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# Economics of Diversity: Issues and Prospects

Edited by

Hiroyuki Hino

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# Economics of Diversity: Issues and Prospects



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Edited by **Hiroyuki Hino**

The Research Institute for Economics and Business Administration  
Kobe University



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# Forward

It is a great honor for me to introduce, on behalf of the Research Institute for Economics and Business Administration (RIEB) of Kobe University, this book which is a collection of the papers and comments presented at a workshop entitled “Economics of Diversity: Issues and Prospects.” This workshop was held on March 21, 2008, in Kobe, Japan. It was organized jointly by RIEB and the Graduate School of International Cooperation Studies of Kobe University.

The workshop was intended to initiate our project to establish “The Center of Economics for Global Diversity (CEGD)” at Kobe University. This project was motivated by our observation that while the world is increasingly integrated in terms of international movements of goods and services, capital and labor, various forms of conflicts among ethnic or culturally diverse communities — such as ethnic clashes within and across national borders and even terrorism — have been on a rise. While diversity of economic agents has recently attracted greater attention in the economics literature, attempts to explicitly incorporate economic and non-economic diversities in an analysis of economic behavior have been relatively limited. We felt, therefore, that it would be important to establish a focal point, where various dimensions of diversity would be incorporated in the main body of economics comprehensively.

The CEGD was to facilitate international research in the field of economics of diversity, in close collaboration with Jawaharlal Nehru University (JNU) and Cairo University. In addition to research, the CEGD was to offer intensive training for doctoral and post-doctoral students. JNU and Cairo were the ideal partners for the Center, not only because of their academic excellence but also their proximity to complex issues of diversity in the Middle East and in India. Kobe University had concluded a collaboration agreement with JNU and with Cairo University. In addition, research cooperation agreements had been signed separately with Yale University, Gulf Research Center, and University of San Paulo.

Unfortunately, we were unable to bring the CEGD project to fruition. This was because the Ministry of Education and Science of Japan did not approve our proposal to fund the CEGD under its Global Center of Excellence (COE) Program. Nevertheless, we felt that it was important to publicize its accomplishment as a contribution to broader and deeper understanding of economics of diversity.

I believe that the papers and discussions presented in this book are excellent. I hope that you will enjoy reading them.

Junichi Goto  
Kobe University

# Preface

Junichi Goto

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A workshop was held in March 2008 in Kobe, Japan, to begin studying systematically various aspects of economics as it relates to diversity of individuals, firms and nations. This book is a collection of papers presented in the workshop and the comments on those papers.

Chapter I is devoted to theoretical exposition of the relationship between diversity of economic agents and the optimality of market economy. Chapter II consists of case studies on diversity of firms and nations. Chapter III presents an exposition of diversity of financial markets in the global economy.

We believe that this book offers interesting and rich insights on various dimensions of diversities of an economy and their implications on its properties. It is our hope that this book will serve as an introduction to Economics of Diversity to those who may be interested in pursuing this subject more deeply.

We are grateful to all the participants of the Kobe workshop for their valuable contributions and to those who made the workshop possible. In particular, we thank Harumi Watanabe and Takako Kitano for their excellent editorial and administrative assistance.

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# Introduction and Summary

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## 1. Introduction

Over the last few decades, we have observed a rise in income disparity among nations as well as in inequality among distinct communities within a nation. Economic crisis of a country or a group of countries appears to have become a regular occurrence in the world. We also witness increased incidence of economic or social instability, as seen, for example, in various forms of conflicts within and across national boundaries, including clashes between different ethnic communities.

Can we assume that invisible forces of market would not generally lead an economy to a stable and optimal equilibrium, if agents that form the economy are not homogeneous as commonly assumed in neoclassical economics? Is the rise in income disparity a natural consequence of having diverse agents or communities in a market economy? If the answers to the these questions are “yes”, what economic institutions and/or government interventions are needed to bring about stability and greater equity in an economy?

An important advance has been made in economic theory, experimental economics, and development economics in introducing diversity and in better understanding its implications on the properties of market economy and the desired policies. Yet more concerted efforts have to be made to bring together research on diversity in various fields of economics and other social sciences. Eventually it would be most useful to incorporate diversity in a common framework of economics, which may be called “Economics of Diversity.”

This book presents a set of papers and comments that discuss various dimensions of diversity of an economy and its implications on stability and optimality of that economy. Chapter I is devoted to a theoretical exposition of the relationship between diversity of economic

agents and the optimality of market economy. Chapter II consists of case studies on diversity of firms and nations. Chapter III presents an exposition of diversity of financial markets in the global economy.

## **2. Diversity and Stability of a Market Economy**

Chapter I begins with a paper by Professor Mukherji titled “Competitive Markets and Diverse Economic Agents.” This paper casts doubt on the proposition that competitive market can be expected to yield an equilibrium which is stable, efficient and optimal. It shows that the initial distribution of endowment among economic agents and/or other initial conditions must be just “right” if market mechanism is to have the ability to bring an economy to an equilibrium. Similarly, unless certain conditions are met, market mechanism may apportion gains from trade asymmetrically. If the probability of having the “right” initial conditions is not high - which may well be the case - then one could conclude that a market economy is likely not to possess the desired qualities commonly associated with neoclassical economics.

As regards stability, Mukherji cites previous work of others that show that this property of market economy holds even in the presence of agents with diverse preferences, provided that their behavior could be aggregated into a well-behaved function.

In the real world, however the distribution of preferences among individuals in an economy may not be so “smooth” to allow the desired aggregation. For example, you have some ethnic groups or some portion of the population who actually do not eat any meat, and some other portion of the population who eat almost exclusively meat. In that case, the economy would consist of two groups of individuals, one group being close to one end of the extreme and the other in the other end.

The second paper in this Chapter is “Market Paradigm and Diversity of Values” by Professor Satish Jain. In this paper, Jain takes note of the fact that in analyzing the institution of market, it is generally assumed that individual’s preferences and values are independent of those of others in the community, as well as those of the society. In reality, of course, this is not the case.

Jain systematically introduces inter-dependence of individual preferences and values, and finds for example that even if the institution of market admits an equilibrium of individual and social values, these equilibrium values may not be consistent with a sustainable social structure. He also argues that if individual preferences are influenced by preferences of other individuals or by social preferences, then it is not clear what significance one can attach to the Pareto-criterion, the fundamental notion of optimality of market economy.

The theme of economic stability and diversity is followed in the

first paper of Chapter II, i.e., “Regime Type and Economic Performance: Why Democracies Just ‘Muddle Through’.” This paper investigates the empirical relationship between the level of democracy and economic performance in a country, where economic performance is judged by a combination of growth and economic stability. The paper’s author, Professor Chandra, models policy formation as “partisan mutual adjustment,” in which policy formation is seen as an outcome of negotiations among partisan individuals or groups with different objectives. Using a technique of finance literature and controlling for all relevant variables, he shows that democracy enhances economic stability, although it may not help achieve very high economic growth. In other words, participation in policy formulation of diverse individual and groups as seen in democracy increases economic stability.

The diversity of values, that Professor Jain discusses may help explain this democracy versus volatility nexus. If in a country, individual values are very similar, then individual values and social values would be practically identical. In that case, autocracy would give a stable result because there would be no conflict between social and individual values anyway. For that matter, there may be little need for democracy to solve conflicts between individual and social values. In many of the cases of stable high growth economy shown in Professor Chandra’s paper there is commonality of values in the society. Professor Chandra’s analysis may well be dealing with the diversity of values of individuals in the society and how it influences the formation of social or political consensus in a political regime.

If we apply Professor Chandra’s analytical framework to the African context, we could try to explain when and how conflicts occur. Conflict is an extreme case of the volatility that Chandra discusses. We could try to explain how conflicts occur in the framework of interaction of individual values, or possible conflict between social and individual values in a political regime. An interesting research project may be to combine the work of Professor Chandra and that of Professor Jain Satish. This would give us a framework to analyze triangular relationships among diversity of individual values in a society, conflicts and economic performance.

### **3. Diversity of Firms and Nations: Case Studies**

Chapter II offers an in-depth study of diversity of a national economy and that of a firm system. In his paper “Diversity of Nations and Deviations from Market Principles: Case of Egypt,” Professor Ghoneim offers examples in Egypt to argue that policies based on market economy and outcomes of such policies affect, and are affected by, cultural norms of that country. Interactions between “second best institutions,”



such as culture and market economy should, therefore, be understood more comprehensively.

On this basis, Ghoneim shows that a major task of Economics of Diversity would be to provide a comprehensive framework that is capable of analyzing and identifying growth and development paths of different economies with different history and culture. He then provides rich research agenda for Economics of Diversity in this regard.

Professor Aldrighi presents in his paper “Some Peculiarities of the Recent Evolution of Business Groups in Brazil” a painstaking and thorough study of ownership and other characteristics of firms in Brazil. This paper highlights diversity of corporate structure in the global economy, drawing on Brazil as an example. It shows that much of business groups are family-owned, and that pyramidal ownership structures are common, which may be intended to facilitate the expropriation of minority shareholders. This paper shows where and how corporate structures are different from those of typical Western firms.

#### **4. Diversity of Financial Market and Its Stability**

Chapter III deals with the diversity of financial system in the global economy and global financial stability. In his paper entitled “The Globalization of Bank Regulatory Policy and Diversity of Markets: Implications for Financial Risk Management,” Professor El-Shazly presents a concise overview of risk management practices of commercial banks as regulated under Basel II. He argues that Basel II really does not account for diversity of financial markets in the global economy, because it favors measuring risks that banks are carrying, by a sophisticated internal models approach that is not really applicable in most developing countries.

Basel II presumes that with very sophisticated internal models of risk management and measurement, banks could obtain a very good estimate of how much risk it could carry prudently. The reality is that even the most sophisticated institution in Switzerland did not know how much risk it was carrying. In the U.S. too, major banks did not know, although they had the most sophisticated risk management system. Then, how would one expect the country like Egypt to have a stable financial system with banks knowing how much risk they are carrying? Perhaps, having a common bank regulatory framework across the borders or having one global financial market does not necessarily lead to a more stable solution, either locally or globally.

This leads to the second paper of Chapter III, “Determinants of the Type of Financial System; A Survey.” In this paper, the author, Professor Teranishi, describes how a financial system in a country is determined, and how such system diverges among nations. He then describes

two seemingly distinct financial markets, and analyzes the characteristics of each. One market is more stable than the other.

If it is desirable to have a sort of distinct financial markets, where some distances were kept between them, then it would be necessary to introduce capital control. Otherwise, forces of globalization would lead national markets to converge to one integrated market. The question is therefore whether the stability of national markets - and hence that of global market - could be better safeguarded by reintroducing some form of capital control.

It would be most useful to consider without prejudice - and taking full account of diversity of economies - a model of global financial system that would be substantially more stable than the present. This too would be an interesting research project for those who may be interested in Economics of Diversity.



# I Diversity of Economic Agents and the Optimality of Market Economy



# 1 Competitive Markets and Diverse Economic Agents<sup>1</sup>

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## 1. Introduction

This is a report on on-going work which looks into the nature and properties of competitive markets.<sup>2</sup> Currently in the realm of policy making, the major theoretical assumption, some might say the only assumption, is that markets should be competitive. A regime of policy making based on such a foundation has been referred to as the SLP regime (S: Stabilize, L: Liberalize and P: Privatize): *stabilize* refers to the aspect that government expenditures should stabilize at some low acceptable levels; *liberalize* refers to the free access to markets in international trade by lowering barriers, and *privatize* refers to reduction of the role of the public sector in carrying out economic activities. Notice that all three refer to the lowering of the role of the government. This view is of course open to criticisms of various kinds.

First of all, what about the provision of public goods? Or the more pervasive matter of externalities? Usually such concerns are brushed aside. We shall be concerned with the more basic matter of the faith in competitive markets: the fact that under some conditions, such markets attain optimal states. It is forgotten that there may be market failures; even having accepted that market failures are perhaps not of immediate concern (a view which I do not share) it is forgotten that optimality of markets rest on *two* legs: that the competitive equilibrium will be *at-*

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1. This is a revised version of a paper presented at the Kobe COE Workshop, *Economics of Diversity: Issues and Prospects*, at Kobe University on March 21, 2008. Comments received from participants, particularly those from J-M. Grandmont and M. Hirota are gratefully acknowledged. Thanks are also due to J. Goto and H. Hino, the organizers of the workshop for providing an opportunity to discuss material presented here.

2. Mukherji (2008) and (2006).

*tained* and once reached, the different agents will have the *incentive* to carry out the trades required of them. Notice that a breakdown on either count will render the basis of our faith on competitive markets to be non-existent. We shall argue that these two legs or two aspects of optimality of markets rest on a general *implicit* assumption that agents are not too diverse; further, we shall show that soon as we consider the fact that agents are generally diverse in nature, these two aspects become difficult to establish. Consequently in the face of diversity, we need to rethink completely the basis of economic policies.

The basic analytical aspects of our note will be based on the standard exchange model with  $N$  agents, each with a utility function and an endowment with enough assumptions allowing us to define excess demand functions, which are defined over strictly positive prices, and satisfy Walras law and homogeneity of degree zero in the prices. We shall show that even in such text book environments, ensuring the twin aspects of optimality referred to above may require some agency to tackle the problems caused by the diversity in economic agents. Consequently we need to be careful before adopting policies purely based on competitive markets without ensuring that these conditions are met.

The equation of motion, which depicts the movement of prices in dis-equilibrium is usually represented as a system of differential equations of the type:

$$\dot{p} = \varphi(Z(p)) \quad (1)$$

where  $p$ ,  $Z(p)$  represent prices and excess demand respectively, and  $\varphi(\cdot)$  is some sign-preserving function of the excess demand.<sup>3</sup> This approach has been subjected to many criticisms. First of all, it was difficult to see, as Koopmans (1957) pointed out, whose behavior was being described by these equations and why that person or decision maker was behaving in such a fashion. The answer that this was how the Invisible Hand worked, although acceptable during the time of Adam Smith, did not find too many takers in more recent times. Secondly, it is not at all clear whether such a system works i.e., beginning from some arbitrary price, and adjusting prices according to the above rule allows the system to approach equilibrium. And consequently such enquiries were not supposed to be of any significant interest.

Fortunately, contributions from Charles Plott of Caltech and his associates provide significant support to a study such as the present one: "*Experimentalists have discovered that classical models, which are based on an assumption of tatonnement, have remarkable explanatory power even when applied to the non-tatonnement, continuous, double auction*

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3.  $\varphi(Z(P)).Z(P) > 0$  whenever  $Z(p) \neq 0$ .

*markets*".<sup>4</sup> The classical tatonnement is precisely what we have defined above. Consequently, given the results of the experiments conducted by Plott and his associates, we may address ourselves to the analysis of the classical tatonnement, even though we are not sure whose behavior is being analyzed; thanks to the experimental results, we know that this analysis will be a good predictor of what to expect.

There is however, in addition, a passage in Negishi (1962) which also provides another justification for a process such as this one and why someone may be interested in following such a rule. Negishi (1962) p.639, says: "*Since welfare economics assures us that under certain assumptions a competitive equilibrium can be identified with an economic optimum.... we may conclude that the competitive process towards market equilibrium is also a computational device for solving the problem of optimal resource allocation....*".

Accordingly, we may consider the optimality problem, when aggregate resources are fixed. Thus the so-called 'exchange model' is considered and the set-up is identical to the one used so effectively by Negishi (1962). We have discussed elsewhere<sup>5</sup> the properties of a gradient process<sup>6</sup> which may be used to compute the optimum; its interest lies in the fact that the process is a revision of the Lagrangian multipliers, which may be interpreted as 'scarcity prices'; further, it was shown that if these values were really market prices, and if the aggregate resources were distributed in some specified manner, then the gradient process would in fact be the so called classical tatonnement, where price moves in the direction of the excess demand. Given the strong convergence properties of the modified gradient process, this analysis provides a new look at the condition for stability of competitive equilibrium viz., the fact that distribution of the aggregate resources should be 'proper', in some sense. Thus, a 'proper' distribution of endowments would provide a rationale for the price adjustment process as a means of arriving at some optimum, which is incidentally also equilibrium. Notice that this requirement arose mainly because of diversity among the agents.

The second pillar which looks at what happens at a competitive equilibrium is considered next. Another aspect of diversity is revealed. It is possible that even at competitive equilibrium, gains from trades may not be equitably distributed. In any case, adhering to competitive trades require that these be incentive compatible. We show how this may not be so. Thus we require regulatory authorities to oversee and ensure, through the imposition of penalties, that no one deviates and such trades are carried out.

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4. Anderson et. al. (2004), Hirota et. al. (2005).

5. Mukherji (2008).

6. Uzawa (1958), p.157.



We begin by specifying the model and setting out what ‘getting to equilibrium’ entails. In doing so, we also focus on the problems created by the diversity among agents; we also report on situations when diversity of particular types may in fact be of great help in concluding that equilibrium may be stable.

**2.1. The Model**

We shall assume as in Negishi (1962) that we are analyzing the standard exchange model involving  $m$  individuals and  $n$  goods and that the total amounts of these goods are given by the components of the vector  $\bar{W} \in R^n_{++}$ ; each individual  $i$  has a real-valued utility function  $U^i: R^n_+ \rightarrow R$ , assumed to be *strictly increasing, strictly concave and continuously differentiable*. Sometimes, we shall specify a distribution of  $\bar{W}$  among the individuals, usually denoted by  $\{w^i\}$  such that  $\sum_i w^i \leq \bar{W}$ ,  $w^i \geq 0$ ; we call such a distribution a **feasible allocation**.

The prices are represented by the vector  $P = (p_1, \dots, p_n) \in R^n_{++}$  or by the vector  $P = (p_1, \dots, p_{n-1}, 1) = (p, 1) \in R^n_{++}$ ; in the latter case, when good  $n$  is chosen to be the numeraire,  $p \in R^{n-1}_{++}$  is the vector of relative prices of the first  $n-1$  goods. Given a feasible allocation  $\{w^i\}$ , the **budget set of  $i$**  is given by  $B^i(P, w^i) = \{x \in R^n_+ : P^t \cdot x \leq P^t \cdot w^i\}$ . The **demand  $x^i(P)$**  is the unique maximizer of  $U^i(\cdot)$  in the budget set and the **market demand** is given by  $X(P) = \sum_i x^i(P)$  and excess demand is defined by  $Z(P) = X(P) - \bar{W}$ .

Excess demand functions are expected to satisfy:

- $Z(P)$  is a continuous function and bounded below for all  $P > 0$ ;
- Homogeneity of degree zero in the prices i.e.,  $Z(\beta P) = Z(P) \forall \beta > 0, P > 0, \beta \in R$ .
- Walras Law<sup>7</sup> i.e.,  $P^t \cdot Z(P) = 0 \forall P > 0$ ;

To these we add the following assumptions:

- $Z(P)$  is continuously differentiable function of prices for all  $P > 0$ .
- For any sequence  $P^s \in R^n_{++}$ ,  $p^s_k = 1, \forall s$ , if  $|P^s| \rightarrow +\infty$  as  $s \rightarrow +\infty$  then  $Z_k(P^s) \rightarrow +\infty$ . (Boundary Condition).<sup>8</sup>

The above conditions are standard and all of them excluding the last, in fact appeared in Negishi (1962); the importance of the role of assumptions such as the last, (the Boundary Condition), was realized somewhat later.<sup>9</sup> Finally, the equilibrium for the economy, with a feasible allocation of resources  $\{w^i\}$ , is defined by  $P^*$  such that  $Z(P^*) = 0$ . Under the assumptions mentioned above, we know that an equilibrium exists and the set  $E = \{P \in R^n_{++} : Z(P) = 0\}$  is non-

7. The superscript ‘t’ will denote matrix transposition.

8.  $|x|$  stands for  $\sqrt{x_1^2 + x_2^2 + \dots + x_n^2}$ , when  $x = (x_i) \in R^n$ .

9. See Arrow and Hahn (1971), p.293, Assumption 1, for example.

empty.

Before passing on to other matter, we would like to point out an important restriction on excess demand functions: **Weak Axiom of Revealed Preference** in the aggregate (WARP) holds if for any  $P^*$  in  $E$  and  $P \neq aP^*$ , we have  $P^{*t}.Z(P) > 0$ . It may also be noted that:

**Remark 1** In case aggregate demand  $X(P)$  is derived from the maximization of a single utility function  $U$  subject to an aggregate budget constraint, WARP holds. This follows since at  $P^*$ ,  $X(P^*) = \overline{W}$  and since  $X(P)$  is the best among an aggregate budget set, it follows that  $U(X(P)) > U(\overline{W})$  and hence  $P^{*t}.(X(P) - \overline{W}) > 0$  as claimed.

### 2.2 The Tatonnement Process

Consider a feasible allocation  $\{w^i\}$ ; unless otherwise stated this allocation will be held fixed in this section. The price adjustment process which we shall study is the following:

$$\dot{p}_j = \gamma_j Z_j(P) \quad \forall j = 1, 2, \dots, n \tag{2}$$

The symbols  $\gamma_j$  represent positive constants, and are interpreted as speeds of adjustment in various markets. This is what Negishi called the ‘non-normalized’ system where the adjustment occurs on all prices. A related process studied involves the choice of one good as the numeraire or the unit of account so that all prices are measured relative to good  $n$ ; then the price vector is  $P = (p, 1)$ :

$$\dot{p}_j = \gamma_j Z_j(p, 1) \quad \forall j \neq n, p_n = 1 \tag{3}$$

Hereafter, in such situations, we shall write  $Z(p, 1)$  as  $Z(p)$ . This process is called the ‘normalized’ system. We shall consider mostly the latter and we note that the choice of the numeraire may affect stability results (Mukherji (1973)).

Given our assumptions of the last section, for any initial price  $P^o = (p^o, 1)$ , there is a solution to (3) denoted by, say  $p(t, p^o)$  or  $p(t)$  in short. The equilibrium for the process is  $P^* = (p^*, 1)$  such that  $Z(p^*, 1) = 0$  and hence coincide with the equilibrium for the economy. Given that the numeraire remains fixed, there is no loss of generality in referring to  $p^*$  as the equilibrium for the economy. We need to investigate whether  $p(t)$  approaches  $p^*$  as  $t \rightarrow \infty$ : the question of stability of competitive equilibrium addresses this precise question.

We shall say that the equilibrium  $p^*$  is **globally stable** under (3), if the solution  $p(t, p^o) \rightarrow p^*$  as  $t \rightarrow \infty$  for any initial  $p^o$ . If however

convergence is ensured only for  $p^o$  in some neighborhood of  $p^*$ , say,  $N(p^*)$ , then we shall say that  $p^*$  is **locally stable** under (3). One may introduce the related notion of **linear approximation stability** as follows: consider the linear approximation of the process (3) around the equilibrium  $p^*$ :

$$\dot{q} = J(p^*).q \quad (4)$$

where  $q = p - p^*$  and  $J(p^*)$  denotes the  $(n-1) \times (n-1)$  Jacobian matrix:

$$A = \left( \frac{\partial Z_i(p^*)}{\partial p_j} \right)_{i,j = 1,2,\dots,n-1}$$

Then  $p^*$  is said to be **linear approximation stable** if for any initial configuration  $q^o$ , the solution to (4) approaches zero or if equivalently, *all characteristic roots of  $A$  have real parts negative*. In this situation we refer to  $A$  as a **stable matrix**. Matters have been simplified by choosing the positive constants to be unity. It may be pointed out that linear approximation stable is almost the same as local stability except when the matrix  $A$  is singular. A necessary condition for linear approximation stability is presented first, to indicate the nature of the problem we are about to tackle.

**Lemma 1**<sup>10</sup> Let  $\bar{B} = \begin{pmatrix} B & 0 \\ 0 & 1 \end{pmatrix}$  for any  $(n-1) \times (n-1)$  matrix  $B$ . That  $A$  is a stable matrix implies there is a positive definite matrix  $B$  of order  $n-1$  such that  $(P - P^*)^t \bar{B} Z(P) > 0$  for all  $P = (p, 1)$  such that  $p \in N(p^*)$ , for some neighborhood  $N(p^*)$ .

If the matrix  $B = I$ , then the above is a local version of WARP; hence we should be requiring something like WARP to conclude the stability of equilibrium. Traditionally several kinds of restrictions have been employed to attain the conclusion that equilibrium is stable, e.g., gross substitution, dominant negative diagonal Jacobian, WARP and so on. These are all restrictions on the nature of preferences and emanate from the classical notion (Hicks (1946), Samuelson (1947)) that income effects are de-stabilizing.

However WARP, given Remark 1 and Lemma 1, indicates another possible source of instability: the fact that there may be diversity among economic agents. Since the latter aspect constitutes the focus of the present note, we shall confine attention to this aspect. For the sake of

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10. Mukherji (1989); see also McKenzie (2002), p.102.

completeness, we first present a well-known stability theorem:

**Proposition 1**<sup>11</sup>: Under WARP, the unique equilibrium  $P^*$  is globally stable under (3).

We introduce, next, the notion of **Pareto Optimality**: a feasible allocation  $\{w^{i*}\}$  is Pareto Optimal if there is no other feasible allocation  $\{w^i\}$  such that  $U^i(w^i) \geq U^i(w^{i*}) \forall i$  with the inequality strict for some  $i$ . We present next some conditions which imply WARP.

**Lemma 2**<sup>12</sup> In case the initial distribution of resources  $\{w^i\}$  is Pareto Optimal, then WARP holds.

To indicate why this is so, notice that with such an initial allocation the only possible equilibrium  $P^*$  must be the no trade equilibrium and hence  $x^i(P^*) = w^i \forall i$ ; thus for any  $P$ , which is not a scalar multiple of  $P^*$ ,  $P^l x^i(P) \leq P^l w^i \Rightarrow P^{*l} x^i(P) > P^{*l} w^i \forall i$  which in turn, on summing over all  $i$ , implies WARP.

**Lemma 3** If the 'Law of Demand'<sup>13</sup> holds that is  $(P-Q)^t \cdot (X(P) - X(Q)) < 0$  for any  $P, Q > 0$ , then WARP holds.

This last claim may be easily seen by choosing  $Q = P^*$ , an equilibrium, and then invoking Walras Law.

There are two contributions, which are relatively recent and deserve special mention; they are related, in the sense, that both adopt a common approach to investigate whether aggregation over individuals leads to nice results. The answer, in both cases, is in the affirmative, provided some conditions are met.

In the first, Hildenbrand (1983) describes the agents' characteristics by a demand function and income (or expenditure); the demand function is restricted by imposing WARP. While the marginal distribution over demand functions is not restricted, each conditional distribution of income for a given demand function is assumed to have a continuous non-increasing density. It is then shown that the competitive market demand has a negative quasi-definite Jacobian<sup>14</sup>; which in turn implies the Law of Demand and hence WARP. In this demonstration, income is assumed to be independent of prices; for the exchange case, the results hold in case the endowments are collinear.

On the other hand, in Grandmont (1992), agents' characteristics are in term of a pair: preference and income; a transformation of the commodity space is the starting point. That is, given a preference relation and income, a new pair is generated with the same income and a new preference relation derived from the former preference, by stretching the axis corresponding to every good  $h$  by a factor  $e^{ah}$ ; the transformation

11. See for example Negishi (1962) or Arrow and Hahn (1971).

12. See for instance Arrow and Hurwicz (1958).

13. See for instance Hildenbrand (1983).

14. If  $A$  denotes the Jacobian (without the numeraire row and column), then  $x^t A x < 0$  for all  $x \neq 0$ .

is indexed by  $\alpha = (\alpha_1, \dots, \alpha_n)$ . This allows the specification of the agents' characteristics in terms of a marginal distribution over the space of preferences and income, and for each preference and income, a conditional distribution over all transforms  $\alpha$ . It is shown that when every commodity is desired in the aggregate, total market demand has nice properties, if the conditional distribution over the transforms, given a preference and income, has a density which is 'flat enough'; a flatter density is interpreted to imply increased behavioral heterogeneity. For pure exchange economies the nice properties consist of the property of gross substitution on a set of prices whose size is shown to depend on the degree of behavioral heterogeneity: more heterogeneity implies a larger set for which gross substitutability holds.

