# UT Soft Law Review

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**The 6th Annual BESETO Conference 2012 :
Economic Regulation and the Rule of Law**

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### The 6th Annual BESETO Conference 2012 :
### Economic Regulation and the Rule of Law

# A Baseline for Analyzing Exploitative Abuse
# of a Dominant/Superior Position

**Tadashi SHIRAISHI**[*]

## Summary

The emerging importance of laws regarding exploitative abuse continues to prevail; not only the European Union but the United States, the jurisdiction least concerned about this type of abuse, is interested in dealing with standard-essential patents, and such cases include issues of exploitative abuse of a dominant position. The jurisdictions that already regulate "superior" positions are equipped with abundant cases and practices useful to this study. Taking Japan as an example, I show that these jurisdictions have the same framework as jurisdictions that regulate "dominant" positions, the analysis of which could contribute useful thoughts and experiences to the discussion of exploitative abuse.

## I.  Introduction

Most anticompetitive conduct prohibited by competition law falls into the category of collusive agreements or exclusionary conduct. Unable to ignore their competitors, violators collude with effective competitors and/or exclude innovative ones.

Exploitative abuse is unique in that it occurs when the violator is in a position where it can ignore its competitors to a certain extent. Free from competitive constraints, the violator can unilaterally exploit its trading counterparts.

The most serious problem in the current laws on exploitative abuse is the lack of an analytical framework. This is why some jurisdictions regard their laws of exploitative abuse as different from those of other jurisdictions.

I would like to take a quick look at the situations of exploitative abuse in the United States (US) and the European Union (EU) before I analyze the situation in Japan, a jurisdiction with abundant experience in prohibiting "abuse of a superior position." These observations will

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\*   Professor, University of Tokyo Graduate Schools for Law and Politics. This essay is based on the prepared remarks for the 6th Annual BESETO Conference, "Economic Regulation and the Rule of Law," Peking University, November 4th, 2012.

hopefully establish an adequate baseline for discussing exploitative abuse.

## II. Situations in the United States and the European Union

### i. Ignorance and Indifference

The US, the mother jurisdiction over competition law, has historically ignored the idea of regulating exploitative abuse. It is not easy to prove the absence of something, but there are some cases that clearly illustrate this void.[1]

When we ask the general public what they imagine by the jargon "tying arrangement," not a few of them, even in the US, would imagine a situation where someone is compelled to purchase an unwanted product ("tied product") in addition to another product that the purchaser really wants to acquire ("tying product"). However, under US antitrust law, such imagination is a rudimentary mistake, and students are instructed to think about a situation where competitors of a tied product are excluded by a tying arrangement.[2]

In such a jurisdiction, the alleged victims of unwanted tying are required to show "injury to competition." They are forced to fabricate odd stories of injuries to tied product competition in spite of the fact that it is simply unwanted, usually causing them to lose their lawsuits.[3]

Another illustration of absence is the doctrine shown by *Intergraph*,[4] among others.  For an exclusionary conduct to be illegal under US antitrust law, the alleged violator and the alleged victim have to be in a competitive relationship, in other words, in a situation where they compete for the same customers.  This impressive feature of US antitrust law does not seem to draw enough attention, probably because it is common sense in the US and does not require elaboration. This requirement for a competitive relationship and the ignorance of exploitative abuse are common in showing that the law is concerned only about collusion or exclusion.[5]

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1   According to an ICN report, US competition authorities indicated that the jurisdiction did not have exploitative abuse regulation.  "ICN Special Program for Kyoto Annual Conference: Report on Abuse of Superior Bargaining Position" (Prepared by Task Force for Abuse of Superior Bargaining Position, 2008) (hereinafter cited as "ICN Kyoto Report"), p.10.

2   An impressive example is Jefferson Parish Hospital District No. 2 v. Hyde, 466 U.S. 2 (1984), where surgery was the tying product and anesthesiological service was the tied product. Because no one would say anesthesiological services are unwanted when undergoing surgery, most people, at least in Japan, would be surprised at the fact that US antitrust experts discuss such a case. More importantly here, this is the only perspective which US antitrust experts talk about regarding tying arrangements.

3   Brantley v. NBC Universal, Inc., 675 F.3d 1192, 1203 (9th Cir. 2012)("'[C]ompelling the purchase of unwanted products' is not itself an injury to competition."), *cert. denied*, 133 S.Ct. 573 (2012).

4   Intergraph Corp. v. Intel Corp., 195 F.3d 1346, 1357-1358 (Fed.Cir. 1999).

5   In contrast, in the EU and Japan, there is a completely different pattern of common sense thinking that a

The EU competition law, probably influenced by US jurisprudence, used to show a certain amount of indifference to exploitative abuse, in spite of the fact that it has had a treaty statute, currently Article 102 TFEU, and some legacy cases.[6] Article 102 is better known as a vehicle for regulating exclusionary abuse, rather than exploitative abuse.

### ii. Emerging Importance

Unlike in the past, vigorous discussions about exploitative abuse are now occurring in the EU. Although it is difficult to champion only one cause, we should at least mention the issue of standard-essential patents (SEPs).[7] In most of these legal battles, not only the alleged violator but also the alleged victim is well financed. Such cases have urged scholars and practitioners to write articles on exploitative abuse.[8] If the two sides are in a competitive relationship, an exercise of SEPs could easily be categorized as exclusionary conduct. If not, however, such a case has to be categorized as exploitative abuse.

Facing such a globally important issue, even the US competition authorities have been deeply concerned about SEPs that might give rise to cases with exploitative tastes.[9]

## III. Exploitative Abuse of Superior Position: Japan as an Example

Some jurisdictions have prohibited abuse of a *superior* position.[10] These competition authorities tend to emphasize the difference between "superior position" and "dominant position," so they can enjoy a loose requirement for prosecuting illegal conduct.[11] They also tend to focus on protecting small- and medium-sized enterprises (SMEs) under political pressure.

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competitive relationship is not a requirement for finding a violation. The absence of the requirement in those jurisdictions is supposed to be fundamentally related to the existence of exploitative abuse regulation there.

6　The Court of Justice, in dicta, allowed a room for accusing excessive pricing. Case 27/76 *United Brands v. Commission* [1978] ECR 207, paras. 250-251.

7　The cases include the suspended investigation of Qualcomm (November 24, 2009, MEMO/09/516) and the commitment decision on Rambus (December 9, 2009, Case COMP/38.636).

8　Formerly, in contrast, refusals to license intellectual property rights were regarded as per se legal and were almost overlooked. Tadashi Shiraishi, "Refusals to License Intellectual Property," in an OECD free documentation of "Competition Policy and Intellectual Property Rights" (DAFFE/CLP (98) 18)(1998), p.287-293.

9　Examples may include the proposed consent order in the matter of Motorola Mobility LLC and Google Inc., FTC File No. 1210120 (January 3, 2013).

10　According to the ICN Kyoto Report, p.6, seven competition authorities indicated that their jurisdictions are equipped with such regulations.

11　Probably in order to emphasize that it is related not to a "market" position but to a position in an individual bargain, conventional documents tend to use the description of "a superior *bargaining* position." Because I do not see any meaningful difference, I omit "bargaining" for simplicity.

Japan is included in this type of jurisdictions; here, I would like to analyze Japanese law, focusing on whether it is actually so different from the "dominant" position laws of jurisdictions such as the EU.

### i. Position

Japanese law is said to require evidence that the alleged violator has a "superior position," rather than a "dominant position." This requirement is the main cause for the conventional belief that Japan's laws are different from the European Union's laws.

However, the difference between "superior" and "dominant" has rarely received sufficient analysis. A "dominant position" is conventionally thought to be a ruling position in a market, while a "superior position" is conventionally thought to suffice even when the alleged violator solely has relative superiority in bargaining with its own trading counterparts.

The current guidelines of the Japan Fair Trade Commission (JFTC) show the conventional thinking on superior positions:

> *In order for one party to a transaction (Party A) to have superior bargaining position over the other party (Party B), it is construed that Party A does not need to have a market-dominant position nor an absolutely dominant bargaining position equivalent thereto, but only needs to have a relatively superior bargaining position as compared to the other transacting party. When Party A has superior bargaining position over Party B, who is a transaction counterpart, it means such a case where if Party A makes a request, etc., that is substantially disadvantageous for Party B, Party B would be unable to avoid accepting such a request, etc., on the grounds that Party B has difficulty in continuing the transaction with Party A and thereby Party B's business management would be substantially impeded.*[12]

The second sentence of the cited guidelines specifies that the trading counterpart (Party B) must require a continuation of the transaction with the alleged violator (Party A). Here, we should consider the basic philosophy behind the concept of markets: a relevant market in competition law is defined as a range of suppliers that are interchangeable from the viewpoints of relevant purchasers. In this scenario, the relevant purchasers, who are the trading counterparts of the alleged violator, include the abused (Party B). If the trading counterparts need continuation, the alleged violator is in a dominant position in the relevant market because the relevant purchasers are locked-in trading counterparts. This means that when the alleged violator has a "superior bargaining position" in the sense of conventional thinking,

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12  The Japan Fair Trade Commission, "Guidelines Concerning Abuse of Superior Bargaining Position under the Antimonopoly Act" (November 30, 2010) II. 1 ("Tentative Translation" posted on the JFTC website).

it has a dominant position (or at least a quasi-dominant position) in an appropriately defined relevant market.[13]

In *Sumitomo Mitsui Banking Corporation (SMBC)*,[14] where the bank tied unwanted "interest rate swaps" to loans for SMEs, the JFTC clearly found that the relevant SMEs could not find other alternatives for getting loans because they had been locked in by SMBC. The relevant counterparts were specific SMEs distinguishable from general SMEs, and the relevant market was not the whole loan market, but the loan market for those SMEs captured by SMBC. The JFTC, consciously or not, found that SMBC had a dominant position in such a small market.

In *Seven-Eleven Japan Co. Ltd.*,[15] where the franchisor barred franchisees from discounting fresh foods right before the pull date, the JFTC found that the Seven-Eleven franchisees needed continuation due to the contractual duty not to compete for one year after termination. The relevant trading counterparts were Seven-Eleven franchisees, and distinguishable from general convenience store franchisees. The JFTC, consciously or not, again found that Seven-Eleven Japan, the franchisor, had a dominant position in such a small market.

Some may oppose the idea of defining such small relevant markets. However, we should be reminded of the fact that most people agreed to the idea of defining a market specifically for Microsoft customers.[16] The OS market without Mac OS was smaller than the OS market as a whole. I do not find any logical difference between the small market in *Microsoft* and the small markets in *SMBC* and *Seven-Eleven Japan*.

To be sure, the extent of the position required (that is, super-dominance, normal-dominance, or quasi-dominance) remains an issue, but it might help to note that the "superior position" test in Japan is qualitatively along the same lines as the "dominant position" test found in other jurisdictions such as the EU.

Conventional thinking in Japan has occurred without enough understanding of real cases, sometimes based on incorrect assumptions such as a finding of a superior position depending

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13   In other words, when the guidelines say "Party A does not need to have a market-dominant position" in the cited first sentence, the JFTC never defines what the "market" is. It is assumed to be something larger than the locked-in market above, but the guidelines' market does not have any theoretical foundation in competition law. It must be different from the concept of "market" which the JFTC usually uses for its merger control, focusing on demand-side substitutability.

14   JFTC Recommendation Decision on December 26, 2005, Shinketsushu vol.52, p.436.

15   JFTC Cease-and-Desist Order on June 22, 2009, Shinketsushu vol.56, no.2, p.6.

16   United States v. Microsoft Corp., 253 F.3d 34, 51-54 (D.C. Cir. 2001), *cert. denied*, 534 U.S. 952 (2001).

on the difference between the capital of the alleged violator and the trading counterpart.[17] I have not found any judgments or decisions that relied on such a capital difference test in the past three decades.

As shown before, the JFTC, in favor of a looser requirement, tends to emphasize the difference between superior and dominant, maintaining a protectionist approach for the conventional thinking as the "standard" description of the law. This is why the conventional viewpoint has been firmly believed in Japan. Because they emphasize the illusive difference, they miss the chance for fruitful comparative studies and contribution to the global issue.[18]

## ii. Abuse

Some critics argue that cases of abuse of a superior position constitute contractual breaches and should be dealt with by civil law in private lawsuits. Such criticisms are one-sided. In other words, abusive conduct in a "superior" jurisdiction has more variations.

Japanese practitioners and scholars have reached a consensus that the majority of cases fall into one of two categories of abuse: not only the cases but also the JFTC Guidelines can be restated as such. The first category is, to be sure, a contractual breach or "unforeseeable disadvantage." *Seven-Eleven Japan* is an example of unforeseeable disadvantage because the basic franchise contract did not have a specific clause about the discount. The second category is "excessive disadvantage" for future trade. *SMBC* is an example of excessive disadvantage because SMBC made the unwanted tie a condition of receiving a new loan.

Excessive disadvantage includes excessive pricing, which is a hot topic in the area of exploitative abuse in EU competition law. Excessive pricing has not been as extensively examined in Japan, but recently, in *Tokyo Electric Power Co. (TEPCO)*[19] and *AEON*,[20] both in 2012, the JFTC consecutively faced issues of excessive pricing. TEPCO raised its electricity price for large customers,  and AEON, a famous supermarket chain in Japan, refused to pay the wholesalers' raised beer prices.

The JFTC tends to easily find violations in cases where the superior side unilaterally forc-

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17   If it depended on a capital difference, some victims, even when the alleged violator had a superior position, could find other alternatives and terminate their transactions with the alleged violator.

18   This may be a reason why the European Commission provided scant information to the questionnaire by the ICN Task Force of 2008, although the EU had already had debates on exploitative abuse of a dominant position. ICN Kyoto Report, p.10, p.29.

