IMF Working Paper

WP/97/150

INTERNATIONAL MONETARY FUND

Monetary and Exchange Affairs Department

Cooperation, Emergence of the Economic Agency Role of Government, and Governance

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November 1997

Abstract

This paper focuses on the emergence of the economic agency role of government and its relationship with cooperation and economic management. It distinguishes emergence under war, domination or capitulation, perfect cooperation, and strategic bargaining. Good governance is a consequence of constraints designed by principals with the incentive and ability to do so. The *incentives* are related inversely to the expected relative frequency of controlling government and directly to the expected relative share of costs of poor agency. The *ability* is directly related to bargaining power in determining the agency role. There are implications for the evolution of cooperation in the society and for macroeconomic performance.

JEL Classification Numbers: D72, D78

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[1]Paper prepared while on sabbatical leave at the University of Oxford, England. The author is grateful for comments received from participants at a seminar of the Centre for the Study of African Economies, Institute of Economics and Statistics, University of Oxford. The author would also like to thank colleagues in the Fund for their comments, especially William Alexander, David Burton, Robert Hauswald and I. H. Lee. The author remains solely responsible for the views expressed in the paper.

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SUMMARY

This paper focuses on the emergence of the economic agency role of government and its relationship with cooperation and economic management in a new autonomous state, a country about to undertake systemic transformation, or one about to launch a major policy reform. A major theme of the paper is that cooperation matters. It argues that this economic agency role emerges in the context of differences in expectations regarding x-efficiency and the distributional impact of government economic activity; the history of cooperation between, and relative bargaining power of, opposing groups; and the initial set of norms, rules, and conventions governing the behavior of individuals in the country. The paper distinguishes emergence of the economic agency role under war, domination or capitulation, perfect cooperation, and strategic bargaining.

Governance is viewed as a measure of the honesty and efficiency of the agent in economic management. Good governance is a consequence of appropriate constraints designed by principals with the incentive and ability to do so. The *incentives* of groups to design such constraints are related inversely to the expected relative frequency of controlling government and directly to the expected relative share of the costs of poor agency. The *ability* is related directly to bargaining power in determining the agency role. Poor governance results when the agency role emerges in an environment of noncooperation.

There are implications of agency role emergence for the future evolution of cooperation in the society and for macroeconomic performance. Of particular importance is the effect on the economic policymaking process, the incidence of government corruption, and the emergence of disruptive distributional conflicts. Addressing poor governance could start with the problem of cooperation. In addition, the conventions, social norms, and economic institutions, which have historically emerged in society, will typically serve as important focal points in the selection of the government's economic agency role.

I. INTRODUCTION

In the study of economic policy, the economic agency role of government (EARG) is one of the most controversial, and the origin of good governance one of the most perplexing. This paper focuses on the emergence of EARG and how it is related to the emergence of good governance in the economic sphere. Table 1 (which is self-explanatory) lists the kinds of activities that typically form elements of the economic agency role of government; the precise content of such a role would vary from one country to another.[2]

The arena in which the paper operates is either a new autonomous state (e.g., a country that has emerged from colonialism), or a country[3] that is about to undertake system transformation (e.g., from centrally planned to market), or about to launch a major and broad-scale policy reform after a long period of economic stagnation. Such a country will have a major organizational problem, namely, the role to give to the state in economic management and the agency arrangements accompanying that role. The game situation in which the agents find themselves is a hawk-dove game. In that context, we model this economic agency role as an equilibrium that emerges out of a process that takes place in one period—"the initial period of the new state"—and deduce the implications for the constraints on agency, also decided at the initial date, which will accompany this role, and the efficiency and honesty of the governments that will tend to emerge to undertake this governance role in the early history of the new state—until the agency arrangements are modified in some future period. How well future governments carry out their governance role—under the initial organizational arrangements—will affect macroeconomic performance and will provoke reactions by principals (citizens) if unsatisfactory. Although we allude to these developments in future periods the paper does not focus the analysis beyond the initial period.

Thus we consider an autonomous country of free individuals faced with the collective decision-making problem at some initial date of choosing an EARG. We investigate the factors that determine the economic agency role assigned to government at the start of this economic transformation process and the agency arrangements that accompany this role. We

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[2]In this context see, for example, Guitián (1996).

[3]A *country* may or may not be identical to a *society*. We think of a society as a group of individuals that tend to have shared beliefs (especially about human nature, how the world works, and distributive justice); tend to respond to similar incentives; have important common modes of communication (language, signs, symbols), these having similar meanings to the members of the society; and observe some particular set of rituals, even if with varying degrees of devoutness within the population. These characteristics together give the members of the society an identity sufficiently pronounced to set them apart from members of other societies. Thus there is inevitably some judgment in the demarcation of societies. A country, from this standpoint, can contain several societies. Nevertheless, for ease of exposition, we shall use the two terms interchangeably in this paper.

