Economic Reforms and Capital Markets in Central Europe

KEN MORITA

ECONOMIC REFORMS AND CAPITAL
MARKETS IN CENTRAL EUROPE

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Preface

As the title of this book shows, the author mainly investigates two topics: (1) systemic transition of Central European[1] economies, and (2) the commodity futures market, particularly speculation. The two topics might seem rather different, actually, however, they are closely related as is stated in this book along with J. R. Hicks' assertion.[2] Also in this book the author has tried to consider more deeply (in Chapters one, two, and thirteen) the relations between the two topics. As a matter of fact, there are still many problems to be investigated. Economic reforms in Central Europe were hardly attempted about ten years ago, and the study of the functions of commodity futures markets in Central Europe has just started. In this book, therefore, we will indicate the way in which economic transition and commodity futures markets in Central Europe both work.

This book has three parts. In the first part, we consider commodity exchanges in Central Europe. Our attention is concentrated upon Poland (the Warsaw Commodity Exchange) and Hungary (the Budapest Commodity Exchange); after investigating relationships between centrally planned economies and futures markets and so on, we study the necessity of establishing a commodity exchange for transforming the economic system in Poland, and the function of the commodity futures market in Hungary. As will be seen after reading this book, the Warsaw Commodity Exchange is still of immature and the Budapest Commodity Exchange has had lots of problems for serious consideration (although the Budapest Commodity Exchange is further developed than that in Warsaw).

It seems necessary to investigate what and how serious the risk in the modern international economy is related to capital movements. In particular, important questions to be considered here are the following: what is characteristic risk in the former centrally planned economies and what is characteristic inefficiency related to centrally planned systems. In approaching questions we highlight: (1) risk in transition economies particularly Poland as an example and (2) barriers to foreign direct investment which are important to clarify in terms of the characteristic risks examined as (1) above. These are examined in the second part of the book.

In the third part, we analyze the speculation from which the Budapest Commodity Exchange suffered and which needs to be investigated further. Although it might be doubtful to mention that speculation itself has instability for the market, there has been rather a variety of cases of

unstable speculation. If we describe the unstable cases as "excessive speculation", we must study what excessive speculation is and what reasonable policies for regulating against the excessiveness are. To do this, we examine a case study of excessive speculation, and in considering reasonable regulations we study a case involving international agreement for regulating commodity price movements.

That is an outline of three parts in this book. Needless to say, we should continue in a fourth part and fifth part based upon the questions raised in the first three parts of this book. As was mentioned previously, the topics both of economic transition in Central Europe and of speculative behavior in futures markets are now changing, sometimes drastically, which means further considerations will be necessary.

Therefore, each chapter in this book must be scientifically analyzed and carried out successful investigations later on this analysis.

Because this book covers a variety of topics, giving short summaries here in this introduction might be helpful for readers.

The book starts by examining relations between a centrally planned economy and the futures market, pointing out the inefficiency of a centrally planned economy. That might be the first step towards considering commodity futures markets in Central Europe. Then first we inquire about the necessity for and function of commodity exchanges in the Warsaw Commodity Exchange and in the Budapest Commodity Exchange. After that we try to describe the function of the Budapest Commodity Exchange, and after a comparative analysis with the Tokyo Grain Exchange, we conclude that there might be no significant difference between a commodity exchange in Central Europe and a commodity exchange in a developed country, such as Japan. However, it should be recognized that there have been risks, which are characteristic for transition economies. The most typical risks are the factors that hinder capital movement, particularly foreign direct investment into transition economies. In the second part of the book, we examine what the risks are for them. With such an examination, we confirm the typical risk for transition economies is a financial one. The financial risk can have serious effects for large-scale investment, and we can recognize this by statistical analysis that shows that foreign exchange reserves could significantly explain the inflow of foreign direct investment. Based on the above analyses emphasizing the importance of the financial aspect, in the third part of the book we consider speculation and the futures market, focusing our attention in particular upon stability. The short conclusion to the third part shows that, when "excessive speculation" comes into existence, it is extremely difficult to identify at an early stage and to prevent unstable effects for prices, it might be possible to

successfully regulate price movements through quantitative regulation with enough commodity stock. Moreover, even if there could be a successful "price stabilization effect", it would also have the effect of expanding the macroeconomic disequilibrium.

Therefore, the view put forward in this book is as follows: for the commodity futures market in transition economies, financial risk still exists, which means that the commodity futures market would be developed by alleviating the financial risk in the transition process. At the same time we can see that it has been difficult for regulation by the authorities against excessive speculation to be successful, and that the best way of dealing with unstable speculation might be to establish a well working infrastructure for the market mechanism.