19   JFTC press release on June 22, 2012.

20   AEON's press release on August 1, 2012, responding to the JFTC's press release on the same day. The JFTC mentioned the refusal by AEON but did not take any legal measure against AEON. AEON elaborated on the reasons why its refusal did not violate the law.

es its advantageous price without sufficient negotiations.[21] When the superior side is careful to negotiate, the JFTC has difficulty in deciding whether the price level itself is abusive or not.

## IV. Conclusion

The emerging importance of laws regarding exploitative abuse continues to prevail. The EU has vigorously sought new frontiers in the area, but it is not a local phenomenon. If the US reacts to the problem of SEPs, it could affect a piecemeal change in its competition law. Japan has much experience in applying its regulations regarding superior positions; however, in order to contribute to this global issue, it needs to do away with conventional thinking and establish a framework in order to adapt to the issue of excessive disadvantage caused by unregulated monopolies. Japan has already begun experimenting with such applications.

Another issue to be addressed is enforcement. One of the reasons behind the US's reluctance is arguably the treble damages system in federal antitrust law. The EU is equipped with a discretionary fining authority. Japan has been struggling to get along with the inflexible surcharge system, which may be deterring the JFTC from adopting cases since the 2009 amendment that introduced the surcharge system to exploitative abuse of a superior position.[22] Settlement decisions or commitment decisions that discount or immunize fines/surcharges may be adequate. Optimal enforcement should be pursued along with optimal illegality arguments.

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21　This is why the JFTC issued a caution to TEPCO, because TEPCO's conduct lacked sufficient negotiation. TEPCO ceased the behavior before the JFTC issued its caution.

22　Harry First & Tadashi Shiraishi, "Japan: The Competition Law System and the Country's Norms," in: Eleanor M. Fox & Michael J. Trebilcock (eds.), *The Design of Competition Law Institutions: Global Norms, Local Choices* (Oxford University Press 2013), p. 252.

# Corporate Governance and the Rule of *Soft* Law [1]

**Tomotaka FUJITA**[*]

## I. Introduction

On September 7, 2012, the Legislative Council of the Ministry of Justice ("Legislative Council") adopted the Draft Revision of the Companies Act 2005 ("Draft Revision"), which intends to enhance the regulation on corporate governance and corporate groups in Japan. The Legislative Council is a consultative body of the Minister of Justice, and government-sponsored bills to revise Companies Law are always based on its Draft Revisions. Among other proposals, the Draft includes a new disclosure requirement, which is as follows: "A listed company that does not have an outside director as a board member shall, in its business report, explain the reason why it is not appropriate for the company to have one."

On the same date, the Legislative Council also adopted the Resolution with the Revision of Companies Act ("Resolution"), which refers to the following request to stock exchanges: "In addition to the requirements stated in the Draft Revision of the Companies Act, stock exchanges shall, taking into account all relevant discussions and the current status of the adoption of outside directors, provide a rule with respect to the regulation on outside directors with specific regard to listed companies seeking to hire one or more independent directors as the response at this stage."[2]

The Legislative Council in its Draft Revision and Resolution introduced an approach called "comply or explain" in order to regulate the board structure of listed companies, which is the central theme in the field of corporate governance reform. It is a "soft" approach in the sense that (1) the proposed Draft does not impose a specific governance structure, but it allows the deviation as far as each company gives an "explanation," and (2) the details of the regulation are not given by the state but by stock exchanges, and the rules are not necessarily enforced by states. Of course, the "soft" approach is not a completely new idea. The most famous example in the area of corporate governance is the "Corporate Governance Code" implemented by London Stock Exchange in the United Kingdom.

Why did the Legislative Council adopt the "comply or explain" approach in this recent revision? One might say that it is simply a product of political compromise because the mem-

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1   This paper is prepared for the 6th BESETO Conference 2012 "Economic Regulation and the Rule of Law" (November 4, Beijing, China).

2   Note to Part 1, Section 1-2.

bers of the Council could not reach a consensus. Some are strongly in favor of introducing outside or independent directors to the boards of Japanese firms, but others are strongly against this measure. Although this explanation contains some truth, it does not provide the whole story. The adoption of the "comply or explain" approach has a more profound background. This paper explores the theoretical basis of the approach and examines its limit.

Three basic questions should be answered when legislators wish to address the issue of company board structure (or corporate governance structure in general): (1) Does the board structure (or corporate governance structure) matter?; (2) Is there an optimal board structure?; (3) How can the legislator enforce the board structure that he or she wishes to achieve?

Legislators in every country always answer the first question in the affirmative when they propose corporate governance reforms. Despite the responses of legislators in many countries, traditional studies have responded in the negative to this question.

Part II focuses on studies about whether changes in board structure, such as size and composition, could affect the firm's value. Part III reviews recent studies on econometrics and draws implications from their findings. Contrary to traditional studies, these recent studies assume that board structure *does* matter, and seek to answer the second question ("Is there an optimal board structure?"). They are based on the model that a desirable board structure may differ from firm to firm; hence, there may be no single "optimal" structure. Part IV reviews empirical studies on the determinants of board structure. They show that voluntary choices by firms can lead to efficient board structures in some countries, but not in others. Finally, we examine the third question: How can the legislator enforce the board structure that he or she wishes to achieve? Part V re-examines the advantages and disadvantages of the "soft" approach in this context. Part VI presents the conclusion.

## II. Does the Board Structure Matter?

The first question is whether the board structure matters. One might assume that the answer is self-evident because it is always the premise of corporate governance reform in every country that a better board structure (or corporate governance structure) leads towards the improved performance of firms. Otherwise, any intervention in the board structure is just a waste of resources. Nevertheless, traditionally the econometrics literature has challenged this intuition and argued that board structure *does not* matter. Although many attempts have been made in order to find a correlation between a firm's board structure and its performance, few studies have found a correlation between a firm's performance and the size or composition of its board.[3] Therefore, it has been argued that board structure (either size or composition) is irrelevant to firm value. In opinion of several previous researchers, the legislators of many countries have been acting according to a belief that has no empirical foundation.

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3   *See* generally, Sanjai Bhagat and Bernard Black, The Non-Correlation Between Board Independence and Long-Term Firm Performance, Journal of Corporation Law, Vol. 27, pp. 231-273 (2002).

## III. Is There An Optimal Board Structure?

Recent empirical studies have argued that the board structure *does matter* despite the lack of correlation between board structure and firm performance. The essence of their argument is as follows.

Traditional studies focused on the correlation between the board structure of firms in general and their performance. Under this methodology, a positive correlation can be found between the number of independent directors (or the board size) and the firm's performance if a greater number of independent directors leads to better performance. However, it is more plausible that each firm has its own optimal board structure and own optimal number of independent directors. The firm's best performance would then be achieved with its optimal number of independent directors. If the firm either increases or decreases the number of the directors, its performance would decline. For instance, let us assume that the optimal number of independent directors is five of seven board members for a particular firm. The firm's performance would improve with an increase in the number of independent directors until it reached five. Then the firm's performance would then decrease with the increase in independent directors after it reached five.

Under this model, one cannot find the correlation between a firm's board structure and its performance because the optimal number differs from company to company. However, this *does not* mean that board size or board composition does not matter. On the contrary, the firm's performance would be best achieved with the optimal board size and composition; therefore, it is important that each firm choose the size and composition of its board.

Traditional empirical studies asked whether there was a general correlation between board structure and firm performance. However, this question makes little sense. It is more important to ask whether each firm adopts its own best structure and what type of company needs what type of board structure (e.g., a bigger [or smaller] size of board or more [or less] independent board members, etc.). Indeed, the recent empirical literature no longer examines the correlation between board structure and firm performance. Instead, these studies examine the determinants of board size or board composition, and their findings show a correlation between type of firm and type of board structure.[4]

According to the recent literature, the answer to the question of whether there is an optimal board structure is as follows: Although board structure does matter for firm performance, no board structure is optimal for all firms. In other words, there is no "optimal" structure as such.

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4   *See*, for example,  Jeffrey L.Coles, Naveen D. Daniel, and Lalitha Naveen, Boards: Does One Size Fit All, Journal of Financial Economics, vol. 87, pp. 329-356 (2008); James S. Linck, Jeffry M. Netter and Tina Yang, The Determinants of Board Structure, Journal of Financial Economics, vol. 87, pp. 308-328 (2008); Kenneth Lehn, Sukesh Patro and Mengxin Zhao, Determinants of the Size and Structure of Corporate Boards: 1935-2000, Financial Management , vol. 38,pp. 747-780 (2009).

## IV. How Do Firms Choose their Board Structure in the Real World?

Empirical studies on the determinants of board size or board composition support the hypothesis that US firms, on average, choose their optimal board structure.[5] First, they select several factors that might affect the optimal board structure. For instance, one can easily imagine that more diversified firms with more branches need more directors with different kinds of expertise. One can also predict that firms that need special knowledge and skills require a greater number of inside directors. They then examine whether the data support these predictions. The literature shows that the actual choices of the firms in the US are more or less consistent with the results predicted by the models. In short, firms in the US generally seem to choose their optimal board structure. If this is the case, the law does not have to intervene in the firm's board structure. Indeed, any intervention would not be necessary or, even worse, could decrease the firm's value. In fact, one study showed that the Sarbanes and Oxley Act, which requires board independence, caused inefficient results.[6]

Researchers conducted essentially the same analysis on Japanese firms listed on stock exchanges. Curiously, they found the opposite result: firms that needed a larger number of independent directors hired fewer and vice versa.[7] In short, the choices made by Japanese companies seem inefficient. The researchers conclude that the market force does not effectively lead Japanese companies to achieve an optimal board structure because management can successfully affect companies' choices to favor its interests. If this is the case, it may be possible that intervention by the state achieves better results.

## V. How Should the Legislator Intervene with the Board Structure?

As is indicated in Part IV, Japanese firms may not voluntarily choose an optimal board, and state intervention might improve the situation. How then should legislators implement the regulation? It is not advisable to set a minimum number or percentage of independent directors that is applicable to all firms. This is inconsistent with the basic premise on which the recent literature rests: the board structure matters, but the optimal structure differs from firm to firm. Thus, a "One-size-fits-all" type of regulation should be avoided. The "soft" approach adopted by the Legislative Council can be best understood as the response to this problem. Although the approach shows the legislator's recommendation for each firm's board structure, it allows firms to deviate if they give an explanation. Some empirical studies have concluded that the "comply or explain" approach to corporate governance regulation has worked well in the United Kingdom since the 1990s.[8]

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5  See, the literatures cited in *supra* note 4.

6  Sanjai Bhagat and Brian J. Bolton, Sarbanes-Oxley, Governance and Performance (March 17, 2009), available at SSRN: http://ssrn.com/abstract=1361815 or http://dx.doi.org/10.2139/ssrn.1361815.

7  *See* Takuji Saito, "Determinants of Board Composition when Managers Control Director Selection: Evidence from Japan"(2011) (unpublished manuscript), Konari Uchida, Determinatnes of the Ratio of Outside Directors and Firm's Performance, Securities Analysts Journal, vol. 50, no. 5, pp. 8-18 (2012) [in Japanese].

8  Sridhar Arcot, Valentina Bruno and Antoine Faure-Grimaud, Corporate Governance in the UK: Is the Comply or Explain Approach Working?, International Review of Law and Economics 30 (2010), pp. 193–

However, the approach is inherently weak. First, for the approach to work properly, each firm should have the incentive to give a meaningful explanation to both investors and the market when it deviates from the rules provided by the legislator. The market should also respond properly to the explanations given by the deviating firms. Unfortunately, an empirical study on firms listed on the London Stock Exchange, which adopted the "comply or explain" approach for corporate governance, shows it may not be the case.[9] First, the study found that the overwhelming majority of firms choose "comply" rather than "explain." Second, the minority of firms that choose "not to comply" often do not offer meaningful explanations. Finally, the minority of firms that choose "not to comply" are usually highly profitable.

These facts suggest that it is too costly for firms to make persuasive explanations for non-compliance, so they often choose "comply" even when the deviation is desirable. Firms can safely choose "not to comply" only when they are highly profitable because investors or the market would not complain about these firms even if they give insufficient explanations. If this is the case, the "comply or explain" approach does not work as is supposed to do. The resulting "over-compliance" would lead inefficient outcome.

The influence of institutional investors might aggravate the situation even further. The fund managers of institutional investors are accountable to their own investors. Because it is costly for the institutional investor's fund manager to "explain" to their own investors why they support firms that choose "not to complain," they may tend to vote against the firm's decision and turn a deaf ear to its "explanation" even if they understand that the best choice for the firm is "not to comply." If this happens, each firm would have a strong incentive to "comply" regardless of the desirability of such a choice.

Second, a collective response by the industry group might completely undermine the "comply or explain" approach. This is an immediate concern regarding the current revision. It is reported that the Japan Business Federation (*Keidanren*) is now drafting a "standard explanation form" available for firms that do not adopt an outside director. The very idea of a "standard explanation form" is inconsistent with the purpose of the "comply or explain" approach. The approach presupposes that the optimal board structure is unique to each firm, and therefore the law should not impose a single rule on all firms. Firms that choose not to comply are expected to explain their reasons for deviation. If all firms adopt the "standard explanation form," thus refusing meaningful explanation specific to a particular firm, the "comply or explain" approach would have no influence on firms' choices. Each firm can safely continue its current board structure free from the fear that investors or the market would not be satisfied with its explanation because almost all firms would have adopted the same explanation.

Although the "comply or explain" approach has advantages, further studies are needed to determine whether and how it works in the real world.

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9   Iain MacNeil and Xiao Li, Comply or Explain: Market Discipline and Non-Compliance with the Combined Code, Corporate Governance: An International Review, Vol. 14, Issue 5, 2006.

## VI. Conclusion

In the recent corporate law reform, the Legislative Council of the Ministry of Justice adopted a "soft" approach to regulate board structure. While the revision is a result of political compromise, the solution has a theoretical background.