We shall see that while the above two results are of great interest and provide conditions under which the equilibrium may be stable, they do not address the question of why the rule such as (1) or (2) or (3) may be followed. Nor do they address the question of ensuring competitive trades. While the Grandmont contribution may be considered to be arguing in favor of increasing heterogeneity, since that increases the chance of some stability condition being met, it may be difficult to manipulate the degree of heterogeneity in a model. We shall show that with reallocation of resources it may be possible to attain WARP and hence ensure stability. Moreover, we shall try to shed light on why a process such as (3) may be followed.

### 2.3. The Optimum Problem

Consider the optimum problem A:

$$\begin{aligned} & \text{Max } \sum_i \lambda_i U^i(x^i) \\ & \text{subject to } \sum_i x^i \leq \bar{W}, x^i \geq 0 \end{aligned}$$

The planner (the decision maker who is solving the above problem A) wants to attain a particular Pareto Optimum where the particular optimum reflects the evaluation of the importance that the planner places on the relative importance of the different individuals; this relative importance is established through the choice of the weights  $\lambda_i$ . We have shown<sup>15</sup> that there is a unique configuration  $[\{x^{i*}\}, P^*]$  such that

$$L(\{x^i\}, P^*) \leq L(\{x^{i*}\}, P^*) \leq L(\{x^{i*}\}, P) \forall x^i \geq 0, \forall P \geq 0$$

Where  $L(\{x^i\}, P) = \sum_i \lambda_i U^i(x^i) + P^t[\bar{W} - \sum_i x^i]$ ; further it may be

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15. Mukherji (2008) contains the details of the results claimed here.

shown that the configuration  $[\{x^{i*}\}, P^*]$  satisfies:

- i. for each  $i$ ,  $x^{i*}$  solves  $Max U^i(x)$  subject to  $P^{*t}.x \leq P^{*t}.x^{i*}$ ;
- ii.  $P^{*t}.\overline{W} - \sum_i x^{i*} = 0$ .

Now let  $\hat{C}$  denote a compact subset of  $R_+^{mn}$  containing the allocation  $\{x^{i*}\}$  whose existence was asserted above. Consider too the problem, for a given  $P > 0$

$$Max_{\{x^i\} \in \hat{C}} L(\{x^i\}, P);$$

the solution exists and is uniquely determined and we shall refer to it by  $X(P) = \{x^i(P)\}$  i.e.,  $L(\{x^i\}, P) \leq L(X(P), P) \forall \{x^i\} \in \hat{C}$ . One may show that

$$[P - P^*]^t . [\overline{W} - \sum_i x^i(P)] > 0 \text{ provided } P \neq P^*. \quad (*)$$

One may consider then the following gradient process<sup>16</sup> for solving the problem A:

$$\dot{P}_j = \left\langle \begin{array}{l} \gamma_j [\sum_i x_j^i(P) - \overline{W}_j] \text{ if } P_j \neq 0, \\ Max \{0, \gamma_j [\sum_i x_j^i(P) - \overline{W}_j]\} \text{ otherwise} \end{array} \right\rangle \forall j \quad (5)$$

where  $\gamma_j > 0$  for all  $j$ , are constants. We note first of all, there is a solution to the above process for any initial configuration  $P^0 > 0$ ; let us refer to this solution by  $P(t, P^0) = P(t)$ . The equilibrium for the process ( $\dot{P} = 0$ ) occurs only when  $P(t) = P^*$ . And as we have shown in Mukherji (2008):

**Proposition 2:**  $P(t, P^0) \rightarrow P^*$  and consequently,  $x^i(P(t)) \rightarrow x^{i*} \forall i$ .

Thus the gradient process is able to solve the optimal program; the question is whether (5) can be thought of as a tatonnement process, like (3), for example. It may be shown that if we interpret  $P$  to be 'market prices' and  $x^i(P)$  to be demand then indeed this identification is complete.

First of all, to stress the obvious, the variables  $P$  are Lagrangian variables and in this sense, reflect some sort of scarcity prices of the various goods: the individuals however, do not respond to these prices by maximizing their utility functions and hence  $x^i(P(t))$  are not demands. There is therefore no reason to expect that (5) describes a price adjustment tatonnement. However, under certain conditions, this description may be accurate.

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16. A discrete version of the process was analyzed by Uzawa (1958).

Note first of all:

$$x^i(P(t)) \text{ solves the problem } \text{Max } U^i(x) \text{ subject to } P(t)^t \cdot x \leq P(t)^t \cdot x^i(P(t)) \text{ for all } i \text{ and all } t.$$

This observation allows us to demonstrate the validity of the following:

**Proposition 3:** *There exists a choice of  $w^i(t)$  for each  $i$ ,  $t > T$  such that if the resources with each individual at  $t$  were to be represented by  $w^i(t)$ , then  $x^i(P(t))$  would be the demands at prices  $P(t)$ : so that the process (5) may be interpreted as a price tatonnement.*

However there is a difficulty in that there is no way to guarantee that the redistributions  $\{w^i(t)\}$  are feasible; this is satisfied in the limit, of course. Notice that (5) may be interpreted as a price tatonnement when the resources are appropriately distributed. Another interesting feature should be pointed out. Whenever this is possible the crucial property (\*), may be seen to be WARP. Thus by properly redistributing resources we may achieve the following: the gradient process (5) which always generates solutions to achieve an optimum may be identified to be the classical tatonnement (3). This provides an answer to not only the question why use a tatonnement type process but also provides a clue as to who might be interested in following such a rule.<sup>17</sup>

### 3. At the Competitive Equilibrium

In the last section we were discussing the ways to encounter what problems may be thrown up by the diversity among economic agents. This could be countered by redistributing resources, we argued. But there is another source of differences among agents and that is to consider how the market treats them. The source of this difference may also be the preferences and initial resource base, but this throws up another dimension to the problem of diversity. We are going to argue that this aspect may give rise to completely different set of difficulties.

Consider next what may happen at a competitive equilibrium. For example, let us look at the competitive equilibrium defined by the following:

- 2 goods  $(x, y)$ , 2 individuals  $(A, B)$ , exchange problem specified by the following
- $U_A = x + y$ , endowment  $(1, 0)$
- $U_B = 2x + y$ , endowment  $(0, 1)$

Note that for this exchange problem the competitive equilibrium

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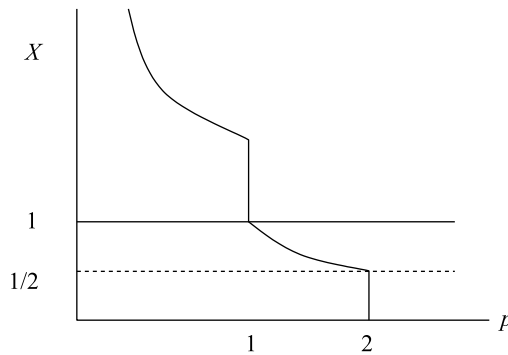
17. Mukherji (2008) contains a regularity condition on the distribution of resources which implies global stability of equilibrium for a process such as (3).

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$p^* = 1$ ; where  $p$  is the price of  $x$  relative to  $y$ ; A consumes  $(0, 1)$ ; B consumes  $(1, 0)$ . To check this conclusion note that aggregate demand  $X$  for good  $x$  is given by:

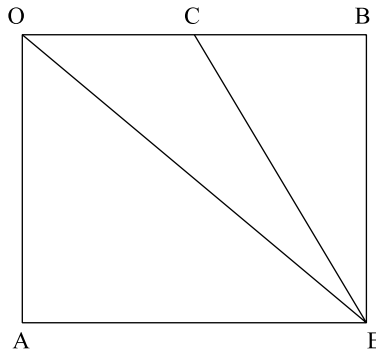
$$X = 1/p + 1 \text{ if } p < 1, \quad X \in [1, 2] \text{ if } p = 1, \quad X = 1/p \text{ if } 2 > p > 1, \\ X \in [0, 1/2] \text{ if } p = 2, \quad X = 0 \text{ otherwise}$$

Thus  $X = 1$  is possible only when  $p = 1$ ; notice that this is a unique equilibrium which is globally stable under a process such as (1). Thus the problems discussed in the last section simply do not occur. The diagram below may be useful in this connection.



**Figure 1: Demand for good  $X$**

Alternatively, consider the Edgeworth Box associated with this exchange situation: E denote the endowment point; the line EO is the equilibrium budget line as well as the indifference curve through A's endowment. At the competitive equilibrium, the agents are at O. EC depicts the indifference curve through B's endowment point. Thus B



**Figure 2: Exchange Equilibrium**



makes the most gains (1) from trading while A makes no gains at all.

This then indicates another source of diversity among agents. The competitive equilibrium transactions do not apportion gains symmetrically. For while it is in B's incentive to trade at the competitive equilibrium price (since this is the price that B would set, if allowed to, subject to the condition that A does not lose from trading), while if allowed to, A may contemplate setting a different price. This is the tension between the two which needs careful consideration.

At the competitive equilibrium trades, would B have any incentive to hold on to some stocks of good  $y$ ? Suppose that B were to surrender only  $\alpha$  units of  $y$ ,  $\alpha < 1$ . Now notice that A is worse off after the trade; B however gains  $2 - \alpha > 1$ ; thus if B can get away with it, B would undersupply; A would lose out and, anticipating this, may not desire to trade at all unless there is some agency to regulate B's behavior. In the face of such situations, it should be noted that *no trade is a better alternative in such situations*. Alternatively, A may decide to not let go of his entire stock of good  $x$ . This would allow A to gain from trades and hence A has every incentive to do so. Thus each agent has an incentive to go back on their agreement to behave competitively unless there are costs associated with such deviation.

It should be pointed out that when we analyze competitive equilibrium trades, the basic presumption is that agents have **agreed to behave competitively**. A few elementary algebraic manipulations would convince people that B would set the price differently if B were not constrained by being required to ensure that A is not worse off after trading. For B will be better off by cheating on this and may try to undersupply the goods (which is the same thing as raising the price) if there is no penalty associated for doing so. Consequently, we do need to ensure that adequate penalties are imposed so that the trades consistent with a competitive equilibrium take place and optimality of the markets are ensured. Proper regulation is thus of the utmost importance in ensuring that efficiency of trades at a competitive equilibrium to counter the different incentives that may be present at the equilibrium which might encourage agents to deviate from competitive trades.

The conclusion that regulation is necessary has some necessary implications. Not only are regulators necessary, but we need regulators to regulate the regulators too; what guarantees do we have that appointed regulators will have the right incentives to carry out their task? A hierarchy of regulators is of course a very demanding requirement. It should also be clear that this is not quite feasible; and it is because of this that at some stage, regulators may not carry out their assigned tasks or are provided with incentives to 'look the other way' and the seeds of corruption are sown.

#### **4. Conclusion**

Notice then that the two pillars or aspects of optimal markets viz., the ability to reach a competitive equilibrium and the incentives of agents to make the transactions there, depend on there being some fairly stringent requirements to tackle the problems discussed above: so far as the first is concerned, it would help if, for example, buyers' and sellers' income effects cancel out, or if there is a single individual or if initial distribution is optimal to begin with. So far as the second is concerned, it is expected that both agents should benefit from such trades and that they should have the incentive to carry them out. Our analysis shows that these presumptions are just that and without too much of a basis; consequently, the fact the agents may behave to suit their own greed requires that appropriate institutions need to be in place to check such behavior; only if these institutions are effective can we consider competitive markets to be efficient. This requirement is apart from the cases of market failures that are more commonly studied.

To tackle diversity we need to have appropriate distributions of purchasing power (to make the process of price adjustment meaningful and convergent) and we also need to have proper sanctioning authorities in place to handle problems associated with markets sometimes apportioning gains from trade asymmetrically thereby creating different incentives. If these are not in place, the transactions will not lead to optimality: rather we shall be seeing scams and frauds and various types of non-competitive behavior. Policy making thus needs to be aware of such issues; this aspect needs to be emphasized since it is generally believed that any distribution of resources is consistent with optimality of competitive markets. It is this element which is missed out by those who prescribe SLP regimes as the basic policy paradigm.

Having regulators in place though, while necessary, is not sufficient to ensure that agents carry out their competitive trades. It is easy to see that if proper incentives for regulators to carry out their assigned task do not exist, then competitive trades may not occur and we have the foundation for scams and frauds. As we have pointed out the need for a hierarchy of regulators makes this rather difficult to meet. One way to tackle this demanding requirement of having to regulate the actions of all concerned agents is to consider deviant (from competitive, that is) behavior as a problem of failure to meet contractual obligations: after all, the agents have to agree to act competitively and when this agreement is broken it is a failure to keep one's word. One of the ways of ensuring this would be to ensure that agents adhere to a system of values wherein it is understood that keeping one's word is mandatory. Only then may we dispense with the hierarchy of regulators. One may however argue that this amounts to making an assumption that agents

never go back on what has been agreed upon.

To sum up, we need to have a proper distribution of endowments to ensure that the method of getting to equilibrium is successful. Secondly we need to have a regulatory mechanism in place which oversees agents' behavior and penalizes any deviant behavior, for only then would the competitive trades actually be incentive compatible. Both these issues arise because of diversity in agents not only because of preferences and initial distribution of resources but also due to the treatment that the competitive mechanism hands out to them because of these differences. Consequently, economic policies which do not take into account these aspects, and rely solely on the efficacy of the market mechanism, are bound to fail.

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Professor Mukherji gave us a good survey from a historical point of view. If I had time, I would add something to his review. However, because I am given only 10 minutes, I will limit my discussion to one point. That is, what he dealt with is the differential equations system for tatonnement. We have another system, non-tatonnement. Fisher called this non-tatonnement, a trading process.

ZIJ, I want to call it an allocation function, should be determined by some training rule and process. ZIJ is J' individual excess demand ex post, i.e., after trade. This is market excess demand. But this has to have same sign as market excess demand function. We have a lot of feasible determination functions, but we know a very simple one. This is very traditional one but usually textbook tells us this kind of story.

I sometime question when I look at this equation, however. What is the P; what is the X, excess demand function? These were constructed with some kind of assumption of Walrasian central market using public price. When we look at a more realistic market, we look to a decentralized market, such as double auction, and some bilateral exchange decentralized economy.

Last year, Herbert Gintis wrote an interesting paper in Economic Journal. He tried new things by using agent-based simulation, and he used private prices rather than public price, which we usually use. This paper is very interesting.

Recently in Caltech, several experiments have been performed. We used Scarf type exchange model, and sometimes identified stable cases by tatonnement and also other unstable cases. Then we tried to clarify a meaning of this finding. Suppose there are three-type's of persons, and there are several persons in each type. Originally, they have some kinds of initial good; only one initial good. Imagine a double auction market.

Then, everybody tries to get some profits, by a double-auction route, with each transaction priced. As time proceeds, we observe a lot of transaction prices. We have started  $T_1$ .  $T$  equal 1 is the starting period. Then, in this transaction, good  $I$  is transaction price. We have some kind of distribution like this. This depends on probability. Actually, of course, the transaction is finite, not infinite. We have a lot of actual transaction prices. After this period ends, again, the endowment in the next period is restored to the original endowment. Everybody has a new endowment.

But the situation is different from the previous period. The situation is different in this period, because they know several information. Based on this information, in the next period, everybody tries to do something subject to the double-auction routes. Again, we have some kind of distribution. In several periods, we have many distribution functions of actual transactions. What is the relationship? This distribution, the traditional Walrasian one or, another kind of equation. Also, some kind of gradient method, there are many things, but we take an average here. Then we have some kind of average price for transaction sequences. And we compare the sequences of this, and with parts of this, we find some kind of interesting things, very similar, in some sense. Not completely similar; but fairly similar.

But still I am not sure whether this finding can be true as a general tendency. We have to get more certain results. We have to do a lot of experimental works, not only using human subjects but also simulated block results. And now we try to make a program, which represents human psychology and the human behavior. If we complete this one, we will do several experiments very quickly, then gradually we will come to understand better.

Please remember this kind of study is probably important in some setting. This study tells us some kind of a meaning of Walrasian market.

### **Response from Professor Mukherji**

I think Professor Hirota is too modest. He did not refer to one important result which has immediate bearing on what I was talking about. In the 80s, he had a paper where he showed that if you look at the points in the box and if you had the Scarf-type utility functions, then almost 80% of the endowment distributions led to stable price tatonnement. Fortunately or unfortunately, Scarf chose from the remaining 20%, which gave the unstable result. The point that I was trying to make is that you do need to tackle this question of distribution of purchasing power before you can talk about the convergence. And the need for this is the existence of diversity among agents.

### 3 Market Paradigm and Diversity of Values

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Under globalization, among other things, the institution of market is expanding at the expense of non-market institutions; many important non-market institutions are getting transformed often acquiring some market-like characteristics; and individual preferences and values are being impacted upon by powerful market forces. All of these, it would be argued, have rather problematic implications for the diversity of individual and social values and for the significance that can be imputed to them. The purpose of this paper is to consider some of these problematic issues.

The first section of the paper is concerned with analyzing the inter-relationships between individual and social values within an institutional framework. It is pointed out there that in general one can expect individual and social values to impact on each other. Consequently in the context of any institutional structure two very important questions arise: (i) Does the institutional structure admit of an equilibrium of individual and social values; and are these equilibrium values consistent with a sustainable social structure? (ii) If there is an equilibrium of individual and social values then what is the extent of divergence between the realized social values under it and the values for the attainment of which the institutional structure exists in the first place?

The framework within which the institution of market is analyzed by economists, being generalizable, can be used, and is used, for analyzing non-market institutions as well. The framework has some distinguishing features: (i) Individuals are assumed to be rational in the sense of invariably trying to achieve as high a position as possible in terms of their preferences. (ii) Preferences and values of individuals are taken as given. In particular, an individual's preferences and values are assumed to be independent of preferences and values of other individuals as well



as of social preferences and values. In other words, individuals are assumed to be autonomous. (iii) The evaluation of social outcomes is done in terms of criteria which are relations between individual preferences and social preferences or outcomes. Pareto-criterion, for instance, is such an evaluative criterion.

In economics, the resultant outcomes are almost invariably analyzed from the perspective of efficiency; and there is an almost exclusive preoccupation with efficient rules and institutions. It is not generally recognized that choice of an efficient rule or institution does not preclude the possibility of important social values being violated. Section 2 of the paper contains an analysis showing that an exclusive reliance on the market mechanism with or without efficient corrective mechanism for negative externalities can conflict under fairly plausible circumstances with basic human rights.

Section 3 of the paper looks at the implications of individual rationality for the method of majority decision. From the analysis of this section the tentative conclusion that emerges is that the standard notion of individual rationality is unlikely to be compatible with the objective of attaining the relevant social values in the context of non-market institutions. The concluding section in addition to summarizing the main conclusions of the paper contains some remarks regarding the importance of the autonomy assumption for normative criteria like the Pareto-efficiency to have significance.

## 1. Institutions and Values

Institutions, as ensembles of rules, provide the framework within which individuals in the society act. Given the institutional framework, actions undertaken by individuals would depend on their preferences and values. The totality of individual actions determines the social outcome. The social outcomes which result as a consequence of individual actions can be analyzed from various perspectives. One perspective is that of values; one could ask which social values are satisfied by the outcomes and which are not. One could also look at the outcomes from the perspective of their responsiveness to individual values and preferences.

An institution could give rise to outcomes which are responsive without necessarily doing so invariably. That is to say, for some configurations of individual values and preferences and under certain conditions the institution in question could give rise to responsive outcomes; while for some other configurations or for the same configurations but under different conditions could give rise to non-responsive outcomes. The institution of market is highly responsive to individual values and preferences provided the preferences and values are backed by money. If a set of preferences and values are not backed by money they would

have little or no impact on the market outcome. Market, like any other institution, filters in only some kinds of preferences and values under certain circumstances and filters out the remainder. For instance, if left to market, few individuals undertaking actions, for whatever reasons, inimical to biodiversity, would have greater decisiveness on the eventual outcome than a large number of people interested in ensuring survival of species if resources at the command of the former are greater than at the command of the latter. The following point therefore seems clear. In general, different institutions are required for proper articulation of different values and preferences. One institution might do an excellent job of articulating one kind of preferences and values; a second institution for another kind of preferences and values. Even for the same preferences and values different institutions might be optimal under different circumstances. Market may or may not be the most appropriate institution for articulation of preferences and values of economic kind; but there can be little doubt that it is inappropriate for articulation of a variety of values and preferences. Values and preferences relating to preservation of species provide an example.

As mentioned above, social values being embodied in social outcomes depend on actions undertaken by individuals constituting the society, which in turn depend on their preferences and values as well as the institutional structure. For instance, under certain conditions, if individual preference are selfish then the institution of market results in Pareto-optimal outcomes. On the other hand, the outcomes yielded by the market mechanism when individual preferences do not satisfy the requirement of selfishness are in general not Pareto-efficient. Thus whether the social value of Pareto-efficiency would be realized under the market mechanism or not depends, among other things, on the nature of individual preferences. While self-regarding preferences under the institution of market, assuming ideal conditions prevail, give rise to Pareto-efficient outcomes; under the prisoners' dilemma kind of rules of the game they do not. Social outcomes, and consequently social values, depend on both the institutional structure and individual values and preferences. One can speak of social values which result as a consequence of individual actions undertaken within the framework of the institutional rules as being embodied in the institution. Thus, the nature of an institution is partly determined by the preferences and values of individuals acting within its framework. In other words, the character of an institution is not entirely determined on the basis of the formal rules characterizing the institution.

One implication of the above is that there can easily be a divergence between the values which are embodied in an institution and the values for the realization of which the institution is supposed to exist. Given the social values for attainment of which a particular social

institution is supposed to exist, while in general there would be a nonempty set of profiles of individual preferences and values which would induce individuals to undertake actions that would result in the desired social values, it is unlikely to be a large subset of all logically possible profiles of individual preferences and values. If individual preferences and values are not appropriate from the perspective of the desired social values, then a divergence between the desired and realized social values would be inevitable. In this context, self-regarding rational behaviour which turns out to be so appropriate in the case of the institution of market can be an important source of divergence between the desired and realized social values. In the context of most non-market societal institutions, when individuals act according to their assigned roles, the results are quite different from when they act solely in pursuit of their preferences. The values which would materialize if all judges gave judgments solely on the basis of law and evidence are bound to be quite different from those which would if they gave judgments to further their own self-interest. In this connection an interesting question arises, namely: What determines whether an individual would act in accordance with the assigned role or not?

So far we have been taking individual preferences and values as given; and have only considered how they affect social values through the mediation of the institutional structure. Needless to say, this is only an analytical simplification. Social institutions have a profound influence on individuals in relation to formation of preferences and values. If a social institution is of great importance in the social order, the values that the institution embodies are bound to have significance for individual values and preferences. The institution of market puts completely selfish behaviour on a high pedestal. It is of course perfectly possible for a person to be selfish in one domain; and altruistic in another. But if the society is so structured that its preeminent institutions encourage completely self-regarding behaviour, then it is quite likely that many individuals, if not all, would internalize the motto of completely selfish behaviour to such an extent that even in the context of institutions where their acting in accordance with their assigned roles is essential for the realization of institutional objectives, they may not be able to do so. Thus one possible answer to the question which was posed at the end of the last paragraph is that whether individuals by and large would act in accordance with their assigned roles or not to a large extent depends on the nature of the dominant institutions of the society. If the dominant institutions of the society are such that they encourage self-regarding behaviour, then one can expect that individuals on the whole would not act according to the assigned roles. The dominance of the market in the contemporary context then has the implication that in the context of non-market institutions as well we should expect from most individuals

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self-regarding behaviour even though the design of these institutions might be such that their successful functioning depended on individuals performing their assigned roles, and not acting in their narrow self-interests.

Thus we see that there is a symbiotic relationship between institutions on the one hand and individual values and preferences on the other. The nature of an institution is partly determined by individual preferences and values. Institutions on the other hand impact individual preferences and values in two different ways. Institutions by filtering in some preferences and values and filtering out the others determine which preferences and values would be articulated and which would not be. The preferences and values which are filtered out and consequently do not find articulation are bound to become insignificant sooner or later, if not disappear altogether. Secondly, the formation of individual values and preferences themselves is profoundly affected by the values embodied in the institutions, particularly those which are dominant.

Once the interdependence between individual and social values is recognized it is immediately clear that there are several possibilities. There might be a unique equilibrium of individual and social values, there might be multiple equilibria or there might be no equilibrium. It is also possible that there might be an equilibrium of individual and social values but without possessing the property of long-term societal sustainability. Furthermore, even if there is an equilibrium of individual and social values, there is no reason why the social values figuring in the equilibrium should coincide with the values for the attainment of which the institutional structure is supposed to exist in the first place.

### 2. Dominance of Market Paradigm: Some Implications

When the domain of a particular institution expands, the domain of some other institution must necessarily contract. Viewing institutions as instruments for realization of specific social values, it follows that expansion of the domain of a particular institution must imply contraction in the domain of some values. Thus purely on theoretical grounds one can conclude that the expansion of the domain of the institution of market must be resulting in the contraction of the domain of some values not embodied in the institution of market. It is not generally recognized that the expansion of the domain of market could be at the expense of some very basic social values. In what follows we show that under fairly plausible circumstances dominance of market paradigm would have serious and inimical implications for basic rights.

One of the main characteristics of the contemporary economic processes is that almost invariably they involve negative externalities. If an activity undertaken by individual A harms individual B then in the

absence of compensatory measures, undertaking of the activity would involve injustice to B. It may also involve more than injustice. If B is living a subsistence existence, then the harm inflicted on him might endanger his very survival. Thus, uncompensated negative externalities have the potential of bringing about violation of the most fundamental of all human rights, namely the right to life. From this it would seem to be the case that if one wants to foreclose the possibility of negative externalities impinging on basic rights then the victims of negative externalities must be fully compensated for harm inflicted on them. The issue of compensation, however, turns out to be rather complex, partly because of the nature of negative externalities of modern economic processes and partly because of considerations involving the market paradigm. In the sequel we consider some of these complications.

Market under ideal conditions allocates resources efficiently. When these ideal conditions are not there the link between market and Pareto-optimality is ruptured. Inefficient allocation of resources under the market mechanism because of non-satisfaction of one or more of the ideal conditions under which market necessarily gives rise to efficient outcomes is construed as a market failure. The term 'market failure' is reserved for failure of market to attain efficiency. There is no term for failures of market with respect to any other social value as economic discourse relating to market has been almost exclusively concerned with the single normative criterion of efficiency. Because of the connection, under ideal conditions, between competitive markets and Pareto-efficiency, the dominance of the institution of market has also resulted in the emergence of efficiency as the preeminent normative criterion in economic discourses. In economics several different, though closely related, notions of efficiency are used.<sup>1</sup> The most important notion of efficiency is that of Pareto-optimality. The efficiency criterion based on the Kaldor compensation principle is also widely used. The general understanding which has emerged as a consequence of the preeminence of the normative criterion of efficiency can be summarized as follows: (i) In the context of market failures, it is desirable to correct for market failures so as to bring about efficient allocation of resources. (ii) In the context of non-market institutions, to the extent possible one should go in for efficient rather than inefficient institutions.