Table 1. Typical Areas With Government Agency Role

A. Institutions and Minimal State Activities	B. Macroeconomic Activities	C. Direct Production and Distribution Activities
1. Rules (i) coordination; (ii) standards; (iii) definition of property rights; and (iv) regulation of markets for systemic stability, internalization of externalities, and consumer safety.	1. Monetary Policy (i) supplier of currency; (ii) central banking; and (iii) exchange rate management.	1. Role in production (i) infrastructure (physical and human capital); and (ii) establishment and overseeing of state-owned enterprises.
2. Minimal State Activities (i) defense; (ii) police; and (iii) enforcement of contracts and property rights.	2. Fiscal Policy: determining (i) contributions to taxation to finance public goods and pay for agency activities of government; and (ii) subsidies.	2. Policies directly influencing distribution in markets and hierarchies (e.g., minimum wage laws, wage controls, arbitration in labor-management disputes, social legislation and enforcement).

conclude that good governance emerges as a consequence of appropriate incentive compatible constraints designed by principals with incentive and ability to do so. With opposing groups of principals, the *incentives* of groups to design such constraints are related to their expectations regarding relative frequency in controlling government and relative share in the costs of poor agency. The *ability* is directly related to bargaining power in determining EARG; this relative power, together with the history of cooperation between the groups, largely determine whether EARG emerges in the context of perfect cooperation, strategic bargaining, domination/capitulation, or war. The first two processes of emergence are classified as "cooperative" and the last two as "noncooperative." The paper goes on to argue that there are implications for macroeconomic performance through the impact on: (i) the context in which economic policymaking takes place and economic policies evolve; (ii) the extent of government corruption; and on (iii) the incidence of disruptive distributional conflicts.

In the paper, *cooperation* is viewed as the willingness to communicate, negotiate, and reach agreement on the design of institutional or organizational arrangements and mechanisms and on how to share the ensuing benefits and costs, without fighting, coercion, or total domination by one party. The paper also focuses on a narrow aspect of *governance*, namely, honesty and efficiency in economic management of the governing agent—hence the emphasis of the paper on the agency of the government in the economic sphere.

There is a body of intellectual work that seeks to demonstrate how economic cooperation as well as social institutions and modes of economic organization in a country/society can emerge and change over time, not through central authority or via some social contract of a Hobbesian or Lockean type, but via an evolutionary process. The paper benefits greatly from the central themes in that literature.

The rest of the paper is organized as follows. Section II analyzes the EARG emergence process and shows how payoffs to competing groups depend on whether the emergence is via perfect cooperation, strategic bargaining, domination/capitulation, or war. Section III shows how the incentive for designing an agency contract with incentive compatible constraint is related to the process of EARG emergence. Section IV provides a brief overview of the main themes in the literature on the evolution of cooperation. Sections V and VI posit some broader economic consequences of the EARG emergence process. Section V deals with the impact on the evolution of cooperation—between government and private enterprise and between government and the society at large—while Section VI discusses the impact on macroeconomic performance in general. Section VII outlines a couple of obvious policy implications, and Section VIII concludes.

II. EARG EMERGENCE AND PAYOFFS

We consider a country with two groups of individuals—H and D—in a simple hawk-dove game. The model works as follows. Time is divided into three periods, namely, a *historical period* ($-\infty \leq t < 0$); the *period of emergence* (or *initial period*) of the new state and of EARG (t=0); and the *early historical period* (t=1) of the new state. The H and D individuals enter t=0 from the historical period endowed with experience in cooperation; relative power in negotiating to determine the role of government in the new state; and experience with government (G) and the nongovernment (S) sectors performing economic activities (activities related to the emergence, maintenance, and evolution of institutions, as well as macroeconomic, production, and distribution activities). During t=0, H and D decide, via processes that depend on their experiences and relative negotiating strengths, on: (i) the distribution of activities in the new state between S and G, and (ii) the incentive compatible constraint on government. The payoffs from the decisions made at t=0 comprise the distribution of benefits (and costs) from the economic activities of government, to be reaped (and borne) in period t=1. The distribution of benefits and costs during t=1 will have social and economic effects during t=1—on cooperation between H and D, on the efficiency of government, and on macroeconomic performance of the economy.

A. The Basic Problem and Graphical Solution

Imagine now a population of individuals who at t=0 want to decide, inter alia, on the allocation of economic activities between S and G. Ignoring distributional effects, if the population is socially rational, it will allocate activities between S and G on the basis of expected social efficiency in undertaking the activities.

Assume now that the individuals in the society, on the basis of past experience, have identical expectations about the relative efficiency of S and G in the performance of all activities. For instance, using S as the point of reference, one can rank all activities (services) in terms of the relative efficiency with which S can supply a given quantity of the services. Then, for any given category of activities (e.g., institutions) it is, in principle, possible to think of the problem in terms of Figure 1. The GG curve represents the marginal social cost with

organization under G and SS the marginal social cost with organization under S. It is important to note that these are expectations by the individuals (economic agents or citizens) of the country as to how S and G will perform during t=1. Equilibrium is then at E_0. All activities (in a particular category) to the left of the equilibrium are organized under S and all activities to the right are organized under G.

It is more likely that, on the basis of their past experiences, the agents differ in their expectations with respect to the efficiency schedules involved. Also, the agents will expect from experience that the economic activities of S and G will have distributional effects.

Consider the case of *distributional effects*. Suppose the two groups of individuals—H and D—in the country see the distributional effects differently. Note that these groups could be ethnic, regional, ideological, occupational, or income groups. Within each group we assume identical expectations as to the distributional effects under S and G organization. Group H considers that the institutions, and macroeconomic, production, and distribution activities under S organization will be more favorable to it than if the same activities were organized under G; for group D the expectation is the opposite. The agents then treat the adverse distributional effects as costs. Effectively then we will have a situation as shown in Figure 2. The S_HS_H and G_HG_H schedules represent the expectations of H with regard to organization under S and G, respectively, while the S_DS_D and G_DG_D schedules represent group D's expectations of organization under S and G, respectively, where both add an imputed positive value to one of the normal efficiency schedules (SS for group D and GG for group H) in Figure 1 for the adverse distributional impact expected. The equilibrium desired by H is now E_H and that desired by D is now E_D. In short D wants a higher G/S combination than H. This means that D and H must now negotiate to find a common equilibrium. If negotiation proceeds smoothly, there will be changed expectations on one or both sides. Suppose that happens—that is, D and H work out certain details and they now agree on the new schedules S_ES_E and G_EG_E. Equilibrium can then be established at E_1.