As is explained in Part III, recent empirical studies, unlike traditional ones, have shown that board structure could affect firm value. They also suggested that Japanese listed companies choose inefficient board structures. Arguably, these findings provide a basis for legal intervention.

At the same time, recent studies assume that an optimal board structure differs from firm to firm, and therefore it is not advisable to introduce a single standard that all firms should follow. This would justify the "comply or explain" approach to regulation adopted by Legislative Council.

However, it is an open question whether this approach works in realty. There have been both positive and negative views with respect to the experience in the United Kingdom, which adopted the approach two decades ago. How it will work in Japan after the new legislation remains to be seen.

# The First French Mutual Group Facing up the Coming Surge in Seniors' Long-term Care Needs

## MGEN contribution to the LTC Conference at the University of Tokyo, April 2012 "Strategy for long term care coverage of seniors"

**Jean-Louis DAVET**[*]

## 1. Understanding the nature of MGEN long-term care coverage requires a brief historical review of what our mutual is all about

### 1.1 MGEN key figures and duties

MGEN (Mutuelle Générale de l'Education nationale) was founded in 1946, when the National Social Security regime (state health and social insurance scheme) was created by regrouping at national level the 130 Teachers Friendly Societies which existed throughout the French territory. Until then, these funds provided coverage against social protection risks (death, vocational incapacity, disability) and owned and managed nursing homes (mainly sanatoriums).

2012 MGEN as the largest mutual health and social protection insurer in France counts more than 3,5 million persons covered.
MGEN is also the founding member of the Istya mutual group, leading complementary health insurance group, covering 6,3 million people, ie serving 10% of the French population.

The MGEN, from its inception, assumed concurrent duties such as administering the state health insurance mandatory regime, covering civil servants members of the National Education Service, Universities, Research, Culture, Communication and Sports. 2011, more than 3 billion euro have been paid out in mandatory insurance benefits.

MGEN is also a major health insurer in France, complementary to the mandatory state health insurance. 2011, more than 1 billion euro paid out in health and maternity benefits.
MGEN provides health insurance to 55 000 expatriates too.

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[*]   Chief Executive Officer of MGEN Group, Chief Executive Officer of Istya Group, Graduate of The Ecole Centrale de Paris (Engineering and Business school), Doctor in Mathematics, University of Paris 6, Former Researcher at CNRS (French National Scientific Research Center), Former Professor of mathematics at University Paris 6 and at Ecole Centrale de Paris

MGEN is also a Social protection insurer covering the risk of incapacity with income protection, short and long term disability, long term care and death.

MGEN owns and manages a network of 33 nursing homes, hospitals, rehabilitation centers, health care centers, mental hospitals (MGEN healthcare facilities and nursing homes : 3 300 in-patient beds).

MGEN activities in health insurance, social protection and social assistance are aggregated within a single "global coverage". Among the bouquet of benefits offered to our members, health benefits have rapidly taken prime importance, keeping pace with the transformation of health and health care conditions in France. Complementary health insurance is now considered to be the "dominant" guarantee" (health benefits accounting for 80% of the benefits paid in 2011).

Since its inception, the MGEN coverage and later developments have been true to the very strong values of the mutual world which are as many guide lines:

- Values of solidarity, essential to our mutual, are upheld by our members through the premium they pay. The members pay an income-related contribution, whilst they are granted benefits according to their needs. A contribution-benefits scheme similar to the National Social Security regime.
- A global approach to risks. Our "global offer" or "2 in 1 coverage" (health and social protection insurance in a single policy) has been developed year after year keeping abreast of the needs expressed by our members and our mutual financial capacities, according our General Assembly decisions, made up of our members whose authority is supreme in this field.
- Any response has to cover many aspects: financial, humanitarian, social and health support is given to our members. The MGEN aims at supporting its members while taking their personal life and career path into account.
- Accessibility to the offer is essential: no discrimination of any kind based on age, state of health, or reduced for reasons of means.
- Finally, the MGEN position in providing care to its members is systematically that of a complementary or supplementary insurer (not substitutive) to the National social protection regime.

## 2.  French population projections and long-term care

### 2.1  French population projections
In France, long-term care is based on a cash for care scheme -the APA *(Allocation Personnalisée d'Autonomie)* – financial support for the provision of long-term care, for old people (over 60) either at home or in institutions, according to their level of dependency.

The French care system is based on a single assessment scale, the AGIRR grid, which distinguishes 6 levels of dependency or lack of autonomy, according to the inability to perform activities of daily living (ADL), the degree of cognitive impairment and the subsequent needs for daily assistance or supervision:

- GIR 1: bedridden or confined to an armchair and mental faculties severely impaired
- GIR 2: confined or impaired mental faculties
- GIR 3: help several times a day for ADLs
- GIR 4: loss of autonomy for transferring, sometimes also regarding toileting or dressing, OR mobile but needs help to perform ADLs, including eating
- GIR 5: help for bathing and home care. No cash benefit is allocated to this group
- GIR 6: autonomous. No cash benefit for this group either.

The APA (cash for care allowance) is allocated up to the fourth level. Because, it is a national scheme implemented at local level, care packages are defined according to the level of dependency and give entitlement to a certain amount of money.

The benefit is paid to finance a specific care package determined by a team of professionals according to the needs of the recipient. The use of the cash allowance is controlled and it can only finance the services identified as necessary by the professionals.

A co-payment system has been introduced: above a threshold, the recipient contributes to the payment for the care package according to his or her level of income.

**In 2011**, people aged 60 and older using long term care services in France and recipients of the cash for care benefit (APA) amounted to 1 199 000 persons (2% of the global French population : *63 417 000*).

Under the central scenario of the National Institute of Statistics (INSEE), projections for the metropolitan France (mainland and Corsica) for the years 2007-2060 are based on the following assumptions:

- Fertility will remain high: 1.95 children per woman versus 1.90 in the 2006 projection.
- An increase of longevity or life expectancy is expected: mortality assumption is slightly optimistic for the oldest-old, 86 for men and above 91 for women.
- France will keep a positive net immigration per year: more than 100 000 persons a year.

**In 2060**, France will have a population of 73.6 million people, ie 11.8 million more than in 2007. People in the age of 75 and over will be 11.9 million versus 5.2 in 2006. The number of people aged 85 and more will be 5.4 million, versus 1.3 in 2007.

France is aging but with specific demographic dynamics. French population is expected to keep on growing thanks a significant fertility rate, contrasting with most European countries (France ranks 2nd in terms of fertility rate in the European Union) but the projections remain subject to the future family and immigration policies.

## 2.2  Population aging and increase in the use of long-term care services

Changes in the demographic structure are caused largely by the steep increase of the elderly population.

Population projections show how the population ageing will affect the future demand of long-term care services and the number of cash for care recipients. In 2011, 1 199 000 people received the long-term care allowance. By 2030, when the baby boomers reach ages of 85 and older, the long-term care users (APA recipients) are expected to be 1 550 000; ie an increase of 35% over the period 2010-20130, followed by a constant annual growth of 2% till 2045. In 2050, LTC users (APA recipients) could surge to 2 300 000 persons (4% of the Global French population).

## 2.3  Long-term care users characteristics

Most long-term care users are and will be women in the future: 74% in 2011 and 71% in 2060. The LTC users population is ageing: mean age in 2011 was 84, and expected to be 88 by 2060.

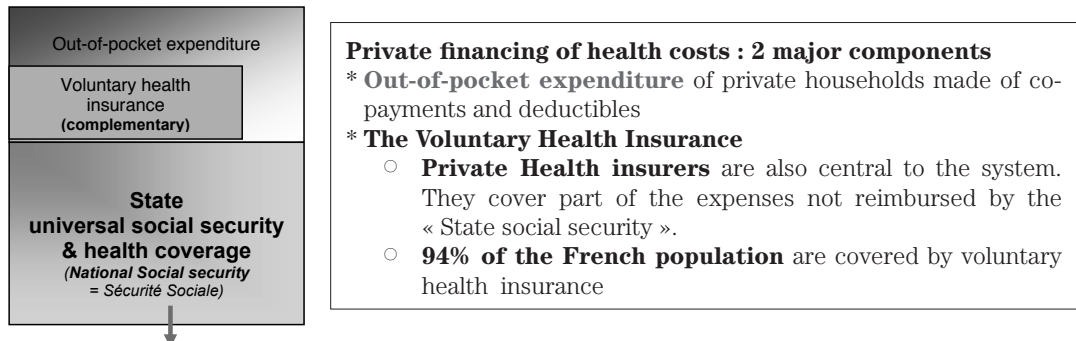| Age | % of LTC Public allowance recipients (APA) |
|---|---|
| over 60 | 8% |
| over 75 | 17% |
| 85 | 20% |
| 95 | 63% |

*source DREES*

Long-term care users ageing and the increase in life expectancy reduce the likelihood of having informal care provided by a family carer (survival spouse or husband). In 2000, there were 2.8 carers for each male LTC user and 2.2 carers for a female long-term care user. In 2040, the share of available carers decrease to 2.3 carers for a male LTC user and 2 carers for a female LTC user.

Long term care users stay mainly at home (61% of the recipients of the cash for care allowance APA, versus 39% in nursing homes).

## 3.  French social and health insurance system (welfare insurance scheme) :

### 3.1  The French social security and health insurance system is a 3 level scheme

| |
|---|
| Out-of-pocket expenditure |
| Voluntary health insurance **(complementary)** |
| **State universal social security & health coverage** *(National Social security = Sécurité Sociale)* |

**Private financing of health costs : 2 major components**
* **Out-of-pocket expenditure** of private households made of co-payments and deductibles
* **The Voluntary Health Insurance**
  ○ **Private Health insurers** are also central to the system. They cover part of the expenses not reimbursed by the « State social security ».
  ○ **94% of the French population** are covered by voluntary health  insurance

**Public financing of health care expenditures**
**Social health insurance, named** «**Social security**», is a mandatory scheme controlled by The French government. Founded in 1946, the "Social security was built on fundamental principles:
- equity for healthcare access and solidarity,
- benefits to recipients, determined by the government,
- financed by compulsory contributions (by employers, employees, retirees, unemployed …)
  ○ Contributions to the State universal social and health coverage *(National Social security)* are mandatory, based on the fair principle that "one pays according to one's incomes and receives care according to one's needs". They are income-related contributions, rather than risk related.
- There is no direct link between the amount of contribution paid by an individual and the benefits granted to this individual.

**The state social  security system is divided in 4 branches :**
- Mandatory Health insurance
- Occupational injuries and illnesses
- Pensions
- Family benefits

The French Social security system includes 4 schemes :
- general scheme: covering most employees, unemployed and students
- special scheme : for specific employees who are not in the private sector, such as civil servants
- agricultural scheme: for farmers and agricultural workers.
- autonomous scheme: for self-employed in the trade, craft, commercial and other sectors.

The Mandatory Health insurance *(Social security)* is till the main source of financing of health care costs, despite a relative withdrawal (more deductibles, higher co-payments, de-reimbursement). 77% of medical care and goods (outpatient care, hospital care, medical goods, sick people transportation) are financed by National social security . However, in the recent years, economic deficits resulted in regular transfers from public mandatory health insurance to private financing (voluntary private health insurers and households'out-of-pocket spending), particularly for outpatient care, whilst hospital care costs remain mainly sponsored by public financing.

**Public social and health protection expenditures:**
France has to cope with a faster growth of public social expenditures than its GDP (Gross Domestic Product) and each economic slowing down increases the deficits further.

In 2010, the public social expenditures of the 4 Social security schemes amounted to 654,2billion €, equivalent to 34% of GDP.

The major sources of public financing of social expenditures are the followings:

- taxes (31%); a significant source of fiscal pressure,
- social contributions by employers and employees (about 58%), at risk in a context of economic crisis and the subsequent increase in unemployment
- and public deficit (almost 6%).

### 3.2  Demography and projections of health care costs

According to demographic scenarios, considering the effects of population ageing on health care spending and assuming that age-related spending on health care remains constant for each year and not considering that gains in life expectancy are spent in good health, by 2050 France would have to cope with health care expenditures amounting to 15.8% to 22.3% of GDP.

According to improved health scenario, assuming that the number of years spent in bad health during a lifespan falls while total life expectancy increases (the morbidity rate is assumed to fall faster that mortality rate driven by social, environmental and technological determinants of health), by 2050 health care spending in France could reach 10.4% to 14.9% of GDP.

As agreed in some studies, such as the French one published by Brigitte Dormont (University Paris Dauphine and Montparnasse Institute[**]), and contrary to common views population ageing may not exacerbate health care expenditures growth. Health care spending grows in line with the aggregate income and subsequently with the diffusion of new medical technologies and changes in practices and behaviors.

Between 1992 and 2000, the observed growth of health care expenditures (+35.1%) is mainly due to the following cost drivers: changes in practices, mainly induced by technological changes (+ 35.8 points), decrease of morbidity, which has a negative effect on cost surge (-6.6 points), increased size of the population (+ 3.2 points out of the 35.1 points), change in the age structure of the population and increased share of the oldest age groups (+ 2.7).

Over the period between 2000 and 2008, population ageing has a bigger impact on health care expenditures growth (+23.6%) but remain a minor cost driver (change in the age structure of the population and increased share of the oldest age groups (+ 4.8 points out of the 23.6 points increase), ie only counts for one fifth in the cost increase. Changes in practices (+ 9.9 points), decrease of morbidity (+3.1 points), increased size of the population (+ 5.8 points

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[**]   «Vieillissement de la population et croissance des dépenses de santé» («Population ageing and increase in the health care costs» : Institut Montparnasse 2012)

out of the 23.6 points).

|  | | evolution<br>**1992 -2000** | evolution<br>**2000 - 2008** |
|---|---|---|---|
|  | % | **+ 35.1** | **+ 23.6** |
| **Demographic changes** | | + 5.9 | +10.6 |
| change in the age structure of population and **increased share of oldest old** | | + 2.7 | + 4.8 |
| increased size of the population | | + 3.2 | + 5.8 |
| **Changes in morbidity** | | - 6.6 | + 3.1 |
| **Changes in practices** *(mainly induced by technological changes)* | | **+ 35.8** | **+ 9.9** |

## 4. Long-term care costs and sources of financing

Long-term care spending for elderly people, recipients of the cash for care allowance (APA) amounted to 34.6 billion € in 2010, representing 1.8% of GDP.