Externalities create a divergence between private and social costs. If a factory emits pollutants and harms those living in the neighbourhood, and the costs that the factory imposes on the residents in the neighbourhood are not a cost to the factory then there would be a divergence between costs that the factory bears and the costs from the

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1. On efficiency criteria see Kaldor (1939), Scitovsky (1941), Arrow (1963) and Sen (1970).

perspective of the society. Suppose the factory is operating under competitive conditions, so that the price of the good which is being produced by the factory is equal to its marginal cost. If the factory reduces its output by one unit, the net private loss to the factory owner would be approximately zero. What would be lost because of decrease in revenue would be almost exactly matched by the gain because of reduction in costs. However, the net gain to the society would be positive as the harm due to the marginal unit would be eliminated. It is because of this divergence that socially inappropriate decisions would be taken. The socially optimal amount of good is that level at which price is equal to the sum of marginal harm and private marginal cost. On the other hand the actual amount which would be produced would be that level of output at which the price would be equal to the private marginal cost. Thus, from a social point of view there would be overproduction of the good manufacturing of which is pollution-generating.

Thus in the presence of externalities market is not able to allocate resources efficiently.<sup>2</sup> What is required for efficient allocation of resources is that the divergence between private costs and social costs be eliminated. One way to bring about alignment of private and social costs is to use Pigovian taxes to correct problems of negative externalities. If the factory owner is made to pay taxes equal to the harm inflicted on the people living in the neighbourhood, then while deciding on how much output to produce the factory owner will be taking into consideration not only the costs of producing the good but also the harm which will take place as he will have to pay taxes equal to the harm. Thus while deciding on the amount to be produced he would be taking into consideration the full social costs of his decision and therefore would arrive at the socially appropriate decision. Pigovian taxes therefore constitute one method of solving the externality problem. Another method to solve the externality problem is to make the factory owner liable to the victims. If the factory owner has to pay to the victims for the harm then once again the factory owner would be incurring the full social costs of his activity. While both imposing Pigovian tax on the injurer and making him strictly liable for the harm work equally well as far as efficiency is considered; the two solutions to the externality problem differ from the perspective of basic rights. As under the system of Pigovian taxes, the victim is not compensated the possibility of violation of basic rights as a consequence of negative externalities cannot be ruled out. If the injurer is liable to pay to the victim for all the harm that his

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2. Implicitly it is being assumed that the transactions costs are prohibitively high so that it is not possible to bring about efficient allocation of resources through private bargaining among the parties involved in the interaction giving rise to the negative externality. See Coase (1960).

activity causes then the possibility of violation of basic rights because of externalities is foreclosed. Thus in the context of the example under consideration it is possible to ensure efficiency as well as preclude the possibility of violation of basic rights on account of externalities by making the injurer strictly liable to the victim for the entire harm.

The rule of strict liability, however, does not in general guarantee efficiency. If one considers an interaction in which from a social point of view it is optimal for both parties, injurer and victim, to take positive amounts of care then strict liability would not lead to socially optimal results. Consider for instance an interaction such that taking care by either party costs 1; if neither party takes care loss would be 10; if one of the two parties takes care then loss would be 8; and if both parties take care then loss would be 0. It is immediate that taking care by both parties is socially optimal as it minimizes social costs, sum of costs of care and loss. Under strict liability, the victim has no incentive to take care as he would be fully compensated for the loss, whatever it may be. Knowing that the victim would not take care, the injurer has the option of not taking care and paying 10 to the victim or taking care at a cost of 1 and paying 8 to the victim. Clearly he would choose the latter option. Thus under the strict liability the social outcome which would result would involve total social costs of 9, while the minimum of social costs is 2. It is of course possible, as has already been seen, to construct examples where the rule of strict liability would give rise to socially efficient outcomes. What this example shows is that it is possible for outcomes under the regime of strict liability to be inefficient. If the choice of rules for solving the externality problem is going to be confined to from among efficient rules, only then the rule of strict liability goes out of reckoning.

Strict liability is only one of an infinite number of rules, called liability rules, which apportion accident loss between the injurer and the victim. One of the most important of liability rules is the rule of negligence. Unlike the rule of strict liability, under the rule of negligence injurer is liable if he is negligent and not liable if he is nonnegligent. Injurer is defined to be negligent if his level of care is less than the legally specified due care level; and nonnegligent otherwise. Now we consider the negligence rule in the context of our example. Suppose the legally specified care level for the injurer is fixed at the level which costs 1. If the injurer does not take care then he would be liable for 8 or 10 depending on whether the victim is or is not taking care. On the other hand, if the injurer takes care his only cost would be 1, the cost of taking care, as he would not be liable for the victim's loss. Clearly the injurer would choose to take care. Given that the injurer is taking care, if the victim takes care then his loss would be 0 and if he does not take care then his loss would be 8. Thus his costs would be 1 when



he takes care, and 8 when he does not take care. Thus a rational victim would take care. Thus under the negligence rule the outcome which results as a consequence of strategies adopted by rational individuals is such that the social costs are minimized.

On the relationship between liability rules and economic efficiency the following general result holds<sup>3</sup>: A liability rule invariably gives rise to socially efficient outcomes if and only if its structure is such that: (i) whenever the injurer is nonnegligent and the victim is negligent, the entire loss in case of accident is borne by the victim, and (ii) whenever the victim is nonnegligent and the injurer is negligent, the entire loss in case of an accident is borne by the injurer. An individual is called nonnegligent if and only if the level of care taken by him or her is greater than or equal to the legally specified level; otherwise he or she is called negligent. It is assumed that the legally specified due care levels are set at levels which are total social costs minimizing.<sup>4</sup>

From the general result it is clear that economic efficiency at the very least requires from the victims socially efficient levels of care. If the victims in question are living a precarious existence, then the efficiency requirements would conflict with basic rights in an essential way.

In the context of negative externalities, there is another aspect of the institutional structure which deserves special attention. If the institutional structure prohibits inflicting harm without compensation, the victims would not have to undertake measures, including legal ones, for obtaining the compensation due to them. On the other hand, if the institutional structure is such that it is the victims who would have to sue or take other measures for recovering compensation for the harm inflicted on them, as indeed is the case with the contemporary social and economic organization, then the victims would be forced to expend

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3. See Jain and Singh (2002).

4. This general result on the efficiency of liability rules is crucially dependent on negligence being defined as failure to take at least the legally specified due care. This way of defining the notion of negligence has, however, been questioned, most consistently and cogently, by Grady (1983, 1984, 1989), on the ground that the courts do not determine negligence or otherwise of a party in this way. According to Grady, whether a party is adjudged by the courts to be negligent or not depends on whether the opposite party is able to show the existence of some cost-justified precaution which could have been taken but was not taken. That is to say, a party is considered to be negligent if and only if it can be shown that the party could have averted some harm by taking care which would have cost less than the loss due to harm. If negligence is determined on the basis of existence of a cost-justified untaken precaution then the results on the efficiency of liability rules change radically. It can be shown that with negligence defined as existence of a cost-justified untaken precaution, there is no liability rule which is efficient [Jain (2006)]. This impossibility theorem, however, has no bearing on the argument of the text.



resources in the undertaking of the required recovery measures. This means that even if the liability rule is that of strict liability, the actual compensation would be less than the harm, unless the recovery costs including legal costs are added to the judgment and there are no possibilities of errors in judgments, i.e., the probability of obtaining a correct court order awarding full compensation and all recovery costs is one.

Thus, it is clear that it is inherent in the nature of contemporary organization of the society dominated by the market paradigm that violation of basic rights would take place for those who are living a subsistence existence and are exposed to the negative externalities of powerful economic processes, unless the state takes countervailing measures. In view of the diffused and almost all-encompassing nature of the negative externalities of the contemporary economic processes, these countervailing measures for the protection of basic rights, at the very least, must consist of all that a welfare state would provide for the general welfare of the populace. In other words, for the protection of basic rights the domain of the market must not be allowed to expand at the expense of the domain of the welfare state to such an extent so as to imperil the basic rights.

### **3. Market Paradigmatic Notion of Individual Rationality and Non-Market Institutions: Some Fundamental Difficulties**

In the contemporary organization of societies majority rule is almost as important in the political domain as market is in the economic domain. Majority rule can be viewed in several different ways; in what follows we consider two important ways of looking at it. One viewpoint that one can adopt regarding majority rule is social choice-theoretic. Majority rule can be viewed as an aggregation rule which determines social preferences as a function of individual preferences. Once social preferences are determined by the method of majority decision, the social choice can be made on their basis. Majority rule can be characterized in terms of a set of value-judgments. It can be shown that an aggregation rule which for every logically possible profile of individual orderings specifies a unique reflexive and connected social binary weak preference relation is the method of majority decision if it satisfies the conditions of independence of irrelevant alternatives, neutrality, anonymity and strict monotonicity.<sup>5</sup> Thus from a social choice theoretic perspective, acceptance of majority rule is logically equivalent to accepting the value-judgments mentioned above. But the institution of majority rule by itself does not guarantee that these value-judgments would be realized.

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5. See May (1952) for the characterization theorem for the method of majority decision.

If every individual votes in accordance with his preferences then the value-judgments characterizing the method of majority decision mentioned above would indeed be realized. But if every individual is rational in the sense of always trying to attain as high a level as possible in terms of his preference ordering, then the value-judgments characterizing the majority rule cannot be realized under the institution of majority rule. In some situations individuals would find that they can benefit by misrepresenting their preferences. As the revealed preferences would not be the same as true preferences in these situations, the outcomes which would result under the method of majority decision would not be the ones which would have resulted if everyone had revealed his or her true preferences. Consequently the realized social values would be different from the ones which characterize the method of majority decision according to May's theorem.

The only way that majority rule as an aggregation procedure can work properly is if every individual plays his role as demanded by the majority rule, namely to reveal one's true preferences. It is not the case, however, that it is impossible for an individual to prefer an alternative  $x$  to another alternative  $y$  for purely self-regarding reasons; and at the same time reveal his true preference ordering which would result in the social outcome being  $y$ , rather than misrepresent his preferences and obtain  $x$ , without being irrational. If one has internalized the appropriate values, one can prefer  $x$  over  $y$  for self-regarding reasons and at the same time forego the opportunity of obtaining  $x$  rather than  $y$  because it would involve a course of action inconsistent with the internalized values. If, however, one assumes preferences to be self-regarding and the notion of rationality to be as it is conceptualized in economics, then it is not possible for an individual to reveal his true preferences if by misrepresenting them he can benefit, if he is to be rational.

There is another conception of the method of majority decision which is quite different from the social choice theoretic conception of its being an aggregative rule. If a set of individuals is deliberating on which of the two courses of action the society should choose and if everyone is thinking about the matter only from the perspective of the society as a whole then it is possible to argue that the course of action which the majority would opt for will have the greater likelihood of being the correct course of action. Thus, in a society where everyone is able to transcend one's own interests and is able to think about social alternatives from the perspective of the collective, no individual, regardless of the opinions of others, would have any incentive to misrepresent his preferences. In this conception, majority rule is merely a device for finding out the 'social will'. As every individual is evaluating things only from societal perspective, it is clear that every individual can be expected to play his role in identifying the appropriate course of action.

When a set of judges are solely motivated by justice, one can expect majority judgment to reflect, more often than not, the collective notion of justice. It is of course immediate that for majority rule to succeed as locator of 'social will' the individuals must not be rational in the sense of market paradigm. Indeed, they must have the capacity to transcend their self-regarding preferences for this conception of majority rule to work.

The above discussion has shown that if individuals have self-regarding preferences and are rational in the standard sense then majority rule will not work either as an aggregator of true individual preferences or as a locator of collective will. In other words, the notion of individual rationality as conceptualized in the market paradigm is an impediment to proper functioning of majority rule. What is true of majority rule also holds for almost all non-market institutions. The difficulty in the proper functioning of majority rule on account of market paradigmatic notion of individual rationality discussed here is merely an instance of a much wider phenomenon afflicting almost all non-market institutions.

#### 4. Concluding Remarks

The main point which has been argued in this paper is that the dominance of the market paradigm is not conducive to the diversity of social values. In this context two facets of the market paradigm were discussed: preeminence of the normative criterion of efficiency and a notion of individual rationality in which the self-regarding aspect of individual preferences is of central importance. Exclusive preoccupation with having efficient rules and institutions, it was argued, can have problematic implications for other values. As an instance, a consideration of various ways of solving the problem of negative externalities showed that none of them is such as to preclude the possibility of violation of basic rights on account of negative externalities.

For the successful functioning of any institution it is essential that individuals constituting the society perform their required roles in the context of that institution. The remarkable thing about the market mechanism is that the only thing that is required of individuals is that they do the best for themselves; without bothering about other individuals or about the society as a whole. This kind of role-playing, needless to say, is unlikely to pose any difficulties. Thus, in the absence of externalities and other complications, one can be reasonably sure that there will be no problems in the proper functioning of the markets on account of some individuals not playing their roles appropriately. The same, however, cannot be said regarding non-market institutions. In the context of non-market institutions, there would in general be a

divergence between what is required of individuals for the proper functioning of the institution concerned and what can be expected of individuals from the perspective of their self-interest. In the case of majority rule we saw that whether it is viewed as an aggregation rule or as a procedure for attempting to determine the social will, what would be required for its proper functioning would not be forthcoming if individuals are rational in the market paradigmatic sense. What has been argued about the method of majority decision can be said about almost any non-market institution in which individual preferences play a direct or indirect role in determining social outcomes.

In section 1 it was argued that in general one should expect individual and social values to impact on each other. If such indeed is the case then values which are relations between individual and social preferences lose much of their meaning and significance. Consider for instance the Pareto-criterion, the most important of all values in the economic discourse. If individual preferences are autonomous then the appeal of the Pareto-criterion is immediate. But, if individual preferences are influenced by preferences of other individuals or by social preferences then it is not clear what significance one can attach to a condition like the Pareto-criterion. The point can be illustrated by considering some extreme examples. If every individual is a conformist in the sense of always wanting to have the same preferences as social preferences then no matter which equilibrium of individual and social preferences is considered all individual preferences would be identical to social preferences and the Pareto-criterion would be satisfied. If every individual is a nonconformist in the sense of always wanting to have the opposite of social preferences then no matter which equilibrium of individual and social preferences is considered all individual preferences would be identical and opposite of social preferences and consequently Pareto-criterion would be violated. It is obvious that in these two polar cases no significance can be attached either to satisfaction or violation of the Pareto-criterion. Once one accords recognition to the fact that individual preferences form in a social context, it would be difficult to maintain the assumption of autonomy of individual preferences and consequently to impute much significance to the normative criterion of efficiency.

In any society there is bound to be a multiplicity of independent values which are desired to be realized. It is also reasonable to expect that all values, or at least most values, will have their domains of pre-eminence. These domains may differ across cultures or historical epochs. Once the desirability of a multiplicity of independent values is recognized, it is reasonable to suppose that a multiplicity of institutions would be required for their realization. From this perspective, the appropriate domain of the market partly depends on the cultural and historical factors as they influence the desired complex of values for the society.

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Lex Zhao

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Professor Jain's paper is basically about the interrelationship between individual values and social values. Individuals have rational preferences and values, and institutions have profound influences on individuals to make individuals act according to assigned roles or simply to pursue their own self-interests.

Institutions can either filter in or filter out some preferences and values. From the interaction between individuals and institutions, a unique equilibrium or multiple equilibria could arise, one of which may not possess long-term societal sustainability. There is this tradeoff between efficiency and fairness, and how they may conflict with each other. Aggregate criterion is not enough. While welfare may increase in the aggregate, winners and losers may be born, leading to conflicts. Some basic rights, probably human rights, may not be surrendered to make tradeoffs. Simple welfare gains and even transfers may not be enough. Legal laws and policies must take the above into account.

The paper summarizes very well the basic issues in the relationship between individuals and institutions. Some stylized facts and real-life cases rather than numerical examples would be welcome.

Comment number one. Standard economics assumes individual preferences and values are given. My question is, "Is it really so?" I would think young people and senior people have very different tastes. Actually I ski. If you go to a ski resort, the domain is ski of course, and it is almost impossible to find any snowboarder above 40. I am almost the only one. But below 40 there are like millions. So it is like one against millions. There is a very big difference between young people and old people in preferences. Of course, tastes between rich and poor are very different too. Some people have a personal jet and they are still not satisfied, while I would be perfectly satisfied with a four-wheel drive sports utility off-road vehicle.

Jain's paper talked about institutions and legal system. These are of

course important. However I would think that several elements that lie behind the institutions and systems are also important, such as culture and religion, which would play important roles in determining individual preferences and values.

Comment number 2. Are individuals really rational? Of course we always assume them to be. But if they are rational, why do countries, groups or even families go to war so often; why are there so many holy wars? Actually, I once asked a famous economist why there are so many holy wars. He told me that behind every holy war it is about money, about power. Why is there terrorism? I do not know.

Is the Pareto criterion really a good criterion? We cannot explain jealousy. Jealousy says that I feel worse if you are better off even though I am not worse off. This satisfies Pareto criterion. Since individuals are different, you cannot aggregate, you cannot take care of this externality. I guess that social choice theory cannot explain this type of externality.

### **Response from Professor Jain**

You are quite right in saying that if there is jealousy, etcetera, then, Pareto criterion does not sound very appealing. This is what I was saying; that the appeal of Pareto criterion and indeed all such criteria is dependent on the autonomy of individual preferences. It makes a lot of sense to say that X is socially better than Y when some people like X better than Y, and no one likes Y better than X, provided everyone's preferences are autonomous. But once they are interdependent, it is not very clear that the criterion makes sense.

## II Diversity of Firms and Nations - Case Studies





# 5 Regime Type and Economic Performance: Why Democracies Just ‘Muddle Through’

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What I am going to talk about today is fairly closely related to the concept of diversity and diversification, and we adopt an empirical and theoretical machinery that was developed originally in finance to study the diversification of portfolios.

This work is co-authored with a colleague, Professor Nita Rudra, a political scientist at the Graduate School of Public and International Affairs at the University of Pittsburgh. What we are looking at is the relationship between regime type and economic performance, and specifically, we are going to look at the question of why democracies just ‘muddle through’ based on some empirical findings.

So very briefly, to introduce the question, we are looking at the relationship between democracy or level of democracy at the national level and economic performance. Before I start anything else, we are going to define economic performance not only as the rate of economic growth as has been the tradition in economics, but as a composite of economic growth and economic stability, which is the variability of economic growth patterns.

There is a very lively debate that started in the late 1990s on this issue of looking at economic performance as more than just economic growth, economic stability included, and there have been many contrasting results.

You look at some authoritarian regimes, they have had very high growth at different points in their history. Other authoritarian regimes have had low or negative rates of economic growth. Yet other authoritarian regimes have been somewhere in between these.

One thing that we have noticed in the literature is fairly consistently that democracies have tended to show, relative to authoritarian regimes, economic stability. So the question is: how do we theorize this

and how do we think about all of these issues. This is the goal of this presentation.

By way of a literature review, and this is unfortunately only the tip of the iceberg, there is a huge literature on the relationship between democracy and growth. There are many different conclusions. There is a set of papers that say that democracy harms economic performance for a whole variety of reasons. The work by Mancur Olson is one such work. A few of us mentioned Rodrik's name. He collaborated with Alberto Alesina to produce a paper that brought up some of these results. Acemoglu and Robinson and other famous papers like Tavares and Wacziarg, who may have been students of some of these other people, also produced results like this. So, that is one line of findings.

A second line of findings is that democracy encourages growth which is the opposite of the first one. A third line is that democracy and growth exhibit some kind of inverse U-shaped relationship. A fourth one is that the relationship between democracy and growth is not robust. So we get kind of a hodgepodge of results when we try to study this relationship.

Of course one of the first questions is, "What do the data suggest?" Shortly after my Ph.D., in 1998, I started looking at data on growth and instability. I found that very few democracies show extremely high or low rates of growth. Most democracies tend to be clustered in an area of moderate rates of growth. This is something that subsequently was also demonstrated in papers by Quinn and Woolley, and Rodrik.

If we look at two-decade long episodes of growth and instability, and we look at how democratic these countries are, and the measure I am using is a fairly widely used measure of level of democracy (the Polity IV datasets), what you find is that among the countries with highest average rates of growth over two-decade episodes, only one country, Botswana, between 1981 and 2000, has a democratic score that is reasonably high. All of the other countries tend to have relatively low democratic scores. They tend to be more authoritarian regimes.

If you look at the lowest rates of growth among a fairly large sample of countries, again, there is only one democracy. We have one democracy in the Top 10 performers. We have one democracy in the Bottom 10 performers. Then if you look at growth episodes over 40-year time periods, you again find the relative absence of democracies. You have two of them in the Top 10 and you have none in the Bottom 10. So by and large democracies do not tend to be among the extreme performers, either in a positive sense or a negative sense in terms of growth outcomes. So that is one observation.

Of course, people have studied this and there are a number of studies that have actually tied the institutional milieu within which growth enhancing or growth reducing policies are implemented, and of

course there is the Quinn and Woolley paper which I mentioned earlier. They essentially talk about risk-taking behaviour of elites. I am not going to go into too much detail.

But one of the flaws in that paper is that not all elites are risk takers. It turns out that you have elites that tend to be fairly risk-averse because they are scared of the consequences that risk-taking behaviour may impose upon them.

The Rodrik study, which looks at the relationship between growth and economic performance, emphasizes that you tend to see more cooperative behaviour in democracies. So, in democratic situations, there are different interest groups and they are interacting to try and put through policies that serve their own interests that maximize the objective functions they may have. But they all agree by and large on playing by the rules of the democratic game. What that means is that at the end of the day, we are going to accept the outcome, so, we are going to cooperate within the rules of the system in order to bring about an outcome that ideally benefits us the most. But if not, we will compromise a little bit.

One of the problems with this study is that the model actually admits radical shifts in policy even in a cooperative regime. So, even though you may have a cooperative regime, there is nothing in this model that says that because today your policy position is going to be in one place, tomorrow it is going to be in a similar location. Tomorrow, your policy position could jump off to a whole different set of policies that have whole different set of consequences for growth and stability.

In his seminal work from the 1960s on policy formation, Charles Lindblom developed a concept of "partisan mutual adjustment." Basically, it is about the interaction of partisans. A partisan by definition is an individual or an entity, an interest group, that has a particular position on some kind of policy.

So partisans want a particular thing to happen in the policy arena. Of course, if you have a diversity of these partisans, then one of the interesting questions that comes out of this, is how you reach equilibrium and what some of the problems are with reaching equilibrium. Partisan mutual adjustment is essentially about the adjustment of partisans as they try to negotiate policies in a direction that maximizes their objectives.

So these partisans are decision-makers in society. They can be individuals. They can be institutions. They can be the press. They can be the judiciary. They can be just an individual who wants more money as a result of some kind of tax cut.

What we argue is that partisan mutual adjustment actually ends up limiting the set of policies that can be implemented. The more partisans you have that have a voice and that have some power within the

system, which you tend to see to a greater degree in democratic regimes, the more limited is the set of outcomes that you can get at the end of the day. I hope it is not a very controversial thing but if it is, I would be glad to argue it out.

So, let us look at what democratic regimes would look like under this model. In democracies, what you have, is competitiveness. You have competitiveness in political participation; you have many participants who are vying for power. You have openness of executive recruitment. Usually the process is relatively open. You have constraints on the actions of the chief executive. So the chief executive's actions are constrained by all the competing interests in society that could ultimately cost his or her power, or their power if they are a group, if they do not act in some kind of optimal manner.

The emphasis in the regime is agreement by non-coercive persuasion. So we are going to try and bargain. We cannot kill each other in a democratic regime, because there are laws, and there are checks and balances and so on. So one of the things that we are going to have to do is to try and negotiate a solution. This is a key feature of democracy and this is something that Lindblom spends a lot of time on in his work.

The consequence of this is a constrained policy agenda, and what you usually see coming out of these processes is familiar economic policies with predictable consequences. The process itself is decentralized. It is diversified. There are many, many different participants in the process, partisans that participate. This process is what Lindblom calls partisan mutual adjustment. So the outcome of all of this, among other things, is policies that encourage stable growth.

By contrast, if you look at non-democratic regimes, you have limited competitiveness in the political arena in the sense that I mentioned in the democratic description. So, you have limited competitiveness in terms of political participation, in terms of openness of executive recruitment (very often it is completely closed), in terms of constraints on the chief executive. Very often in authoritarian regimes, in fact that is one of the definitions of an authoritarian regime, you do not have constraints or many constraints on the actions of the executive. You have agreement, but it happens very often via coercive persuasion. If you do not do this, I will throw you into jail for the rest of your life, kill you, or do something like that.

As a consequence, the policy agenda tends to be less constrained. In this situation, of course you can have familiar policies. There is nothing that stops an authoritarian regime from implementing familiar policies. But one of the differences between the authoritarian and democratic regime is that you can have unfamiliar economic policies. The consequences of this can be predictable or they can be unpredictable.

This is one of the things that differentiates authoritarian from democratic regimes. The policy making process tends to be more centralized and less diversified. The process usually involves fiat or a more limited form of partisan mutual adjustment.

The outcome of this can be policies that can encourage extremely rapid or slow growth, and policies that can be much less stable than they might be in the democratic regime.

One of the major points in Lindblom's work, his really famous book, was actually titled, "The Intelligence of Democracy." His argument was that in democratic regimes policy outcomes tend to be more intelligent because the policy formation process involves many more voices. Therefore, any problem is tackled in a democratic regime from a much larger variety of angles. You see all the pros and cons of the policy before society reaches some level of consensus.

This is another very interesting angle that we can look at when we talk about the economics of diversity. A system that admits a larger diversity of voices, at least by Lindblom's argument, would likely tend to have more intelligent outcomes.

So what is our model. Our model is one of partisan mutual adjustment. You have many partisans. The process results in some kind of mean policy position and specific functional forms, and all that obviously will affect how the model comes out. We provide one that is fairly restrictive and makes some fairly strong assumptions. But it is probably generalizable in some way depending on how you develop the notion of convergence to some kind of mean position.

There is a diversification effect. In other words, partisans act as buffers against one another. If a particular partisan wants a policy that is very extreme in some direction or the other, chances are there are going to be other partisans that buffer that influence.

As you have more and more partisan involvement, you are going to have more diversity and more of this buffering. When I say buffering, I am saying it in the sense of finance. If you have worked on portfolio theory, that is the kind of buffering we are talking about. We are talking about diversification.

So the prediction of this whole model is that policy outcomes should show portfolio-like characteristics. They should show diversified portfolio-like characteristics in democracies, and undiversified portfolio-like characteristics in authoritarian regimes.

Now we make a big jump. This is a jump that we are actually working to address in a follow-up paper. We are going to use economic growth and instability as an outcome variable. Now, clearly growth is determined by many factors. One of the things we tried to do empirically is to put in controls for other things that might drive patterns in growth. But I think a better way to study this question would be to look

at variables that are more closely linked to policy. Currently we are looking at variables like expenditure on social welfare, which is very directly determined by policy. We are asking similar questions about whether we see portfolio-like patterns in that variable.

But what are the empirical predictions? Our empirical predictions are based on Markowitz's portfolio theory, his classic book of 1959, "Modern Portfolio Theory." It was based on a series of papers that preceded it in the early 1950s. Some of them are technical. One came out in the Naval Research Logistics Quarterly. But basically what he demonstrated is that for any underlying universe of assets, all combinations of risk and return where risk is defined as the variability of the return must lie within a convex frontier.