There may also be systematic differences in expectations regarding *x-efficiency* for S and G organization. Without any loss of generality, we assume that the H-type individuals have expectations of G organization being less x-efficient than S organization in the new environment while the D-type individuals assume that either there will be no difference in the x-efficiency between S and G organization or that S organization will be less x-efficient. The intra-group expectations are presumed identical among individuals of both types. Thus, again with no loss of generality, we can take the SS and GG schedules of Figure 2 to reflect the impact of expectations with respect to both distributional effects and x-efficiency. E_H and E_D then represent the desired G/S combinations of H and D, respectively, with unchanged expectations, while E_1 represents the equilibrium point with a smooth change in expectations after a negotiation process that results in transformed and similar expectations between the two types of individuals.

Figure 1

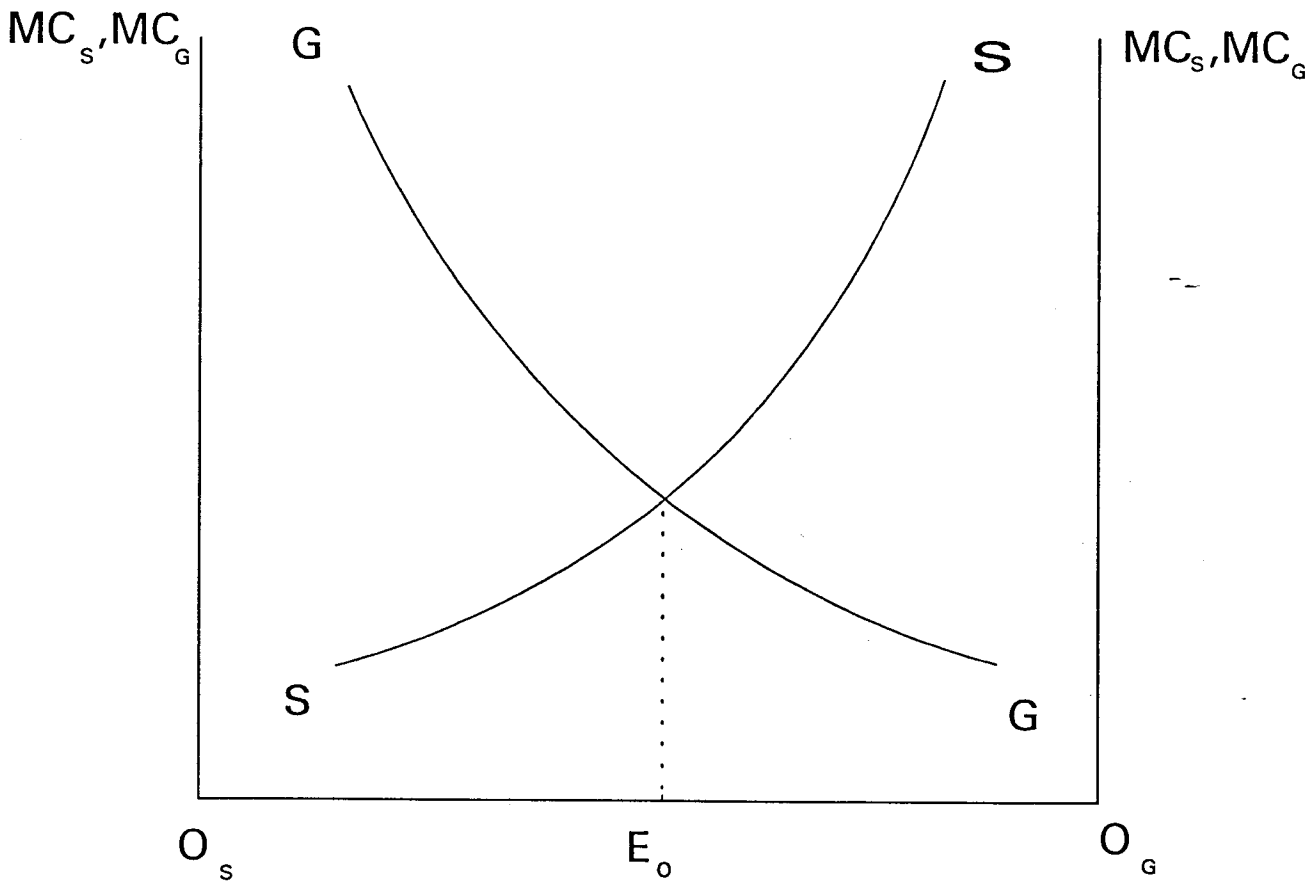
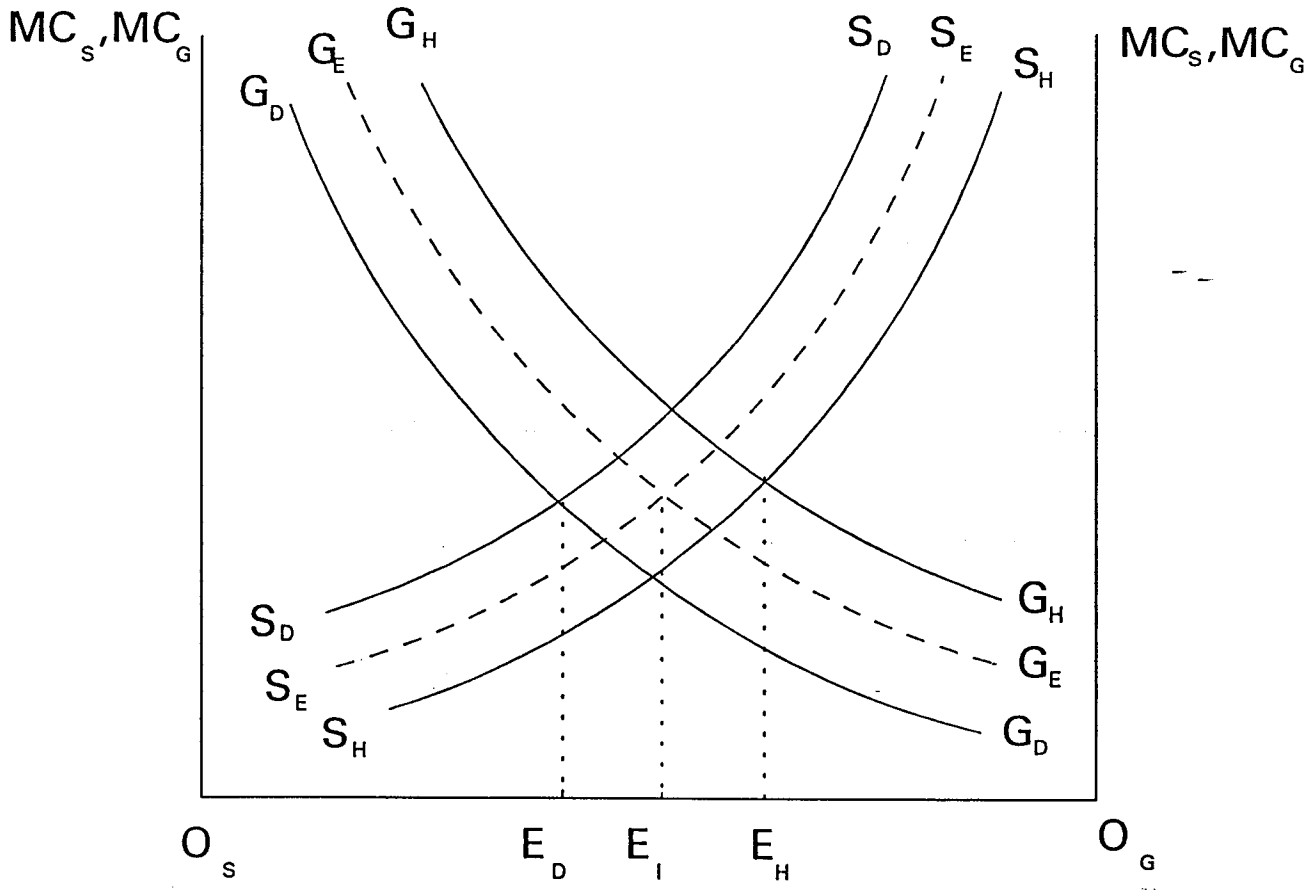