69% of the total LTC costs are sponsored by public funds, ie 1.3% of GDP. The 3 main sponsors of LT care expenditures are:

- The Social security *(Mandatory health and social protection insurance)* is the main source of financing, covering 62% of the costs, mainly health care costs at home and in institutions.
- Local authorities *(departments)* rank second, sponsoring 22% of the LTC costs, and in charge of paying the cash for care allowance (APA), to a total amount of 5.3 billion € in 2010. The cash for care benefit is allocated either to LTC users at home (61%) or in institutions (39%).
- At National level, The National Solidarity fund for Autonomy (CNSA) provides 11% of the LTC cost financing.

**Despite public financing, the average households out-of-pocket expenditures or co-payments remain higher than the average pension**: the average gross pension in France is 1 216€ per month. The average costs of Long-term care is 1 800€ per month for elderly at home and between 2 200€ to 2 900€ for institutionalized patients

LTC costs are divided in 3 categories:

- Costs covering the dependency are cash for care allowance (APA), tax deductions on home care services, income tax deductions. Sources of financing for these "dependency costs" are mainly public[***] (82% versus private financing 18%).

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[***]   Public financing of LTC costs via the cash for care benefit (APA) is targeted to the 4 first AGIRR groups with higher level of dependency and greater needs for care and services.

- Health care costs (outpatient care, hospitals, care in nursing homes) provided to LTC users are publicly sponsored too (93% of the health care costs).
- Housing costs (housing allowance, tax deduction for promoting building of nursing homes). 81% of housing costs are supported by long-term care users and their family. The share of private financing for elderly in institutions amounts to 72%.

## 4. Financing long-term care for the future generations : challenges at stakes

With population ageing and the growing number of disabled seniors, the increased demand for long-term care services and the public cash for care allowance (APA) will lead to unsustainable increase in public financing, with the subsequent impact on public debt and tax pressure:

In 2012, GDP growth in France is expected not to exceed 0.3%.

In 2011, public debt reached 86% of GDP, ie a growth of 3.7 points of GDP compared to 2010. Tax and social contributions amounted to 43.9% of GDP in 2011 (compared to 42.5% of GDP in 2010). In 2009, 68.2% of tax and social contributions were allocated to financing health care and social protection (ie. 28.4% of GDP).

Till avoiding recession, but facing a severe economic crisis with pessimistic economic growth projections, French governments can no longer afford to finance deficits of state health and social insurance by borrowing and will be compelled to introduce the necessary and many times postponed long-term reforms for financing long-term care, unless the ability of France to maintain and improve the present level of LTC coverage will be seriously compromised.

In France, the development of policy regarding the frail elderly has been a very low process. It came onto the political agenda in the mid-1980, but until 1994 there were no specific policy on dependency, only numerous political debates and expert reports.

Between 1994 and 1995, the implementation of an experimental pilot scheme developed by some local authorities (the departements) has been followed in 1997 by the creation of a temporary national scheme "The Prestation Spécifique Dépendance", implemented at the local authorities level. The main weakness of this scheme was that only 15% of the frail older people received the cash for care benefit.

A reform was implemented in 2002 in order to increase the number of recipients and to reduce the costs. The creation of the cash for care allowance APA *(Allocation Personnalisée d'Autonomie)* was based on a universal principle without any possible recovery from inheritance.

The next step came in 2004, after the heat wave of the summer 2003, with the development of the national "plan for frail elderly people" over the period 2004-2007.

In 2005 the National fund for the frail elderly was set up (Caisse Nationale de Solidarité),

financed by employers'contribution in return for cancellation of one day of public holidays (one unpaid working day) and the transfer of credits from the Social security fund.

In 2007, after the election, the new French President, Nicolas Sarkozy, announced the creation of a "Fifth branch of the National Social Security" combined with the development of private insurance schemes but in 2009, the economic crisis with the surge in unemployment and public deficits stopped the reform.

In February 2011, the previous French government initiated a review of long term care coverage and financing. Four groups of experts were formed: *Society and ageing, Demographic and financial perspectives of long-term care, Housing and caring for the elderly, Strategy for the coverage of the elderly Long-term care.* Discussions occurred regularly; meetings were held; reports were written. Then, a national debate has been organised for several months, which brought to the attention of many people in France how serious the long-term care issue is, for individuals as well as for the society.

The experts groups pointed out five principles to improve the French LTC scheme:
1. Ensuring universal quality long-term care for all older people:

   At home: increasing the family carers' and LTC workers'qualifications and valuing the LTC workforce and informal carers. Improving management of domestic long-term care: developing prepayment of services, checking the cash for care recipients' revenues and assess the effectiveness and quality of services.
   In nursing homes: improving the quality of care and services in institutions: more staff and skilled

   The universal LTC scheme shall be based on equity: a LTC offer provided according to the needs, regardless the recipients'revenues or capacity of cost sharing.

   The LTC services offer is also required to be homogeneous all over the country avoiding geographical disparities

2. Enabling older people with care needs to stay at home as long as possible

3. All LTC costs (present and future ones) have to be properly estimated, budgeted and sources of financing identified.

4. Improving coordination of public funds spent in preventive medicine to delay the entrance in LTC needs or into nursing homes.

5. Increased cost efficiency and productivity with the reorganisation of the LTC sector mainly

made of local non-profit service providers and a more efficient patient care pathway or coordination between social workers, doctors and families.

The experts groups came out with 3 possible scenarios for developing LT care coverage in France:

**Scenario 1: Creation of a "Fifth branch of the National Social Security" : a mandatory universal insurance, publicly financed by tax pressure and social compulsory contributions** (paid by employers, employees, retirees, unemployed …)

The main advantage of this scenario is the homogeneity of the coverage all over the country enabled by a state ruled and centralised organisation (The Social security).

The main weaknesses of this solution are the increased burden on public finances, hardly bearable in a context of budgetary constraints and required policy of curbing public expenditure and the possibly insufficient public financing resulting in the need of voluntary private insurance to complement the public coverage.

**Scenario 2: Creation of a private universal mandatory LTC insurance** that every body is compelled to subscribe from a certain age on to be determined.
This mandatory insurance is based on insurance mechanism of risk pooling. The ideal pool for LTC insurance is composed of individuals who contribute to the scheme from the beginning of their working life or earlier as possible and who do not claim any benefit for decades. The long time lapse between beginning contributions and claiming benefits is similar to that found in pension plans and life insurance. Mandatory contribution is a prerequisite because it is difficult to imagine that most young adults would spontaneously start paying premiums for long-term care insurance unless they had to.
This mandatory LTC insurance is expected to substitute the present public cash for care benefits.

To improve the affordability of insurance premiums for middle-class, low-income individuals, and the people aged 50 and over, whose premium is higher because of their late entry in the plan, public financial support will be implemented (tax credits, subsidies (vouchers)).
The premium is based on the age at the entry in the plan regardless the income.

The main advantages of this scenario are better risk pooling across generations and the savings in public expenditures to finance long-term care. In 2025, savings expected are 6.5 billion euro, in 2040 the cut in public spending could reach 56.8 billion euro.

The main weaknesses of this solution is the increase in public spending during the launching phase of the plan to support the cost for LTC users not yet covered by the new plan, added to

the public subsidies paid to the lower incomes to make the insurance affordable.

## Scenario 3 : Improvement of the present cash for care income-adjusted benefit.

Improvement of the scheme could be based on five key principles:
1. A possible introduction of the recipients'assets in the calculation of the cash benefit; a proposed but not recommended solution.

2. A reform of the cash for care benefit allocated to home LTC users:
   - including targeted increases in the benefits according to the level of needs, for isolated people and Alzheimer patients,
   - introducing the salary index in the calculation, combined with the already used price index. Considering the heterogeneity of prices of services across the country has also been recommended,
   - enlarging the range of eligible costs, such as home repairs and adaptations for better safety and accessibility.

3. A reduction of private cost-sharing for nursing homes residents:
   - reforming the pricing policy of nursing homes and LTC beds units
   - increasing the cash for care benefit allocated to seniors in nursing homes
   - fixing an "Out of Pocket threshold" for people facing long-term care for a long time

4. A regulation of the private LTC insurance market
   - promoting the use of the same assessment scale by public authorities and private insurers to assess the claimants'functional and cognitive status in order to determine the needs for long-term care and services and to standardise the benefit triggers governing when the policy holder becomes eligible to receive benefits.
   - reducing the heterogeneity of the LTC insurance policies and offering more protection to consumers, who may not be able to assess what policy is most appropriate for them and how adequate will be the coverage in the future. This suggested regulation requires to determine minimum standards for benefits provided within the policies such as:
     - required disclosure of provisions to the applicant at he time of purchase and for the duration of the policy
     - reduction of probationary periods compared to the present policies
     - disclosure of limitations and exclusions
     - consumer protective model of premium increases
     - required disclosure of rating practices : explanation of potential premium rate revisions
     - required minimum cash for care benefit
     - requirements to offer policyholders' inflation protection: in the calculation of the benefits, insurers shall account for anticipated increases in the cost of long-term care services covered by the policy

■  LTC insurance portability from one insurer to another

5.  Finding out new sources of financing to cope with the increase in public spending dedicated to LT care

| Projections of public spending allocated to LTC | | | | |
|---|---|---|---|---|
| share of GDP % | | | share of GDP % | |
| Cost types | 2010 | 2040 | Evolution 2010-2040 | |
| Dependency | 0,38 | 0,63 | + | 0,25 |
| Housing | 0,09 | 0,13 | + | 0,04 |
| Health Care | 0,72 | 0,97 | + | 0,25 |
| Other costs | 0,03 | 0,03 | 0 | |
| TOTAL | 1,22 | 1,76 | + | 0,54 |

sources : DREES, DG Trésor, INSEE (French National Institute of statistics), salaries index

The various possible sources of public financing, resulting in the increase in tax pressure and social contributions, could be the followings:
■  considering, the inheritance taxes, the cancellation or reduction of tax exemptions in case of children gift
■  introducing an additional "Day of solidarity" (unpaid working day); a proposition rejected by unions.
■  cancelling or reducing income tax credits or reductions for LTC users corresponding to dependency and housing expenses
■  reforming tax allowance for retirees
■  altering or suppressing social contribution exemption for seniors aged 70 and over (not LTC users)
■  other suppressions of various tax exemptions and credits.

Combined with the 3 above described scenarios, other fundamental challenges of long-term care have been explored in the 2011 government review of LTC, questioning social and industrial French policies.

Considering population ageing in the urban planning and building industry to make cities and homes age-friendly.
■  Designing lifelong neighbourhoods, where residents healthcare and accessibility needs can be met throughout the entire lifecycle
■  Home adapting for senior living (safety equipment) sponsored by public financing to allow people to age in their own homes and communities

- Designing Intergenerational homes : mix of young families and seniors
- Spaces provided for social and community facilities

Implementing a global **prevention and health promotion policy** to elderly in order to delay the need of LTC services, with a better coordination of the various stakeholders: public transport companies, community support service providers, social workers, health care providers ….

Developing at local authorities level **an intergenerational approach of the society to promote seniors as valuable assets to the community**, to acknowledge their essential contribution to the society. Creating opportunities for older people to volunteer for tasks, promoting active ageing with societal participation, intergenerational reciprocity and solidarity, proving it's vital to invest in the human capital of all generations for better social cohesion.

Promoting **advanced technologies for ageing population** :
- Assistive patient technologies for telehealth services or telecare solutions, remote patient monitoring devices, personal alarm systems, motion detectors, fall detection devices
- Home automation techniques for the comfort and security of its residents (domotics).
- Create ICT network (Information and Communication Technologies) that support seniors and LT care users, families, informal caregivers, home supportive services providers, healthcare providers, social workers, physicians, hospitals, residential care facilities …

Transforming the seniors'home in safe and comfortable living environment with advanced technologies enables them to stay at home and to live independently as long as possible even if they need care services. More than a response to LTC users'satisfaction, home-based care cost much less than residential.
The French market of advanced technologies for ageing population is till in an embryonic stage, estimated to 2.5 billion euro in 2012 but expected to reach 25 billion € by 2025.

**Supporting informal caregivers:**
Informal LTC provided by family and relatives is crucial in enabling elderly to remain at home. In France, 4.3 million people aged 16 and over are caregivers for old people over 60. These family carers are mainly women (54%).
The national review of long term care coverage highlighted 4 main recommendations for encouraging informal care:
- designing a nationwide unique information center and hotline,
- improving the co-ordination by local authorities of the supportive actions addressed to carers (training, assessment of their needs, respite services or facilities to give caregivers a break, such as day care …), health care because providing care has physical and psychological impacts
- developing a labor policy supporting employed caregivers

■ facilitating the active role of the volunteering sector in home LTC services.

The worldwide successive economic crisis stopped the works on LTC reform, when government arbitrations were steering for scenario 3. Once again, changes have been delayed; there is no concrete implementation of any kind of the 2011 government national review of long-term care.

## 5.  Long-term care private insurance in France and MGEN ranking

France, with the United States, is one of the two leading markets in terms of the share of its population covered by private LTC insurance. In France, in 2010, 5.5 million people were LTC insurance policyholders, the equivalent of 15 per cent of the population aged over 40 years, compared to about 5 per cent in the United States.

The group* LTC insurance market is relatively large and represents about 45 per cent of the market *(FFSA 2009). (*group insurance : employers' sponsored insurance plans)*

Indemnity policies are the prominent model of private coverage, ie cash benefits are paid when the policyholder becomes eligible to receive benefits.