What we predict is that to the extent that growth is the outcome of these kinds of portfolio phenomena, then the mean rate of growth which is the analogue of return in the finance literature and the variability of the rate of growth which is the analogue of the standard deviation of the return on an asset portfolio, should show a specific relationship. Combinations of growth and instability should have properties that are similar to combinations of return and risk that you see with asset portfolios.

Furthermore, in finance, the more diversified the portfolio is, the more stable is going to be the rate of return on that portfolio. In other words, diversified portfolios will tend to clump on the left side of the diagram, representing low risk, but also a limited range of returns. Undiversified portfolios will tend to have a much higher level of risk, higher instability, but potentially, more extreme outcomes, extremely high returns, extremely low returns and everything in between also, so the range is larger.

This diagram represents ten year episodes of growth and instability for a whole series of countries. This was based on World Bank data. There are 417 observations which is what we were able to dig out of the World Bank dataset. These are one decade observations of growth and instability for a whole set of economies.

Depending on how you interpret this, there is some sense that these extreme outcomes bending downward over here and bending backward over there. So maybe there is some sort of visual evidence (for what it is worth) that there is some kind of convex frontier here.

In terms of the empirical investigation of this proposition, the first and most important question is: Is there a convex frontier? We use growth data from the World Bank. We use three complementary methods because it turns out that when you are empirically trying to look for a convex frontier, by definition, any set of points is going to have a frontier, and is contained within a convex half. This is a well-known theorem.

So of course, if you try hard enough, you are going to find a

convex frontier on any scatter plot. So what we do is to use three different methods to look for evidence that there is a frontier and that this frontier is convex. I will not go into too much detail about this. But what we find by and large is that each one of these methods tells us something slightly different about whether there is evidence for a convex frontier. The findings from all three are consistent with a convex frontier that encloses growth and instability combinations.

One of the methods is least useful in terms of trying to test hypothesis about whether there is a frontier. But in terms of trying to estimate the shape of the frontier, it is the most useful. It is called data envelopment analysis. It uses computational geometry. What it essentially does is to say that there are actually geometric ways by which you can take the outermost observations of a scatter plot. Then, you can take the next set of outermost observations and then the next one. We did that repeatedly and these are the hulls that we managed to peel off our dataset. We use this to estimate the shape of the convex frontier

Now, you are always going to find a convex frontier. So, we did not use this to test any hypothesis about convexity; we used the two other methods to test that. This is more effective just for looking at the shape of this frontier.

The next question is: Is democracy a determinant or is it at least associated with increased stability? In other words, if you look at a figure, do we tend to see the more democratic regimes clustered to the left side of this diagram? Do we tend to see the less democratic regimes on the other side of the diagram?

Again, there are many different ways in which you can test this. We actually have a number of variables that have been used in the political science literature as proxies for level of democracy. We present two of them, and a third one that we use as well. One of them is a measure of political competition in society and another is the degree to which the executive is constrained. So we use these as measures of democracy.

We use various measures of stability. One measure of stability, the most commonly used one that you see in the Quinn and Woolley paper, and the Rodrik paper is the standard deviation of the rate of economic growth. That is a common one.

But the standard deviation of the rate of growth relative to the minimum possible standard deviation of the rate of economic growth is conditioned on the actual rate of economic growth that the country has. So another way to think about how well a country is doing or how stable it is relative to what it could be, is not just the standard deviation, but how much more unstable the growth is than it could be given the rate of economic growth. We call this the horizontal distance from the frontier.



We use this as another measure of instability, namely how unstable are you relative to the best stability situation that you could be at. We run a few models, and we use a whole set of standard control variables which are in a table in the paper, to try and flush out other possible confounding effects.

What we find repeatedly for all the different measures of democracy, and we also found this for a variety of combinations of these control variables, is that democracy is in fact associated with stability. The higher is the level of democracy, the more stable the country tends to be. This is controlling for variables like per capita GDP, because democratic regimes tend to have higher per capita income countries and so on.

So what are the conclusions? Our conclusion is that regime type does matter but the relationship is a non-monotonic relationship and it is not a one-to-one relationship. We are talking about a frontier relationship. For these outcomes of growth and instability, it is not like you have got a line that says higher growth, higher instability; or higher democracy, higher instability; or any of that. We are actually talking about ranges of outcomes and levels of instability in relation to the underlying institutional structure. This is not your traditional notion of a relationship between democracy and growth patterns.

So what are our conclusions? In authoritarian regimes, you have low levels of partisan mutual adjustment, you tend to have less negotiation, there is a greater likelihood that uninformed and untried policies will arise. They are possible. You are more likely to have extremely positive or negative outcomes. You can have intermediate outcomes as well. But in authoritarian regimes you are more likely to see extreme outcomes as well.

In democracies you tend to have a higher degree of partisan mutual adjustment. You tend to have a more extensive, protracted sometimes negotiation process. There tends to be an implicit caution of policy makers. You tend to have more informed and tried economic policies, a la Lindblom's "Intelligence of Democracy." You tend to have stable outcomes that tend to be less extreme than you see in authoritarian regimes.

As a broader contribution of the study, we revive and expand upon Charles Lindblom's work. One of the critiques we have received was that Lindblom did his work in the 1960s. Therefore by implication, somehow it is worthless. We actually feel very strongly in the opposite direction. It provides new insights, we think, into the democratic process, and it also provides an explanation about how and why regime type drives different policy outcomes.

We use a formal portfolio theoretic model from finance and we are continuing to work on this from some underlying notions about how the

negotiation happens. The formal portfolio theoretic model draws an analogy between democratic regimes and well-diversified financial portfolios. One of the other findings is that there are actually upper and lower boundaries for the rate of economic growth, which is a point that is not explicitly made in most of the work on growth theory.

We can actually characterize the universe of possibilities in terms of growth and instability using this Markowitz-type of frontier. Then finally, diversity, and this is to come back to the point of this conference, at least in this model, diversity is beneficial for stability.



## 6 Comment

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I think this is a very interesting paper and I enjoyed reading it. The paper very nicely does both a) define or outlines the frontier of the literature and b) also pushes out the frontier of this literature on regime type - in the sense of democracy or not - and economic performance. There has been quite a mushrooming of this literature in the last 10-15 years. It goes back much further though, especially in the work of modernization theorists of the 1950s and early 1960s who posited a profound tension between democracy and development, and argued that what development needed was a man on horseback like General Park of Korea or Field Marshall Ayub of Pakistan and so on, which was used to justify many military coups and support for all manner of military regimes by avowed democracies.

The bottom line of this literature as the paper notes is first that democracy is an insurance against economic collapses. The stronger claim that, democracy is not necessarily inimical to growth is also fairly widely accepted. But as Chandra and Rudra point out quite rightly, this is a very complicated relationship where indeed if you want to get growth beyond a certain point, you may need to move away from democracy, it limits your possibility, it may well be necessary not to be a democracy to be at the "growth frontier". There are lots of problems with this econometric literature as is usual with cross country regression exercises: the results are highly sensitive to specifications, time periods, country coverage, often leading to a lot of noise and confusion. For example, one major problem with some of these kinds of econometric studies was that the results depended on whether developed countries were included or not. Similarly the results depended on whether Africa was included or not. If my memory serves me right, I think the very first study of this kind done at the World Bank was a background paper

for a World Development Report some 15 or so years ago (I think Surjit Bhalla was the author). My recollection is that paper showed a strong positive relationship between democracy and growth but if you took out Africa, nothing was left of the relationship. Chandra and Rudra are well aware of such and other pitfalls of this literature and take care to avoid or minimize them. Theirs is a highly sophisticated exercise which controls for all manner of contingencies and still finds that the basic results hold: democracy is indeed a pretty good insurance against economic catastrophes and not inimical to reasonably rapid growth. Moreover, Chandra and Rudra go behind the veil of econometrics to reveal the underlying political economy that could explain the results.

In other words, the paper is at the frontier, indeed pushes the frontier. That is obviously good news but there is also bad news in that I cannot see it being pushed much further with this kind of analysis of regime type and growth and hence the returns to further research along these lines are likely to be modest and diminish very rapidly.

Hence the questions that arises and the ones I would like to spend a bit of time on are what kind of regime types, what typologies should we be focusing on, what is salient from the point of view of this project on economics of diversity. I think there is a very rich menu of what to be done in this regard on this project. The Chanadra and Rudra paper serves the valuable function of stimulating thinking on what the next frontier should be in studying the diversity of nations.

One type of diversity amongst countries that is highly relevant to policy is that of regime type in terms of whether and to what extent a state is developmental. Future research on the notion of a developmental state, how developmental a state is, the parsing of the notion and the concept of a quasi-developmental state which is not quite like the East Asian developmental state - which in any case is somewhat idealized and exaggerated - Japan and Korea, for example were more messy in there "developmentalist" phase than the idealized East Asian state. The democracy-growth literature speaks of a continuum of regime types in terms of democracy, authoritarian and quasi-democracies, similarly can we distinguish developmental, quasi-developmental and non-developmental regimes, how might we define them, what might be the criteria?

This relates to a very important point that Professor Hino made earlier about the danger of abandoning the Washington Consensus without replacing it with anything which I want to come to in a minute. First, I would like to note that the issue of the "developmentalism" of states is closely related to the governance agenda which has become so prominent in recent years. How and where do you put countries on the governance spectrum. Now this whole governance agenda requires a lot more work, there is a lot of pie in the sky in this, all manner of good things are often combined into an agenda that runs the risk of making

the pursuit of the best the enemy of the good. Nobody is for corruption, how can you be for corruption, it is like being against motherhood. But the agenda requires a lot more parsing and a lot more identification of what constitutes appropriate governance. What is the relevant dimension of governance in any particular context? There is no such thing as zero corruption; it is not possible. It has never been achieved and it cannot be achieved. Also if absence of corruption is necessary for development there would be no developed countries today. In fact in a sense, none of the rich countries of today developed as democracies either, none of them were democracies during their “developing” phase: women did not have the right to vote until a very late stage, and there were many other restrictions on the franchise; basically white male property owners were for long periods the sole beneficiaries of democratic rights in most developed countries.

Similarly the whole question of corruption, is a very complex one. From the perspective of development or integration into the global economy the issue is one of how rents are allocated in a society. There are always rents in an economy, since a perfectly competitive economy cannot exist.

The issue is what kind of activities attract rents and how those rents are used, what are the incentives for investing, do rents end up in capital flight as happened in Russia with a combination of an open capital account, weak property rights and a privatization process which amounted to theft, or do you have systems which were more typical in East Asia in which the rents were used to encourage investment, and to direct investment to manufacturing.

So I think the issue of regime types or diversity in how rents are generated, what are the incentives for how they are utilized could be a very important way to try to parse the governance agenda. There are corrupt governments which deliver development; indeed the most rapidly growing economies in the world today, China, Vietnam, India, are by no means, free of corruption. But then there is also kleptocratic corruption which corrodes or even devastates an economy.

All this has a bearing on the point that Professor Hino raised. Does anything go if you dismiss the Washington Consensus? This is a very good question and a real risk unless we come up with an analysis matching country diversity with the diversity of appropriate policies. Clearly there are many aspects to the diversity of country contexts. In addition to the one noted above concerning developmentalism and governance, there is the diversity in such dimensions as the stage of development, the size of the economy, the institutional and physical infrastructure: all these are very important for determining what kind of policies, what kind of interventions are likely to be effective or not in particular context.

For example, a poor infrastructure could mean that the supply response to trade liberalization is weak or non-existent, and that implies that trade liberalization must be accompanied by aid-for-trade type of policies. So I think the diversity of country characteristics in terms of size, geography, indeed, stage of development, are all also relevant for learning lessons for policy from say the experience of East Asia. China's experience, for example, cannot be of much relevance for many countries simply because its very size allows it to pursue certain policies which are not possible for small countries to adopt.

When one seeks to draw policy lessons, including notably in terms of how to integrate successfully into the global economy to minimize the losses and to maximize the gains from globalization, much depends on country characteristics.

So I think that this notion of diversity of country contexts is vital for addressing many issues that arise in designing economic policies. The basic and overarching question of the right balance between the market and the state is a contextual matter, it depends on the type of economy. In that very important sense, an analysis of economic diversity offers a very rich and rewarding agenda for future research.

# 7 Diversity of Nations and Deviations from Market Principles: Case of Egypt

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## 1. Introduction

The world economy has been in a state of flux for the last fifty years, experiencing several changes at an accelerated pace. Market economy does not seem to be solving the ills of growth and development as has been advocated by international organizations. Several measures on the economic, political, and institutional levels need to be present to ensure a positive outcome of market economy policies. Traditional tools identified by classical economists and adopted by international institutions (including World Bank, International Monetary Fund, and World Trade Organization) do not seem to be accommodating such changes. The recent food crisis as well as the financial crisis which are still unfolding revealed that traditional means of dealing with economic crisis are not any more relevant in dealing with economic changes. If one follows the historical development paths of different countries, he/she finds diversity in the means adopted for development and growth is rather the norm than adopting a one single formula approach recommended by international organizations.

As identified by the Commission on Growth and Development (2008) each country has its own specific characteristics and historical experiences which must be reflected in its growth strategy. Chang (2002) challenged the conventional free market policies encouraged to be adopted by international organizations. He identified that countries that are now developed have adopted several protectionist measures during their early days of development, which differed in nature, time, and

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extent of government's intervention. Moreover, Rodrik (2007) has emphasized that there are many alternatives to growth which has been reflected in his main theme of his latest book *One Economics Many Recipes: Globalization, Institutions, and Economic Growth*. Rodrik (2007) pinpointed the importance of what he called local knowledge in shaping the institutions necessary for economic growth.

This short paper starts from the assumption that there is a need for establishing a new discipline "Economics of Diversity". It discusses the aspects needed to be taken into consideration in this new discipline to provide a comprehensive framework capable of analyzing and investigating the growth and development processes of different economies. Moreover, it identifies the issues that "Economics of Diversity" should focus upon in its research agenda. The study then focuses on Egypt as a case study which points out the main elements of diversity in different economic phenomena in the Egyptian context. Finally, the study provides a suggested research agenda for Economics of Diversity based on the anecdotal evidence of the Egyptian economy.

## 2. Issues Which Economics of Diversity Can Focus on

In this section we identify a number of issues that we believe a new discipline, "Economics of Diversity," should tackle in its research agenda. It is important to note that such issues do not constitute an exhaustive list, but rather they represent one researcher's point of view.

### *a) Factors that affect how market economy performs:*

Among the set of variables that have not been tested to understand why free market policies lead to different outcomes in different countries are those that affect economic growth. In other words, the variables used in the economic growth literature, such as democracy, human capital, rule of law, inflation, costs of market information, organizational changes that cause market imperfections (see for example Barro, 1997; North and Thomas, 1973), are likely to have an impact on the functioning of the market economy whether in their own merits or collectively.

It has not been tested if these variable could help understand why free market policies perform differently in different countries and setups. For example, does human capital have an effect on the functioning of market policies? And in what way? The problem that arises here is how to measure the performance of market economy and judge whether it is performing efficiently or not. Hence, variables that economists included in their regressions to explain the main factors affecting economic growth are likely to have an impact as well on functioning of market economy. The outcome of market economy policies might differ substantially from one economy to another depending on the quality of human

capital or the degree of rule of law or any of the aforementioned variables. Such aspects of economic research should represent one of the main pillars of “Economics of Diversity”.

*b) Institutional aspects:*

There might be a huge divergence between private and social returns due to weak property rights (as explained by North and Thomas, 1973). This could be due to lack of techniques that overcome the free rider problem or because benefits of enforcing property rights could exceed those to any group or individual.

Rodrik (2008) identified that there is a need to revisit our understanding of institutions. Chang (2002) pointed out that there is a need to revisit the institutions promoted by international organizations such as rule of law, protection of property rights, corporate governance, etc. Using anecdotal examples, Rodrik (2008) explained that the objective of desirable institutions might be clear (including security of property rights, enforcing of contracts, stimulating entrepreneurship, supplying social safety nets, etc.), but the issue that remains not answered is what kind of institutions should be adopted to achieve such aims. And whether such institutions will make market economy perform better, or it will create an alternative mechanism for market economy. The functioning of market economy is very much likely to be affected by institutions, including their nature, design, costs of implementation, and the extent of their adaptability to the society’s needs.

In addition, institutions themselves might be an outcome of economic development and not a condition for it. The ability to enforce institutions is a crucial element that needs to be considered. Such aspects related to institutions should constitute another main element for study within the context of “Economics of Diversity”.

*c) Second best institutions (e.g. culture):*

Building on the divergence of institutional and cultural setups in countries, as well as the diversity of economic objectives and constraints, Rodrik (2008) reached the conclusion that the institutions promoted by the international organizations might not be the best in serving the interests of developing countries. He coined the term “second best institutions”. It is those second best institutions that “Economics of Diversity” should focus on to understand how countries can reach or fail to reach certain goals, and yet achieve a certain stable economic and social equilibrium status. We do not argue that cultural aspects affect growth and development, as this has been an issue highly subject to debate without conclusive results. Rather we argue that market economy policies and outcomes are affected by, and affect cultural norms as an example of second best institutions. The interaction between second best

institutions and market economy needs to be better researched.

*d) Issues that have been neglected by Orthodox mainstream economists:*

Economics of Diversity should focus on issues that are debatable on the macro level as well. For example, till now there is lack of consensus on what type of exchange regime should a small developing country adopt, or whether it should have an open capital account or not, or what kind of prudential regulations should be adopted by developing countries' financial systems. What kind of industrial and technological policies should be adopted by developing countries is another question that requires to be tackled. To what extent should trade liberalization go? This is another important example, which has been challenged seriously by Chang (2002).

Recent crisis in the world reaffirmed that Breton Woods Institutions might have got the Washington Consensus wrong, especially as we experience the unfolding of the financial crisis. Finally, as argued by late Economist Mancur Olson (1965; 1982) the role of lobbies and interest groups, especially when complemented by social conditions, play a role in affecting market performance and economic growth. What role can "Economics of Diversity" play in this regard to explain the different outcomes of different countries? It is necessary to take into consideration several economic and non-economic variables to be able to learn some fruitful lessons. The studies that have tackled this issue so far have focused on the economic reasons, and mainly macroeconomic factors, and that is why it has been difficult to draw lessons. "Economics of Diversity" should fill this void and address such issues in non-conventional manner.

### **3. Anecdotal Examples from Egypt:**

*a) Social safety-nets*

Egypt suffers from the absence of formal efficient social safety nets that are able to handle economic reforms (e.g. weak social security system, inefficient health insurance system, and absence of unemployment benefits). As a result, informal institutions in the form of family and religious ties appeared to overcome this economic institutional failure. Such informal institutions had their pros and cons from social, economic and political point of views.

Among the positive effects of the informal institutions was to enhance the ability of the Government of Egypt (GOE) to undertake major economic reforms which boosted inflation and unemployment without having to cause riots from the population. However, the sustainability of such second best institutions is subject to question, an issue that Rodrik (2008) did not tackle. Here the answer is difficult as it depends (as

economists like to assume) on various political-economy factors which increase the degree of uncertainty. Moreover, the boundaries of such second best institutions are fragile. For example, it might be the case that second best institutions can serve the interests of some Egyptians, but it is unlikely to continue like this for all segments of the society. It might be the case that such institutions served the economic interests of the government at a certain period of time, but it can backfire as it can have negative political and/or social consequences that can eliminate any economic benefits (e.g. the hegemony of religious fundamentalist groups on such social safety nets, and the inability of the government to reach the segments which needs to be subsidized in case there is a lifting of prevailing indirect subsidies).

There is a need in this regard to evaluate the role of such second best institutions in achieving different economic goals together with their sustainability, and their social and political effects. Moreover, there is a need to investigate why certain institutions are adopted by certain societies at different times, and why the adoption of similar institutions leads to different results in different countries.

*b) Does culture matter?*

In the case of Egypt, as well as other countries, it does, especially when formal institutions are weak or absent. For example, it is likely to be the case that culture matters more in countries where rule of law is weak. Max Webber and afterwards economists such as Benjamin Friedman (2005) and David Landes argued that it does. That is the reason the Protestants were able to succeed. I tend to disagree with this argument, at least in the case of Egypt because the question that remains unanswered is which types of attitudes, norms, and behaviors are more conducive to economic growth. This question is difficult to answer.

In Egypt, culture matters A LOT and it is more important than formal institutions. However, it works both ways. It acts as an engine for success when properly utilized, and acts as skyrocket of destruction when improperly used. Examples include fostering investments. Large players in the market with their well connected political ties (at the high level as well as the implementation level) can reduce tremendously their transaction costs (something favorable) and overcome any bureaucracy. However, the same people can deter new entrants building on such ties, regardless of the laws enacted (which negatively affect economic growth and functioning of the market). In other words, second best institutions can work both ways. The determining effect is, like the economic historians used to say, when you have a dictator, he can be a destructor and can be benevolent. In this case culture can act both ways, and it is itself largely determined by the degree of development of the country.

Egypt is not a multi ethnic country. It is rather a homogenous

country where minorities prevail in minor segments. Some consider Christians as a minority (10% of the majority Moslem population), and less than 1% are considered Bedouins. Economic policies do not affect negatively or positively such minorities. There are success stories for Christians (in fact the richest man in Egypt is Christian), but it cannot be considered as a phenomenon in Egypt that Christians (as a minority), are behaving better in terms of having higher entrepreneurial skills.

Another example of how culture can affect market policies is related to how the GOE broke the vicious circle of lack of confidence in the exchange rate regime that had been adopted. Egypt used to adopt a fixed exchange rate regime, however since 1997 there was a need for devaluation, which the political leadership refused. In 2001, the situation was relatively bad and foreign exchange reserves had declined significantly. A series of devaluations were carried out, however there was a lack of confidence among the population. The result was always the black market outpacing the announcement of devaluation. To break this circle, the Prime Minister (not the Central Bank Governor) announced in 2003 the flotation of the Egyptian pound. In practice, this has not been the case as Egypt still adopts a managed floating regime. But there was a need to announce something different from devaluation (although in fact it was a devaluation) to convince people of the seriousness of the government's action. Of course this was complemented by other measures to stop the black market. But finally it worked. This is an example where transparency and adoption of really free market policies might not work to reach an economic aim. It all depends on what can be called "the Economics of the Situation".

*c) Do formal institutions matter?*

In Egypt, the liberalization and reform efforts undertaken since 2004 have not brought tangible positive results so far for the population. In fact, people argue that they do not feel the reforms undertaken. In other words, the focus and debate revolve around the trickling down effect of economic growth. Why is this happening? It can be due to the lack of formal institutions. The capture of business and political interests for the weakly functioning institutions and of course the spread of second best institutions (as culture) meant that there is a need to reform formal institutions. In a country where the competition law has only been enacted in 2005, and has only raised one case to court and where imprisonment is absent, what do you expect for anticompetitive behavior to look like? Certainly such behavior will spread, implying that free market policies and orthodox prescriptions are not likely to yield positive results. What Egypt lacks is mainly "quality of growth" although growth rates are high (which reached the neighbourhood of 8% lately).

d) *Getting incentives right:*

Another example is the low productivity of Egyptian workers. Though there are many economic arguments behind such low productivity, it is crystal clear that there is an inefficient system of incentives or rather a wrong cultural adaptation to incentives. The carrot and the stick system does not apply to governmental officials, to an extent that incentives do not work in the right way. Carrots and sticks do not have any effect. Part of the stick problem is that people think it is not morally right to punish people who do not perform. The end result is that a free market policy as incentives is not well behaving in Egypt especially when adopted by the public sector. But the problem is not the wrong policy, but rather that institutions (including system of hiring and firing, feeling pity for the people who behave wrong) ended up in such a wrong outcome of the policy.

*Bottom line:* In Egypt when market policies are not functioning properly it is either because the institutional setup is not adaptable to the market policies or because there is an institutional failure (which could be a result of cultural attitude among other reasons).

#### 4. The Future Research Agenda

It seems that Economics of Diversity, at least in the Egyptian context, is a branch of political economy and institutional economics. However, there is a lack of research on such topics in Egypt as well as paucity of studies that address cultural issues and their potential impact on the economy. There are a few studies that addressed the institutional setups of the business society on the economic system (e.g. the configuration of the business class) and how they use their political connections (Zaki, 1999). There are also a few studies that addressed issues of political economy of trade policy (explaining the interaction between the government and the exporting community) (Ghoneim and El-Mikawy, 2003). However, studies of how market policies perform in the light of the institutional setup and cultural beliefs are rather absent.

There is a need for collaboration between economists, sociologists, and anthropologists in this field. There is a need to go into areas that Levenett (2005) in *Freakonomics* pointed out which could explain why certain market policies perform in a certain manner. There is a need also to go into areas that could allow us to understand why the crime rate has gone up or down in Egypt and whether it has a relationship with the high population growth in poor segments of the society. What role do culture and beliefs have to play here as a connection between the two variables? What are the dependant and the independent variables, etc. Such type of research is rather missing, though extremely important

for our better understanding of why market policies work sometimes and why not as well as for policy making decisions.

The issue that is very difficult for economists to deal with is culture. Douglas North touched upon the relationship between culture and institutions repeatedly. Economists remain uncomfortable with culture, particularly since it presents definitional problems, is difficult to quantify, and operates in a highly complex context with psychological, institutional, political, geographic, and other factors. Culture is not an independent variable, it is influenced by numerous factors including geography, climate, politics, and history.

Economics of Diversity which tackles *Glocalization* (a combination of globalization and localization) should complement and challenge what the orthodox thinking focused upon, namely having macroeconomic foundations right. It should focus on microeconomic foundations of an economy and try to explain the success and failure of economies by digging in the micro details of a society (and not an economy). Rodrik (2006; 2008) and World Bank (2005) can act as starting points. That is taking into consideration a whole setup of issues ranging from macro and microeconomic policies to political system, geography, institutions, anthropology, etc. However, the problem that will always remain is how to define its boundaries and its framework. That is the most difficult task.

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## 8 Comment

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Professor Ghoneim brought us great contributions to develop our thinking on what economics of diversity is all about. To my understanding, his fundamental question is why the outcomes of market economy can be so different under different conditions. And the related question is what kind of institutions will make market economy perform better. Remember his example of the Egyptian economy, that the informal institutions and social safety net helped reforms in Egypt to perform very well without causing any rioting. This kind of thinking is very important.

If I am correct, the traditionalist view of economics tells us that if market economy does not give expected results, it is because its setup is not right. So getting the fundamental set up right is what the government can do and maybe what the government should do. Then countries should adopt the best practice model of institutions, which is correct maybe as far as we assume that people react to incentives in the same way.

I understand that the economics of diversity aims at departing from this assumption somehow. The bottom line, as Professor Ghoneim correctly claimed, is that the culture, which is specific to a country, society, a region or even group of people, does matter. It governs the behavior of people and changes the outcomes of the market economy.

People might behave differently to some extent, although I believe that people around the world share the same aspiration for economic progress, which is to achieve the maximum well-being with least effort, risk, and cost. And as an economy develops, such differences tend to converge. So, I think probably we are talking about the transitional stages of development where all the institutions are not so adequate.

Even at a lower stage of economic development, opportunities of

economic progress is bigger when the size of the market is greater, so the globalization sounds good to everybody. Here the usual questions may arise. Given the heterogeneity of people and societies in the world, can all the stakeholders in the global market gain from globalization? Some may gain and others will lose, maybe. Should the global market economy work properly when participants are so diverse? Some researchers consider that institutional arrangements can play an important role to connect the heterogeneous individual society with the global market. Such institutional arrangements should be allowed to be different depending on a specific context of each country as far as such country specificity is politically agreeable for its society.