Figure 2



B. Processes and Payoffs

The argument so far is that if the discussion and negotiations proceed smoothly, identical expectation schedules—$S_E S_E$ and $G_E G_E$—emerge from the decision-making process of the country. In the new equilibrium, H allows a little more G (namely, $E_1 - E_H$) than initially preferred, while D allows a little more S (namely, $E_1 - E_D$) than initially desired. We can express E_1 as

$$E_1 = pE_D + (1-p)E_H$$

The ratio p/(1-p) represents the relative success of D and H individuals in negotiating to fix the bounds of S and G activities, with $0<p<1$. The higher the ratio, the closer to E_D is E_1 and the more "successful" is D relative to H in the negotiations. We can also think of E_1 as the mixed strategy solution of the population (of H and D individuals) to the game, with all individuals playing the same strategy (E_1) in the equilibrium. If all expectations are realized, the payoffs are the shares in the benefits of cooperation less the cost of negotiating the agreed rules.

Consider the situation, more explicitly, in the simple hawk-dove game with a structure of payoffs shown in Table 2, where q is the probability of H winning in an all-or-nothing struggle and 1-q is the probability of D winning. These probabilities could depend, for example, on relative resource holdings. V is the benefit of winning and C is the cost of fighting and losing—all being values assumed held with certainty. For simplicity we assume here that the values V and C are the same for the two groups.

Table 2. Initial Primitive Game

		D: E_D	D: E_H
H	E_H	q.V-C(1-q), (1-q)V-C.q	V, 0
	E_D	0, V	V/2

Consider the case in which q and 1-q are common knowledge. Then H will win E_H as D will capitulate, without a fight, if $(1-q)/q < C/V$, or alternatively if $q/(1-q) > C/V$.[4] By the same token D will win E_D without a fight (that is, H will capitulate) if $(1-q)/q > C/V$, or alternatively $q/(1-q) < C/V$.[5] When q=½, both H and D somehow have equal chances of winning an all-or-nothing fight. At that point, H and D could agree to share equally (perfect cooperation) or could engage in strategic but peaceful negotiation or bargaining (without war).

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[4]This is simply because the payoff of D is better under the conditions; that is, $(1-q)V-C.q < 0$.

[5]As before, because $q.V-C(1-q)<0$.

So far, then, we have what we shall call the *domination/capitulation solutions*, namely E_H and E_D as shown in Figure 2, and the solutions when q=½—namely, *perfect cooperation* and *strategic bargaining*. In Table 3, we show the resulting situation. The perfect cooperation solution is treated as effectively a solution in which both sides capitulate.