MGEN ranks first in terms of number of people covered, ie 40% of the market of policyholders (2.2 million of policies)

The representation of old age in the French society is not positive and often connected to the understanding of death in the western society. As underlined by Yoko Mishima[****], western societies seem to have a frightening understanding of death, often depicted as a violent end of life instead of a natural process or an occasion for renewal of life. Western representations of death have a profound influence on the prevailing perception of ageing. Therefore, the images of long-term care are the ones of frailty and despair, loneliness and destitution, in fact a sense of loss of who and what we are.

Consequently, the registered mean age at LTC insurance application is quite old in France (62 years old) because most young adults are reluctant to consider their old age and the LTC stage.

## 6.  MGEN long-term care coverage

### 6.1  MGEN members'profile

Administering the state health insurance mandatory regime and providing health and LTC insurance to civil servants members of the National Education Service, the MGEN policyholders are mainly women since teaching is a female dominated career in France.

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[****]   in Hagakuré Nyumon (Introduction to Hagakuré)

The current age pyramid of MGEN members (2011) and the projections by 2040 and 2050 is partly resulting from the XXth demographic trends in France. However the profile of the MGEN members age pyramid is much closer to the Japanese population than to the French one. The various recruitment policies in the Department of Education, according to the French population demography and budget constraints, and the drastic cut in recruitment over the past years (between 12 000 to 16 000 job suppressions per year for the past five years ) reduces the share of new and younger MGEN members. In addition to the lower recruitment of the Department of Education, the strong competition on the private insurance market (and specially health insurance) participates to the ageing shape of the projected pyramids.

The age pyramids presented below belong to a pessimistic scenario for the MGEN members portofolio in the absence of any voluntarist actions to youngerize our insurees.
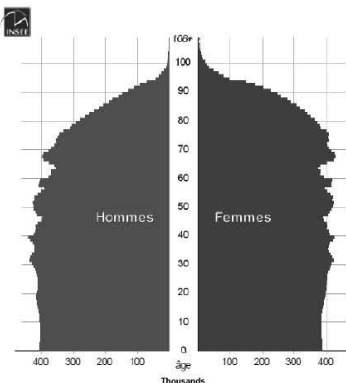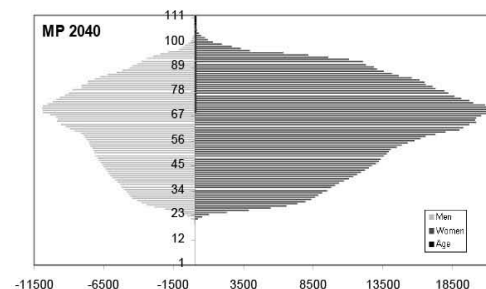
**Metropolitan France population**
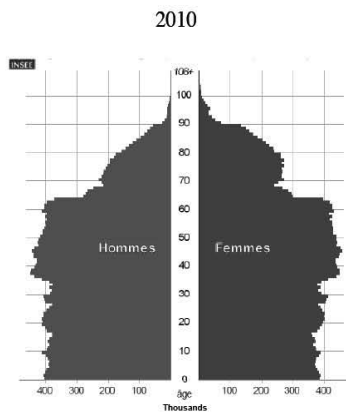
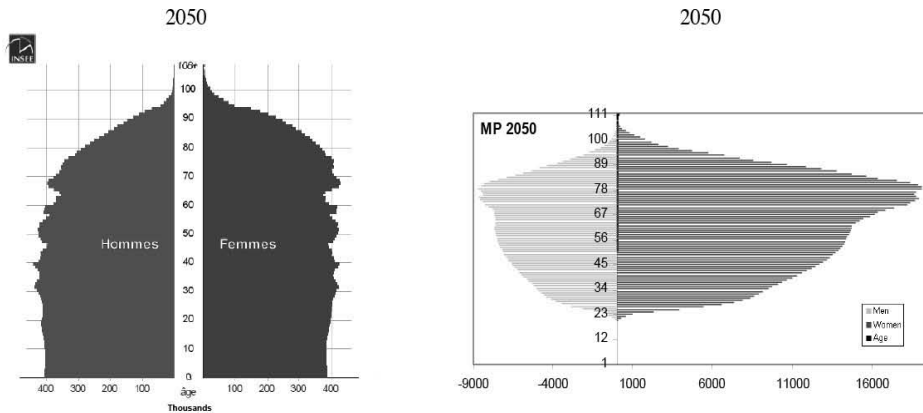2010



**MGEN Policy holders' profile**

2011
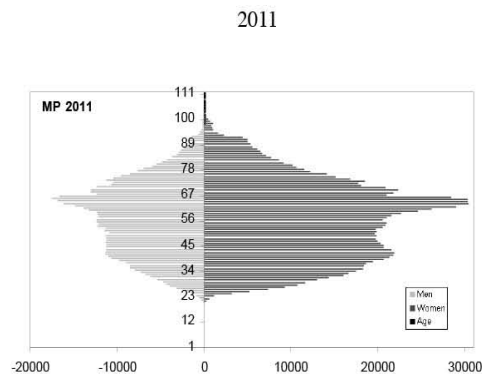


2040



2040

## 6.2  MGEN long-term care coverage

In the absence of the many times postponed governmental LTC reforms, MGEN decided in 2010 to include a first level of LTC coverage in its policy.

The MGEN LTC coverage is combined with the health insurance within a "global coverage" for a comprehensive protection: 3.4 million persons covered by the global coverage (adults and children), and more than 2 millions adults protected for LTC

The LTC component of the "Global coverage" is a complementary coverage to the public LTC scheme, (mainly made of cash for care benefits (APA)).
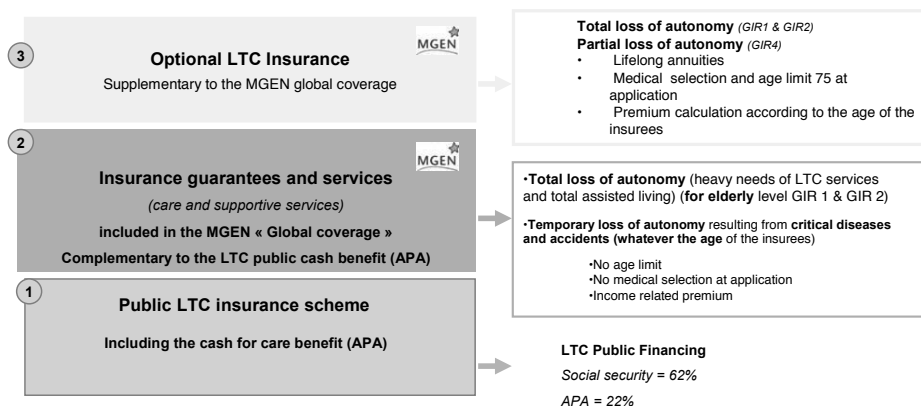


The MGEN LTC coverage includes insurance guarantees with cash benefits and a range of services. It is targeted to LTC users either at home or in nursing homes and to family caregivers. It provides protection to the users, eligible for **various levels of needs for care and supportive services and whatever the duration of the health status, either temporary or long term care needs**:

- temporary loss of autonomy or temporary disability or need of supportive services, resulting from critical diseases and accidents ( "PTA coverage") *whatever the age of*

*the insurees*
- total loss of autonomy  *(for elderly level GIR 1 and GIR 2)*
- permanent partial loss of autonomy  *(for elderly level GIR3)*
- light need of supportive services  *(for elderly levels GIR 4 and GIR 5)*

The MGEN LTC coverage includes **preventive measures and services BEFORE** the entrance in dependency to promote healthy ageing and to delay the need of LT care services (such as memory training workshops organised in the MGEN health centers, retirees clubs in the MGEN agencies for an active ageing) and **DURING** to develop elderly-friendly environment (prevention of falls and injuries), healthy leaving (healthy diet, adequate nutrition, prevention against the risk of improper use of medicines).

**Services and cash for care benefit are offered to caregivers too**: an annual lump sum and various services such as information, assistance, respite care and respite facilities (ie, day care for home LTC users)

**Inusurance techniques**

The level of premium of MGEN LTC coverage is very low because **a first level of coverage** is **included in the MGEN "Global Offer"** (combined with the health insurance) and mutualized over all adult members of all ages, ie **2 millions insurees**. (see chart 1  below).

The risk insured in the part of coverage included in the global offer is **an annual risk, providing lifelong annuities** for total loss of autonomy and specific benefits for LTC users at home : an additional cash benefit (a lump sum to be used  *for home equipment for example*) and lifelong supportive services.
All claims when submitted are totally and lifelong provisioned.
The current year premiums are used to pay and to provision all claims submitted in the current year for a lifelong duration (ie, until death or the very marginal reversal to a lowest level of dependency *(from level GIR 1 or GIR 2 to GIR 3)*. This system is called "pay-as-you-go".

For the MGEN member this system means in practice that:
- His/her contribution for the year current covers the risk of occurrence during this particular year and does not allow for any future "vested right".
- At the end of the year,
    - if he/she unfortunately becomes a LTC user, he/she will receive long term care benefits even if he/she leaves the MGEN and no longer pays any premium.
    - If, fortunately he/she doesn't need LTC, no benefit will be paid and he/she shall keep on paying his/her premium the following year to remain covered against LTC needs.

When launching our LTC coverage, in 2010, in accordance to its values of solidarity, MGEN financed with its own capital the lifelong costs for the 5 000 members, already LTC users and

recipients of the public cash for care benefit APA.

**Benefits trigger** is the medical necessity, determined by the classification at level GIR1 and GIR2 by a team of professionals at public local authorities level *(Conseil général)* with the subsequent allocation of the public cash for care allowance APA.

**As a counterpart of "total loss of autonomy coverage"** dedicated to the elderly, a **guarantee against the risk of "temporary loss of autonomy or disability" provided to any insuree, whatever the age**, cash for care benefits and pre-paid supportive services in case of critical diseases and accidents. This coverage is aimed at attracting younger subscribers.
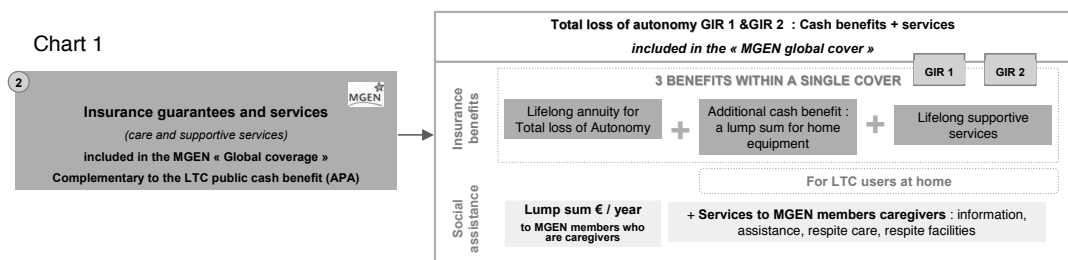
Chart 1



**An optional LTC insurance** (see chart 2) is also proposed to complete the first level of LTC coverage included in the MGEN global cover, for elderly people suffering from "total loss of autonomy GIR 1 GIR 2" and "partial loss of autonomy GIR 3". To meet insurees risk appetite, two options with two levels of cash benefits and monthly annuities can be subscribed.

The risk insured in this optional coverage is a **lifelong risk**, for seniors total and partial loss of autonomy, providing lifelong annuities and additional cash benefit to face expenses related to the LTC status such as home equipment.
Risk pooling of this optional coverage is limited to this policy subscribers.
To prevent adverse selection, medical questionnaire and age limit of 75 are required for application.

**Benefits trigger** is the medical diagnosis made by professionals at local authorities level *(Conseil general)* to determine the classification of LTC users and deliver the public cash for care allowance APA.

Chart 2

**3** **Optional LTC Insurance**
Supplentary to the MGEN global coverage

MGEN

GIR 1   GIR 2                        GIR 3

OPTION 1 and OPTION 2 : 2  levels of cash benefits

| Total loss of autonomy | | Partial loss of autonomy | |
|---|---|---|---|
| **Lifelong monthly annuities** | + **Additional cash benefit : lump for home equipment** | **Lifelong monthly annuities** | + **Additional cash benefit : for home equipment** |
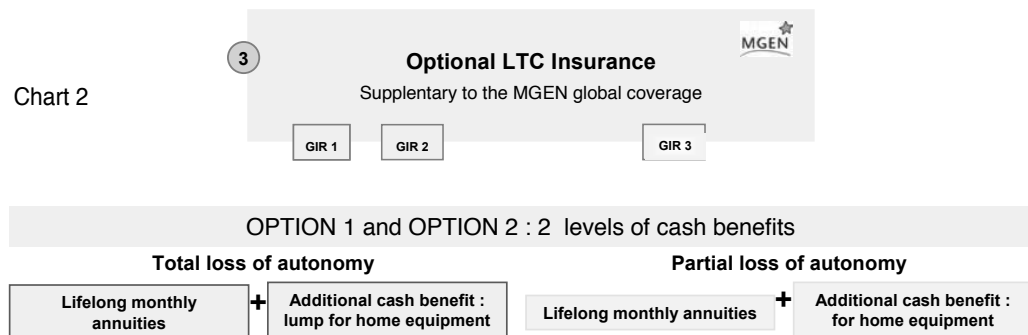
The uniqueness of the MGEN global LTC coverage is based on two major features:

- The total premium of the global LTC coverage (first level of guarantees included in the "Global offer"supplemented by the optional LTC insurance) is very competitive thanks to specific risk pooling mechanism of the first level of coverage.
- A single benefit trigger determines the insurees eligibility to all LTC cash for care benefits and services (public ones and private ones).

## 7.  Conclusion and perspectives

As expected, despite the presidential campaign promises, the many times announced and postponed reform of the public LTC insurance because of successive financial and economic crisis found no concrete implementation.