Hereafter we present a further summary of each chapter.

The purpose of the first chapter is to consider the differences between a centrally planned economy and futures transactions in adjusting disequilibrium (coming from the third and the fourth sources in the Hicksian sense).

As far as the first and second sources of disequilibrium are concerned, it could be eliminated with the functions of futures market and of a centrally planned economy without adjustment of the spot market. In other words, it could be considered that, concerning price expectation adjustment and quantity planning adjustment, a centrally planned economy could have the same function as a market economy. However, a centrally planned economy could not have a flexible mechanism to adjust disequilibrium in the spot market because there could not be flexible spot market adjustment in a centrally planned system. In the same terms as in chapter one, we could say that the difference coming from flexible spot market adjustment between a market economy and a centrally planned economy might be expressed as:

$$a(\mu_x - X_1)(P_f - P_1) \quad \text{or} \quad a\mu_x(P_f - P_1)$$

In chapter two in which we focus our attention upon Poland, we study inflation in Poland in the first section and privatization in the second section. It might not be so easy to recognize relationships between commodity futures markets, macroeconomic transition and structural reform. The purpose of section one is to indicate that important macroeconomic indicators and structural reform would produce the basic necessity for establishing commodity futures markets in Poland. That is to say, high inflation occurred together with a budget deficit to which agricultural expenditure contributed. Prices of agricultural products and the

income level of farmers have been closely connected with high inflation in Poland. The huge amount of budget deficit has been one of the sources for speculative money. It would be difficult to say that privatization in Poland has been successful, but the general trend says that they have tried to have an intensive use of agricultural land and this has necessitated more efficient management for the agricultural sector and food processing sector, which seem to be comparative advantage industries. It could be confirmed that there exists necessity both from the supply side (like farmers) and from the demand side (like the food processing industry).

In the Polish economy, however, it has been difficult to eliminate price expectation, and privatization, particularly capital privatization, has been delayed. From the viewpoint of a more active function in the commodity futures market, we could see the necessity for and the possibility of a better functioning commodity exchange. At the same time, however, we could expect that a commodity futures market in Poland would be developed in the near future as part of their transition process.

In chapter three, we describe more about the commodity exchanges in Warsaw and Budapest. Establishing a commodity exchange is undoubtedly connected with the movement toward a market oriented economy. In Hungary the convenience of keeping trade from Chicago might be the main necessity of establishing a commodity exchange, and in Poland (as was shown in chapter two) the main necessities are for a reduction of subsidies to agriculture and for policy adjustment with the EU (European Union). Needless to say, the reform toward a market oriented economy means, in a sense, "Americanization" and "Globalization", which means putting more emphasis upon efficiency and much freer capital movement. In chapter three, we describe developing aspects of the Budapest Commodity Exchange based upon the above considerations. One of the "keywords" which connects the commodity exchanges in Central Europe and economic transition toward a market economy might be "instability". We should discuss in much more detail the way we deal with the instability arising from speculation and capital movements. Chapter three is, therefore, a chapter that raises questions and creates a bridge toward the second and third part of this book.

In chapter four, we discuss the efficiency of commodity exchanges in Central Europe focusing our attention upon the Budapest Commodity Exchange, particularly with a comparative view of the Tokyo Grain Exchange. Although our conclusion might be rather tentative, it is as follows: it might be said that the function of the Budapest Commodity Exchange is no less efficient than of the Tokyo Grain Exchange.

Frankly speaking, however, the turnover of the Budapest Commodity

Exchange (particularly in the sections of livestock and grain) has been fairly small. By expanding the turnover, as in the foreign currency section, efficiency could be increased. This means that joining the EU would be a good opportunity for increasing turnover and for increasing efficiency. At the same time, however, joining the EU indicates more risk in terms of unstable speculation.

To join the enlarged EU might have both positive and negative effects upon: (1) possibility of raising efficiency by increasing market volume, and (2) risk from speculative instability. (Then, are there any effective policies that are more efficient as well as eliminating market instability?) It would be easy for a government or other institutions to have a policy of regulating and intervening in the market by. It would also be easy to expect that unreasonable regulation and intervention would have harmful effects on the market mechanism. The question we should ask is when and how regulation and intervention compatible with economic rationality would be employed. An effective task in approaching the question is undoubtedly what is an effective signal for recognizing disequilibrium between buying and selling. We have made cumulative analyses of the disequilibrium which we usually call "excessive speculation". (In the third part of the book we investigate the question with case studies.)