Table 3. Post Primitive Play

		D	
		Don't capitulate	Capitulate
H	Don't capitulate	(Strategic bargaining or war)	V, 0
	Capitulate	0, V	V/2

Now picture the *strategic bargaining* case, when q = ½ and the sides want to cooperate to find a solution, perhaps because they need to search for a solution as they do not have a long history of cooperation or know the perfect cooperation solution. When they sit to negotiate, both sides have in their midst "fighters" and "capitulators." Fighters want to take their chances that, despite the odds, they can win in an all-or-nothing fight; capitulators do not mind giving in and letting the other side have its way. Let's suppose that the frequency of fighters among H and D are r_H and r_D, respectively. This information is not common knowledge and is known only within the groups. The remaining $1-r_H$ and $1-r_D$ are capitulators. The problem now for H and D is to decide on a value of p that would determine E_1 in Figure 2, where E_1 is as defined above. Both sides are cooperating but in a bargaining situation in which each side is trying to get a good deal for itself.

We picture the strategic bargaining game as follows. If the parties choose to bargain and settle at a point like E_1, this latter strategy can be regarded as a mixed strategy composed out of strategies E_D and E_H (in the proportions p and 1-p, respectively) with the former being the pure strategy originating from D and the latter from H. From the side of H, the search for E_1—i.e., the p/(1-p) combination—is tantamount to a search for some combination of what H knows that D can expect to get if D fights for E_D and what H will get if D simply capitulates and accepts E_H. In hawk-dove game-theoretic terms this can be described as the payoff of strategy E_1 against E_H, from H's viewpoint, as follows:

$$\begin{aligned} F(E_1, E_H) &= pF(E_D, E_H) + (1-p)\,F(E_H, E_H) \\ &= p[r_H\ ½(V-C) + (1-r_H)\ V] + (1-p)\ V \\ &= V - p[1/2\ r_H\ (V+C)] \end{aligned}$$

where we have made use of the assumption that a proportion r_H of the H group members are still willing to fight if D insists on fighting for E_D. Similarly, from the side of D, we picture the payoff of E_1 against E_D as follows:

$$F(E_1, E_D) = pF(E_D, E_D) + (1\text{-}p)\,F(E_H, E_D)$$

$$= p(V) + (1\text{-}p)[\tfrac{1}{2}r_D(V\text{-}C) + (1\text{-}r_D)V]$$

$$= V - 1/2\ r_D(V + C) + \tfrac{1}{2}r_D\ p\ (V + C).$$

Bishop and Cannings (1978) proved that, if I is a mixed evolutionary stable strategy (ESS)[6] which includes, with non-zero probabilities, the pure strategies A, B, C,..., then the expected payoffs against I to the strategies used to compose I (the support of I) must be equal. That is, with F(.) again representing expected payoff,

$$F(A,I)= F(B,I) = F(C,I),.....=F(I,I)$$

Intuitively this is because if F(A,I)>F(B,I), it would pay to adopt A more often and B less often and I would then not be an ESS.[7] Let us suppose that the E_1 solution is an ESS. Then equating the two payoffs—$F(E_1, E_H)$ and $F(E_1, E_D)$—and solving for p yields:

$$p=\frac{r_D}{r_D+r_H}$$

—a solution that is intuitively obvious. The payoffs to D and H, respectively, can now be approximated for this solution as p.V and (1-p)V, respectively, with p being defined above.

In general, of course, any point (such as E_1) could be an ESS as long as the p established makes the payoffs from bargaining—pV, (1-p)V—greater for D and H, respectively, than the payoffs expected from not bargaining. Indeed, this condition places the

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[6]An *evolutionary stable strategy* (ESS) is a strategy such that, if all members of a population adopt it, no mutant strategy could invade the population under the influence of natural selection [see, e.g., Maynard Smith (1982),Vega-Redondo (1996), and Weibull (1995)]. The uninvadable strategy (the ESS) could be a pure or mixed strategy. The ESS can be seen as a refinement of Nash equilibrium (see, e.g., Friedman, 1991 and Weibull, 1995). In general, an ev*olutionary stable state* (ESS) is one to which the system returns after small perturbations. Suppose the existing state $s=(s_i \ldots s_n)$ and let some small subpopulation of the actors switch to some other state $s_a = (s_a^1 \ldots s_a^n)$. Suppose $\bar{s}=(1-\varepsilon)s+\varepsilon s_a$ is the resulting perturbed state. Let F (.) represent the average payoff function. Then s is an ESS if, for any such s_a, it is the case that $F(s_a|\bar{s})<F(s|\bar{s})$ for sufficiently small $\epsilon>0$. Although there may be more than one ESS in any game, the ESSs are always a subset of the Nash equilibria (NE) of the game. Thus, the ESS criterion for dynamic stability in these (evolutionary) games is a refinement of NE. The two most popular evolutionary games are the *hawk-dove* and the *war of attrition* [see Maynard Smith (1982) for a good introduction].

[7]See also Maynard Smith (1982, 14 et seq.).

general restriction on the p that will be established. Namely, for ESS it is required that the p above satisfy

$$1/2\ r_D[1-(C/V)] < p < 1-1/2\ r_H\ [1-(C/V)].$$

This condition will be met for sufficiently low r_H and r_D and sufficiently high C.[8]

Suppose now that q and 1-q are not common knowledge. The theoretical analysis becomes more complicated but the conclusions do not change—we end up with dominance/capitulation, war, or strategic bargaining.[9] Thus, depending on the values q and 1-q as estimated by the parties themselves, we will have either a domination/capitulation solution or a fight, at time t=0. If the parties fight, the period t=0 lasts until one party wins and determines EARG for period t=1.