In the absence of LTC public reform, MGEN already launched in 2010 its LTC insurance. Facing a new stop of the governmental reform, MGEN is now working on further improvements of its coverage.

Among future directions:

- MGEN is developing a pack of home services, telehealth services, home automation techniques to improve home LTC users comfort and security in partnership with a home and motor mutual insurance company. A new partnership with the IESF (French Engineers and Scientists association), with the famous Engineer school "Ecole Centrale de Paris" and "The Army Biomedical Research institute" is being developed to design a studying and research program aiming at supporting the development of innovative technologies in long-term care.

- Considering the family caregivers' needs and the young adults reluctance to subscribe LTC insurance, MGEN is working on an innovative and comprehensive concept of insurance, providing LTC coverage to **ascendants** as well as to policyholders, in order to offer competitive and attractive coverage and to lower the age of subscription.

- Unlike stock insurance companies, mutual organizations have no access to capital markets to finance development projects or increase their own funds. To modify this unfair situation, MGEN is now working with the French government to allow mutual organizations to design new alternatives to finance their development and to contribute to new major social issues such as LTC. MGEN intends to develop the issuance of "Mutual Savings Bonds" only available for sale to MGEN and mutual partners' members. These bonds are designed to be
  - safe and secure savings products for the Mutual members
  - an innovative and financing for mutual organizations to increase their capital for complying with Solvency 2 capital requirements or/and to invest the raised capital in nursing homes.

- MGEN is also considering the development of a new kind of LTC insurance, the premiums of which could be invested in financing the building of nursing homes with a priority access for the policyholders. In case of no vacancy in its nursing homes network, MGEN shall finance home long term care or find a place in another institution.

# The Evolution of Social Norm: Economic Modeling[*]

**Tomotaka FUJITA**[**]
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## Introduction

The basic theory of the "social norm" is one of the core issues of our "Soft Law Project."[1] Our previous paper[2] reviewed how economics – together with other disciplines such as sociology or sociological psychology – can analyze social norms and what the possible our future agenda might be.  In that paper, we identified three different lines of argument that have been discussed: (1) Incentive structure of the social norms, (2) Stability and transition of the social norms, and (3) Interrelationship between social norms and the law.

The first question focuses on the question of why people observe norms that are not enforced by the state.  One might say that they follow norms voluntarily simply because "they like it,"[3] and sometimes that might be true.  However, there may be the possibility that conformity to a certain norm has a hidden incentive structure that binds the behavior of members of the society.  Recent literatures in law and economics scholarship have revealed the incentive structure of many social norms.  For instance, one might explain the observance of cooperative social norms, which looks disadvantageous at first glance, as equilibrium in an infinite, repeated game.[4] Alternatively, we could consider a costly conformity to certain social

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1   University of Tokyo GCOE Program "Soft Law and the State-Market Relationship: Forming a Base for Education and Research of Private Ordering" and University of Tokyo 21st Century COE Program "Soft Law the State-Market Relationship: Forming a Base for Strategic Research and Education in Business Law"

2   Fujita and Matsumura (2005).

3   There are two different types of "they like it" situation.  The first is a situation where many people like to do the same thing and this leads the regularity in people's behavior.  The second is the situation where conforming to the "social norm" creates pleasure.  People may not like to do "A" in itself, but once many people do "A" and "A" becomes a social norm, then conformity creates utility.  The former is a pattern in which behavior people like becomes social norm and the latter is in which people like the behavior because it conforms to the social norm.

4   It is well known that when the discounting factor is low enough (i.e., the players are sufficiently patient), a cooperative strategy that guarantees each player a minimum required payoff is possible ("Folk Theorem").  See, Myerson (1991), p. 331, Gibbons (1992), p. 88.

norms a signaling behavior of the players – one that conveys certain private information to the other party.[5]  Both explanations can be integrated.[6]  Several analyses along these lines have been discussed since our Project began and the outcomes have been published.[7]

The second question is why a certain specific norm is chosen among all possible equilibria. Although this question is often confused with the aforementioned first question, it is theoretically a completely separate one.  The argument of the incentive structure only shows the regularity of people's behavior forms equilibrium, and does not explain why a specific equilibrium is chosen among possible ones.  There are also related questions as to whether a chosen equilibrium is optimal, and how stable it is.  This relates to the economic theory of the formation and transformation of the norms and customs, to which much attention has been drawn in recent economic literatures.[8]  The "front line" of game theory focuses on this issue,[9] and it has also much to do with such approaches as "new institutional economics" (e.g., North (1990)) or "comparative institutional analysis" (e.g., Aoki (2001)) – both of which explore the formation and transformation of the institutions.

Finally, there is another line of literatures that focus on the interrelationship between legal rules and social norms.  If there is a possibility for social norms to be inefficient, one would naturally ask whether state intervention could improve the situation.  The state (including courts, legislators, administrative body, etc.) can affect an inefficient social norm through a direct intervention such as outright prohibition,[10] or through a more indirect intervention (such as a public campaign) that simply creates a "focal point" among multiple equilibria. Either way, the effort may not be promising when one considers the ability and incentive of the state.  The desirability of the "incorporation strategy" in the Uniform Commercial Code and other legal rules, which is discussed in this symposium, addresses a more delicate relationship between law and social norms.[11]

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5   For example, it is often gifts in the form of certain goods (such as souvenirs) that are preferred to gifts in a form of money.  It is costly to choose appropriate souvenirs, and it is even more costly for those who do not know much about the receiver.  In this case, the behavior to send souvenirs rather than money could work as a signal that indicates the sender's knowledge of or enthusiasm for the receiver.  See, Posner (2000), Ch. 4.

6   A costly conformity to certain social norms could be interpreted as a signaling of a low discount factor (patience) in the players, which facilitates cooperative behavior in repeated games.  See, Posner (2000).

7   See, for example, Seshimo (2005).

8   As a seminal work, see, Sugden (1986) and Sugden (1989).  As a more recent work, see, Matsui (2002).

9   For the literatures of evolutionary game theory, see, Part I. C.

10   It is usually assumed in economic literatures that direct state intervention as exogenous (i.e., raising the cost of certain behaviors).  Recent law and economics literatures sometimes focus on the endogenous effects of state interventions and argue for a possible "preference-shaping policy."  See, Sunstein (1986) and Sunstein (1993).

11   Bernstein (1996) distinguishes "relation-preserving norms" (RPNs) and "end-game norms" (EGNs), and argues that it might be unwise for courts (or another third party, such as arbitrators) to apply the former when disputes are referred to them.  The argument can be best understood in the context of repeated games.  The outcome resulting from the application of RPNs can be seen as a payoff for the parties' coop-

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Although all three lines of previous study must be further developed, the focus of this essay is devoted exclusively to the second aforementioned question. This choice is more exogenous than endogenous. During previous discussions in the Seminars, the Symposia or the Study Groups of Soft Law Project, it was felt that the systematic study of the dynamics of social norms is lacking in Japanese legal scholarship.[12] This may be partly attributed to the fact that the recent developments in economic literatures are too heavily technical for lawyers and if this is the case, an introductory note for this field would help the situation. As such, this essay does not intend to propose a new theory or to report a new finding; rather, we wish instead to discuss how recent economic modeling can address and shed light on the intriguing subject of the evolution and transformation of social norms.

Part I explains the nature of the problem; by citing a classical example in economics of information, we show that an inefficient norm may be chosen among multiple equilibria. Subsequent Parts analyze the social norms using the simplistic model of evolution. First, we examine the pure coordination game with a symmetric payoff structure (Part II); we see the efficient outcome is more stable than an inefficient one in a long-run evolutionary process. Second, we examine the coordination game with the asymmetric payoff structure (Part III). Compared to the previous Part, the analysis in Part III shows that a suboptimal outcome can be more stable. Finally, we examine the whether the situation can be changed with communication among players. The simple model of a "cheap-talk game" is introduced, and the implications of equilibria choice and evolutionary stability are explored.

## I. Multiple Equilibria and the Possibility of Non-optimal Equilibrium

### A. Social Norms as Equilibrium

In this essay, as in our previous article, we use the term "social norm" as meaning "a behavioral regularity which is widely observed among the majority of the member of the society."[13] If we define the social norm in this manner, we can see it as the equilibrium of a game played by the member of a society. Such an equilibrium can be inefficient for many rea-

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erative strategy. The outcome from the application of EGNs can be seen as the payoff of the parties' "trigger" strategy, in case other party does not cooperate. The party goes to the court when the other party does not cooperate and EGNs (trigger strategy) apply. This terminates the relationship with the party in question, but the possibility for this trigger strategy strengthens the stable relationship with other trade partners. On the other hand, if the courts apply RPNs to the dispute resolution, parties cannot introduce a "trigger strategy" into their games.

Bernstein's argument has an important implication, which the courts should be very careful to examine: the nature of the game is to not destroy the whole of a structure that is efficient. For empirical studies into customs in industry, see, Bernstein (1992) and Bernstein (1999).

12　See, for example, Nakazato (2005).

13　The reason for the use of this possibly debatable definition, see, Fujita and Matsumura (2005), p. 61.

sons.[14]  The most obvious example is a norm in a small closed society that has a third-party effect on non-members and is suboptimal for the larger society as a whole.  For example, social custom within industry can be inefficient from the viewpoint of society, including industry's customers.  Cooperative trade customs can facilitate a tacit collusion, helping to achieve an oligopoly outcome among industries that can harm the consumers' welfare.  A closed society of experts might develop a suboptimal (from the viewpoint of the whole society) standard of conduct in relation to non-expert customers.  The University of Tokyo Hospital Case, in which the Supreme Court refused to accept the customs among medical doctors as a proper standard of care in relationship to patients, is a typical example that focuses on this aspect.[15]

However, a theoretically more interesting situation is when the social norm becomes inefficient, even without such an outright third-party effect.  This occurs typically in a situation where multiple equilibria exist.

## B. Multiple Equilibria and Suboptimal Equilibrium

Until the 1970s, many economists had been relatively optimistic in believing that a rational expectation would lead to an efficient equilibrium.  Developments in the economics of information and game theory changed this perception.  It has been well recognized that a suboptimal equilibrium can be chosen by the players and become stable in a multi-equilibria situation.

|  | products | | payoff | |
|---|---|---|---|---|
|  | firm | home | Firm | Home |
| Race A (high) | 20 | 12 | 15 | 12 |
| Race A (low) | 10 | 6 | 15 | 6 |
| Race B (high) | 20 | 12 | 10 | 12 |
| Race B (low) | 10 | 6 | 10 | 6 |

Table 1

The following example will demonstrate how an inefficient outcome (social norm) can be an equilibrium.  Akerlof (1980) suggests a possible scenario in which an inefficient social norm (referred to as a "social custom" in the original article) could survive, based on a simple model of asymmetric information.  Assume a society in which Race A and Race B co-exist; there is no difference in productivity between the two races on average, but there is a difference in productivity among the individuals of each race.  (For the sake of simplicity, let us assume that 50 percent of each race is of low productivity and the rest is high.)  Each individual has a choice whether to work at a firm as an employee or to work at home.  High-productivity individuals can produce 20 products at a firm and 12 at home, whereas low-productivity

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14   For a discussion of the possibility of inefficient social norms, see, Posner (1996).
15   Supreme Court Decision February 16, 1961, Minshu [The Supreme Court Reporter] v. 15(2), p. 244.

individuals can produce 10 at a firm and 6 at home. The payoff to the individuals is either (1) the salary from the employer when they work at a firm or (2) the value of the products when they work at home.  Finally assume that, for an unknown reason, employers embrace a prejudice that Race A is more productive on average, and they consequently pay more to the employees of Race A than of Race B (say, 15 to Race A and 10 to Race B respectively).

What happens next?  High-productivity individuals in Race B could earn more if they work at home than at a firm (12 and 10 respectively; see, Table 1).  These individual therefore choose to work at home.  Low-productivity individuals in Race B earn less if they work at home than at a firm (6 and 10 respectively; see, Table 1).  Therefore, they choose to remain working at the firm.  As a result, the average productivity of Race B employees at the firm becomes 10, which corresponds with their salaries.  Individuals in Race A, regardless of their productivity, earn more working at the firm than at home (15>12, or 15>6) and therefore they choose to work at firm.  The average productivity of Race A employees at the firm becomes 15, which correspond with their salaries.  Overall, this becomes an equilibrium in the sense that neither party has an incentive to move or change.

This is a sort of self-fulfilling prophecy.  Once the prejudice emerges that Race A is more productive and deserve a greater salary than Race B, it will create a real difference in productivity among both Race A and Race B employees at a firm.  The differing productivity does not create the discriminatory treatment; rather, the discriminatory treatment creates differing levels of productivity.

The equilibrium referred to in this Section is not efficient.  If the firm employs each race equally and pays 12.5 (i.e., the average of 15 and 10) to both, all individuals will work at firm because they will earn more than if they work at home (12.5>12 for high-productivity individuals and 12.5>6 for low-productivity individuals).  It would ultimately maximize production in society.  Nevertheless, all members of the society will voluntarily observe an inefficient social norm, once it emerges.

The most unfortunate characteristic of the model is that the follower of the social norm might not even be aware of a possibly better equilibrium.  In the above scenario, although both the employer and employees would be better off in a society where Race A and Race B are treated equally, people might not even consider such an ideal situation possible.  Under this circumstance, inefficient norms cannot be easily changed.

## C. Recent Developments in Game Theory

One might wonder why people choose inefficient equilibria at all when more efficient equilibria exist.  In the scenario of Section B, we simply assumed that, "for an unknown reason, employers embrace a prejudice that Race A is more productive."  But why does this happen at all?