In the four chapters in the first part, we mainly attempt to recognize necessities and functions of commodity exchanges in Central Europe related to economic reforms in transition countries and also connected with globalization. Although it is difficult to say that the Warsaw Commodity Exchange is now well established, it can be seen that the Budapest Commodity Exchange might not be less efficient than the Tokyo Grain Exchange. However, in terms of its turnover, although this has been growing for the last few years, it has never been enough. Investigating the factors causing lower turnover, particularly from abroad, is the main aim of the second part of the book, mainly focusing our attention upon the transition procedure and foreign direct investment.

The second part consists of four chapters, investigating two topics of economic reform and capital movement. The first two chapters are about economic reform and the second two chapters are about capital movement, in particular foreign direct investment. (The reason we do not separate the four chapters is that they have in common a single question about "risk", basically related to economic transition.)

Chapter five discusses the method and the timing of economic reforms in Poland. The main point of this chapter's discussion is to indicate that structural reform might be more important from the viewpoint of the middle and long term, and thus the reform of government is also very

important as well as enterprise efficiency and workers reform in terms of discipline. As is discussed in the second part, where transition economies are concerned, problems of risk are closely related with government behavior. (In a case study of the Philippines, for example, inefficient resource allocation by the government made the capital coefficient much larger and made the potential capacity for economic growth much smaller). The main conclusive points for consideration in chapter five are, therefore, policy changes toward: (1) more growth oriented reform (and a lower unemployment ratio), (2) more radical structural reform, (3) more active policy of protection for infant industries, and above all (4) the necessity of a wiser and stronger strategic political stance on the part of the authority. That is to say, governmental reform which moves from a stability oriented position to a more growth oriented strategic position might be necessary.

Chapter six makes a comparison between the current Polish economic reforms and postwar Japanese economic reforms. It provides a comparative analysis of the postwar Japanese "chukan antei ron" ("gradual reform" in the modern English term) with the radical reform in Poland led by Mr. Balcerowicz. Actually, however, Japan introduced a very radical structural reform by allowing rather high inflation and a low unemployment rate in the postwar Japanese economy. In case of Poland, on the contrary, we cannot see any evidence of "radical" structural reform policy making the Polish economy more competitive and making its income and asset distribution more equal. In that sense, postwar Japanese economic reform of 1946-48, usually described as "gradual reform", might be more radical than the Polish Balcerowicz Program described as "radical reform".

Needless to say, it might not be possible to simply compare experiences of postwar Japanese reforms with current Polish reforms. However, we could undoubtedly mention that for both the Japanese economy and the Polish economy: (1) radical shock therapy for purging inefficiency is necessary, but (2) it is extremely difficult to expect that without structural reform efficiency would improve (they would have high inflation and lots of unemployed workers). Therefore, in order for the Polish economy to be on a higher rate of growth path, radical structural reforms would be necessary. Such a government stance might be closely connected with risks, and where and how they are.

In chapter seven, we focus our attention upon a specific competition, the case of a passenger car production project in the 1980s between the Italian car company (Fiat) and the Japanese car company (Daihatsu) in order to show the decision-making process and the decision-making factor from the viewpoints of the Japanese government and Japanese consortium, and the 1980s Polish situation. And we conclude that we recognize that both the

times concerned and, nowadays, the financial factor might be a basic factor for FDI (foreign direct investment) in Central Europe. Two more conclusions in chapter seven are: (1) the main reasons why the Japanese side was inferior to the Italian side in this case were less managerial resources in Japan (Japanese consortium) than in Italy (Fiat) in the case of FDI in Central Europe, and less support from the Japanese government for foreign policies toward Poland than from the Italian government; also (2) (a) as Japanese companies are generally risk averse, transactions will be small when social costs are high, and (b) social costs like imperfect information, higher transaction costs and an immature law system might be (to some extent) eliminated by establishing an international regime, which would make Japan's FDI in Central Europe more active.

Therefore, we could conclude in chapter seven that factors like international relations, managerial resources, risk aversion, and systemic risk are very important in the economic affairs of Central Europe.

In chapter eight, we try to take a general view of closely related factors with inward FDI in Central Europe and capital movements. Through investigation focusing our attention upon Central Europe, particularly the Visegrad three countries of Poland, Hungary and the Czech Republic, we attempt to recognize significantly the correlated factors with capital inflows into Central Europe and to make clear the problems in capital movements in transition economies.