We summarize the processes and the payoffs from the emergence game in Table 4. Strategic bargaining processes are associated with q =½ and domination/capitulation with $q \neq ½$. In the case of perfect cooperation, q may or may not be equal to ½; it all depends on the history of cooperation among the individuals in the society and, in particular, between the H and D groups in our analysis. The payoffs are realized via influence over the content of

Table 4. Payoffs from Emergence of EARG

Process	Payoffs
Perfect cooperation	D = V/2, H=V/2
Strategic bargaining	D = pV, H = (1-p)V
Domination/Capitulation	Winner = V, Loser = 0
War	Winner = V, Loser = -C

EARG and the institutional and organizational rules which emerge to govern the agency arrangement and the evolution of that arrangement. In particular under cooperative emergence, the agency arrangements will be designed with both H and D cooperating to decide the terms. Under noncooperative emergence, the winner has veto power and will decide the terms of the agency in conformity with its interests alone to ensure internalization of the benefits it has won.

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[8]The conditions we require are the following: from the standpoint of D, that $pV>1/2r_D(V-C)$ or $p>1/2r_D[1-(C/V)]$; and, from the standpoint of H, that $(1-p)V>1/2r_H(V-C)$, or $p < 1-½r_H\ [1-(C/V)]$. Thus as long as the p is in the bounds set by these parameters, it could be an ESS.

[9]See also Maynard Smith (1982) and Riley (1980) for use of this general sort of framework.

III. EARG EMERGENCE AND THE PRINCIPAL-AGENCY PROBLEM

Part of what is negotiated between H and D, at t=0, is the agency agreement for G. The fundamental problem for H and D is to design a contract and organizational structure that would control agency costs and prevent shirking and opportunistic behavior by the government agent. In brief, if they control the situation, the rational aim of H and D (the principals) is to cooperate and come up with an action (agency contract) in time period t=0 such that when the agent comes to "move" in t=1 the best response of the agent, in maximizing its own payoff, results in actions by the government (the agent) that are also in the best interest of the principals, that is, achieve the highest possible set of payoffs to H and D. The constraint faced by H and D, of course, in achieving this goal is asymmetrical information (about agent types and agent behavior during the agency), with the agent typically having far more information than the principal. Thus there is risk of experiencing relatively less than potential payoff from the government's actions because of adverse selection and moral hazard.

H and D should, in principle, have an incentive to cooperate to solve the agency problem. Unfortunately, complications arise from conflict of interest. The relative payoffs shown in Table 4 are a measure of the relative frequency with which the two sides expect to have the power to ensure that the agent originates from their ranks or, alternatively, the expected relative power distribution, on average, in any government that emerges in t=1. The point is that H and D are going to design a contract (as principals) and then will select some subset of individuals (the government) composed from their ranks to carry out the terms of the contract (as agent). If there is poor agency, the cost will be borne by members in one or both of H and D groups. The distribution of the costs of poor agency (C_A) will be inversely related to the payoffs discussed above; the stronger side will have the greater ability to shift the costs to the other side. We conclude, therefore, that the incentives of principals to having a strong agency agreement (with appropriate incentive compatible constraints) will vary directly with the expected share of the costs of poor agency. This is summarized in Table 5. The overall (H+D) incentive in favor of agency arrangement with incentive compatible constraints varies directly with the expected loss of H+D from poor agency weighted by their relative power to control government—what we could call the *weighted average loss from poor agency*. The closer is p to 1/2, the closer is the overall incentive under strategic bargaining to that under perfect cooperation.[10]

There are many possible incentive compatible mechanisms that could be designed. The typical mechanism would contain, inter alia: (i) punishment for poor agency, at the end of the agency; and/or (ii) differential compensation for good and poor agency. Both promises should be credible. Punishment is, perhaps, more useful in dealing with corruption than with

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[10]For example, in the case of perfect cooperation, the *weighted average loss from poor agency* is 0.5 $(1/2 C_A)$ + 0.5 $(1/2\ C_A)$ = 0.5 C_A, while in the case of war the weighted average loss is 1 (0) + 0 (C_A) = 0. In the case of strategic bargaining, the weighted average is $2(p\text{-}p^2)C_A$ which is $0.5 C_A$ when p = 1/2.

Table 5. EARG Emergence and Incentive Compatible Constraints

Process of EARG Emergence	Relative Frequency Expected of Being Agent	Expected Distribution of Costs of Poor Agency (C_A)	Overall Incentive in Favor of Agency Arrangement with Incentive Compatible Constraints
Perfect cooperation	0.5, 0.5	$½C_A, ½C_A$	Very strong
Strategic bargaining	D=p, H=1-p	D=(1-p)C_A, H=pC_A	Strong/Very strong
Domination-Capitulation	Dominator=1, Capitulator=0	Dominator= 0 Capitulator=C_A	Weak
War	Winner=1 Loser=0	Winner=0 Loser=C_A	Weak

inefficiency. Hence, the principals can, for example, include in the contract (the institutional arrangement) promise of a levy, to be determined ex post (that is, a *punishment fee*), for dishonesty. This fee will be at least as high as the corruption revenue that an agent is accused and found guilty of extracting. We can picture a situation, for example, in which there will be a commission of inquiry at the end of an agency (a term of office). The credible announcement of the penalty plus it's explicit inclusion in the agency arrangement (e.g., the *Constitution*) will ensure that only honest agents will apply. Another form of punishment, applicable to address both inefficiency and corruption, is *nonrenewal of the agency* after a term ends. Thus, having an institutional arrangement that assures free and fair elections, in a truly democratic system, could form an important element of an appropriate incentive compatible system.

The effective compensation (wage/salary) of an agent could also be made to vary according to whether the agent is good (efficient and/or honest) or poor (inefficient and/or corrupt). One way to design such a payment mechanism would be to have the compensation split into two elements; one element will not vary with outcome (a kind of regular salary plus perquisites during the agent's term in office). But the government (the agent in office) will be considered fully responsible for the outcome (macroeconomic performance) during its time in office; hence, there will be an additional variable component of compensation that in turn is made up of a number of elements and vary according to circumstances, history, and norms of the country.

