the smooth adjustment process: high (low) rate of profit → entrance (withdrawal) of capitals → excess-supply (-demand) → decline (rise) of price → decline (rise) of rate of profit. But it is realized through crisis and trade cycle. In this point our theory is different from neo-classical price adjustment theory (or Uno-theory).

18) "The value of labour power", which plays an important part in *Kapital* by K. Marx, means the value of consumption goods necessary to reproduce labour power. Here the reproduction of the labour force must be the reproduction of "the wage labour power". In order to reproduce it, it is not necessary for real wage rate to keep a certain level but to be confined within a certain range, where wage labourers are compelled to reappear at labor market even if money wage rates rise or decline.

enough for labourers to afford to buy back the means of production. At the same time it must not be too great for capitalists to be able to exploit labourers. As to the level of employment, the rate of unemployment must not be lower than a certain level. Otherwise capitalists can not force labourers to follow their lead by threat of firings. On the other hand the rate of unemployment must not be higher than a certain level. Because if it becomes extremely high, labourers no more expect to be employed and capitalists lose their hegemony.

The mechanism for confining real wage and employment into a suitable range is crisis and trade cycle. In the upward cumulative process a decrease in unemployment and a decline in the real wage rate compared with labour productivity occur. In the downward cumulative process an increase in unemployment and a rise in the real wage rate relative to labour productivity occur. Switching from one to the other, real wage and employment are confined into the appropriate range for capitalism to reproduce itself.

## **12. Transcendence of Capitalist System and Crisis**

Crisis and trade cycle are necessary to the reproduction of the capitalist system. In this sense crisis and trade cycle work as the reproductive mechanism of the capitalist system. However, in contrast with this we must consider whether this movement, which is indispensable for the reproduction of the system, creates factors that necessitate replacing the capitalist system with other new relations of production or not. That is the question.

### **(1) incompatible production power**

The capitalist system cannot reproduce itself if the downward cumulative process were not reswitched upward, and it is a revival or increase of an accumulation demand for an introduction of new technologies that is most important in the turnaround moments. In the capitalist system new techniques are introduced and production equipments embodying old ones are scrapped in the process of trade cycle. In this way production power increases in the capitalist system.

The increase of production power brought about by the introduction of new techniques plays an important part in the reproduction and survival of the capitalist system. By raising labor productivity through an introduction of new techniques, capitalists can prevent profit rate from declining even if they concede to increase real wage rate for laborers. And by increasing labour

productivity and technical composition of capital it becomes possible in the long run for the capital accumulation rate and the growth rate of products to rise over the limitations of the increasing rate of labour supply in the capitalist system.

But capitalistic relations of production cannot be compatible with any production power. In general, it is necessary that production power is kept in a certain range in order for any specific relations of production to work. If it exceeds the upper limit, it becomes difficult for the specific relations of production to reproduce themselves. Of course this is valid for the capitalist system also.

With the increase of production power, new production power which becomes incompatible with the capitalist system appears. (a) With the increase of labour productivity the problem of unemployment and realization becomes acute, then the capitalist system becomes unstable. (b) As enormous funds are necessary to develop or introduce new techniques, the necessary funds exceed the limits of private ones. This leads to an introduction of public funds by national power; it contradicts the principle of private capital investment, and thus bribery and corruption prevail. (c) New techniques bring a wide and serious change into the life environment of human beings, the human body and Nature. Under these conditions, it endangers human beings' survival to entrust decisions on production to anarchic private capitalists. (d) New techniques have remarkably increased the abilities of information processing. Not only material conditions which support advanced data processing emerge but the average ability of members of society of information processing increases remarkably. Then it becomes difficult to exclude majorities possessing the ability from decision-making on production, though this exclusion is the foundation of capitalism.<sup>19)</sup>

## (2) formation of revolutionary people

As the production power of the human being comes to have a character incompatible with capitalistic relations of production, human society cannot help choosing either of the following two alternatives. One is to maintain capitalistic relations of production by any and every means (interventions of state, maneuvers over working class, suppression, and military power etc.). The other is to replace the relations with new ones, which are characterized by

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See N. Okishio "Notes on Technical Progress and Capitalist Society" *Cambridge Journal of Economics* 1977, 1.

making fundamental decisions on production socially, not privately. The former is to deepen the inconsistency between characters of new production power and relations of production, and to endanger the very survival of human beings sooner or later. The latter is to create new relations of production which conform with new production power and to guarantee the survival of human beings. Therefore we must choose the latter alternative for the survival of human society in the future.

Undoubtedly this important choice has to be made by human beings themselves. How are such people who choose the latter alternative brought up? Crisis and trade cycle play an important role in the formation of these people. The working classes are compelled to be unemployed in a downward cumulative process. And production capacity, which is accumulated by raising the rate of exploitation of labourers in upward cumulative process, remains idle. In the upward cumulative process, unemployment of labourers declines but the rate of exploitation rises. An introduction of new techniques compels labourers to unemployment and reshuffle, and makes former skilled labourers worthless. A pressure upon capitalists in the downward cumulative process leads minor capital unable to raise funds for new technique introduction to bankruptcy. The increase of new production power raises the information processing ability, which is the foundation of the decision making capacity, of ordinary people including working class. And now production power entrusted to capitalists' decisions brings about wide, serious and irreversible dangers in the life environment, human body and Nature. These occurrences increase the numbers of people who recognize that replacement relations of production are necessary.

Of course it is one-sided, if we do not see the counteraction of capitalism to stop the increase of such people. When working class or minor capital gets into trouble economically, they are apt to try to beg "big men" who exploit these chances. In spite of these counteractions the majority of people gradually or rapidly recognize the necessity of new relations of production for the survival of human beings.

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With the founding of Kobe University of Commerce, successor of Kobe Higher Commercial School, in 1929, the Institute extended its research activities by adding several divisions. One was the famous Latin-American Library, which soon became the center of research in this field in Japan. A room for statistics equipped with various computing machines was established and began publication of *Jūyō Keizai Tōkei* and *Sekai Bōeki Tōkei* annually. A filing room was prepared to deposit press clipping files systematically arranged by topics and dates. Another room was designed to become the center of all possible original records and data having to do with the beginning and progress of Japanese business.



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