The results we have in chapter eight are: (1) financial factors are extremely important for capital movement into Central Europe, (2) these financial factors might also be recognized to have significant correlations with the growing factors in a macroeconomic sense, and (3), as foreign direct investment has been understood to prevent volatile capital movement, increasing inward foreign direct investment would have a contributing role for successful transition. Therefore we could confirm that as explicitly mentioned in chapter five (as far as the Visegrad three countries are concerned) a more growth oriented policy might be more appropriate for reforming the economy.

As considered in the second part of the book, in the Central European transition economies there have still been risks, particularly of the financial kind. Also the risks might be, needless to say, serious barriers for capital inflow into these economies. The same situation has applied to commodity futures market, of hindering investment into them (and more investigations into the relations between short-term and, middle and long-term capital movement should be done in the future). Thus it seems to us that the risky factors have made the volume of capital markets less and the transactions in capital markets more unstable (when moving capital is risky).

Based upon the above background, in the six chapters of the third part we consider the problems related to government regulation against speculative instability.

In chapter nine, we investigate a case of excessive speculation with the Walter Labys study (although this happened in the middle of the 1970s) focusing our attention on the intervention method, both in cases of spot market intervention and futures market intervention, recognizing for excessive speculation.

In chapter nine we mainly consider that authority can intervene only in the futures market with a short position. We also mention that it is just necessary to clear the short position and leave other things to the market, which means that the authority does not need to have enough stock to absorb the capital inflow or to worry about spot price rise as a result of shortage of stock. That is to say, we would emphasize that an intervention policy in the futures market is undoubtedly effective, because intervention in the spot market might oppose the market mechanism and meanwhile intervention in the futures market might utilize the market mechanism.

In chapter ten we aim to investigate whether or not it is possible to identify excessive speculation at an early stage, and to consider what signal would be appropriate for recognizing the excessiveness.

Considering the characteristics of the topic in this chapter, we investigate a particular case study as a corner market case which happened in the natural rubber market in Japan in 1968.

Based upon the investigation, we have the following results for the above case: (1) it is a case in which they did not operate regulations, and they should have put regulations in motion, and (2) it is a case in which we could identify neither early regulations nor appropriate regulations to deal with a speculator who was not good from the viewpoints of both financial capacity and pricing strategy.

It is also correct, however, to mention that we need more investigations to find the appropriate criteria from an operational point of view.

In order to identify an appropriate and operational regulation, in the chapter eleven, we examine a way of regulation in which through an intergovernmental agreement such as the international commodity agreement authorities try to limit price movement within a particular price range.

In chapter eleven we consider the case of International Wheat Agreement which had a regulation usually recognized as a "multilateral contract scheme". Reconstructing the agreement with price theory suggests that the International Wheat Agreement contributed to the chronic excess supply situation through a destabilizing mechanism built into the agreements of

1953 and 1956, and that the multilateral contract scheme did not really work but rather the "export regulation scheme", which was actually a quantity regulation scheme, worked effectively.

In other words, the function of a multilateral contract scheme which had, to some extent, a market mechanism was quite limited and a mechanism which regulated through quantity worked well.

Such intergovernmental regulation schemes as the International Commodity Agreement have not been more or less successful enough (except in the case of strict quantity regulation). Could we then recognize any *raison d'être* for such intergovernmental regulation policies? In chapter twelve and thirteen, we try to find any *raison d'être* for them by using an interdisciplinary approach of sociology, anthropology and political economy in order to extract the functions "embedded" in such a framework, and to find an appropriate theoretical position for functions of futures markets in an interdisciplinary sense.

In chapter thirteen, investigation from the field of sociology is done. The original issue raised here is McKinnon's proposal which said that, if it were possible to have a futures market with enough distant futures transaction, it would be possible to stabilize income on the one hand and to utilize production factors efficiently with futures market information on the other. By applying functional exigencies and types of exchange put forward by Parsons, Polanyi and Smelser, etc., the McKinnon proposal (utilizing futures market functions) could be interpreted as corresponding to adaptation in terms of functional exigencies and a market type of exchange in terms of types of exchange. As far as international commodity exchange is concerned, this corresponds to goal attainment in terms of functional exigencies and mobilizative type of exchange in terms of types of exchange. Also among international commodity agreement regulation schemes, a scheme which corresponds to goal attainment and to mobilizative types of exchange would be the export regulation scheme. It can be clearly shown that the international commodity agreement has from the origin a functional framework within which to work through quantity regulation.