To say the least, the best practice model cannot apply universally. A famous Harvard economist Dani Rodrik has pointed out this argument for many years and Professor Ghoneim presented us a very similar view. I also now like to express my sympathy to this kind of thinking.

One difficult question is how a society can find its own appropriate institutional arrangements. When we say institution, there are many aspects obviously. First, it encompasses macroeconomic policy, monetary and fiscal policy, exchange rate regime and trade policy. Some rules in the market should be considered, like the corporate governance issue, financial market supervision, labor market regulation, and competition policy. Even the safety net issues can be included in this rule of the market. And some other issues in the market system such as the legal system and a political system based on free election should be included. Also some inter-institutional relationship like a business-government relationship, a central government-local government relation. And finally, I can come up with some social planning issues like income distribution, education, and health.

These things should be converged to some extent under the globalization, but we should at the same time consider the local specificity and the harmonious interface of them. But how can one country find the most appropriate institution to face the global market? That is the remaining issue.

Professor Rodrik once commented that is a kind of self-searching process and that a democratic society would be able to find it out somehow. Maybe so. But that answer seems to me rather optimistic. It also has to do with the capacity of policymakers of each society. The search needs the general guidelines. Our quest for the principles of economics of diversity can make some meaningful contribution to that issue.

I fully agree that economics of diversity should tackle the cultural diversity and associated diversity of the institutions in the context of the political economy analysis. I found it extremely important that Professor Ghoneim pointed out that while culture affects the market economy, it

is not an independent variable if we take into consideration the feedback from the market economy to the culture. In addition, the culture is a difficult concept to define, to measure, and to set a boundary. Therefore economics of diversity is related to the complex interaction between culture, idiosyncrasy of institutions and the generality involved in the market integration.

Professor Ghoneim correctly pointed out that second-best institution is that it may seem good in the beginning but it can backfire later. I think Japan's experience of industrial policy in the past may tell you the same story. It may have helped establish certain industries in the beginning of the industrialization process, but later too much intervention becomes costly. We need to address not only what kind of institutional arrangements are appropriate but also how institutional arrangements should be transformed in this dynamic process.

To conclude, I appreciate Professor Ghoneim's introduction to some fundamental questions regarding the setup of economic diversity. Obviously, we do not have answers to all these questions, but we should digest them while making concrete programs of research.

### **Comment of Mr. Adams**

I think it is incumbent on the profession to get a bit more disciplined in terms of how we are measuring, what we are measuring, and doing some of the work that has to be done. In fact, if we look at these issues today from the perspective of Africa in fact the story is a lot more positive on the growth side than people have been talking about over the last ten years. We expected that, because Africa is one of the places of great skepticism with respect to this.

I could not stand up for the Washington Consensus policy. But I think that in a sense, Washington Consensus is a bit of a mis-nomer. There has been a set of policy recommendations that I prefer to call "neoliberal policies." In these recommendations, it is true that there are a set of policies and a lot of policy prescriptions which went too far in terms that they left it to the market, forgetting consequences, focusing too much on government failure and neglecting market reality. That is what we recognize now.

I think that there was a crude, vulgar form of, if you like, neoliberalism, which also became identified with The Washington Consensus. There were countries in which the Bretton Woods Institutions did buy this neoliberal agenda and brief, which I think is now recognized widely by everybody including at least in "the thinking element --- the institution." There was a kind of excessive faith and belief in market and excessive neglect of failure, conflicts in institutions and so on. I think that this is now very widely recognized.

If you remember, “culture” was involved to explain everything. Some time ago, it was argued that China was underdeveloped because the Chinese were lazy opium eaters. Now when China becomes a great success, confucius culture becomes a secret. We now talk about “India’s Hindu rate of growth.” So what people say changes depending on whether you are doing well or badly. Nothing is like failure. When you are doing badly, everything is condemned -- your culture, your business culture, etc. When you succeed, everything is fine.

But the basic point of argument is that people respond to incentives, and what incentives mean is culture-specific. In the same cultural environment, certain types of incentives are impossible, or certain types of incentives do not work in the way they should work in other contexts.

Like the classic story in Japan, when you wanted to fire somebody, what to do is to give them a very big, prominent desk in a large room and no work. You need to look at particular incentive schemes in particular cultural context. Beyond that, I remain somewhat unclear in how far economists can do.

### **Comments of Prof. Hino**

We can agree that market economy and market principles do not always produce best results. The more difficult question is if you do not have the market principle, what principle you would work with. Would you say “anything goes”? That is not helpful. It seems to me that The Washington Consensus provides a starting point to consider how policies should be. From there, we would look carefully at the conditions in the economy to see if policies based on market principle would work. If not, then we would consider how and where one can deviate. This way, you would have a framework to consider and formulate policies.

It is not quite helpful to completely discard the Washington Consensus because in my view it provides a framework for thinking through policies. One cannot rely totally on it, obviously. But still, it is the framework. At this time, we do not have any other framework that provide a starting point to examine what policies are right, and from there to adjust to find policies that would work best under the specific circumstances you have in hand.

# 9            Some Peculiarities of the Recent Evolution of Business Groups in Brazil

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## 1. Introduction

Since the 1980s, the corporate scene has been rapidly and hugely modified around the world. Competition has become increasingly ruthless as a result of deregulation, privatization, globalization, and pressures from financial markets. This process triggered a surge of corporate restructuring worldwide, embracing cross-border as well as domestic mergers and acquisitions, disposal of non-core businesses, and strategic alliances. The harsh contest among financial institutions has promoted the continuous integration of financial markets, both within and across national frontiers. Moreover as a consequence of the broad recognition that the public pension system was unsustainable on a pay-as-you-go basis, funded pension schemes have expanded at a fast pace in a large number of countries, fostering, in turn, capital markets and non-bank financial intermediaries supplying this type of contractual savings. Simultaneously, individual and institutional investors have been increasingly aware of, as well as sensitive to, the returns from the wide-ranging alternative investment instruments - made available by the deregulation of financial markets together with the reduction of transaction cost resulting from information technology innovation.

Although these general trends seem to fit most of the countries around the world, their manifestation has varied when interacting with path-dependent, national idiosyncrasies, such as legal and economic institutions, culture, and politics. Turning specifically to business groups,

a widespread type of firm organization in developing countries, as well as international divergence across multiple dimensions (e.g. their motivation, structure, strategies, and performance), has prevailed.

A recent survey, conducted by Khanna and Yafeh (2007), stressed the need for further research to clarify the puzzle of the international diversity of business groups. Why have business groups in some countries contributed to enhance economic welfare, by coping with market failures (financial constraints, contract imperfections, and transaction costs), whilst in others their deleterious social effects (such as rent seeking, corruption, and market power) have been dominating? In the same vein, why do the extent and quality of government support for business groups vary significantly across countries? Or still, why in some economies is the expropriation of minority shareholders by business groups' controlling shareholders more unrestricted?

With respect to the rationale of business groups, Schneider (2007) proposes a three-pronged typology. "Organic groups" are those whose growth relies on economies of scope and/or vertical integration, exploiting group-specific assets - general reputation or knowledge-based assets embodied as human capital, technological, organizational, or managerial expertise.<sup>1</sup> "Portfolio groups" are primarily motivated by risk-return tradeoff optimization, taking their firms as fundamentally financial assets that should be traded depending on market circumstances. That type of business group tends to be highly diversified, with its subsidiaries' managers being more autonomous. Finally, "policy-induced groups" have their origins and evolution closely associated with incentives granted by governments.

An extensive branch of the literature has emphasized expropriation as the main motivation lying behind business groups. It is argued that kind of firm organization allows controlling shareholders to expropriate minority shareholders by means of self-dealing transactions related to asset diversion and transfer pricing among affiliated firms. "Tunneling", as Johnson et al. (2000) dubbed this sort of self-dealing, takes place notably in business groups organized into pyramidal ownership structures. Some analysts have underlined the role of investors' weak legal protection in magnifying agency costs by facilitating the leverage of voting power over ownership. On top of pyramidal arrangements of ownership, the most usual devices for achieving the separation of voting rights from cash-flow rights are dual-class shares, cross-shareholdings, and voting agreements. Notwithstanding the benefit of mitigating the tradeoff between monitoring and liquidity, the divergence from the "one-share-one-vote" rule brought about by these mechanisms has the drawback of

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1. The distinguishing feature of those assets lies in their non-rival character, that is, they can provide services in other distinct businesses at a negligible cost on top of maintaining the supply of services to the original business.

intensifying controlling shareholder's incentive and power for expropriating minority shareholders.<sup>2</sup>

Concerning specifically pyramidal schemes, Almeida and Wolfenzon (2006) contests the expropriation view, arguing that they operate primarily as a means to ensure financing to new enterprises. They present two reasons to uphold the claim that when investor protection is poor and hence the latitude for diversion of cash flows is ample, the choice of the group structure is biased in favor of pyramidal arrangements. The first is the "payoff advantage", allowing private benefits of control to be reaped by the controlling family at the expense of minority shareholders. The other is the "financing advantage" which is derived from the fact that, given that the expectations of cash-flow diversion are reflected in the harsh conditions under which outside investors are willing to supply capital, the controlling family can tap the retained profits of firms it already controls to finance the set up of new enterprises. Besides, firms with high investment requirements and/or low profitability would be more prone to pyramidal ownership arrangements because they face stronger financial constraints and, consequently, benefit most from intra-group transfer of resources. Thus, the emergence of pyramids might represent an efficient response to overcome financial market failures, notably in countries with undeveloped capital markets and where the investor protection is poor.<sup>3</sup>

Endeavoring to begin to bridge the gaps pointed out by Khanna and Yafeh as well as the literature briefly reviewed above, this paper focuses on the peculiarities characterizing Brazilian business groups. It is shown that state-controlled firms and banks (such as Petrobras, the giant oil and gas group, the development bank BNDES, and the universal bank Banco do Brasil) together with pension funds of employees of currently or formerly state-controlled firms have played an outstanding role on the corporate landscape. Also highlighted is the widespread use by Brazilian business groups of pyramidal arrangements of ownership as well as non-voting shares, entailing a wide wedge between control rights and capital ownership for the controlling shareholders, who predominantly are families. Another finding is the variety of strategies followed by business groups regarding the range of business activities. Concerning the overall pattern of specialization in production, trade, and investment,

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2. Among those conceiving pyramids as a mechanism for expropriating minority shareholders, it should be mentioned: Bebchuk et al. (1999), La Porta et al. (1999), and Bertrand and Mullainathan (2002).

3. Khanna and Yafeh (2007) also rebut the view that pyramids are just accounted for by expropriation, identifying potential efficiency-based reasons, such as mutual insurance or risk sharing. In addition, they argue that tunneling may represent a reward to some core asset, like entrepreneurial ability or lobbying capability.



Brazilian business groups appear to confirm predictions based on comparative advantages, with most of them operating in natural-resource intensive industries and just a few exporting human-capital intensive goods and services.

This paper is structured as follows. The first section provides a brief account of the main changes that the Brazilian economy has undergone over the last 30 years and that shaped the background of incentives and constraints against which business groups have been operated. Section 2 focuses on Brazilian groups' structure and strategies, specifically on their ownership and control structures, the level of diversification of their businesses, and the extent of internationalization of their activities via trade and foreign direct investment. Following a more aggregate approach based on a large sample of public companies operating in Brazil, the subsequent section presents some descriptive statistics about their governance characteristics, such as their controlling shareholders' identities, the divergence between their voting rights and cash-flow rights, and the existence of pyramidal arrangements. Finally, the last section concludes.

## **2. An Overview of the Sweeping Changes in the Brazilian Economy over the Last Three Decades**

Until the 1970s, the industrial development in Brazil was strongly influenced by active import substitution policies, encompassing trade protection, below-market interest rate loans, tax exemptions, and other incentives (Fishlow, 1972). Pursuing the deliberate goal of strengthening the domestic industry, those policies certainly contributed to the development of Brazilian business groups, particularly over the period 1950-1979. The "Plano de Metas" (Targets Plan) and the "II Plano Nacional de Desenvolvimento" (Second National Development Plan) - covering the periods of, respectively, 1956-1961 and 1975-1979 - are remarkable instances of how those groups blossomed under the aegis of active industrial policies.

The "Targets Plan" aimed to, and did, boost investment in infrastructure and some segments of the intermediate and capital good industries, such as electrical energy, oil production, highways, steel, and cement, on top of car making. Even though state-owned enterprises and foreign firms were at the front of this "big push", some industries were left to Brazilian private business groups, which also benefited from demand spillovers derived from the leading firms.

The Second National Development Plan, an ambitious plan stubbornly implemented by General Geisel administration in a time of world economic slowdown, intended to overcome the structural and external constraints obstructing Brazilian economic growth. It targeted

infrastructure (railways and telecommunications), energy (petrol, ethanol, and electricity), and those segments in the producer goods sector (both capital and intermediate goods, like steel, heavy chemicals, non-ferrous metals, and non-metal minerals) needed to complete the national industrial matrix (see Herman, 2005). Strong incentives were provided to Brazilian business groups with a view to inducing them to embark on this government-led catch-up, ranging from abundant, subsidized credit, to tax-exempt investments in targeted industries, protection from foreign competition, and even capital grants. Banco Nacional de Desenvolvimento Econômico, the Federal-Government-owned development bank, was pivotal in directing private investment decision towards the policy-targeted sectors.

The successive external shocks hitting the highly indebted developing economies from 1979 to 1983 culminated in the debt crisis, bringing to an end the state-led development strategy followed so far by most of those economies. In Brazil, one of the main internal culprit for that crisis' emergence and severity, the II PND, inasmuch as its financing had inflated both the public and private external debts, also turned out to be a telling vehicle by which the dramatic dollar shortage was attenuated after 1983 (See de Castro e de Souza, 1985). Indeed, pressures on the balance of payments were significantly lowered by virtue of either increasing exports or decreasing imports of intermediate and capital goods as far as II PND's large-scale projects began to mature. However, Brazil' various levels of government were entangled in dire fiscal straits. This was partly due to the "nationalization" of the private-sector external debt combined with the sharp currency devaluations (in 1979 and 1983), forcing the Brazilian state to bear most of the external debt service burden throughout the 1980s and 1990s and to relinquish their leadership in domestic investments.

The fiscal crisis translated into high and unstable inflation and interest rates, which in turn spurred most firms to adopt defensive strategies: too little investment (generally in plant enlargement rather than in innovation) and the use of financial surplus to purchase inflation-indexed government bonds, which afforded liquidity, safety, and high earnings. The outcome is meaningfully epitomized as "the lost decade", during which stagnation and high inflation prevailed (artificially stopped for only ephemeral spells by successive unorthodox stabilization plans), large banks grew larger (cashing in on the inflationary tax), productivity levels widened their gap vis-à-vis developed countries', and the fiscal crisis worsened.

On the political front, Brazil began in 1984 its return to democracy, leaving behind 21 years of military dictatorship. In 1988 a new Constitution, still prevailing today, was enacted. For some, its populist bias added to some equivocal subsequent legislative and jurisdictional

measures that deteriorated the quality of the general economic regulation framework, aggravating contractual uncertainties (see Bacha and Bonelli, 2005, pp.179-180).

The long-standing high inflation was finally defeated in 1994 by “Plano Real”, which managed to cut down the annual inflation rate from 2,708 percent in 1993 to just 14.8 percent in 1995. Price stabilization was indisputably a turning point in Brazil’s recent economic history, reducing volatility and uncertainty and thus improving the business environment. Furthermore, it put pressure on firms to heighten productivity, since inefficiencies could no longer be concealed as they were during the inflationary times. The currency stabilization plan had the pegged exchange rate as its nominal anchor, but at the same time, that Brazilian inflation rate continued to exceed their chief trade partners’. The resulting overvalued real exchange rate further compelled firms and business groups to revise their strategies. Also banks were impacted by the dramatic plunge in inflationary tax revenues, which brought to light inefficiencies, mismanagement, and wrongdoing pervading some of them, including large ones, such as Banco Nacional, Bamerindus, and Banco Econômico.

Another watershed in the corporate landscape was privatization. Beginning in the middle of the 1980s, it gathered momentum mainly during Fernando Henrique Cardoso’s administration. The “Plano Nacional de Desestatização”, a formal privatization policy plan, was launched in 1990. In the following four years, 68 companies were sold, primarily from the steel, fertilizer and petrochemical sectors, generating US\$ 11.8 billion worth of revenues and debt transfers. So far as foreign investors are concerned, their participation was then trifling, inasmuch as macroeconomic instability (notably uncertainties about the value of the currency and the exchange rate) together with the absence of a neat regulatory framework threw a cloud of gloom over expected rates of return. During Cardoso’s two administration terms (1995-2002), the privatization process was speeded up and its scope enlarged by further including important infrastructure areas.<sup>4</sup> This advance was prompted by important institutional changes that removed long-standing state monopolies in key sectors (e.g. energy, mining, oil and gas upstream, and tele-

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4. In terms of value, most of the deals (88.2 percent) occurred between 1995 and 2002, notably in 1997 (26.3 percent) and in 1998 (35.6 percent). With respect to the type of investor, the almost US\$78.6 billion worth privatization revenue raised under Fernando Henrique Cardoso’s administration came predominantly from foreign investors (53 percent), followed by domestic firms (26 percent), domestic financial institutions (7 percent), individual investors (8 percent), and pension funds (6 percent). The great majority of the privatization revenues collected from 1995 to 2002 resulted from deals in the sectors of infrastructure and services (85 percent).

communications).<sup>5</sup> At the same time, a legal framework was set up with a view to regulating those sectors, including the creation of several specific regulatory agencies. Landmarks in the Brazilian privatization process occurred in that period, such as the selling of Companhia Vale do Rio Doce (CVRD) in 1997, Telebras in 1998, and Banespa in 2000.

The Federal Government undertook a huge and concerted effort to achieve its utmost goal of maximizing privatization proceeds, combining ad hoc changes in the legal and regulatory rules (such as the removal of the tag along clause so far comprised in the corporate law), mobilization of the BNDES to render some bids financially feasible, and pressure for state-controlled firms' pension funds to join some consortia of bidders.<sup>6</sup> Indeed, cash payments and debt transfers arising from privatization over the period 1995-2002 achieved US\$ 93.4 billion (BNDES, 2002).<sup>7</sup>

Trade liberalization has also had extraordinary effects on market structures as well as on firms and business groups' structures and strategies. Beginning in 1988 with some shy measures to reduce tariff and non-tariff barriers, trade openness deepened during Collor administration (1990-1992). A tariff cut schedule was followed and most of discretionary import controls and non-tariff barriers were dismantled (see Azevedo and Portugal, 1998). The average nominal tariff fell from 41 percent in 1988 to 12.6 percent in 1995. Moreover, Mercosur, the allegedly customs union formed in 1991 among Brazil, Argentina, Uruguay, and Paraguay, has expanded intra-bloc trade flows and intra- and across-bloc direct investment flows (see Bonelli, 1998). Except for a few setbacks

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5. In 1995, a constitutional amendment released oil and gas upstream to private and foreign firms. However, the Federal Government keeps its controlling stake in Petrobras, the giant petrol firm, selling in 2000 its shares exceeding the minimum to retain control.

6. A minor Brazilian banker, Daniel Dantas, achieved a great ascendancy over Brazilian pension funds in the coalitions built to participate in the privatization auctions and, in some cases, in the control of the firms after being privatized. In 1997, in association with the Citibank, he set up an investment fund, CVC - Opportunity Equity Partners FMIA - CL, dedicated to take part in the Brazilian privatization process, managing to raise around US\$ 1 billion from BNDESPAR and pension funds of state-owned companies' employees, such as PREVI, TELOS, SISTEL, FUNCEF, FACHESF, COPEL, CELOS, CENTRUS. It is still unclear whether, and if so to what extent, the Federal Government facilitated and supported his initiatives.

7. The dramatic shift in corporate ownership at the end of the 1990s can be grasped by comparing the fraction state-controlled firms accounted for in all Bovespa-listed firms' market capitalization value just before and ten years after the great privatization wave: it peaked at 61.2 percent in June 1997 and in March 2007 it was 22.3 percent. The colossal revenues collected from privatization failed however to prevent the ratio of net public debt to GDP from escalating 26 percentage points over the period 1994-2002 (from 30 percent to 56 percent), even though the rate of gross tax to GDP jumped from 27.9 percent to 34.9 percent in the same period (See Delfim Neto, 2005).

induced by overvalued exchange rate, trade deficit and currency crises, Brazilian trade liberalization has been preserved.

As a result of trade and financial liberalization, privatization, and fierce global competition, a wave of mergers and acquisitions took place in the 1990s, triggering a major restructuring in various sectors and firms. Food, beverage, and tobacco were the leading sectors in such deals over the period 1996-2000 (184), followed by financial institutions (129),<sup>8</sup> telecommunications (123, mostly after Telebras' privatization), and, notably in 1999 and 2000, information technology. As a whole, about 2,300 such deals occurred from 1994 to 2000, 61 percent of them involving foreign resources.

Emphasis should also be laid on some material shifts in the institutional setting that shaped corporate governance in Brazil since the end of the 1990s. First, the Federal Government managed to put through in 1997 a law abolishing minority shareholders' tag along rights in the case of control transfers, which had been guaranteed by the 1976 Corporate Law. The rationale lay clearly in maximizing the revenues to be collected from the imminent privatization of some of the jewels in the crown of state-owned enterprises. Second, the approval of the new Corporate Law in 2001 and the law (n. 10411) in 2002 reforming the 1976 law that had created and disciplined the "Comissão de Valores Mobiliários" (CVM), the Brazilian capital market regulator. Overall, the new Corporate Law seems to have taken some steps in strengthening non-controlling shareholders' rights vis-à-vis the former law, although it is still far from providing them with legal protection against controlling shareholders' expropriation.<sup>9</sup>

Third, the São Paulo Stock Exchange (Bovespa) launched, in December 2000, new listing segments in which firms can join voluntarily as far as they commit themselves, by contract, to higher governance requirements. At the end of the 1990s, the Brazilian stock exchange stuck in appalling conditions: many public companies were going private, a small number of IPO's, low issues of new shares by listed companies, a shrinking volume of trading at the Bovespa, a low stock market capitalization value of the companies (be it in absolute terms or

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8. The banking sector was object of a deliberate restructuring policy (PROER) aiming at coping with some banks' financial distress, mismanagement, outright fraud, and insolvency, unveiled by the sharp fall in float revenues resulting from monetary stabilization.

9. Among other enhancements to protect minority shareholders, the new Corporate Law reestablished tag along rights to minority shareholders owning common shares (guaranteeing at least 80 percent of the value paid to the former controlling shareholder), allowed minority shareholders and holders of preferred shares to nominate at least one member of the board of directors and fiscal committee, and reduced the upper limit fraction of non-voting shares that firms can issue (binding only for new issues).

as a percentage of the GDP), and Brazilian major companies issuing ADR's at the NYSE. Probably acknowledging the insurmountable "political economy hurdles" to the adoption of legislation effectively protecting minority shareholders' rights, Bovespa's directors created the new listing segments differentiated by levels of corporate governance. That mechanism of governance certification, which allows firms' self-selection regarding their respective governance quality, met the rising demand for better governance from domestic and foreign institutional investors, facilitating Brazilian firms' access to global capital markets, either as issuer of securities or acquirers of foreign firms or assets.

Listing on Bovespa's Level 1 requires, for example, demanding disclosure as compared with that legally mandated (relative, for example, to financial information, amount and types of securities issued by the firm that are owned by insiders, and the terms of contract with related parties). To be listed on Level 2, firms should, in addition, comply with equal treatment for holders of common stocks when the controlling shareholders sell their shares, financial reporting in accordance with the U.S. GAAP or the IFRS, and boards of directors composed of at least 20 percent of independent directors. Finally, Novo Mercado, on top of Level 2's obligations, precludes firms from issuing non-voting shares.

It should be noted that the leading Brazilian business groups typically have their main firms listed on the Level 1 - such as CVRD, Votorantim, Gerdau, Suzano, Sadia, Odebrecht, Camargo Corrêa, Ultrapar, Brasil Telecom, Pão de Açúcar, Usiminas, Eletrobrás, and the largest banks (Itaú, Bradesco, and Unibanco). This can be partly accounted for by either their deliberate avoidance to migrate to the higher governance standards or specific regulation or legislation. Thus, Level 1-listed firms show an average market value well above that of any other listing segments - R\$17.5 billion against R\$2.80 billion for the traditional segment, R\$3.76 billion for the New Market, and R\$3.41 billion for Level 2 (data as of August 2008). Considering the 50 largest Brazilian business groups in 2006, 45 of such companies had at least one publicly-traded company, totaling 77 companies. 34 were listed on the Bovespa's older segment; 25 on Level 1; five on Level 2; and 13 on the Novo Mercado. The only major business groups with companies listed on the Novo Mercado are CPFL, Perdigão, Embraer, Camargo Corrêa, Light, and the state-controlled Banco do Brasil (Federal Government) and Nossa Caixa (State of São Paulo).

This private-led institutional innovation is certainly connected to the high number of initial public offerings and new share issues taking place in Brazil from 2004 to 2007.<sup>10</sup> Most of firms going public recently have

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10. Between 2004 and 2007, there were 106 IPO's: 7 in 2004, 9 in 2005, 26 in 2006, and 64 in 2007. The IPO's in 2007 allowed firms to raise R\$ 55.5 ↗

been listed at the New Market (72 out of the 102 IPO's) and Level 2 (15). A relevant number of these IPO's were made by middle-sized and even small firms (with a net revenue below R\$ 50 million). Worthy noting is that foreign investors have purchased an overwhelming portion of the public offerings of shares, especially IPO's.<sup>11</sup>

Closing this overview, it should be highlighted the role that the National Economic and Social Development Bank (BNDES) and pension funds of state-owned or former state-owned companies' employees have played on the corporate scene in the last two decades. Brazilian private banking system, notwithstanding its sophistication and robustness, has recurrently been loath to provide long-term financing. This gap has traditionally been filled almost exclusively by BNDES and foreign loans, capital markets having had a tiny contribution until recently, and concentrated on bond issues.

Since its inception in the 1950s, BNDES has been a powerful policy vehicle. Up to the end of the 1970s, it operated as the main financial lever of industrial policies, being critical to guide capital allocation to the targeted industries by ensuring subsidized, long-term financing to firms. During the stagnant 1980s, BNDES and its wholly-owned subsidiary BNDES Participações S.A. (BNDESPar) dealt mainly with financially-stressed firms, bailing them out through lending, conversion of debt into equity, and recapitalization. In the following decade, BNDES and BNDESPar gave top priority to privatization and restructurings (including of privatized firms), playing a key role in making successful some consortia's bids. Over the last 10 years, BNDES' flows of lending have been increasing, reaching R\$ 52.3 billion in 2006. Large firms have been the chief beneficiaries of those loans, absorbing at least 25 percent of their amount. BNDESPar's asset portfolio is almost entirely concentrated in shares - almost 93 percent of its market value in 2006. In that year, BNDESPar held representatives in 8 fiscal committees and in 25 boards of directors and had shareholders' agreement in 45 of the 138 firms wherein it had an equity stake.<sup>12</sup>

As regards pension funds, their assets totaled R\$ 394 billion in July

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\billion, more than 260 percent the amount collected in 2006 (R\$ 15.2 billion). In 2007, additional R\$ 14 billion in equity financing came from new issues of shares by 12 already listed firms (R\$ 15 billion in 2006). As a percentage of GDP, Bovespa-listed firms' market capitalization value leapt from 36 percent in 2001 to 58 percent in 2005, 74 percent in 2006, and 130 percent in October 2007.