Although it has been well recognized since the 1970s that there can be a suboptimal equilibrium in a multi-equilibria situation, the mechanism of the choice among multiple equilibria has not been fully examined in terms of theory, until recently.  Following the lead of Schelling

(1960), we can call something that tends to focus the players' attention on a specific equilibrium a "focal point effect," and the resulting equilibrium a "focal equilibrium." But how does a "focal point" arise? Economists were, at first, not ambitious to handle the issue within economic theory. For example, Myerson (1991) says "the focal point-point effect defines both an essential limit on the ability of mathematical game theory to predict people's behavior in real conflict situations and an important agenda for research in social psychology and cultural anthropology."

Recent game theorists, however, have attempted to elaborate an economic model to address the problem of equilibrium selection. Different approaches have been taken to exclude less plausible equilibria. Although some have attempted to explain equilibrium selection at the individual decision-making level introducing new "refinement" concepts, more literatures have shifted to "evolutionary" explanations that focus on how the equilibria converge through a long-term evolutionary process.[16]

This essay introduces elements of this evolutionary approach to the equilibrium selection process. We examine how simple 2×2 games with multiple equilibria converge into one stable situation. One of the most important features of the evolutionary approach is that, contrary to ordinary game theory or economic analysis in general, players are not assumed to be completely "rational," at least not in the sense that they choose the most appropriate strategy given their sometimes imperfect and incomplete information and an infinite deduction ability. In fact, in the model explained in the following Parts, the overwhelming majority of players simply mimic the seemingly most successful strategy played (i.e., they mimic the behavior of the most successful player in the existing game), with a few "idiosyncratic" players choosing their strategies randomly. In other words, the approach describes how a stable equilibrium emerges from the trial-and-error learning process, and the evolutionary approach can be understood as one possible approach to incorporating "bounded rationality" and "learning" into economic modeling.

## II. Pure Coordination Game with the Symmetric Payoff Structure[17]

### A. A Simple Game with Multiple Equilibria

First, let us assume the following simple normal-form game. Each player has two strategies to choose from: Strategy L and Strategy R. The payoff to the each player through a transaction with others is as follows.

When both players choose L: 2

When both players choose R: 1

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16 Seminal works in the evolutionary approach can be traced back to Smith and Price (1973) and Smith (1982). An excellently reviewed recent development in the evolutionary approach is available in Fudenberg and Levine (1998).

17 For more general arguments and precise proofs, see, Kandori, Mailath and Rob (1993).

When each player chooses different strategy: 0

|   | L | R |
|---|---|---|
| L | 2,2 | 0,0 |
| R | 0,0 | 1,1 |

Table 2

The payoff structure is "symmetric" in the sense that each player gets the same payoff from the transaction, although the *amount* of the payoff depends on the combination of both parties' strategies.

This game has two sets of Nash equilibria[18] with pure strategy: (L, L) and (R, R). There is no compelling reason for one equilibrium to be preferred by the players over the other.

## B. Modeling the Evolutionary Process

Let us assume that the game described in Section A is being continuously played by many people over a long period of time. We consider a group which consists of eight players. Players make transactions with one another within the group, and the payoff of each transaction is exactly the same as in the above game: (L, L) produces 2 for each member; (R, R), 1; and (L, R) and (R, L), 0. Total return to each player is the aggregate of the payoff of the transactions. For the sake of simplicity, we assume that each player makes one transaction with another member of the same society. Therefore, the return to each player depends both on the chosen strategy and on the number of other players who choose the same strategy. For instance, when four members choose Strategy L and the other four Strategy R, the return is 6 (2×3+0×4) for those players who chose Strategy L and 3 (0×4+1×3) for those who chose Strategy R.

Let us further assume the following turnover of group membership. Players enter into and leave from the group continuously, but the membership of the group is kept constantly at eight individuals. Sometimes one new member enters while one old member leaves, and sometimes more than one new member enters while the same number of old members leave. Each player chooses his strategy when he enters the group and does not change it until he quits. An "*ordinary*" newcomer mimics the best strategy of the existing member who obtains the highest expected payoff. There also exist a small number of "*idiosyncratic*" newcomers who choose their strategy randomly. The choices of "idiosyncratic" newcomers do not follow the above pattern, but are simply unpredictable. The choice of an "ordinary" newcomer can be interpreted as an adaptation to the environment, and that of an "idiosyncratic" newcomer as the mutation; overall, it can be said that the above scenario describes the evolu-

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18 A "Nash equilibrium" refers to a situation (or strategy combination) in which no player can increase his payoff by changing his strategy, given the strategy of other players. For a definition of Nash-equilibrium, see basic textbooks on game theory, such as Gibbons (1992), p. 8.

tionary process.

Where does this evolutionary process converge?  Let us denote the situation where all members choose Strategy L as "Norm L", and that where member choose Strategy R as "Norm R".  First we confirm how the transition between Norm L and Norm R occurs, and then where this evolutionary process converges.

## C. The Choice of an "Ordinary" Newcomer and the Transition between two Norms

First, let us confirm the choice of an "ordinary" newcomer.  Table 3 shows the return for each member.  The first row indicates the number of members who choose Strategy L and Strategy R respectively.  The second and third rows indicate the payoff to the members with Strategy L and Strategy R, given the composition of the members in the first row.  For instance, when seven members in the group choose Strategy L and one member chooses Strategy R, seven players with Strategy L get 12 ($2\times6+0\times1$) and one player with Strategy R ($0\times7$) gets 0.  Therefore, the "ordinary" newcomer will mimic seven members and choose Strategy L.

| Members with Strategy L / Strategy R | Strategy L | Strategy R |
|:---:|:---:|:---:|
| 0 / 8 | - | $1\times7=7$ |
| 1 / 7 | $0\times6=0$ | $0\times1+1\times6=6$ |
| 2 / 6 | $2\times1+0\times6=2$ | $0\times2+1\times5=5$ |
| 3 / 5 | $2\times2+0\times5=4$ | $0\times3+1\times4=4$ |
| 4 / 4 | $2\times3+0\times4=6$ | $0\times4+1\times3=3$ |
| 5 / 3 | $2\times4+0\times3=8$ | $0\times5+1\times2=2$ |
| 6 / 2 | $2\times5+0\times2=10$ | $0\times6+1\times1=1$ |
| 7 / 1 | $2\times6+0\times1=12$ | $0\times7=0$ |
| 8 / 0 | $2\times7=14$ | - |

Table 3

As is shown in the Table 3, if there were more than three players who had chosen Strategy L, an "ordinary" newcomer would choose Strategy L, because those who chose Strategy L obtained more then those who chose Strategy R.  If there were fewer than three members who had chosen Strategy L, an "ordinary" newcomer would choose Strategy R.

Assume that all the players choose Strategy R at the initial stage ("Norm R").  "Ordinary" newcomers choose Strategy R, and even if an "idiosyncratic" newcomer appears at times, as far as they remain small in number, they are likely to be replaced by subsequent "ordinary" newcomers who choose Strategy R.  Therefore, the situation is relatively stable and most (or all) members will continue to choose Strategy R.

However, it might be possible – though not at all probable – that more than three "idiosyn-

cratic" newcomers will enter simultaneously or consecutively,[19] and that all of them will choose Strategy L.  Once this happens, then an "ordinary" newcomer who enters next will also choose Strategy L.  If the next newcomer is an "ordinary" one (as is quite likely so), he will choose Strategy L and furthermore, it is likely that most or all members of the group will come to play Strategy L.  Thus, a transition occurs from Norm R to Norm L.

Although Norm L seems fairly stable, it might still be possible, with an even lower probability, that a future transition would occur.  Even if all members choose Strategy L, if six or more "idiosyncratic" newcomers enter simultaneously or consecutively and all of them choose Strategy R, then Strategy R yields more than Strategy L.  Therefore, subsequent "ordinary" newcomers will choose Strategy R and it is probable that all the members will play Strategy R in a mean time through the replacement of members.  A transition from Norm L to Norm R occurs.

## D. The Long-term Stability of Norms

As explained in Section B, neither the situation where all members follow Strategy L (Norm L) nor the situation where all members follow Strategy R (Norm R) are completely immune to change, and transition could possibly occur from Norm L to Norm R or vice versa in the long term.  Which situation is more likely to remain longer?  The answer is obvious: the period of Norm L is longer.  More than three "idiosyncratic newcomers" need to appear to change Norm R, while at least six "idiosyncratic" newcomers are needed to change Norm L. The more efficient Norm L is more stable than Norm R.

As far as a kind of "natural selection" mechanism along the above lines exists, the optimal equilibrium (Norm L in above scenario) is more "evolutionarily stable" than the suboptimal one.  The period of optimal equilibrium will continue longer over a very long term.

This might give the reader the optimistic impression that the survivorship of a certain social norm suggests its efficiency.  Unfortunately, the model does not necessarily imply this; the only thing shown is the *relatively* high stability for an optimal equilibrium in the long run. It may be possible that an inefficient equilibrium continues for a long period on an absolute basis.  An inefficient equilibrium could survive 1,000 years, followed by a 5,000-year efficient era.  It is especially true when the probability of the mutation (i.e., an "idiosyncratic" newcomer in the above hypothesis) is very low.  An inefficient social norm continues for quite a long time in this situation (even when that period is shorter than the period of an efficient one) when the initial setting is inefficient (i.e., all members choose R in the above scenario).

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19   Although we described that "simultaneously or consecutively" for the sake of simplicity, the expression is too narrow.  It is suffice that there exist more than three idiosyncratic newcomer exist in the group.

## III. Coordination Game with an Asymmetric Payoff Structure

### A. The Payoff Structure of the Game

In the previous Part, we saw a situation where an optimal outcome survives longer when the payoff structure is symmetric. This somewhat optimistic story, however, does not hold when the payoff structure of each transaction is asymmetric. Assume another game, as follows. Just as in the scenario of Part II, players enter into and leave from the group continuously, the membership of the group is kept constantly at eight members, and they make transactions with one another randomly. Each player has two strategies to choose from: L and R. Each player chooses a strategy when he enters the group and does not change it until he quits. An "ordinary" newcomer mimics the best strategy of the existing membership that obtains the highest expected payoff. A small number of "idiosyncratic" newcomers choose their strategy randomly.

The only difference is the payoff structure of the players. Let us assume that each player receives the following payoff through a transaction.

When both players choose L: 2

When both players choose R: 1

When player 1 chooses L and player 2 chooses R: player 1 gets -3 and player 2 gets 0

When player 1 chooses R and player 2 chooses L: player 1 gets 0 and player 2 gets -3

|  | L | R |
|---|---|---|
| L | 2,2 | -3,0 |
| R | 0,-3 | 1,1 |

Table 4

This game also has two sets of Nash equilibria, each with a pure strategy ((L,L) and (R,R)), as in the transaction in Part II. However, it is more risky for each player to choose Strategy L, although it is more efficient for all members to choose Strategy L under this payoff structure. The payoff structure is asymmetric in the sense that each player could receive a different payoff when the choice of strategy differs among parties.

### B. The Stability of the Equilibrium

Under the setting in Section A, the transition from Norm R to Norm L becomes more difficult than from Norm L to Norm R. Table 5 indicates the payoff to the members. The first rows show the number of the members who choose Strategy L and Strategy R respectively. The second and third rows indicate the payoff to the member who chooses Strategy L and Strategy R respectively, given the composition of the group in the first row.

| Members with Strategy L / Strategy R | Strategy L | Strategy R |
|---|---|---|
| 0 / 8 | - | 1×7=8 |
| 1 / 7 | (-3)×7=-21 | 0×1+1×6=6 |
| 2 / 6 | 2×1+(-3)×6=-16 | 0×2+1×5=5 |
| 3 / 5 | 2×2+(-3)×5=-11 | 0×3+1×4=4 |
| 4 / 4 | 2×3+(-3)×4=--6 | 0×4+1×3=3 |
| 5 / 3 | 2×4+(-3)×3=-1 | 0×5+1×2=2 |
| 6 / 2 | 2×5+(-3)×2=4 | 0×6+1×1=1 |
| 7 / 1 | 2×6+(-3)×1=9 | 0×7=0 |
| 8 / 0 | 2×7+=14 | - |

Table 5

The Table suggests that at least six "idiosyncratic" newcomers choosing Strategy L are necessary for the change to Norm L when all members choose Strategy R.  In contrast, only three are needed to transform Norm L to Norm R.

As a result, the situation in which all members follow Strategy L (Norm L) is less stable than the situation in which all members follow Strategy R (Norm R).  Under these circumstances, a suboptimal equilibrium (inefficient norm) is more stable than an optimal one (efficient norm).

Thus, the stability of equilibrium in the long run depends on the payoff structure of the underlying games (transactions) and could be either optimal or suboptimal.[20]

## C. Excess Inertia: A Source of Asymmetric Payoff Structure

One might see the assumption of asymmetric payoff structure as being too arbitrary.  To the contrary: we would like to emphasize that this is often the case in relation to social norms. The asymmetric payoff structure described in Section A implies the following: when many people follow Strategy R, it is very costly to switch to Strategy L, unless other players also switch to Strategy L at the same time.  Such a scenario can be found where the problem of "excess inertia" exists.

Excess inertia can be caused for many reasons; it often occurs, for example, when "network externality" exists (i.e., the situation where the payoff to the player depends on the number of players who take the same action).[21]  If there is an irreversibility in terms of switching strategy (i.e., once the player changes strategy, then the player cannot revert to the original one) and it is costless to switch the strategy at any time, the player would almost certainly take a "wait and see" attitude; in such circumstances, the equilibrium outcome would become inefficient.[22]  Even if switching is not completely irreversible, inefficiencies caused by

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20   See, Kandori, Mailath and Rob (1993).

21   See, Katz and Shapiro (1985).

22   See, Matsumura and Ueda (1996).  David (1985) offers an interesting explanation why existing keyboard

delay would occur as far as there are asymmetric costs in terms of switching back and forth.