In chapter thirteen, we study the same issue as in chapter twelve from the viewpoint of political economy, particularly the international regime approach. The focus in our examination is on the correspondence with the nature of benefit coming from regime formation and on change to a regime. In terms of the nature of benefit coming from regime formation, an international commodity agreement corresponds to stabilization effect, and a futures market corresponds to the mitigating uncertainty effect. This means that an international commodity agreement, particularly an export regulation scheme (which seems to be a substantial scheme), could be

described as a scheme putting more weight upon stability. If a change of regime comes from a shift in dominance of benefits from regime formation, the tendency of a change of international commodity agreement (toward more research and development, more information collection etc.) could be interpreted as the result of a shift in dominance of benefits from regime formation (toward the effect of decreasing information gathering costs from the stabilization effect). A scheme like that in McKinnon's proposal is therefore shown as coming from attaching more importance to the effect of mitigating uncertainty.

In chapter fourteen, we consider the next question asking which effects were produced in the adjustment process when intergovernmental regulation was successful in a sense that price movement was successfully stabilized through buffer stock operations.

Based upon a model contributed by Carl Van Dyne, we examine the nature of the process to adjust a disturbance which happened initially. We recognize by the analysis that the adjustment process would contribute to expanding the initial disequilibrium. It becomes clear, therefore, that the system of adjustment is unstable. As a result, the current account of a primary commodity producing country would have more deficit and also would have more involuntary stock for the primary commodity.

We could insist therefore that, when destabilizing fluctuation is observed and governmental and/or intergovernmental intervention behavior is successfully implemented, this could introduce disequilibrium factors for the macroeconomic adjustment process.

This is an overview of this book which comprises of three parts made up of   fourteen chapters altogether.

At the close of this Preface, I would like to express my gratitude for the financial support of (in alphabetical order) the Japan Commodity Futures Industry Association and Japanese Ministry of Education, Culture, Sports, Science and Technology (Grant-in-Aid for Scientific Research).

Notes

1   It is not easy to define precisely what "Central Europe" is, because it is necessary to carefully examine, for example, historical, ideological, political and cultural factors. In this book, we use the term "Central Europe" to mean the former CMEA six countries, except the former GDR. The main target area of this book, however, is generally limited to Poland, Hungary (and the Czech Republic). Also in this book, as we consider the longer period, we could use the terms Central Europe and Eastern Europe interchangeably if suitable.

2   See, for example, chapter one.

PART I
COMMODITY EXCHANGES IN CENTRAL EUROPE

In Part I, we investigate the commodity futures markets in Central Europe, particularly in Warsaw (Poland) and in Budapest (Hungary). The main issues to be examined are: (1) reasons why it was necessary to establish a commodity futures market in the transition process and (2) the current situation and function of commodity futures markets in Warsaw and Budapest. The second chapter deals with issue (1) and the third and fourth chapters deal with mainly issue (2).

The first chapter provides the basis for the investigations that follow. Needless to say, there have been lots of opinions on the question of why centrally planned economies collapsed. In the first chapter we discuss the interpretation, partly related to the question, that says that inefficiency was mainly caused by incomplete adjustment of disequlibrium occurring as a result of unexpected factors. That is to say, we attempt to rearrange the issue based upon the adjustment mechanism of centrally planned economies from a framework of functions of futures markets.

The second chapter focuses on the Warsaw Commodity Exchange, particularly in connection with budget deficit and agricultural products (pricing). As IMF (International Monetary Fund) policy recommendation and as the purpose of reforms (both radical and gradual) have emphasized, cutting down the budget deficit has been indispensable for a successful transition.

In the third chapter, we mention the current situation of Warsaw and of Budapest, and then indicate problems in examining efficiency.

We have an analysis of the function of the Budapest Commodity Exchange in the fourth chapter. Taking into consideration an evaluation of the efficiency of the Budapest Commodity Exchange, we try to compare the function of the Tokyo Grain Exchange (which is selected as a criterion of judgment in efficiency).

Note that the analyses in the first part of the volume are principally based upon current situations as of the year 1999.

Chapter 1

Futures Markets and Centrally Planned Economies

Introduction

Overall, bad economic performances over a fairly long period in centrally planned economies have mainly resulted from inefficiency, closely connected with economic systems. The question of why centrally planned economies collapsed has prompted lots of opinions and we will try to find better interpretations of the question. From the viewpoint of this volume, at least partially, inefficiency should be interpreted as incomplete adjustment of disequilibrium caused by uncontrollable factors.