11. In 2006, they accounted for 67 percent of the total funds raised by new issues of shares.

12. At the end of 2006, BNDESPar's equity capital portfolio embraced among others the following firms: Eletrobrás (15 percent), Brasileira (11 percent), Valepar (10 percent), Copel (8 percent), Petrobras (7 percent), ALL (6 percent), and CVRD (5 percent).



2007 (17 percent of the GDP), most of which in government bonds and only 20 percent directly in the stock market. The largest pension funds are those of employees from formerly or currently state-controlled firms, such as PREVI (Banco do Brasil), Petros (Petrobras), Funcef (Caixa Economica Federal), Fundacao Cesp, Valia (CVRD), and Sistel (Telebras and Embratel). PREVI held assets worth US\$ 60 billion, predominantly in government and corporate bonds (directly or via investment funds), but with a significant fraction in shares. Investments in equity capital are made directly or through exclusive investment funds that own holding companies that, in turn, own stakes in almost all large firms, notably firms affiliated to business groups, in addition to firms not listed in the stock exchange. For example, PREVI owns Litel Participacoes S.A. directly and also by means of exclusive investment funds (BB Carteira and BB Renda Fixa IV). Analogously, PREVI is a leading shareholder in CPFL Energia, Neenergia, and Itapebi through exclusive investment funds that it wholly owns - "521 Participações S.A.", a special purpose entity set up with the sole objective of taking part in the privatization auctions in the electrical energy sector.

The next section describes the complex arrays that led BNDES, its subsidiary BNDESPar, and pension funds, notably PREVI, to become outstanding players in the Brazilian corporate landscape and even members of the controlling coalitions in business groups such as CVRD and Brasil Telecom. The privatization process was crucial to allow them to hold large equity stakes in a considerable number of firms. Section II also deals with Brazilian business groups' diversification and internationalization.

### **3. Structures and Strategies of Brazilian Business Groups**

This section discusses the traits characterizing some of the largest Brazilian business groups' structures and strategies over the past 25 years. Focus is placed on the following issues: 1) business groups' ownership and control; 2) the evolution of their degree of diversification, in particular whether banking has been one of their chief business lines; 3) the extent of their internationalization operations, either through trade or investment; and 4) their longevity and resilience to the changing economic and political environment.

#### **3.1. Ownership and Control**

From among the sixty largest business groups operating in Brazil in 2006,<sup>13</sup> twenty five were controlled by Brazilian private entities (such as

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13. These figures rely on the ranking set forth by the specialized business ↗



families, privately-owned firms, pension funds, or mutual funds), seven by Brazilian governmental entities, twenty seven by foreign firms, and one jointly-controlled by a Brazilian family and a foreign group. Privatization of formerly state-owned firms and public service concessions notably contributed to this profile: ten from those 25 Brazilian private groups and nine from the 27 groups owned by foreigners resulted from privatization. Domestic private groups that have taken over control of former state-owned groups are the following: CVRD, Usiminas, CSN, CPFL Energia, Embraer, Copesul, Light, and Neenergia; Telemar and Brasil Telecom emerged from the break-up and privatization of Telebras, the former state-owned, monopolistic group in telecommunications services.

Worthy mentioning is that 16 of those top 26 Brazilian private groups (including Pão de Açúcar) are controlled by families.<sup>14</sup> Six of the remaining ten groups (Light, Telemar, CVRD, Usiminas, CPFL, and Copesul) are controlled by those same or other family-controlled groups, and in some of BNDESPar and pension funds of state-owned groups' employees (such as PREVI and PETROS) hold significant stakes. These government-related pension funds and state-owned firms or agencies (Petrobras, BNDESPar, or Banco do Brasil) are also major or even controlling shareholders in the other four business private groups - Brasil Telecom, Neoenergia, Embraer, and Perdigão.

Overall, Brazilian business groups' ownership is structured through pyramidal schemes, with just a few, if any, publicly traded companies - Caixa, Safra, and Andrade Gutierrez have none. The case of Votorantim is illustrative: among the more than seventy companies that compose this business group, only one has shares traded on Bovespa. Usually, the largest ultimate shareholders of Brazilian business groups' publicly traded companies hold more than 50 percent of these companies' voting capital - Embraer and Perdigão being exceptions - and, as a consequence of the recurrent use of pyramids and non-voting preferred shares, own voting rights far exceeding their cash-flow rights. When there are more than one large-block shareholder, they frequently form a coalition to reach control.

The complex arrays that led BNDES' subsidiary, BNDESPar, and

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<sup>14</sup> \\_newspaper Valor Grandes Grupos (2007), which sorts business groups according to their gross revenue. Business group has a loose meaning for that newspaper: firms under the control of the same entity, regardless of operating in related or unrelated sectors. Since no thorough empirical survey on Brazilian business groups is available for the more recent period, we had to adopt this imprecise definition.

14. They are: Bradesco, Itaúsa, Ipiranga, Gerdau, Odebrecht, Unibanco, Votorantim, Pão de Açúcar, CSN, Sadia, Sul América, Camargo Corrêa, Safra, TAM, Suzano, and Andrade Gutierrez.

pension funds, notably PREVI, to become outstanding players in the Brazilian corporate landscape and even members of the controlling coalitions in some business groups are connected, to a great extent, with their participation - in association with Brazilian business groups and sometimes with foreign investors - as bidders in the privatization process. This active participation was urged by the Federal Government due to its firm intent to maximize revenues from biddings. To attract Brazilian private groups to the privatization, BNDES and pension funds played essentially the role of financiers.

Bearing in mind the intricacy of the coalitions formed among Brazilian business groups, some pension funds, governmental agencies, and foreign investors to partake in the bids as well as in the ownership and control arrangements that subsequently prevailed, some cases of privatized companies are examined below.

Companhia Vale do Rio Doce (CVRD), privatized in 1997, was acquired by a consortium that transferred its control to Valepar S.A., a private company owned by Previ and other government-related pension funds, private Brazilian groups (Bradesco, Opportunity, and Vicunha), and BNDESPar. After a number of ownership restructurings, the current distribution of Valepar's voting capital is the following (as of August 2007): Litel/Litela (controlled by PREVI)=49.0%; Bradespar (Bradesco Group)=21.2%; Mitsui=18.2%; BNDESPar=11.6%; and Opportunity=0.03% (Valepar's statutes prohibit any investor from owning more than 49 percent of its voting capital). Thus, government-related entities controlled more than 60% of Valepar's voting capital, which now owns 53.3% of CVRD's voting capital (and 32.5% of its total capital). BNDESPar also owns a direct 6.71 percent stake in CVRD's voting capital. Moreover, Brazil's Federal Government holds special class preferred shares in CVRD ("golden shares") entitling it to veto proposals related to certain issues.

Telemar's control involves the alliance among private business groups, governmental institutions (BNDESPar and Banco do Brasil), pension funds, and a foreign investment fund. Almost the whole voting capital of Telemar Norte Leste S.A. (97.35%) is held by Tele Norte Leste Participações S.A. and its wholly-owned subsidiary Telemar Telecomunicacoes. Tele Norte Leste Participações S.A., in turn, is controlled by Telemar Participações S.A., which has a 53.8% of its outstanding common shares (and just 17.9% of its total capital). Finally, as of January 2007, Telemar Participações S.A.'s voting capital was held by AG Telecom Participações S.A. (affiliated to Andrade Gutierrez Group), Asseca Participações S.A. (owned by Grupo GP Investimentos), L. F. Tel S.A. (owned by La Fonte Group) and Lexpart Participações S.A. (jointly owned by Opportunity, Citigroup, and state-owned firms' pension funds), each holding a 10.275% stake; Alutrens Participações S.A.

(owned by Banco do Brasil and private-sector insurance firms), with 10%; Fundação Atlântico de Seguridade Social (Telemar's employees' pension funds); 4%; BNDESPar S.A., 25%; and Fiago Participações S.A. (owned by state-owned firms' pension funds), 19.9%.

BNDESPar, Citigroup, Opportunity and pension funds are also the largest ultimate shareholders in Brasil Telecom S.A., another major telecommunication service company. Its common shares are almost entirely owned (99.07%) by Brasil Telecom Participações S.A., whose control is in the hands of Solpart Participações S.A., which owns 51.00% of its common shares and 18.78% of its total capital. Solpart, in turn, is a holding company, controlled by Techold Participações S.A., which is entirely owned by Invitel S.A., a holding company controlled by Zain Participações S.A. and that has as minority shareholders PREVI, Fundação 14 BrT (the pension fund of Brasil Telecom SA's employees), and the pension funds of Petrobras, Caixa Econômica Federal and Embratel's employees. Finally, Zain Participações S.A. is owned by Investidores Institucionais Fia (an investment fund comprising BNDESPar and some pension funds), with 45.85% of its voting capital, Citigroup Venture Capital International Brazil L.P., a foreign investment fund (42.47%), and Opportunity Fund (9.00%).

CPFL Energia has the idiosyncratic characteristic of being controlled by a private company (VBC Energia) owned by three family-controlled groups, an investment entity owned by PREVI (521 Participações S.A.), and a holding controlled by pension funds (Bonaire Participações S.A., involving Funesp, Petros, Sistel and Sabesprev), on top of having BNDESPAR as a non-controlling shareholder. VBC Energia is controlled by Votorantim Energia Ltda., Bradesplan Participações S.A., and Camargo Corrêa Energia S.A., owned, respectively, by Votorantim Group, Bradespar S.A., and Camargo Corrêa Group. Usiminas is controlled by a voting coalition involving a foreign group (the Japanese Nippon Group, holding 24.7% of its voting capital in November 2006), a partnership of two Brazilian groups (Camargo Correa and Votorantim, each with a 11.6% stake), a pension fund (Usiminas' employees, with 10.1%), and the privatized CVRD (5.9%). Despite not taking part in this voting agreement, PREVI has a 10.4% interest in Usiminas.

Neoenergia's voting capital is distributed among just three partners: PREVI, holding directly and indirectly 49.01% of its common shares, Banco do Brasil-Banco de Investimento S/A, the government-controlled bank, owning directly and indirectly an 11.99% stake, and the Spanish Iberdrola, with a 39.00% interest.

Companhia Petroquímica do Sul (Copesul), privatized in 1992, had, until recently, its voting capital shared among two private groups (Ipiranga and Odebrecht, each with a 29.46% stake), a Petrobras' wholly-owned subsidiary (Petrobras Quimica S.A. - Petroquisa, 15.63%), and

banks, pension funds, and other investors (25.45%). In March 2007, Petrobras, Ultrapar Participações and Braskem (Odebrecht Group) reached an agreement by which Ipiranga Petroquímica's stake in Copesul was divided between Braskem (60%) and Petrobras (40%).

Finally, Embraer, privatized in 1994 and now a leading global aircraft manufacturer and exporter, could be considered as an anomaly in the Brazilian corporate context, having a scattered capital ownership structure vis-à-vis other large Brazilian companies.<sup>15</sup> Notwithstanding, government-related institutions are among its major shareholders (PREVI and BNDESPar have, respectively, 14.0% and 5.0%). Embraer's by-laws limit voting rights to any individual shareholder in general shareholders' meetings to 5% of the total number of shares, and the total votes by foreign shareholders, individually or collectively, to 40% of the total votes.<sup>16</sup>

Concerning the composition of the boards of directors, Brazilian business groups' controlling shareholder, predominantly a family, is usually a member but is not its chairman nor a CEO or an executive. However, in some business groups, a member of the controlling family is both the CEO and the chairman of their main companies, as are the cases in CSN, Gerdau, and Sul América. Also, there are business groups where the controlling shareholder is the board's chairman but not the CEO (as happens in Votorantim, Braskem, Sadia, and TAM). Unibanco's controlling shareholder is a director and CEO of the group's two publicly traded companies. Only a few companies have significant overlapping between management and the board. It should be emphasized that, out of the 32 largest Brazilian business groups, 20 have companies whose shares are traded as ADRs on the NYSE.

### **3.2. Business Diversification**

Sector diversification varies significantly across the largest Brazilian privately controlled business groups. Some are clearly single-minded, such as Telemar and Brasil Telecom (telecommunications sector), Unibanco and Safra (banking and finance), Sul América (insurance),

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15. Likewise, Perdigão displays a relatively widely-held capital ownership, wherein pension funds, in particular of state-controlled companies, hold large blocks of voting shares: PREVI owns a 15.7% stake, PETROS 11.9%, SISTEL 5.1%, BNDES-FAPES (BNDES's pension fund) 3.7%, and other pension funds more 10.4 percent.

16. The Brazilian Government owns "golden share" entitling it to have veto power over a number of corporate issues. Moreover, keeping Embraer under the control of Brazilians was a condition imposed by the government to its privatization. The free float shares traded at NYSE represent 55.2% of the total shares, and at Bovespa, 16.9%.

Embraer (aircrafts), Neoenergia, CPFL Energia and Light (electrical energy), Sadia and Perdigão (chilled and frozen foods), TAM (airline), and also Pão de Açúcar (food retailer), the French-Brazilian owned group. Others have a core business but also joint ventures, subsidiaries or affiliates operating in vertically-related (upstream and/or downstream) industries,<sup>17</sup> as are the cases of CVRD (specialized in mining but also controlling enterprises in logistics, railways, steel, and energy), Ultra (fuel distribution, chemicals, petrochemicals, transportation and logistics), Ipiranga (operating in the same businesses as Ultra, which recently acquired it), Gerdau (steel, iron mining, energy, and banking), Usiminas (steel, metal goods, mechanics, logistics and transportation), and Suzano (now focusing only on paper and pulp production, after having sold its petrochemical company to Petrobras). Last but not least, there are moderately diversified economic groups conducting business in unrelated industries, like Odebrecht, Votorantim, Vicunha/CSN, Camargo Corrêa, and the bank-centered Bradesco and Itaúsa. The largest state-owned Brazilian business groups, excluding Petrobras, focus on single activities (either banking/finance or electrical energy) and ancillary businesses. Petrobras has undertakings in energy and gas exploration, production, and distribution, petrochemicals, and transportation. As a rule, Brazilian business groups are composed of leading firms in the respective markets in which they have core businesses (de Siqueira, 2000).

In a greater or lesser degree, government policies have influenced the development and diversification of most Brazilian business groups, having different manifestations though time: trade protection favoring light industries before the II World War, systematic state-led strategies of import substitution industrialization from the 1940s to the 1970s, and thereafter government procurement and financial support for privatization bids, restructuring, modernization, and internationalization. Lying behind Brazilian business groups' evolution, it is probably a mix of policy incentives and their deliberate strategies either to achieve scale and scope economies or to reduce risks (Schneider 2007). The account below tries to cast some light on the relative weight of these factors in the evolution of some leading Brazilian privately owned groups.

To begin with, strategies concerning the range of sectors of business activities have been far from convergent among these groups. Votorantim, Camargo Corrêa, Odebrecht, Bradesco, and Vicunha have clearly pursued diversification of businesses, even though sometimes

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17. This may be associated with strategic reaction to uncertainties and contract imperfections. As Khanna and Yafeh (2007, 341) point out, "limited contract enforcement, weak rule of law, corruption, and an inefficient judicial system should all lead to high transaction costs between unrelated parties. Under such circumstances, intragroup trade, within the context of long run relationships supported by family and other social ties, may be relatively cheap and efficient."

relinquishing one or more of them to initiate others. Votorantim Group began in 1918 as a textile mill, diversified thereafter into cement, aluminum, energy, steel, mining, metals, pulp and paper, heavy equipments, sugar and alcohol, disposed of its original textile business, and embarked on new activities, such as concentrated orange juice, chemicals, banking, and, more recently, biotechnology and information technology. In the same vein, Odebrecht, founded in 1944 as a civil construction enterprise, broadened its range of activities to more technologically sophisticated heavy construction projects, chemicals and petrochemicals in the 1980s, and concessions in highways and basic sanitation services. Privatization catapulted the group into the leadership among private-owned Brazilian petrochemical firms. Vicunha Group, whose origins traces back to a weaving mill in 1946, turned into the largest Brazilian textile group (Vicunha Têxtil), which since the 1980s has branched out its interests into several industries, like mining, cement, energy, railway, logistics, trading, and banking and financial services (Banco Fibra, since 1989). After acquiring a relevant stake in CSN, the former state-owned steel maker privatized in 1993, the group's two controlling families became its largest ultimate shareholder. Their progressive control of CSN was reached by dint of increasing indebtedness, financed to a great extent by BNDES.

Camargo Corrêa Group, which originally started as a small construction company in 1939, diversified its activities in the 1970s into heavy civil construction, real estate, agribusiness, cement, metals, mining, textiles, and finance. Later, it extended its interests to shipbuilding, highway concessions, environmental engineering, and footwear. This group also takes part of the controlling block in CPFL Energia, CCR (which operates the main Brazilian highway concessions), and Usiminas, besides holding a significant stake in Itaúsa. Some formerly secondary businesses (such as those in the energy, textile, cement, and footwear sectors) have turned into the group's leading activities, notwithstanding engineering and construction still accounting for around 17% of its revenue. Privatization also influenced the group's investment strategy, propelling it to acquire interests in energy, transportation sectors, and steel (Usiminas).

Inasmuch as price stabilization, finally achieved thanks to Plano Real, dramatically reduced the inflationary tax appropriated by banks, Bradesco likely envisioned the privatization of some major state-owned enterprises in the 1990s as an opportunity for diversifying its portfolio. In fact, in association with other Brazilian private groups, pension funds, and BNDESPar, it was a major player in some privatization auctions, after which it became part of the controlling coalition of groups such as CVRD and CPFL Energia.

CVRD and Gerdau have followed the strategy of marginal



diversification around their core businesses. Even though steel-making has persisted as its main activity, Gerdau Group also owns a bank - Banco Gerdau, set up in 1994, to help finance the group's suppliers and customers - and, with a view to verticalization, has extended since 1986 business to iron mining and manufacturing, and more recently to electrical energy, probably as a reaction to the energy crisis in Brazil.

CVRD Group has maintained its focus on the exploration and production of iron ore and pellets, but preserving its enterprises in closely related sectors, like steel, railways, logistics, and energy. It has also diversified within the mining and metal sectors, beginning to operate with copper and nickel. The global acute competition in the mining sector has led CVRD to search for gains in scale and scope, prompting it to acquisitions totaling US\$ 24.5 billion since 2000, out of which US\$18.2 billion for the purchase of Inco in 2006. Conversely, divestitures equivalent to US\$ 3.8 billion were made in steel (it sold its stakes in Açominas, CSN, CST, and a large block of shares in Usiminas, Gerdau and Siderar), pulp and paper, fertilizers, ships and wood.

Specificities in the petrochemical market have certainly determined the recent acquisitions of Suzano Petroquímica by Petrobras and of Ipiranga Group by Braskem (Odebrecht Group), Petrobras and Ultra. Producing paper and pulp since the 1920s, Suzano Group diversified into petrochemicals in 1974. After strengthening its petrochemical branch, notably through privatization bids in the 1990s, Suzano Petroquímica was recently friendly taken over by Petrobras, the state owned oil company. Ipiranga Group, in turn, started operating in oil production, petrochemicals, and fuel distribution, but in the 1970s its businesses also included hotels, agribusiness, fishing, and transportation. Sharp competition in the 1990s brought about by trade liberalization led Ipiranga to dispose of its peripheral activities and refocusing on its original activities. In 2007, Ipiranga's controlling shareholders decided to sell its control to Braskem, Petrobras, and Ultra.

With respect to the existence of a bank in the group structure, out of the 26 largest Brazilian private groups in 2005, four had banking as their core business; three had banks among their affiliates (Vicunha Group, Gerdau Group, and Votorantim Group); two had a bank (Bradesco) taking part in the controlling coalition (CVRD and CPFL); three had banks among their non-controlling shareholders (Telemar, Neoenergia, and Embraer); and one, Camargo Correa, had a substantial, but apparently passive, stake in a large bank (Itaú).

Brazilian business groups' recent domestic and foreign acquisitions and disposals seem to have been carried out with a view to consolidating their shares and pursuing economies of scale in a more limited range of industries rather than enhancing diversification. Trade liberalization, deregulation, and acute global competition may be spurring them to

strengthen their position in a few markets or to diversify primarily into technologically related industries.

Recent moves in Brazilian petrochemical sector may be illustrative of the implications unleashed by the changing competition context. Not to be an easy prey, Suzano Petroquímica and Ipiranga had either to gain market share (via acquisitions or greenfield investments) or to jettison their assets to other major players. Consolidation in that industry has been advanced both by private and state-controlled business groups, sometimes through alliances, and the takeovers have been reached through either privatization bids or “private” acquisitions of private groups, in which BNDESPar and Petrobras have had a significant role.

### **3.3. Internationalization: Trade and Foreign Direct Investment**

Exports from the ten Brazilian business groups, that exported most in 2006, amounted to almost US\$ 35 billion, accounting for 26% of the country's exports. The leading exporters were Petrobras Group (US\$ 11.9 billion, tantamount to an 8.7% share of overall Brazilian exports), CVRD (8.43%), Embraer (2.38%), Votorantim (1.1%), and Usiminas (1.2%) (Análise Comércio Exterior 2007). Export values as a share of total sales vary sharply from group to group, being higher than 25 percent for CVRD, Odebrecht, Sadia, and Perdigão. Factor endowment (the country's abundance in natural resources, like minerals, land, oil and energy) combined with scale economies partly accounts for the international competitiveness of many Brazilian business groups. For other groups, the leading factors seem to be efficiency and technological competence, such are the cases of Embraer, Odebrecht and Camargo Correa (heavy civil construction services), and Sadia and Perdigão (chilled and frozen food). In some cases, exports began as a way to smooth domestic business cycles.

Some large Brazilian business groups have also pursued internationalization through foreign direct investment. Their main motivations have been protectionism (FDI functioning as a substitute for exports, like Gerdau's steelworks in the USA), access to raw materials and new markets (as are the cases of many Petrobras and CVRD's subsidiaries), and incentives coming from free trade areas (Mercosur and Nafta, the latter making Mexico attractive to Brazilian groups). CVRD and Gerdau are the Brazilian groups that mostly advanced in this front. Even though beginning to invest abroad only in 2000, CVRD now owns joint ventures, subsidiaries and affiliates with operating plants in countries from all continents - the purchase in 2006 of Inco, the Canadian nickel company, being its largest acquisition abroad. Gerdau Group's FDI started earlier, in 1980, and expanded through acquisitions of several steelworks in Canada, Chile, Argentina, and the AmeriSteel. In 2003, Gerdau Group



and the Canadian firm Co-Steel undertook a merger of their steel businesses in North America, by which Gerdau held a 67.5% interest in the new firm, Gerdau Ameristeel Corporation, and the plain management control. Since then, this corporation has acquired a number of other steelmakers in the USA (10 only in 2007), culminating with the acquisition of Chaparral Steel Company, a deal worth US\$ 4.22 billion. Clearly this foray in the American market paralleled protectionism against steel imports, disguised as anti-dumping measures. In 2005, Gerdau Group extended its operations to Spain, where, jointly with Santander, it acquired Corporación Sidenor S.A., and, taking its first step in Asia, established a joint venture with Kalyani in 2007. Now, Gerdau's foreign assets match in value its domestic assets.

Camargo Corrêa, Votorantim, Odebrecht, Ultrapar Participações S.A., and Ipiranga appear as moderate foreign direct investors. Votorantim Group only began to extend production facilities overseas in 2001, and afterwards has made foreign direct investments in the cement, metals, paper and pulp, agribusiness, and financial sectors. Ipiranga has one petrochemical plant in Chile. Ultrapar has three units producing chemical specialties in Mexico since 2003, and one chemical plant acquired in 2007 in Venezuela, besides units in Argentina and the United States. Camargo Corrêa's direct investments abroad began with the acquisition of a cement manufacturer in Argentina in 2005 (Loma Negra), and in the following year Santista Têxtil was merged with Tavex Algodonera, a Spanish textile firm. Odebrecht acquired, in 1988, a Portuguese firm in the heavy construction sector and incorporated in 1992 the British firm SLP Engineering, a firm specialized in providing accommodation modules for offshore platforms. The remaining groups have a limited amount of FDI, most of which represented by trading and commercial offices. Specifically, the three largest Brazilian banks have a modest international standing as compared either with its domestic operations or with foreign banks of similar scale.

Petrobras is the sole state-controlled business group having a significant stake of its overall assets abroad (around 12% in 2006). It holds exploration businesses in various Asian and African countries, a refining plant in Japan, and exploration and production operations in the US and in several Latin American countries. In Argentina its operations are significantly diversified, ranging from oil exploration and production to gas and energy, petrochemicals, and electrical energy.

Conversely, foreign investors have significant stakes in some Brazilian groups. The Portuguese Banco Espírito Santo and the Spanish Banco Bilbao Vizcaya Argentaria had, respectively, 5.94%, and 5.06% of Banco Bradesco's voting capital (figures for 2007). In the mining and steel sectors, Mitsui has 18.2% of Valepar's voting capital, which owns 53.3% of CVRD's voting capital, while Nippon Group has a 24.7% stake in

Usiminas' voting capital. Casino Group co-controls Pão de Açúcar Group jointly with the Diniz Family. Iberdrola Energia S/A (wholly-controlled by Iberdrola) holds a direct 39.00% stake in Neoenergia. And the Dutch bank ING holds directly and indirectly 49% of Sul América's total capital.

### 3.4. Longevity and Resilience

Concerning longevity, the now 30 largest Brazilian business groups emerged before 1970, except those that resulted from privatization of long-standing, state-owned groups. A conventional, though rough, indicator of groups' resilience to changing economic and political settings is the percentage of the top largest business groups in a certain year that still remain among the top largest some years later. Reckoning this "survival rate" for the top 20 and top 10 Brazilian private groups (ranked by net worth) for three periods, the following results are found: (i) from among the 20 largest Brazilian private groups in 1978, 10 (50%) remained among the top 20 in 1988 (for the 10 largest, the percentage is the same); (ii) from the top 20 in 1988, 11 (55%) persisted among the top 20 in 1998 (40% for the 10 largest); and (iii) from the top 20 in 1998, 15 (75%) stayed in the top 20 list in 2005 (90% for the 10 largest). Hence, from the top 20 in 1978, 6 (30%) were in the top 20 list in 2005 (40% for the top 10).<sup>18</sup>

At least after the return to democracy, even though the influence of private business groups on government policies and politics remained considerable, those failing economically also seem to have failed politically to escape bankruptcy. Traditional and economically powerful business groups in the 1970s, like Bonfiglioli, Matarazzo and Comind, respectively, the third, sixth, and eighteenth largest business groups in terms of net worth in 1978, had gone bust in the following decade. Likewise, Bamerindus (top 6 in 1988), Econômico (top 24 in 1988), and Nacional (top 32 in 1978) did not survive the turbulent 1990s, notwithstanding their controlling shareholders' intimate relations with politicians.<sup>19</sup>

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18. Another source (Balanço Anual, Gazeta Mercantil), with data available since 1978, had to be used to calculate those figures. This source's great weakness is that the ranking refers just to Brazilian private business groups. Therefore, when comparing figures before and after the 1990s, decade in which privatization took place, the turnover rate is overestimated.

19. Bankruptcy was not avoided, despite political and personal pressures to bail them out, in the cases of the banks Econômico, Nacional, and Bamerindus. Banco Econômico, a 161 year bank, was controlled by a close friend of Antonio Carlos Magalhães, a leading politician with a powerful influence on the national politics. A member of Nacional's controlling family was the President Cardoso's daughter-in-law while Bamerindus' main shareholder was Cardoso's Minister.