Although the phenomenon of "excess inertia" is most often discussed in the context of technological innovation, it is also a key to understanding the development of social norms. Many social groups do not easily accept the former members who violated the norm and thus disobedience to the norm often has a quasi-irreversible effect.

## IV. Communication and Stability of Norms[23]

### A. The Setting: Introducing Communication Stage

In the previous Part, we have shown that less efficient equilibria can be more stable when their payoff structures are asymmetric. This Part introduces an additional element to the evolution of equilibrium: *communication among players*. In brief, it is suggested that communication can possibly make suboptimal equilibria less stable and optimal equilibria more stable.

In the previous Parts, the players (newcomers) simply chose between Strategy L and Strategy R when they entered the group. Here, we introduce the "communication" stage of the game, considering the following two-stage game.

Each player chooses his strategy when he enters the group and does not change it until he quits. The strategy consists of two parts: (1) In the first stage, each player chooses whether or not to communicate with another party. If he chooses to communicate, he announces something like "B" and listens to what his communications partner announces. If he chooses not to communicate, he says nothing, nor does he listen to what his partner says. Communication costs are denoted as "b", which is positive but arbitrarily small. The player can save this cost by choosing "not to communicate." (2) In the second stage, each player chooses either L or R. Let us assume the same payoff structure in the second stage as in Part III.

When both players choose L: 2

When both players choose R: 1

When player 1 chooses L and player 2 chooses R: player 1 gets -3 and player 2 gets 0

When player 1 chooses R and player 2 chooses L: player 1 gets 0 and player 2 gets -3

---

layout "QWERTYUIOP" survives in the face of more efficient system such as DSK (Dvorak Simplified Keyboard). He points out that technical interrelatedness, economies of scales, and quasi-irreversibility of investment are the key to understand the phenomenon.

23   The argument in this Part is inspired by Matsui (1991) although the article rests on a quite different concept of stability ("cyclically stable set"). Farrell (1993) is also an important contribution to the cheap-talk games which analyze special kind of communication called "neologism".

|   | L | R |
|---|---|---|
| L | 2,2 | -3,0 |
| R | 0,-3 | 1,1 |

Table 6

The payoff for the player depends both on the choice in the first stage and on the choice in the second.   There is, as in the games of previous Parts, a continuous turnover of members.  An "ordinary" newcomer mimics the "best" strategy (i.e., that of the existing member who obtains the highest expected payoff).  A small number of "idiosyncratic" newcomers choose their strategy randomly.

Let us denote the situation in which all members choose L in the second stage as "Norm L" and choose R in the second stage as "Norm R".  We will examine how the transition between Norm L and Norm R occurs, and where this evolutionary process converges.
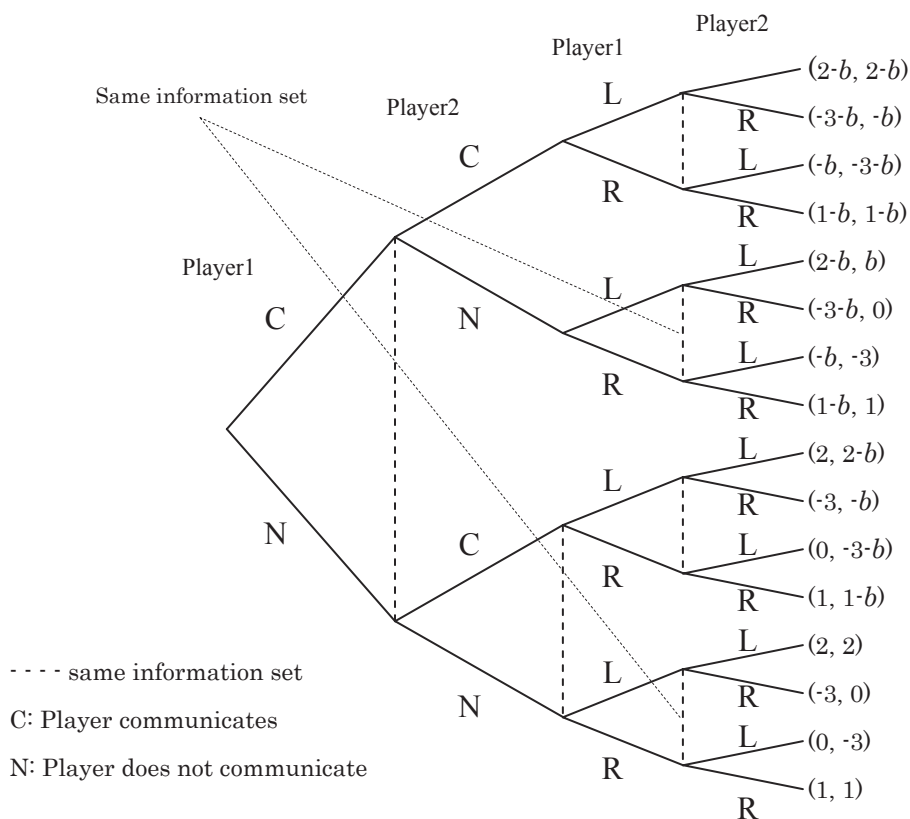


Figure 1

## B. Transition from Norm R to Norm L

First, let us examine the possibility for a transition from Norm R to Norm L.  Suppose an initial situation where all players take the following strategy (Strategy I): "I will not communicate in the first stage and I will choose R in the second stage."  Then, let us suppose that an "idiosyncratic" newcomer begins to take the following strategy (Strategy II): "In the first stage, I will communicate and announce 'B'.  In the second stage, I will take L if my partner also says 'B,' but will otherwise take R."

| Members with Strategy I / Strategy II | Strategy I | Strategy II |
|---|---|---|
| 0 / 8 | - | 2×7-7b=14-7b |
| 1 / 7 | 1×7=7 | 1×1+2×6-7b =13-7b |
| 2 / 6 | 1×1+1×6=7 | 1×2+2×5-7b=12-7b |
| 3 / 5 | 1×2+1×5=7 | 1×3+2×4-7b =11-7b |
| 4 / 4 | 1×3+1×4=7 | 1×4+2×3-7b =10-7b |
| 5 / 3 | 1×4+1×3=7 | 1×5+2×2-7b =9-7b |
| 6 / 2 | 1×5+1×2=7 | 1×6+2×1-7b =8-7b |
| 7 / 1 | 1×6+1×1=7 | 1×7+-7b =7-7b |
| 8 / 0 | 1×7=7 | - |

Table 7

A newcomer's payoff from Strategy II is larger than that of the incumbent players who take Strategy I, if at least two "idiosyncratic" newcomers who choose Strategy II enter into the group.  To see why, assume, for instance, the scenario where six members take Strategy I and two members take Strategy II.  The two members who take Strategy II get 8-7b[24] while the other six get 7.[25]  In contrast, if there is only one "idiosyncratic" newcomer taking Strategy II, Strategy II yields 7-b which is lower than Strategy I does (i.e.,7). (See, Table 7)

Because an "ordinary" newcomer mimics the best strategy (i.e., that of the existing member who obtains the highest payoff) and Strategy II is more successful than Strategy I[26], subsequent "ordinary" newcomers will also adopt Strategy II when there are (only) two or more members who take Strategy II.  Compare the result with that of the previous Part.  At least six "idiosyncratic" newcomers are required there (see, Part III. B), while only two are necessary here.

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24   When the two members with Strategy II meet, both of them say "B," choose L, and get 2.  When they meet the other six members with Strategy I, they say "B," the other party says nothing, both choose R, and both get 1.  Communication costs are 7b in total.  Therefore they receive 8-7b.

25   When the six members with Strategy I meet, both of them say nothing, choose R, and get 1.  When they meet with two other members who choose Strategy II, they say nothing, the other party says "B," both parties choose R, and get 1.  They therefore get 7 in total.

26   We assumed that $b$ is sufficiently small so that 8-7b>7.

Note that when sufficiently large number of members chooses L in the second stage, an "idiosyncratic" newcomer gets even more if he chooses a new strategy "I will not communicate and choose L" and saves communication costs "b". If an "idiosyncratic" newcomer takes this strategy, subsequent "ordinary" newcomers will follow. Therefore, in the long run, players will stop to use communication at all. However, as we saw above, the possibility communication plays crucial role for transition of the Norm.

In sum, even when Strategy I is prevailing and all members choose R, only two "idiosyncratic" newcomers are needed to change the situation. The transition from Norm R to Norm L becomes dramatically easier when a communication stage is introduced into the game, even if the payoff structure of the second game is identical to that of the game in Part III.

## C. Transition from Norm L to Norm R

Let us now examine the possibility of the transition from Norm L to Norm R. Suppose that initially, all players take the following strategy (Strategy III): "I will not communicate in the first stage and I will choose L in the second stage." Does the introduction of the communication stage also facilitate the change the Norm L to Norm R? The answer is "no," for the following reason.

Suppose an "idiosyncratic" newcomer takes the following strategy (Strategy IV): "In the first stage I will communicate and announce 'B'. In the second stage, I will take L if my partner also says 'B', and will take R otherwise." When one or two members take Strategy IV, it does not yield better net results than Strategy III[27]. At least three members are required for Strategy IV to create a greater yield and thus be mimicked by an "ordinary" newcomer. (See, Table 8)

| Members with Strategy III/ Strategy IV | Strategy III | Strategy IV |
|---|---|---|
| 0 / 8 | - | 2×7-7b=14-7b |
| 1 / 7 | 2×0+(-3)×7=-21 | 0×1+2×6-7b =12-7b |
| 2 / 6 | 2×1+(-3)×6=-16 | 0×2+2×5-7b =10-7b |
| 3 / 5 | 2×2+(-3)×5=-11 | 0×3+2×4-7b =8-7b |
| 4 / 4 | 2×3+(-3)×4=-6 | 0×4+2×3-7b =6-7b |
| 5 / 3 | 2×4+(-3)×3=-1 | 0×5+2×2-7b =4-7b |
| 6 / 2 | 2×5+(-3)×2=4 | 0×6+2×1-7b =2-7b |
| 7 / 1 | 2×6+(-3)×1=9 | 0×7+-7b =-7b |
| 8 / 0 | 2×7=14 | - |

Table 8

Next, let us suppose that an "idiosyncratic" newcomer takes the following strategy (Strategy IV´): "In the first stage, I will communicate and announce 'B'. In the second stage, I will

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27   When two members choose strategy IV, it will yield 2-7b while members who choose strategy III get 4.

take R if my partner also says 'B', and otherwise I take L."  Strategy IV´ never yields a greater gain than Strategy III, even if multiple idiosyncratic players enter the group simultaneously. (See, Table 9)

| Members with Strategy III / Strategy IV' | Strategy III | Strategy IV' |
|---|---|---|
| 0 / 8 | - | 2×7-7b=7-7b |
| 1 / 7 | 2×7=14 | 2×1+1×6-7b =8-7b |
| 2 / 6 | 2×1+2×6=14 | 2×2+1×5-7b =9-7b |
| 3 / 5 | 2×2+2×5=14 | 2×3+1×4-7b =10-7b |
| 4 / 4 | 2×3+2×4=14 | 2×4+1×3-7b =11-7b |
| 5 / 3 | 2×4+2×3=14 | 2×5+1×2-7b =12-7b |
| 6 / 2 | 2×5+2×2=14 | 2×6+1×1-7b =13-7b |
| 7 / 1 | 2×6+2×1=14 | 2×7+-7b =14-7b |
| 8 / 0 | 2×7=14 | - |

Table 9

Finally, let us suppose an idiosyncratic newcomer who takes the following strategy (Strategy IV˝): "In the first stage, I will not communicate.  In the second stage, I will take R."  This is completely identical to the game in the previous Part, and the result does not change.  At least three "idiosyncratic" newcomers are required for a change in Norm.

Thus, the communication does not reduce the required number of "idiosyncratic" newcomers for transforming Norm L to Norm R (compare with the result of model in Part III). Because two "idiosyncratic" newcomers are necessary for Norm R being changed to Norm L, Norm L (efficient transition) becomes more stable than Norm R if communication is possible (inefficient transition).

The intuition underpinning the above result is as follows.  Communication simply helps in the coordination of strategy.  If the coordination does not improve the relative advantage of newcomers over the incumbents, it will not facilitate a change.  The introduction of a communication stage does facilitate the transition from Norm R to Norm L, but from Norm L to Norm R.

## Concluding Remarks

This essay introduces, albeit in a very limited manner, a recent economic model that treats the transition and convergence of equilibria and the possible implications in terms of the development of social norms.  It shows that the long-term stability of the game depends both on (1) the structure of the underlying single game, and (2) the possibility for communication between the parties involved.  When the underlying game has a symmetric payoff structure, the optimal outcome is more stable; when the underlying game has an asymmetric payoff – as is often the case – a less-than-optimal outcome can be more stable.  When the parties can communicate with low costs, the optimal outcome is also more stable, even when the struc-

ture of the underlying game is asymmetric.

We do not claim that we can draw normative implications directly from evolutionary models at this stage — — although we do see a curious consistency between the above hypotheses and the familiar argument that social norms are likely to be efficient when they emerge in close-knit groups[28] — — nor do we claim that evolutionary game theory is the most promising tool for the study of social norms.  We also do not claim that models in this essay are the only or the best approach to the evolution and transformation of the social norm.  There are various other types of modeling that treat the long-term transition of equilibria even within the evolutionary game theory (see, Fudenberg and Levine (1998)).  We simply claim that there have been less satisfactory theoretical efforts have so far taken as to the question of why a certain specific norm is chosen from among possible equilibria compared to other research agendas such as theoretical and empirical studies of incentive structures in social norms.  In general, it could be said that the following remark by an eminent game theorist well represents our general feelings on this issue:

"While I think we can be satisfied with some of what has been achieved with these tools, it is appropriate to be happily dissatisfied overall; dissatisfied with our very primitive knowledge about some very important things and happy that progress is being made" (Kreps, (1990), p. 185).

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28   See, Ellickson (1991).

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