The purpose of this chapter is to examine the issue of an adjustment mechanism in centrally planned economies within a framework of futures market functions.

This chapter is divided into four parts. In the first part, we examine the identity of functions against uncertainty in centrally planned systems and forward trading, basically with a contribution by J. R. Hicks (1946). In the second, we examine the identity to eliminate income variance caused by uncontrollable factors mainly with a work by R. McKinnon (1967). In the third, we investigate efficiency of spot market adjustment in commodity exchanges, and in the last part, there is a short conclusion to the chapter.

Forward Trading and Centrally Planned Systems

Four possible causes of disequilibrium were suggested by J. R. Hicks (1946).[1] Here the term disequilibrium means divergence between expected and realized prices, and the divergence comes from inaccurate foresight (which means existence of uncertainty) and causes malinvestment, waste and inefficient production.

According to Hicks, one cause (he said this was perhaps the least important) is produced when different people's price-expectations are inconsistent. Even if all buyers and sellers expect the same price, the total quantity all buyers plan to buy may not equal the total quantity all sellers

plan to sell. This is the second cause of disequilibrium, and Hicks said it was perhaps the most interesting cause of all four. Moreover, even if both price expectations and plans are consistent, people may not predict their own wants correctly, or make wrong estimates of the results of technical processes of production. If this arises, they will find that they are unwilling or unable to buy or sell those quantities they had planned to buy or sell. Therefore, realized prices will be different from expected prices. And this is the third cause of disequilibrium due to unforeseen changes in tastes, unforeseen results of technical processes, imperfect foresight of harvest fluctuations and unforeseen political upheavals, etc.

And moreover, even if no disequilibrium in any of the above mentioned three senses exists, nevertheless the most perfect adjustment of resources to wants may not be reached. This is because, when risk and uncertaninty exist, people will generally act not on the price that they expect as most probable, but as if that price had been slightly shifted in an unfavourable direction. In this way the efficiency of the system may be seriously damaged, and this is the fourth cause of disequilibrium (also called imperfect equilibrium).

Those divergences between expected and realized prices due to uncertainties can, in several ways, be eliminated in order to improve the third and fourth causes of disequilibrium mostly found in every economic system, centralized economies or market economies. Even the most perfectly organized economic system cannot avoid causes like harvest fluctuations, inventions, or political upheavals.

The first and second causes can be eliminated in different ways in any economic system. In a completely centralized system the two causes would be removed. (But, as Hicks mentioned, a completely centralized system is a mere figment of the imagination.) And within market economies, a device in which price-expectations and plans can be (at least partially) consistent exists. In market economies, we could have a device for eliminating or reducing the first and second causes of disequilibrium, that is, the device of forward trading. Hicks included, and we also include in this chapter, not only futures market operations, but also dealings given in advance, and all long-term contracts.

Thus, we could say, as economic devices to eliminate the first and second causes of disequilibrium, there are centralized systems in Socialism on the one hand, and forward trading in Capitalism on the other hand. If no causes classified as the third and fourth kinds exist, then, with the device of a perfectly centralized system or forward trading, price-expectations and plans will be consistent, there will be no waste and there will be perfectly efficient production. However, as the third and fourth causes could not be

eliminated, disequilibrium caused by them does exist.

In this section, we would like to put the above argument by J. R. Hicks into a little wider perspective of devices to reduce uncertainty. As Hicks mentioned, in the device of forward trading, dealings given in advance and all long-term contracts are included. In those tradings between sellers and buyers, all the terms like trading period, quantities and prices are concluded. As a typical device, we could say that quantities and prices are fixed in advance and are actually traded on each delivery day. The long-term contract, in market economies, is concluded voluntarily between private enterprises. And we usually observe the same device in centralized economies in which centralized authority decides quantities and prices traded in advance, and state enterprises actually transact each delivery day.

In the case of long-term contracts, they need to be mutually reciprocal. Thus, they need time for adjustment to reach mutual reciprocity, and there may be some cases[2] with risk of bargaining stalemates and cost of repeated recontracting and also risk of price fluctuations. The above mentioned cases with risk and cost should be treated as an issue of tension management to reach a long-term contract. In cases where benefits with long-term contracts for stabilization could not cover costs for tension management, there may be possibilities for the buyer and the seller to be vertically integrated. The vertical integration seems to be a typical case. Through integration of the buyer and the seller, several sources are redistributed within the organization, and better information flow could make much less uncertainty. The vertical integration could be observed in market economies with rational reasons. In centralized economies, the same type of transaction could usually be observed between state enterprises under directions from planning authorities, which it redistributes several resources and reduces uncertainty.