For example, one of the variable elements could be the size of pension to which the agent is entitled after being in office; one can visualize the principals determining or adjusting this pension after the agent has left office. Another device could entail paying the agent the compensation of a poor agent, during the term of office, and agreeing to an arrangement (contract) which stipulates that an additional (specified) sum would be paid at the end of the term of office if the agent's performance is good (according to criteria stated in the

arrangement). That additional sum would be the difference between the compensations of a good and poor performer. Still another element could be pecuniary rewards in positions given by the principals to an agent after the latter's government agency role; the agents will no doubt have beliefs about this sum and the principals can give appropriate signals so that these beliefs are fairly accurate. Honors and awards granted an agent after the period of agency—whether pecuniary or nonpecuniary—can be given in forms that make them measurable, and indeed valuable, in strictly pecuniary terms. In sum, the point is that, even with a fixed salary during the agency, the principals can design a contract (and, for example, have it included in the Constitution) that involves paying an effectively higher wage to the good agent and a lower wage to the poor agent.

Our proposition, therefore, is that with perfect cooperation H and D will design an agency arrangement that includes provisions for incentive compatible constraints because it is in their interest to do so—they will share equally the full costs of poor agency and have equal chances of benefitting from the inclusion of incentive compatible constraints. There is no expectation by either party of a net benefit from encouraging poor agency. Given the social costs of inefficiency and corruption,[11] the net effect on the welfare of H and D as perfect cooperators will be negative. At the same time the perfect cooperators have the ability to bring about the arrangement which they mutually want.

In contrast, under the other processes of EARG emergence, one side has the opportunity to bear less than half of the burden of the poor agency costs while having a disproportionate opportunity to be the agent and enjoy the benefit from weak constraints on agency. In this regard, the circumstances in which EARG emerges under noncooperation are the worst. In those circumstances, the winner/dominant group will have an incentive and ability to frustrate any attempt to include provisions specifying incentive compatible constraints in agency arrangements.

IV. The Evolution of Cooperation

We have seen how in the hawk-dove game situation faced by the two groups—H and D—cooperation matters. For the initial period (t=0), it matters for the content of EARG and the incentive compatible constraint placed on the economic agency role of the government. For the early history of the new state (t=1), it matters for the distribution of benefits and costs from EARG. We have viewed cooperation in this context as a willingness to negotiate and reach an evolutionary stable agreement on how to share the benefits and costs of government agency, without fighting or domination by one party. When the distributive shares voluntarily agreed are equal, we say that there is perfect cooperation. When the agreement is to share according to some ratio $p/(1-p)$, with $0<p<1$, cooperation exists but it is not necessarily perfect. There is no willingness to share in the case of noncooperation. Thus, inter alia, an

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[11]See, e.g., Johnson (1975), Kurer (1993), Mauro (1995), and Shleifer and Vishny (1993). In this regard, see also Tanzi (1994).

initial condition affecting the process of emergence of EARG is the degree of cooperation existing, in general, among agents (or, more concretely, between the two groups in our model) in the society at t=0. This cooperation "endowment" evolved during the historical period ($-\infty \leq t < 0$). It is, therefore, useful to review the literature on how cooperation evolves. The object is not a full-blown survey but only an overview of the enormous literature in this area.

A. Cooperation and Self-Interest

The rational self-interest assumption has left economists with a major problem of rigorously explaining why in major real-life situations defection and free-riding are replaced by cooperation, even in the absence of a central authority to compel cooperation. The challenge has been taken up not only by economists, but also by political scientists, sociologists, and evolutionary biologist. In this research, both theoretical and experimental work have been undertaken, as well as field and case studies of cooperation in various societies.[12]

In general, the approach which has proved most appealing is to view cooperation as resulting from repeated interactions of self-interested individuals who come to see such cooperation as in their joint interest and gradually build up a stable and predictable mode of cooperation with each other. It has been shown in the theory of repeated prisoners' dilemma (PD) games,[13] for example, that cooperation can arise if the game is repeated "infinitely" and if outcomes of all previous stages are observed before the current stage begins.[14] For instance, let the discount factor be w = 1/(1+r), where r is the rate of discount. Then imagine a PD game being played repeatedly in which player 1 runs the risk of permanent noncooperation from the other player once he does not cooperate—that is, defects—but will benefit from cooperation as long as he continues to cooperate. Player 1 then has the choice between cooperation for one period and no cooperation forever thereafter versus cooperation for all periods including the first. The choice obviously depends on the discount factor of the player. He can choose some big benefit (say c) for one period plus a flow of very low (possibly zero or negative) benefits (say d) thereafter, for a present value of [c+ dw/(1-w)]; alternatively, player 1 can choose a flow of benefits (say a) forever, by cooperating from the beginning, with a present value of a/(1-w). The same prospects could be assumed to hold for player B. Thus there is some

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[12]The articles collected in Mansbridge (1990) are worthwhile reading in this regard.

[13]See, e.g., Friedman (1971).

[14] A known finite number of interactions, however long, does not do the trick (see the exceptions later). It does not pay to cooperate in the final play, because the game has no future. It does not pay to cooperate in the penultimate play because both players anticipate defection in the final play. By use of backward induction, we are led to the conclusion that when the game will be played in a known finite number of moves the dominant strategy (defection) will be still played by each player.

critical minimum value of w beyond which it pays both players to cooperate rather than defect.[15] Indeed there is a w sufficiently close to one that would facilitate satisfaction of this condition.[16] Both players need not have the same discount factors; thus it is possible to have w_A and w_B representing the discount factors of players A and B, respectively.