As regards what happened afterwards to the forty largest Brazilian private business groups in 1978, twenty-two still existed as such in 2005 (nine among the top 40); four had been acquired by other Brazilian groups and five by foreign groups; and eight had bankrupted (no information was found for one of them). Among the twelve groups that were top 40 both in 1978 and in 2005, four were and are primarily engaged in finance, three in capital-intensive mining and manufactured commodities (steel, paper and pulp, metals, chemical products), two in heavy construction, one in agribusiness, and one in food retail.

None among the current largest Brazilian groups operates in a significant scale in electronics, carmaker or other knowledge- or skilled-labor-intensive industries, except the aircraft manufacturer Embraer. Most are primarily engaged in the following core businesses: banking, chemical and petrochemical, mining and metals, telecommunications, energy, pulp and paper, retail commerce, food, insurance, agribusiness, engineering and heavy construction. Banks stand out among the top ten Brazilian groups (Bradesco, Banco do Brasil, Itaúsa, and Caixa Econômica Federal), followed by oil and gas production and distribution (Petrobras and Ipiranga), mining (CVRD), steel and iron (Gerdau), telecommunications (Telemar), and the diversified group Odebrecht (mainly chemicals and petrochemicals and heavy construction).

#### **4. The Governance of Large Firms in Brazil**

This section presents some empirical evidence on the relevance of pyramidal structures in Brazil's public companies and on their controlling shareholders' characteristics.<sup>20</sup> The sample covers each year over the period 1997-2002 and includes not just listed firms at the Brazilian equity market but the whole set of public companies that furnished the required forms to the CVM.<sup>21</sup> Even though largely relied on the corresponding literature, the key concepts and criteria to deal with the data took into account some Brazilian corporate environment peculiarities. The first step was to identify for every sample company for each year the "largest ultimate shareholder" (henceforth LUS), defined as the shareholder holding the largest voting stake, directly and indirectly, in the

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20. The account set forth below draws extensively on Aldrighi and Mazzer Neto (2007). Their research, constructed a data set out of the "Informativo Anual" (Annual Information Bulletin, IAN) and the "Demonstrações Financeiras Padronizadas" (Standardized Financial Statements, DFP)—reports that public companies in Brazil are required to file annually to the Brazilian securities market regulator, "Comissão de Valores Imobiliários" (CVM).

21. The number of firms that complied with the mandatory requirement of filing these forms was 670 in 1997, 836 in 1998, 807 in 1999, 772 in 2000, 727 in 2001 and 666 in 2002, totalling 4,478 IANs and the same number of DFP.

firm. A firm's indirect ownership or pyramidal ownership means that there is at least one firm between the firm under scrutiny and its corresponding ultimate shareholder.<sup>22</sup> It adopted the 50 percent control cutoff to distinguish widely held companies from those with an ultimate controlling shareholder. Hence, a company is said to have an ultimate controlling shareholder if it has a shareholder owning directly and indirectly at least 50 percent of its total voting rights.

The largest ultimate shareholders were classified into the following categories: i) an individual or a family; ii) the state or governmental agencies; iii) a foreign firm; iv) a mutual fund; v) a pension fund; vi) a foundation or a cooperative; vii) a privately-held company; and viii) a legally-registered voting agreement among shareholders.

The data set reveals some interesting results. On average, 52.4% of the sample firms were involved in pyramidal arrangements. Despite the shrinking number of firms under pyramidal ownership over the period, they still represented 49.3 percent of the sample in 2002. Defining degree of pyramidal structure (DPS) as the number of intermediate companies between the firm under scrutiny and the LUS, the average DPS for the sample firms with pyramidal ownership structures (POS) is 2.06.

Table 1 displays the distribution of companies according to the DPS from 1997 to 2002. For firms with POS in 2002, 50 percent presented a DPS equal to 1; 22.4 percent a DPS of 2; and 13.4 percent a DPS of 3 (two firms had 8 intermediate companies and one firm, nine).

Almeida and Wolfenzon's theory implies that pyramidal ownership schemes may occur even though the controlling families have not exhausted all the legal possibilities to issue non-voting shares, the straight-

**Table 1. Degree of Pyramidal Structure: 1997-2002 (in percentage)**

DPS	1997	1998	1999	2000	2001	2002	Average
0	48.28	46.43	45.41	47.92	47.83	50.62	47.62
1	25.77	26.71	22.71	25.12	25.60	25.13	25.16
2	13.43	12.31	13.10	12.02	12.72	11.05	12.45
3	5.44	7.83	9.75	7.40	4.83	6.60	7.08
4	4.17	4.06	4.22	3.24	4.03	3.57	3.88
5	2.18	1.54	2.04	1.69	3.22	0.89	1.93
6	0.36	0.98	1.89	1.69	1.29	1.25	1.27
7	0.18	0.00	0.73	0.46	0.16	0.36	0.32
8	0.18	0.14	0.00	0.31	0.16	0.36	0.18
9	0.00	0.00	0.15	0.15	0.16	0.18	0.11

22. The methodology for calculating the ultimate shareholder's stake in the firm's cash-flow rights and voting rights is described in Aldrichi and Mazzer Neto (2007).

forward and cheapest way to separate voting power from ownership capital. To assess this prediction, firms involved in pyramidal ownership arrangements were classified according to the fraction of non-voting shares in their overall capital over the period 1997-2002. Table 2 shows that 29 percent of the sample firms with pyramidal ownership had issued non-voting shares equal to more than 60 percent of the overall shares (53 percent for pyramidal firms with non-voting shares exceeding more than 40 percent of their respective total shares). Both these fractions cast doubt on Almeida and Wolfenzon's contention. Nonetheless, the evidence that more than 27 percent of the pyramidal-owned firms issued only voting shares is compatible with their claim.

Furthermore, Almeida and Wolfenson assert that their theory, unlike the traditional view, fits recent empirical evidence showing that families controlling firms by means of pyramids hold high stakes in the firm's capital, involving small deviation between voting and cash-flow rights. The results found are inconclusive regarding the cash-flow rights of the largest ultimate shareholders. Although average cash-flow rights are significantly lower in pyramidal firms than in non-pyramidal firms, at least in firms with degrees of pyramidal structure ranging from 1 to 3 the LUS's average stake in the firm's capital is higher than 33 percent, being 47.9 percent for firms with a DPS equal to 1 (Table 3). Regarding the existence of a controlling shareholder, that is, a shareholder holding more than 50 percent of the voting capital, differences between pyramidal and non-pyramidal firms seem irrelevant: 78.6 percent of the sample firms have one controlling shareholder and 39 percent have a LUS owning more than 90 percent of the firm's voting capital, while for pyramidal firms these percentages are, respectively, 74.6 and 37.4.

There is a meaningful discrepancy between cash-flow rights and

**Table 2. Distribution of Pyramidal Public Companies According to the Fraction of Non-Voting Capital 1997-2002**

Fraction of Non-Voting Capital	% of Companies
Equal to 0	27.3
$> 0 \text{ e } \leq 20$	8.8
$> 20 \text{ e } \leq 40$	10.9
$> 40 \text{ e } \leq 45$	4.7
$> 45 \text{ e } \leq 50$	9.1
$> 50 \text{ e } \leq 55$	4.7
$> 55 \text{ e } \leq 60$	5.6
$> 60 \text{ e } \leq 66.67$	28.2
$> 66.67$	0.8
TOTAL	100.0

**Table 3. LUS's Average Cash-Flow Rights and Degree of Pyramidal Structure (%)**

DPS	1997	1998	1999	2000	2001	2002	1997-02
0	59.5	60.6	63.0	62.5	65.6	66.3	62.9
1	45.1	47.4	51.0	46.5	48.7	48.9	47.9
2	37.2	38.7	38.0	41.5	40.1	41.8	39.4
3	34.6	33.7	33.7	33.9	32.2	30.8	33.3
4	24.6	31.4	24.5	25.8	23.0	35.7	27.4
5	19.4	17.9	24.7	11.8	27.9	12.2	20.6
6	25.8	34.8	29.0	22.8	31.7	23.6	27.9
7	42.1	10.7	5.8	30.2	73.7	11.2	20.6
8	24.9	4.1	-	59.3	57.8	35.6	39.4
9	-	-	4.4	16.3	16.3	15.3	13.1
TOTAL	49.3	50.4	50.98	51.2	53.5	54.9	51.6

**Table 4. Cash-Flow Rights, Voting Rights, and Discrepancies between Rights Public Companies and Listed Firms Mean over 1997-2002 (Percentage)**

Variable	Type	Mean
Voting Rights	All Public Firms	73.3
	Listed	70.4
Cash-Flow Rights	All Public Firms	51.0
	Listed	46.1
Divergence	All Public Firms	22.3
	Listed	24.3

voting rights, being even higher, as expected, the divergence between pyramidal groups. The LUS's cash-flow rights and voting rights average, respectively, 51.0 and 73.3 percent, implying an average wedge between these rights of 22.3 percentage points. The highest average gap (27.1 percent) occurs for families, notably for those involved in pyramidal ownership (32.4 percent). Listed companies show a slightly higher average wedge of rights vis-à-vis the average public company (see Table 4).

Families dominate among the largest ultimate shareholders - 54.9 percent over the period 1997-2002. For pyramidal firms, families represent, on average, 63.8 of the largest ultimate shareholders, showing that pyramids are primarily built by family shareholders. Foreign investors (averaging 19.0 percent), governments (8.2 percent) and mutual funds (3.7 percent) followed in importance (see Table 5).

**Table 5. Identity of the Largest Ultimate Shareholders (Percentage)**

Category of the LUS	TOTAL
Government	8.2
Foreign Investors	19.0
Families	54.9
Foundations	1.8
Mutual Funds	3.7
Pension Funds	2.2
Privately-Held Firms	3.6
Others	6.6
TOTAL	100.0

### 5. Concluding Remarks

The Brazilian economy has undergone remarkable changes over the last 30 years. Firstly, the State stopped ruling the economic development strategy, leaving firms ample latitude for individually making decisions about allocation of their capital (de Castro, 2003). Trade liberalization, privatization of most of the largest state-controlled firms, and monetary stabilization have redefined the environment shaping firms' incentives and constraints, bringing about an outstanding restructuring at the corporate level, notably by means of mergers and acquisitions.

Moreover, the new corporate law (approved in 2001) as well as the creation of differentiated levels of corporate governance by the Sao Paulo stock exchange have imparted better governance standards, contributing to strengthen Brazilian capital markets and to the massive number of IPO's over the last three years. Also noteworthy is the striking stakes foreign investors have been acquiring in Brazilian firms. An open question is the impact of a capital market more willing to fund emerging and/or young firms on Brazilian business groups' structures and strategies.<sup>23</sup>

As regards Brazilian business groups' current structures and strategies, a number of characteristic features stand out. Firstly, families control the majority of the Brazilian groups. Secondly, state-controlled firms (such as Petrobras, BNDES, and Banco do Brasil) as well as other institutions over which the government has control (like pension funds of Banco do Brasil, Petrobras, and Caixa Economica Federal) have significant stakes in the largest "private" business groups. This ownership

23. As noted by Khana and Yafeh (2007, p.340), should internal capital markets be the main reason for the existence of business groups, it would be expected that they would shrink with the development of capital markets.

structure is, to a great extent, accounted for by the privatization model followed, designed to maximizing revenues to the government. Third, state-controlled groups have dramatically shrunk their share among the largest groups operating in Brazil. Fourth, diversification strategies vary widely among the sampled business groups. Whereas some of them are focused on specific sectors, others have a rather diversified range of businesses, probably on the grounds of risk sharing or economies of scope. Other groups, despite focusing on core businesses, also have subsidiaries or affiliates operating in (vertically) related industries, diversifying their activities around their main businesses perhaps for strategic motives, contractual shortcomings, or also scope economies. Fifth, most of the largest Brazilian groups have attempted to internationalize their operations. In many of them, foreign sales have yielded high revenues or represented a significant share in the firm's revenue. The other vehicle of internationalization, foreign direct investment, has been spearheaded mainly by Petrobras, Gerdau and CVRD, more recently followed suit by Votorantim, Sadia, Camargo Corrêa, Ultra, and Perdigão. Sixth, Brazilian business groups present a considerable longevity. The majority of them were created before 1950, state support being probably fundamental to ensure their development.

Finally, the examination of a data set built out of reports from hundreds of firms over the period 1997-2002 showed that pyramidal ownership structures are common among the sample companies. It is likely that pyramidal ownership structures in Brazil aim at different strategies of the controlling shareholders. Some probably use them as an "internal capital market" for facilitating the financing of new enterprises, as argued by Almeida and Wolfenson (2006). For others, pyramids may operate as a device for leveraging voting power from a limited capital stake in their firms, facilitating the expropriation of minority shareholders, as the traditional view emphasizes. They may still serve as a mechanism for ensuring the family's control over the firm, preventing other block-holders of shares from contesting it. Finally, tax avoidance should not be neglected as a motive lying behind pyramids.

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## 10 Comment

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I feel honored to speak as a commenter to this quite informative empirical analysis of Brazilian business groups. But first, I must confess that I am neither a Brazilian expert nor an economist specializing in Latin American studies, but I am just a researcher of law. My field is mostly Asia. So perhaps I am not qualified enough to comment on this very professional economic analysis, but kindly allow me to comment in my limited capacity mostly from a legal point of view.

I understand that the general implication of the first part of the presentation is that Brazil did well with Washington Consensus, and how to achieve economic success so far. But I have some question on the way of listing from some legal aspect, so let me make such points.

First, let me pick the observation of recent corporate law reform in Brazil. Though I do not know much about the details of the reforms, based on the information in the paper, I can well understand that these reforms have been directed mostly to the strengthening of minority shareholder's rights.

The paper has given a positive assessment on them based on the very facts that foreign investments have been increased after the reform. In this regard, one thing we lawyers always want economists to reorganize is that the strengthening of minority shareholder's rights or in the other words, corporate democracy is not in itself the ultimate goal of corporate governance. It is just a means and it is just one of the various possible means of corporate governance. We cannot be satisfied with just enacting law to protect minority shareholder's rights, but we have to test whether the minority shareholder's rights are actually strengthened by the law and whether these strengths in the minority shareholder's rights are really contributing to the ultimate goal of corporate governance.

Then what is the ultimate goal of corporate governance? Someone

will say that its efficiency in the performance will increase profitability of each individual corporation. But the others will say that it is the long and stable continuation of a corporation as a socioeconomic entity.

In any case, an assessment of corporate governance should not end in the check of foreign investor's minds but should reach to the evaluation of cause and effect between the specific legal reform and the corporate ultimate goal.

But if this is difficult for some technical reasons, then at least a lawyer wants economists to establish the direct relationship between a legal reform and its directly-intended specific outcomes, such as the protection of market for corporate control by hostile takeovers, or the increased number of shareholders derivative suits, and/or increased case of director's nomination by minority shareholder's activism.

If the economists cannot establish these direct outcomes of legal reform, then I think it will be our lawyers' turn to detect the weaknesses in the more micro level of individual legal designs, which might often include the overly deregulated neo-liberalists legal designs mostly developed in the US Delaware state.

We lawyers would also ask who the minority shareholders are in the reality of the corporate decision-making. They might not always comprise diffused shareholders as in the US security market in an idealistic view. It could be professional profit seekers such as hedge funds, in the reality of US security market, or it could be long-term policy-oriented institutional investors as in cases of UK and Europe, or it could be creditors and business counterparts in an industrial cross-shareholding culture like in Japan.

We, lawyers will also compare the legal designs mainly based on minority shareholder rights with other choices of governance designs in various contexts. Without testing all these points of varieties and diversities, I think we cannot simply rely on the positive reaction by foreign investors on the choice of legal reforms. So this is my first comment.

Then let me give another comment which is on the analysis of pyramidal structure of business groups in Brazil. This is the most interesting part because it provides a good basis for comparative study across regions, including Asia, which is my own field.

But as for the motives of pyramidal structure for my lawyer's eye, the economists' question of whether or not the expropriation of minority shareholder seems a bit simple. I would classify at least two different situations. First is where the pyramidal structure has been intentionally formed by the controlling owners, and second is where such pyramidal structure has been unintended natural result of interactions among originally independent companies.

For the first type of pyramids, I think for my lawyer's eyes, such pyramidal structure is nothing other than a legal device for controlling

shareholders to avoid the accusation of liabilities. For controlling shareholders, once they successfully acquire a corporate control by whatever choices of institution devices, either issuance of nonvoting shares or what else, they have to assume a risk to be accused as legally responsible for corporate decision-making. Because almost all corporate laws in the world have incorporated an idea of piercing the corporate way of limited liability, which is an idea to create an exception to the general principle of limited liability in order to avoid its abuse.

Accordingly, it is a natural reaction of controlling shareholders to purport to evade this liability, and the pyramidal structure seems to be one of the devices for them for this evasion. So, economists might see this evasion as a way of completing the expropriation of minority shareholders, but I would see it more as a way of expropriation of creditor's rights.

At the same time, I totally agree that there must be several different motivations of pyramidal structure, especially for the second type that I mentioned.

As in cases of Japanese manufacturing business groups, pyramidal structures have been naturally formed since long before their listing in the market, which implies that their intention has not been exploitation of minority shareholders but rather in another mode of corporate governance based on the mutual supervision among independent companies. I believe that this view has been supported by some empirical studies in Japan while applying the kind of transaction cost theory.

I have learned that we need more and more works to dig into the micro level of differences or typologies of business groups, such as organic groups, portfolio groups, family-owned, the policy-oriented, or whatever it is, whenever we analyze or compare the motivations, performance and/or any other outcomes of business group activities.

### **Response from Professor Aldrighi**

It is a puzzle why pyramidal ownership structures prevail in Brazil. Maybe an eclectic approach might cope with this puzzle. Tax motivation would probably be another reason why this type of arrangement is so widespread in Brazil.

I think that we economists can learn a lot if we begin to interact with lawyers. My analysis would be enhanced if I manage to deal with the telling comments made by Professor Kaneko.

### **Professor Takahashi**

We would say that economics should learn from the other disciplines to achieve our ultimate goals under this venture of the economists

of diversity. I think that the interaction between Professor Aldrichi and Professor Kaneko should be kind of model for the future.

### III Diversity of Financial Market and Global Stability



# 11      The Globalization of Bank Regulatory Policy and Diversity of Markets: Implications for Financial Risk Management

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## 1. Introduction

In recent years, the world's leading financial institutions have used a portfolio approach to risk measurement and management based on the Value-at-Risk (VaR) statistical concept. The main objective of using VaR analysis is to improve the safety and viability of the finance industry for investment and growth purposes. Basically, VaR estimates the worst loss under normal business conditions over a target horizon at a given confidence level. To put it differently, VaR is the  $q$ -th quantile of the probability distribution of profits and losses that can occur for a given portfolio during a specified time period, where  $q = (1-p)$  and  $p$  denotes a confidence level that reflects risk-averseness. VaR analysis is often carried out for a one-year holding period of credit portfolios and daily positions of trading portfolios with a 95 percent or 99 percent confidence level. VaR is also used to quantify operational risks related to internal control problems over a target horizon. In addition, VaR can be used to assess the risk characteristics of portfolios under extreme events by examining the tails of return distributions and considering the average of all losses that exceed the VaR threshold.

The VaR concept is widely adopted by regulators and the financial community for measuring and managing risk (see e.g. Jorion, 2006). In particular, it has been incorporated lately in the Bank for International Settlements (BIS) standards for market, credit and operational risks of regulated banks. A major advantage of VaR analysis is that it takes into account the correlations and cross-hedging between various asset categories, including financial derivatives, to give a realistic picture on risk-taking behavior. However, the implementation costs of a fully integrated VaR system can be substantial. Also, the use of plausible assumptions in quantifying risk is important for model reliability.



Although the risk modeling approaches within the VaR framework vary among the finance industry professionals, VaR still represents a major tool for the globalization of bank regulatory policy under the BIS standards. However, this does not mean that banks around the world will be homogenous with respect to portfolio allocation or risk-taking behavior. Rather, it means that banks will have similar risk management practices towards a more stable and efficient functioning of financial markets irrespective of the heterogeneity of their portfolio positions or risk profiles.

This poses various challenges at both the domestic and international levels in terms of the financial markets infrastructure. Specifically, global stability of the banking industry under the latest risk-based capital adequacy requirements by the Basel Committee on Banking Supervision (BCBS) known as the Basle II Accord would depend on the availability and sophistication of: (a) derivative markets for hedging risks, (b) credit rating agencies for producing information on the creditworthiness of debtors, (c) insurance products for safeguarding against extraordinary losses, (d) balance sheet information based on internationally-accepted standards for strong fundamental analysis, and (e) professional skills in modeling financial risks for devising portfolio strategies. However, diversity in the set up and working of financial markets suggests that adaptation to the Basel II Accord will vary among different country groups. In general, the advanced economies with well developed financial markets will be able to adapt faster and more fully to the international standards for risk management practices in banks. Also, banks in major financial centers will be generally able to operate under lower capital charges than those in underdeveloped markets.

The rest of the article is organized as follows. Section 2 gives a brief account of the Basel Accords on regulatory capital requirements for banks. Section 3 discusses the adaptation of regulated banks to international rules and standards of financial regulation in light of their market, credit, and operational risk management systems. Section 4 contains illustrations of risk modeling approaches under the Basel Accords that require data available from specialized firms in financial information, usually operating in well-developed markets. Section 5 concludes.

## **2. The Basel Accords and Global Financial Regulation**

Recent developments in bank regulatory policy are essentially attributed to the BIS risk-based standards for capital adequacy as reviewed in Jorion (2007). The Basel Accord of 1988 on capital requirements for credit exposures aimed at promoting the safety and soundness of the global financial system and became the standard for regulatory policy in the banking industry. It stipulated that banks must hold capital of at

least 8 percent of total risk-weighted assets in their loan portfolios. To calculate this, each asset is multiplied by a risk-weighting factor under a standardized approach to credit risk measurement. The risk classification of assets for capital charges did not differentiate though among the credit rating of the obligor.

As for exposure to market risks, such as changes in interest rates and the prices of securities and commodities, regulated banks have been required since the mid-1990s to hold capital against their trading books. This has been basically implemented through the use of VaR estimates as a benchmark for capital requirements. The capital charge for market risk is roughly set as the higher of the previous day's VaR and 3 times the average daily VaR over the preceding 60 business days, with 99 percent confidence level and a 10-day time horizon.

However, under the Basel II Accord, banks are allowed to use either a standardized or an internal models approach for the calculation of capital charges against market risk based on their own risk management system. The standardized approach is a simplified method whereby the capital charge is the arithmetic sum of market risks across the different sources or categories of these risks. Under the standardized approach, the regulatory capital requirement is 8 percent of the sum of interest rate risk, foreign exchange risk, equity risk, commodity risk, and option risk in the bank's trading portfolio. In contrast, the internal models approach allows more sophisticated methods of computation that account for correlations across risk categories and diversification but have to be checked for reliability, including back testing, and approved by the bank's regulator before use.

Under the schedule of risk weights for regulatory capital requirements, the 1988 Basel Accord sets a 100 percent risk weighting for private sector loans regardless of the obligor's credit rating. However, such a capital charge may induce banks to take excessive risk in their portfolio positions by shifting the loan mix towards riskier debtors for higher returns, given the same amount of regulatory capital. To correct for this, the Basel II Accord of 2004 accounts for the relative credit qualities of obligors based on their credit ratings, according to one of two approaches, namely, standardized and internal-ratings-based approaches. Table 1 shows the standardized risk weights of the Basel II Accord.

The standardized approach provides a schedule for risk weights whereas the internal-ratings-based approach allows banks to use their own internal credit ratings. The ratings must correspond to benchmarks for 1-year default probabilities. Also, the internal ratings methodology must be recognized by the bank's regulator and have been in place for at least 3 years. The BCBS provides a formula for the capital required for each interval of default probabilities. The formula is based on the

difference between unexpected losses and expected losses, after allowing for recovery rates according to the type of asset, in addition to a maturity adjustment (which is an increasing function of the maturity of the debt instrument).

The new accord also introduces capital requirements for operational risk. This kind of financial risk stems mainly from internal organizational problems, such as systems failure, trading errors, and fraud. It encompasses both the trading and non-trading portions of bank portfolios. The alternative methods for computation of the operational risk charge vary in their sophistication. They include the basic indicator approach that is based on an aggregate measure of business activity, the standardized approach that is based on dividing the bank's activities into eight main business lines, and the advanced measurement approach that allows banks to use their own internal quantitative models.

The capital charge under the basic indicator approach is a fixed percentage, which is currently set at 15 percent, of the bank's gross income. Although simple, this approach does not account for the quality of internal controls. Under the standardized approach, the capital charge is a fixed percentage of gross income for each of the designated business lines and varies between 12 percent and 18 percent. This approach remains a simplified one but reflects the varying risks across business lines. On the other hand, the use of the advanced measurement approach is subject to a set of quantitative and qualitative criteria for approval by the bank's regulator. Under this approach, insurance against stress loss may be used to offset up to 20 percent of the operational risk charge.

**Table 1. Standardized Risk Weights of the Basel II Accord**

Claim	Risk weights (percent)					
	AAA to AA-	A+to A-	BBB+to BBB-	BB+to B-	Below B-	Unrated
Short-term <sup>1</sup>	20	20	20	50	150	20
Banks, option 1 <sup>2</sup>	20	50	100	100	150	100
Banks, option 2 <sup>3</sup>	20	50 <sup>4</sup>	50 <sup>4</sup>	100 <sup>4</sup>	150	50 <sup>4</sup>
Sovereigns	0	20	50	100	150	100
Claim	AAA to AA-	A+to A-	BBB+to BBB-		Below BB-	Unrated
Corporates	20	50	100		150	100

Source: BIS Reports.

Notes:

1. Short-term claims are defined as having an original maturity less than three months.
2. Risk weighting based on the risk weighting of sovereign in which the bank is incorporated.
3. Risk weighting based on the rating of the individual bank.
4. Claims on banks with an original maturity of less than 6 months would receive a weighting that is one category more favorable than the risk weight shown above (e.g. 20 percent instead of 50 percent), subject to a floor of 20 percent.

The total capital charge under the Basel II Accord will then be the sum of charges for market risk, credit risk, and operational risk that serve as a cushion against unexpected financial losses. The total capital required remains at 8 percent of risk-weighted assets, but the calculation of risk-weighted assets is becoming more sophisticated. As a result, there is a growing need by banks to use quantitative models in financial risk management as discussed next.

### **3. Diversity of Financial Markets and Risk Management Systems**

The capital risk charges under the Basel II Accord may be computed by banks using alternative approaches that vary in their degree of complexity. However, the amount of regulatory capital requirements under the simplified standardized approaches is usually higher than that under the more sophisticated internal models approach. Since a higher capital-adequacy requirement represents a constraint on a bank's leverage ratio (i.e. the ratio of equity capital to total assets), the bank is better off if it adopts the internal models approach. But banks operating in underdeveloped financial markets will be less able to opt for the more attractive, internal models approach compared to their counterparts in well-developed financial centers for several reasons.

First, derivative markets where financial instruments such as options and futures that are useful for hedging strategies can be traded do not exist in many developing economies. This restricts the banks' ability to benefit more fully from the diversification of risks in their portfolios when computing VaR for regulatory capital requirements. In this connection, it is not very meaningful to use and commit resources to the development of sophisticated quantitative models when the bank portfolio consists of traditional assets that often do not require complex pricing methods.