In addition to the above, even under market economies, devices to reduce uncertainty through government intervention could exist. When disequilibrium under uncertainty has serious effects against stabilization for the global economy, especially against economies in less developed primary commodity producing countries, both producing and consuming countries may contribute to establishing a fund to stabilize price fluctuations, to stabilize producer's earnings and to secure consumer's imports. They are, perhaps, very important goals for a centralized authority to stabilize producer's earnings, materials for consumers and prices. In other words, such intergovernmental agreement concluded under market economies is a trial to stabilize, even if a market mechanism is partially distorted. The goals in such agreement could be similar to policy goals in centralized economies.

Consequently, the essential framework that Hicks called forward trading means the fairly strict device in which quantities and prices would be predetermined in advance in uncertain situations in order to have coordinated price-expectations and plans. And within the framework, on each day for actual delivery, transactions can be liquidated. Such a framework can be commonly observed both in market economies with private enterprises and in centralized economies with planning authorities.

We recognize the difference between the above mentioned two systems. Since the third and fourth causes of disequilibrium could not be eliminated, both of them should have adjustment schemes to reach equilibrium. The adjustment schemes are not the same in the two systems. To analyze the difference is the main purpose of this chapter, and it will be dealt with in the third section.

In this section, hereinafter, we would like to make Hicks' classification simply embedded in the much wider theoretical framework developed by K. Polanyi et al. (1957, 1977) and N. Smelser (1959), from the viewpoints of anthropology and sociology, in order to correctly arrange economic devices (forward trading and centralized system) in a wider perspective.

Polanyi classified several types of economies into ascendant patterns of integration, which mean movement patterns of economic goods and service. According to Polanyi, there could be three ascendant patterns of integration: (1) exchange, (2) reciprocity, and (3) redistribution. And in each of the three, there are these four characteristics: forms of trade; uses of money; market elements; and types of social structure. Of these, this chapter here focuses upon forms of trade. Polanyi mentioned that forms of trade could be also classified into three types of trade: market trade; gift trade; and administered trade.   According to him, these types of trade are closely linked respectively with the three ascendant patterns of integration. It means that market trade links with exchange, gift trade connects with reciprocity, and administered trade relates to redistribution.

Their simple characteristics are as follows. Market trade means transactions done voluntarily between each economic agent, with market prices as a signal. Gift trade implies transactions based upon reciprocal relations in which economic agents share their value-systems, and with which economic agents can eliminate costs coming out from negotiations. Administered trade means transactions done by government intervention in order to achieve public goals.

In addition to Polanyi's anthropological approach, Smelser analyzed the same problems from a sociological point of view. For the purpose of this chapter, we focus upon only the most adequate portion in Smelser's paper. Smelser raised an interesting question about correspondence between

patterns of integration and forms of trade. One of his arguments, especially, was focused upon the link between the categories of administered trade and redistribution.

Although we have no space to examine Smelser's argument against Polanyi's, one point that should be mentioned here is his careful consideration of features of administered trade in comparison with redistribution which leads us to the additional fourth ascendant pattern of integration. Smelser's point of discussion is that redistribution only means for the government to collect wealth and to redistribute it with any changes. The term redistribution, therefore, just means only the direction of movement of wealth, not any function of that movement. In administered trade, however, according to Smelser, any collective social goals like war do exist, and public authority mobilizes resources to achieve those goals. In regard to this aspect Smelser can add the fourth pattern of integration, which is called mobilization.

Instead of a pattern of integration, we would prefer to call it an exchange system, as Smelser did. The four exchange systems (exchange, reciprocity, redistribution and mobilization) are embedded into social structures. Consequently, the devices to reduce uncertainty and disequilibrium that are focused upon in this chapter could vary in accordance with the social structures into which ascendant exchange systems are embedded. One of the most excellent points in Smelser's analysis is that he was successful in finding a correspondence between the four types of exchange and the AGIL scheme by T. Parsons and N. J. Smelser (1956). With the linkage, we can have a clear idea that each ascendant exchange system comes out from the functional ascendancy of the society concerned.[3] Therefore, for instance, when a society puts the function ascendancy into completing some social policy goals, mobilization becomes an ascendant system of exchange.

Here in this section, we have the following concluding remarks in our argument:

(1) Concerning the devices to reduce uncertainty and to adjust disequilibrium, both in market economies and in centralized economies, we could recognize the same function in order to coordinate price-expectations and plans.

(2) However, since ascendant exchange systems vary, we could mention that mobilization (central planning) has been employed in centralized economies and exchange (forward trading) has been employed in market economies.

(3) Consequently, regarding the devices concerned here, we should be careful to recognize that the exchange systems are respectively different, but the function is identical.

Uncertainty and Adjustment Mechanisms

The purpose of this section is to mention that, in case of including the third (and fourth) unavoidable causes of disequilibrium, both forward trading and a centralized system could not eliminate perfectly those sources, and also to examine that, when the third (and fourth) sources could not be eliminated through forward trading or a centralized system, they should have an optimum combination of forward trading (or centralized system) and another device, mainly with arguments by McKinnon.[4]

Although there are many factors in the third cause of disequilibrium, we consider here harvest fluctuations and also suppose an individual farmer as a typical economic agent facing uncertainty. And we assume that income variance is a reasonable measure of risk and uncertainty,[5] and the farmer attempts to minimize income variance.

Also we consider, with McKinnon, to keep the analysis as simple as possible, that an individual farmer's planting decision is made exogenously and he has a fixed production opportunity. And the farmer's output (X) at harvest time can be viewed at planting time as a random variable, and also at planting time, he knows the mean (μ_x) and variance (σ_x^2), which are both fixed. And the actual spot price (P) at harvest time can be viewed at planting time as a random variable with a known mean (μ_p) and variance (σ_p^2). We also assume that X and P have a bivariate normal distribution.

We consider that the farmer sells X_f bushels forward for future delivery at the price P_f in order to reduce his income variance. And we assume that the period over which the farmer can sell forward spans the period over which the major price fluctuations occur. We also suppose that the expected value of P is the future price, that is, $E(P) = P_f$, that means no normal backwardation exists. And finally, for simplicity, we assume that transaction in the futures market is costless.

This farmer's income at harvest time is shown as the revenue by adding the futures market transaction to spot market transaction, that is:

$$Y = P_f X_f + P(X - X_f) = PX + X_f(P_f - P) \qquad (1)$$

As his expected income is dependent upon the uncontrolled random variables X and P :

$$E(Y) = E(PX) \qquad (2)$$

The farmer chooses the optimal value of X_f in order to minimize the variance of his income. Under the assumption of bivariate normality, we have:

$$
\begin{aligned}
\sigma_y^2 &= E(Y^2) - [E(PX)]^2 \\
&= P_f^2 \sigma_x^2 + \mu_x^2 \sigma_p^2 + 2P_f \mu_x \rho \sigma_x \sigma_p + (1 + \rho^2) \sigma_x^2 \sigma_p^2 \\
&\quad - 2X_f P_f \rho \sigma_x \sigma_p - 2X_f \mu_x \sigma_p^2 + X_f^2 \sigma_p^2
\end{aligned} \tag{3}
$$

where, needless to say, ρ is the coefficient of correlation between X and P.

Differentiating (3) with respect to X_f and equating to zero, we can have X_f^*, the optimal value of the forward sale of X_f:

$$
X_f^* = \rho P_f \frac{\sigma_x}{\sigma_p} + \mu_p \tag{4}
$$

We can also obtain the minimum income variance σ_y^{*2} by substituting X_f^* for X_f in (3):

$$
\sigma_y^{*2} = (1 - \rho^2) P_f^2 \sigma_x^2 + (1 + \rho^2) \sigma_x^2 \sigma_p^2 \tag{5}
$$

In equation (5), the term $P_f^2 \sigma_x^2$ means the pure effect output fluctuations, and $\sigma_x^2 \sigma_p^2$ represents the interaction effect between output and price variations. The terms imply that, even if the farmer has the optimal hedge through forward sale X_f^*, a residual income variance still exists, because output fluctuation, which is occurred by the third cause of disequilibrium by Hicks, cannot be eliminated. And, in case of $\rho = 0$, we have:

$$
\sigma_y^{*2} = \sigma_x^2 (\sigma_p^2 + P_f^2) \tag{6}
$$

As is shown in the previous section, the third (and fourth) sources like harvest fluctuations cannot be eliminated even in the most perfectly organized economic system. That is clearly represented by non-zero σ_y^{*2}. Consequently, in order to eliminate income variance (which means to eliminate output fluctuations σ_x^2), we should have other devices combined