Second, the financial markets in many developing economies lack rating agencies that provide important information on the credit quality of potential bank customers, the transition probabilities of obligors from one risk class to another, and recovery rates in the event of default. These types of information are necessary when computing the probability of default, portfolio losses and credit VaR using stochastic simulation methods.

Third, the insurance market is often underdeveloped and lacks competitiveness in many developing economies, partly because of low income levels. Under these conditions, banks are less likely to purchase insurance at a reasonable premium as a buffer against severe operational losses. Again this limits the banks' use of sophisticated quantitative models for computing stress loss.

Fourth, the companies in many developing economies produce their

financial statements using accounting practices that are not necessarily in line with the internationally-accepted standards, including disclosure rules. The balance sheet information is also often available with a considerable time delay. This restricts the banks' ability in carrying out strong fundamental analysis for strategic asset management and weakens the rationale for using advanced VaR analysis.

Fifth, the professional skills in quantitative risk management are generally scarce in many developing economies, as such a field of study is often lacking in their finance curriculum. This restricts the ability of banks to develop reliable models for measuring, pricing, and managing financial risks at least in the near future. It is also a problem for the banks' regulator that has to check the models' validity before approving them for use.

#### **4. Illustrations of Risk Modeling Approaches**

This section discusses some of the approaches developed in the finance industry for modeling risk under the Basel Accords. It contains illustrations of market, credit and operational risk modeling and VaR calculations. As will be seen, the implementation of VaR analysis requires data bases that are often developed by specialized firms in financial information, such as credit rating agencies, operating in well-developed markets.

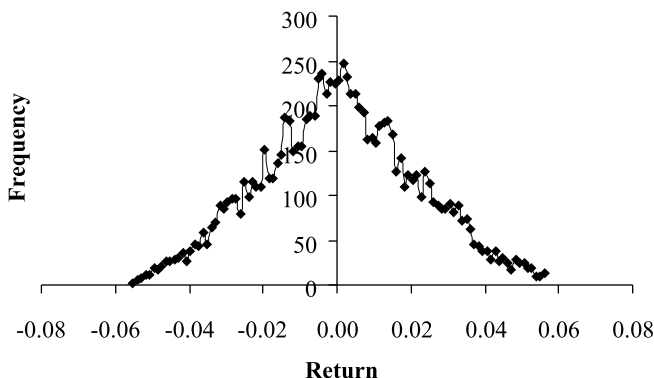
##### **4.1. Market Risk**

Market risk has to do with unexpected changes in financial prices or rates. Bootstrapping is one possible approach to calculate VaR of a trading portfolio consisting of various financial assets. The bootstrapping method of computing VaR is based on stochastic simulation of portfolio return by random reshuffling of historical data. The returns distribution is generated by random draws from observed data series with replacement. Unlike Monte Carlo simulation, bootstrapping does not draw samples from a hypothesized probability distribution (Davidson and McKinnon, 2004, Ch. 4).

Consider, for example, a bank that holds a portfolio of two risky assets. It has a long position in an index fund denominated in domestic currency, which is considered here to be the Egyptian pound (LE), and a short position in a zero-coupon foreign bond denominated in US dollar (US\$). The bond has a face value of US\$100 and a three-year maturity. To calculate the current portfolio value in domestic currency units, the bank discounts the bond value at the dollar interest rate and multiplies the outcome by the LE/US\$ exchange rate.

Now consider data on interest rate, exchange rate and index prices

Figure 1. Bootstrapped Return Frequency Distribution



for 40 business days from early May to end-June 2003, for example, that can be used for generating random portfolio returns. Using the bootstrapping method, these financial time series are reordered 10,000 times and the portfolio value is calculated in each replication. Figure 1 plots the bootstrapped return distribution, which is fairly symmetric. The 5 percent VaR of the distribution is -3.5 percent. This means that, under normal market conditions, the bank may lose more than 3.5 percent of its investment with a probability of 5 percent.

#### 4.2. Credit Risk

Credit risk arises when debtors are unable or unwilling to meet their financial obligations. If debtors default or are downgraded by credit agencies, the market value of their obligations usually fall and debt-holders are exposed to significant losses in their portfolio positions. To price and control potential losses from default, risk managers are increasingly relying on quantitative assessment of credit risk with emphasis on portfolio VaR approaches. In particular, the measurement of financial institutions' exposure to market, rating change, and default risks on a portfolio basis helps managers to examine benefits from diversification.

Credit risk management is principally concerned with the loss in value of a loan because the debtor has either defaulted or has suffered a credit migration, in which case the probability of a default will increase. To quantify credit VaR, financial institutions need information on the probabilities of a change in credit rating and on the discount factors for bond ratings (or debtor risk categories in case of bank loans). An estimate of the loan recovery rate in the event of default is also needed. These types of information are generally available from credit reference agencies.

### Monte Carlo Simulations

The computation of credit VaR using ratings transition probabilities of the obligors is based on stochastic simulation methods as in the CreditMetrics approach discussed in Hull (2006, Ch. 20) and Jorion (2007, Ch. 23). For credit portfolios, the returns distribution is typically non-normal. Specifically, credit returns are skewed such that the portfolio will have above average returns in most cases and will make a loss in only few cases. Also, although the probability of making losses is small, the probability that the credit portfolio will make a large loss is fairly high. The Monte Carlo simulations method is sufficiently flexible to deal with these credit risk characteristics.

Consider a credit portfolio composed of two bonds or bank loans with a three-year maturity. Suppose that bond 1 is BBB rated and bond 2 is CCC rated in the initial period, where the rating system ranges from AAA at the top to CCC and default at the bottom category. The interest rate is 10 percent on bond 1 and 12 percent on the riskier bond 2. Table 2 gives the transition probability matrix of the bond ratings. As shown, the transition probabilities are adjusted to standard deviations using the normal distribution. This allows calculating how many standard deviations are necessary before a loan moves up or down to new credit ratings. For example, Table 2a indicates that if the return on bond 1 moves 2 standard deviations above the mean, its credit rating will be A.

The next step in credit risk estimation is to generate a large number of random variables using Monte Carlo simulations. In each simulation, the random draw from a normal distribution will fall into one of the standard deviation regions of Table 2 and hence the associated credit rating category of the bond is determined. The discount factor for each of the bond ratings are then used to estimate the present market value of the loan cash flows for each year through maturity. Table 3 gives the

**Table 2a. Probability of Credit Migration for Bond 1**

Rating category	Probability	Cumulative probability	Number of standard deviations	
			from	to
AAA	0.0005			
AA	0.0030	0.9995	3.29	2.70
A	0.0625	0.9965	2.70	1.51
BBB	0.850	0.934	1.51	-1.38
BB	0.050	0.084	-1.38	-1.83
B	0.020	0.034	-1.83	-2.20
CCC	0.004	0.014	-2.20	-2.33
Default	0.010	0.010	-2.33	

**Table 2b. Probability of Credit Migration for Bond 2**

Rating category	Probability	Cumulative probability	Number of standard deviations	
			from	to
AAA	0.0010			
AA	0.0015	0.9990	3.09	2.81
A	0.0025	0.9975	2.81	2.58
BBB	0.0150	0.995	2.58	2.05
BB	0.020	0.980	2.05	1.75
B	0.100	0.960	1.75	1.08
CCC	0.700	0.860	1.08	-0.99
Default	0.160	0.160	-0.99	

**Table 3. Bond Ratings and Discount Factors**

Rating category	Year 1	Year 2	Year 3
AAA	1.051	1.055	1.059
AA	1.056	1.060	1.064
A	1.058	1.062	1.066
BBB	1.060	1.064	1.068
BB	1.062	1.066	1.070
B	1.064	1.068	1.072
CCC	1.074	1.078	1.082

discount factors for bond ratings in each year. It assumes that investors are risk averse and so require a higher risk premium to hold riskier assets. The table also reflects an expected increase in interest rates as the yield curve is upward sloping.

This Monte Carlo experiment is replicated 10,000 times taking into account the correlation between the two bonds via the Cholesky decomposition method (e.g. Press et al., 2007, Ch. 2). Precisely, correlation between the two assets is given by

$$\begin{aligned}
 u_{1,t} &= \varepsilon_{1,t} \\
 u_{2,t} &= \rho\varepsilon_{1,t} + \sqrt{1-\rho^2}
 \end{aligned}
 \tag{1}$$

where  $\varepsilon_{1,t}$  and  $\varepsilon_{2,t}$  are two independently random numbers from a standard normal distribution, and  $\rho$  is the correlation coefficient between the variables  $\varepsilon$ . In practice, a proxy estimate of  $\rho$  may be obtained from the correlated equity returns of the debt issuers. Assuming that the nominal value of each bond held in the portfolio is US\$1 million, that the default recovery rate is 60 percent, and setting the correlation coefficient of Cholesky decomposition at 0.5, the cutoff value of the credit portfolio



at the 95 percent confidence level is US\$1,680,090. Thus, the credit portfolio VaR is US\$319,910 at 5 percent. This means that the maximum loss from holding this portfolio under normal business conditions may exceed US\$319,910 with probability 5 percent.

### 4.3. Operational Risk

Operational risk arises from internal organizational matters such as systems failures, flawed valuation models, and trading errors. It is often less visible and harder to quantify than other sources of financial risks and may be managed by contingency plans. However, VaR approaches can be used to estimate model risk as a potential operational problem when the valuation of portfolio positions is based on inappropriate assumptions. Model risk also takes the form of potential losses from arbitrage attack by competitors with better models or from inadequate skills at using models.

### Back Testing

The evaluation of model performance using market data may take place via back testing. It involves testing how accurate the VaR estimates would have been in the past. For instance, if a financial institution is calculating a daily portfolio VaR at 1 percent, then back testing would involve looking at how frequent the loss in a day exceeded the VaR estimate. If this occurred on nearly one percent of the days, the institution may conclude that the methodology for calculating VaR is valid at the specified confidence level. Otherwise, the VaR calculation methodology is doubtful (see Jorion, 2006).

Consider a bank that holds the market portfolio and is calculating the daily VaR at 1 percent. Now using data on the Egyptian capital market index (CMI) as a measure of the market portfolio's value for the period July 2002—June 2003 with a total of 245 business days, the portfolio VaR estimate may be based on stochastic simulation of the mixed Gaussian-Poisson process

$$dP = (\alpha - \lambda k)Pdt + \sigma PdZ + PdQ \quad (2)$$

where  $dP$  is the change in the portfolio value  $P$  in an infinitesimal time interval  $dt$ ,  $\alpha$  is the expected rate of return on the portfolio per unit time,  $dZ$  is the increment of a standard Gauss-Wiener process,  $dQ$  is the increment of a continuous-time Poisson process,  $\lambda$  is the mean arrival rate of the Poisson-distributed event,  $k$  is the average percentage change in the portfolio value if the Poisson event occurs, and  $\sigma$  is the volatility of the Wiener process. It is assumed that the Poisson process is

distributed independently of the Wiener process such that  $E(dq dz) = 0$ , where  $E$  is the expectation operator.

Equation (2) is a mixed diffusion-jump process that accounts for rare events as discussed in Merton (1982). Specifically, changes in the portfolio value are small most of the time and are modeled by the Wiener process whereas large changes in portfolio value are rare events and are modeled by the Poisson process. This mixed stochastic process allows for upward as well as downward jumps and is particularly suitable for returns distribution in emerging stock markets, which usually exhibits leptokurtosis or thick tails and non-normal characteristics as documented in Bekaert et al. (1998).

For this simulation, the jump size is assumed normally distributed,  $N(0, 0.01)$ ,  $\Delta t = 1/245$ , and the other parameters are set at  $\alpha = 0.075$ ,  $\sigma = 0.047$ ,  $\lambda = 0.5$ , and  $k = 0.1$ . The values of the expected rate of return  $\alpha - \lambda k$  and volatility  $\sigma$  of the diffusion part of the portfolio return process are calculated from previous year's data on CMI after separating jump observations. For present expository purposes, a rough way for identifying jump observations in the data series is to consider the portfolio returns in excess of 4 standard deviations as representing rare events. Based on these assumptions, the computed daily VaR at 1 percent consistently exceeds the daily actual losses during the portfolio holding period. Hence, with appropriate parameter values, the bank can rely on this methodology for estimating VaR. In this sense, back testing helps in managing operational risks from model misspecification.

## 5. Conclusion

The Basle Accords have the objective of promoting the global stability of financial markets. The capital adequacy-requirements under the Basel II Accord are based on market risk, credit risk and operational risk charges. These capital charges can be computed under alternative quantitative approaches. However, the more sophisticated, internal models approach that allow banks to develop their own risk management systems pays off in terms of higher leverage ratios. The operating banks in major financial centers are more likely to benefit from this approach than those in less developed financial markets, given the availability of financial products and professional skills. For the developing economies to increase their benefits from the globalization of bank regulatory policy, they need to adopt policy reforms that upgrade their financial markets' infrastructure to a level suitable to the recent developments in the finance industry.

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## 12      Comment

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This is a very useful overview of banking and financial regulation in a global context to further think about the issue of diversity in the financial aspects. Let me start with a very quick summary of the paper.

First, as a background, the Basel Accord was introduced in 1988 and the arrangement was modified in 2004, which is called Basel II. The idea was to introduce a more relevant and sophisticated way to measure risks of individual banks and to promote global financial stability further. The main pillar of this Basel II is the same as before, namely the capital requirement ratio which is the bank capital over risk-weighted asset should be larger than 8%. In the Basel II Accord, the denominator in this capital requirement ratio must take into account three aspects; credit risk, market risk, and operational risk. Especially, the credit risk aspect is something that is very much improved and individual banks can select either standardized risk weights or internal rating based approach. That is the new development to have a more stabilized global financial system.

It is note worthy that advanced statistical model “value at risk” or “stress test”, can be used to measure creditrisk in the internal rating based approach.

The main argument of this paper is that these benefits of Basel II arrangements, especially those of the internal rating approach, may be limited to some of these regulated banks in developing countries. Five characteristics or issues are raised in developing countries banking.

The first is the lack of derivative markets for hedging strategies. The second is lack of credit rating agencies. The third is underdevelopment of insurance market. Fourth is accounting practices, not in line with international standards. Fifth is scarce professional skills in quantitative risk management. These issues are raised so that all these derivative markets or credit rating agencies, all these aspects are not ready yet

for these developing countries' banking. That is the basic argument that I understand in the paper. Again, this is a very useful overview to highlight the difference between developed countries and developing countries' banking practices and to understand the diversity in that respect.

I have three questions or comments. The first one is the comparison between standardized model and internal based model. As I said that in the Basel II arrangement, each bank can select either of them. My question is whether this internal based approach is really superior to standardized models in terms of risk management or overall performance. In the main argument, the discussion seems to be based on the presumption that the internal-based approach is superior to standardized approach because standardized approach requires a higher capital ratio. But requiring a higher capital ratio may be in some sense more robust to risks or some instable situations. I wonder if there are any discussions over which one is really superior, or any actual evidence that the standardized approach is less effective than the internal model. That is my first question.

The second question is about the presence of global financial institutions in developing or emerging economies. The question is how dominant are they in developing or emerging countries? I have very informal observations, for instance, in the East Asian emerging economies there are many global financial institutions like Citibank or Barclays. All these global financial institutions presumably are able to adopt internal based model to measure risks in emerging economies. If these international financial institutions are dominant in these economies, then can we say that there is no worry for these concerns raised in your main argument or something? That is the second question.

Then my final comments or concerns are related to the very recent subprime collapse and associated turmoil of international financial system. This may be too big to ask you, but how would you assess the role of bank regulatory policy in these events? I think the question have some relevance because all these problems took place in really highly sophisticated global financial institutions in developed economies. We seem to be aware that value-at-risk strategies or stress test may not be really effective for such huge cross-border shocks. The stress test is designed to measure the risks in some extreme cases. But I learned that the stress test is designed only for idiosyncratic large shocks rather than the overall global shocks. So it looks like this stress test is not really effective to cope with such huge uncertainty or downward shocks.

It is becoming apparent that the liquidity issues are also relevant to measure credit risks. Liquidity issues are related to securitizations of all these financial instruments in both asset side and liability side. As you can see, all these financial instruments are securitized on asset side and

also asset-backed securities, typically commercial papers, are issued on the liability side. So all these liquidity issues are related to the measurement of their credit worthiness and should be taken into consideration as well. The Basel Committee actually has some recent report on liquidity risk, which came out on February 2008. This kind of consideration should be added to this existing Basel II arrangement. Overall, if you have any comments on the role of bank regulations, that would be very helpful.

### **Response from Professor El-Shazly**

First, Professor Miyao clarified the main points of the presentation very well. To my knowledge, there is not so far an empirical work on whether the internal-ratings based approach is superior or not, because the application of the Basel II Accord is quite recent. But from the amount of committed resources by the international leading financial institutions to develop their internal models for risk management purposes, one expects that banks will make use of these models in conformity with the regulator's guidelines. So at least for sometime we will have to live with it until there are reliable empirical results on whether banks should go ahead in this quantitative model direction or not. Time will show whether the internal models approach is a good idea.

Concerning international banks and their operation in developing countries, their usual policy is to carry out the technical work on risk management at their headquarters. The staff responsible for modeling financial risks is usually recruited at the headquarters of the international banks in the major financial centers such as London or New York. This re-emphasizes or reinforces the diversity and segmentation of markets when it comes to the globalization of bank regulatory policy.

It is true that the majority of banking crises took place in developed economies. The Basle Accords, which aim at promoting the safety of the international financial system, appear to overlook the diversity of markets and that the developing economies may be less able to adapt to the new regulatory requirements.

For liquidity risk, there is little treatment of it under the Basel Accords. However, regulations on this type of financial risk should be clearly incorporated in the Basel Accords towards a more comprehensive approach to risk management.



# 13            Determinants of the Type of Financial System; A Survey

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This brief paper examines the literature that addresses the problem of why financial system differs among countries, or why the evolution pattern of financial system diverges among economies.

The paper is composed of four parts. At first, I will discuss two basic issues of why a financial system is needed. Secondly, I will discuss that the political process and economic model matter. Third and fourth, I will talk about the economic factors and, then, the political factors, which determine the type of diversity of the financial system.

Let me start from a very basic but somewhat strange theme of the necessity of financial system. In the 18th Century, David Hume and Adam Smith discussed that in order to have a workable market system, rule of justice is necessary. Such rule composed of securing of property right, deterrence of violence, and the enforcement of contract. They considered that these three conditions or rule of justice are essential for the working of a market system. But in the case of the financial system, the implementation of the rule of justice does not seem to be sufficient. Why? The reason for this lies in the problem of asymmetric information and incompleteness of contract. Owing to these two problems, which cannot be clarified by the rule of justice, good projects may not be undertaken, and necessary contracts may not be made.

Of course, as Dixit recently argued, private ordering, such as reputation or multilateral punishment strategies, is workable in the case of the community-based system. But this kind of relationship-based system is not sufficient when an economy becomes rule-based, or it goes into a stage of the globalized transaction. Therefore, it seems to be necessary to cope with asymmetric information or incomplete contract problems with a financial system. It is composed of judiciary related to financial transactions, accounting systems, banks, various financial instruments,



security exchanges and so on.

As it is well known, financial system must carry out many functions as emphasized by Merton and Bodie. A financial system must: first, provide a way to clear and settle payments; second, pool funds for large-scale enterprises; third, transfer resources across time and space; fourth, manage uncertainty and control risk; fifth, convey price information; and finally, deal with the problems posed by asymmetric information and principal-agency relationship.

As Merton and Bodie has emphasized, these functions can be carried out by various financial systems. Financial system is defined as a combination of financial organization and financial markets.

In principle, there are many kinds of financial systems, but in order to make the discussion simpler, I will follow Allen and Gale's classification and assume that there are two basic types of financial system; one is bank-centered financial system, and the other is market-based system. These two types of financial system differ in the method of coping with asymmetric information and incomplete contract problems.

Let us turn to the second part of this paper, namely the political process and the economic models matter. I think that the development of financial system occurs in two ways or in two processes. The first process is concerned about a maximizing behavior of private agents: when profit accruing from a new financial system exceeds the cost of the establishment of a new system, then private agent might be motivated to devise new financial institutions to move to new financial system.

The second process concerns government that is in charge of the supply of institutional infrastructure. An important part of institutional infrastructure is the financial system. Therefore, the evolution of financial institution is determined also by the political decision by the government. Because of the second factor, political process is a very important factor in the development of the financial system or in the process of divergent evolution of the financial system among economies.

The importance of the political process was recently emphasized by Rajan and Zingales in a very interesting book entitled "Saving Capitalism from the Capitalists." This point was examined in a broad framework by North in his 1981 book, the emphasized that the difference in the institution determines the fate of nations, and rise and fall of nations. Aoki examined in a broader framework that nation-specific institutions do not necessarily converge to the global standard, and there is a room for the coexistence of various institutions in the global equilibrium.

Let us discuss further about how the evolution of the financial system depends on the political process. As I have said, the decision by the government is, of course, dependent on political process. Political process, in turn, depends on interest group politics in the case of spe-

cial-interest politics, namely policy determination that is related to a particular group of people. Also, it depends on the ideology held by political parties and bureaucrats in the case of general-interest politics. General-interest politics is policy determination that is related to the economy or nation as a whole. Douglass North has argued that the ideology in such context is composed of value system as well as economic models. Economic models are used to decipher environment, surrounding economic agents or the politicians. Therefore, the evolution of financial institution depends upon knowledge as well as economic models.

Moreover, economic models itself evolve over time, so that instrumental rationality or the use of correct model is defined only with respect to a given state of economic ideas. So it seems that correct model for a financial system in the 19th century is different from the correct model in the modern world. This kind of evolution of the knowledge of the financial system also should be taken into account when we discuss divergence of the financial institution.

Let us summarize how the evolution of the financial system takes place. People or governments are motivated to improve financial system usually because of the exogenous changes in transaction cost owing to development of judicial system, progress in information and communication technology, or development of the financial economics. Technology in finance, may be one of the exogenous shocks, which give incentive to the economic agents or politician to engage in financial innovation. I think that this would be an important mechanism of the evolution of the financial system.

Let us now turn to the determinants of the types of the financial system. As I have said, determinants are classified into two parts; One is economic factors and the other is political factors. Let me follow the very basic framework developed by Gurley and Shaw several decades ago, and classify the economic factors in three parts; first is the saving mobilization, second is transformation of funds, and third is allocation of funds to investment purposes.

Let me start from the saving mobilization. This is related to the real interest rate issue. McKinnon and Shaw emphasized that the impact of inflation is important in saving mobilization. They proposed to keep positive real interest rate in order to facilitate saving mobilization of developing countries.

Secondly, the degree of risk aversion was recently emphasized as one of the factors responsible for the saving mobilization. Recently, Mark Roe, Pretti, von Thadden and others emphasized that the degree of risk aversion by asset-holders is an important factor of evolution to cause divergence in the financial system among the economies. They argued that an experience of hyper-inflation or an experience of very hard

shock or an increase in the share of human capital in total assets make people more risk averse. This makes saving mobilization by the banking system more desirable for those people.

The reason for this is as follows: Experience of the hardship makes people extremely risk averse, but compared with financial assets, the degree of diversification of the human capital is very limited. So, risk cannot be decreased by means of diversification in the case of human capital. At the same time, a considerable part of human capital is in the form of industry- or firm-specific skills. It is not marketable. So, when the share of human capital in total assets increases, people become more risk averse and they are averse to the use of the market mechanism, which may be liable to cause risk in their assets.

Thirdly, corporate governance is very important in saving mobilization because of the exploitation of minority asset-holders. Recently, the exploitation of minority shareholders by controlling shareholders is emphasized by a famous series of papers written by LaPorta, Lopetz de Silanes, Shleifer, and Vishney. They emphasized the legal origin view in the sense that the common law countries are more suitable for the development of financial markets because of lower level of regulation, and flexible check of insider trading. In common law countries, laws are developed by the judgment of the judges and not stipulated by the law scholars. So, the judges can very flexibly apply their judgment with respect to the insider trading. This caused development of the market more prominent in common law countries, they argued.

Also the transformation of fund is carried out quite differently by the two types of financial system. Pooling of savings in order to finance large enterprises is done by quite a different way in two basic types of financial systems.

In the case of Japan, a typical case of the latecomer economy, the role of banks has been very important, just as emphasized by Gershencron. But the new issue market for securities has played a very important role in the case of the US. This is dependent on the role of middle class investors, but Berle and Means argued that this resulted in the delusion of stockholders monitoring and decline in the control right of the stockholders. Anyway, pooling of savings is quite differently carried out in two types of financial systems.

Also the transformation of fund is done quite differently between the two types of financial system. The US depends on the second security market; in Japan it is different. The main bank system is emphasized some 10 years ago, but recently there are two basic objections. One is by Weinstein and Yafeh. They emphasized the exploitation of corporate firms by main banks.

Secondly, Allen and Gale examined an economy at a stage of front-runner, where hard data about possible technological possibility is

scarce. In that case, the bank-based system is not effective, efficient, Allen and Gale argued.

Let me conclude and move on to the last section, political process and the type of financial system. The economic factors that I discussed above determine the type of financial system. This is because when democracy with homogeneous voters prevails or autocracy without rivals, then purely economic factors may determine the financial system. But, when democracy is composed of heterogeneous voters, interest groups, ideology matters and the preference of median voter become crucial.

Moreover, when autocracy has its potential rival, then financial policy or institution building is influenced by short-term rent maximization by autocrat, the dictators. Therefore, political process matters in such cases.

In addition, there is the interest groups theory: the Olson=Stigler hypothesis that a small group is politically more influential than a large interest group. But as Douglass North emphasized, although in the local or specific-interest politics the Olson=Stigler hypothesis is useful, in more general matters, ideology and norm matters. Rajan and Zingales uses the Olson=Stigler hypothesis in the explanation of the phenomena of great reversal in the development of financial market during the 1930s.

Recently, the median voter theorem is utilized with respect to the evolution of financial system. For example, Mark Roe said that the emergence of managerial capitalism in the US during the 20th century was due to the middle-class voters' behavior. Also, with respect to the great reversal phenomenon emphasized by Rajan and Zingales, Perotti and von Thadden recently argued that the behavior of median voters, whose asset composed of a very risky firm-specific human skill was responsible for the repression of the financial market during the 1930s.



## 14      Comment

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This paper is an extensive survey concerning determinants of the type of financial systems. The types of financial system are divided into two types, bank-centered system and market-based system. The paper reflected the quality of the work in his area of research.

This paper puts an emphasis on two approaches: “incomplete contracting” approach and political approach. I, therefore, would like to ask him two questions concerning the approaches.

First in the third section, Professor Teranishi discusses economic factors and the type of financial systems. The argument on minority shareholders is important because it is associated with the problem of efficiency and justice. His argument is exclusively based on the legal origin view. However I think his analysis will become fruitful by adopting incomplete contracting approach.

Second in the fourth section Professor Teranishi discusses political process and the type of financial systems. Especially it is noteworthy that he refers to the Washington Consensus. Originally, it meant that World Bank and IMF are deeply associated with economic policy planning of developing countries in exchange for their economic assistance. Of course recently such idea has also been changing within World Bank and IMF. Nevertheless, globalization seems to spread. Under globalization can the convergence of financial systems occur? If it happens, what factors does it depend on?

### **Professor Teranishi**

I should say that I am not completely happy with the legal origin theory, and your emphasis on the incomplete contract aspect regarding minority shareholders seems to be worth consideration. Let me think

about it in my future research. Your second point is exactly what I want to deliberate in this project. It is really an important issue.

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