Despite the above conclusion, it has also been shown that even in finitely repeated PD games,[17] cooperation is possible if there is a positive probability (due to reputation) that one of the players could play the cooperative strategy; this, for instance, could be a realistic expectation if one of the players has a reputation of commitment to a tit-for-tat strategy (see below). From this, a sequential equilibrium reputation hypothesis has emerged, namely, individuals will rationally build reputations in finitely repeated PD games. Evidence of such reputation-building has been found; most notably, subjects make significant efforts to build reputations for altruism, which increases cooperation. Such altruistic types appear to form the basis for reputation building.[18]

Indeed, various experiments and observations indicate that even in one-off interacting situations or in situations of anonymity, people routinely behave in a cooperative (including altruistic) way. The major conclusion that seems to have emerged is that normally people have a tendency to cooperate until experience shows that those with whom they interact are taking advantage of them. In other words, people seem to conform to some "norm of cooperation".[19] This particular line also argues that cooperators tend to seek out other cooperators; and that

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[15] For instance, from the perspective of player A we have,

$$a/(1-w) > c+[dw/(1-w)]$$
$$\text{or} \quad w > (c-a)/(c-d).$$

as the critical value.

[16]See also Schotter (1981) and Sugden (1986) for applications in their game-theoretic approach to the emergence of conventions in PD situations.

[17] See Kreps, Milgrom, Roberts, and Wilson (1982). On cooperation, rationality, and repeated games, in general, see also Fudenberg (1992) and Pearce (1992).

[18]See, e.g., Andreoni and Miller (1993). These authors also make a useful distinction between: (i) pure altruism, (ii) duty, and (iii) reciprocal altruism. Only in the first case does a player care directly about the payoff of the other player.

[19] See, e. g., Frank (1987) and Dawes and Thaler (1988). See Elster (1989) for a general discussion of social norms—such as norms of cooperation—which he describes as emotional and behavioral propensities of individuals—a motivational mechanism that does not violate methodological individualism. In Sen's terms one could say that cooperators are not "rational fools" (Sen, 1982).

in the absence of direct discussion, "greed" is a stronger factor engendering free-riding than "fear," the other factor included in experimentation.[20] An implication advanced is that finding a payoff structure which removes the extra gain from acting in a greedy manner could produce a stable equilibrium involving cooperation; in other words, one could thereby motivate greedy people to contribute because now the only negative result of contributing occurs if others do not contribute [see, e.g., Dawes and Thaler (1988)]. Another, perhaps obvious, hypothesis which has found support in experiments is that discussion among contributors (potential cooperators) fosters the evolution of cooperation.[21] Group identity[22] also appears to promote cooperation instead of defection and free-riding. Finally, experiments indicate that promise-making fosters cooperation only when every member of a group promises to cooperate—that is, when there is "universal promising."[23] This finding supports the expectation that group identity matters, since such universal promising is often one reflection of such identity.

Due to Axelrod (1981, 1984) a strategy that has aroused much interest is a tit-for-tat strategy; the player who adopts this strategy cooperates on the first move and then, in subsequent moves, does whatever the other player did on the previous move. Axelrod found that a strategy of tit-for-tat was very robust in computer tournaments and simulations of PD game situations—it did better than other strategies in a wide range of environments (i.e.,

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[20] "Greed" involves defecting with the hope that others will cooperate—e.g., by contributing to some public good. "Fear" is being afraid that one would lose one's contribution if a critical minimum number of persons did not contribute to a venture (e.g., some public good) which then failed to take off; a "money back guarantee," if not enough contributions were made, would remove this fear.

[21] A reason advanced for the value of discussion (including public political debates) is that it triggers ethical concerns that yield a utility for doing the "right" thing (see, e.g., Dawes and Thaler, 1988, and Elster, 1986). In Elster's words, despite some conceivable objections, which he addresses, "the conceptual impossibility of expressing selfish arguments in a debate about the public good, and the psychological difficulty of expressing other-regarding preferences without ultimately coming to acquire them, jointly bring it about that public discussion tends to promote the common good" (Elster, *ibid*, p.113).

[22] On the notion of group identity, see, e.g., Glazer and Moynihan (1975). See Dawes, Van de Kragt, and Orbell (1990) for discussion of the experiments revealing the importance for cooperation of group identity or solidarity, as indicated by universal promising. They conclude from their experiments that "group solidarity increases cooperation independently of the side payments—either external or internal—often associated with such identity" (p. 99). Hechter (1987) has developed a theory of group solidarity in the rational choice tradition, to explain, inter alia, variation in the extensiveness of corporate obligations and in a group's capacity to induce its members to honor these obligations.

[23] See Dawes and Thaler, op. cit.

distributions of alternative strategies).[24] He also showed that tit-for-tat is an ESS if and only if it is invadable neither by an "Always Defect" strategy nor by an "Alternating" strategy, the latter being one which alternates between defection and cooperation from one move to another. Specifically, there will be some critical value for the discount factor $w = w^*$ above which this is true. Axelrod calls the tit-for-tat strategy "nice," in that the player adopting such a strategy was always willing to cooperate and would never be the first to defect; but it also was provocable into retaliation by a defection of the other player, although forgiving after one round of retaliation, and was a clear (easy-to-understand) strategy. In sum, Axelrod argues that the tit-for-tat strategy is evolutionary stable and robust with initial viability to gain a foothold even in an environment which is predominantly noncooperative. It is obvious that this strategy could have empirical relevance in explaining the emergence of cooperation especially if indeed there exists a norm of cooperation.

In the formulation of Axelrod and others, then, the foundation of cooperation is the *durability of a relationship* not *trust*.[25] Of course, the durability of the relationship results in a state of belief or expectation regarding the behavior of each other that someone could legitimately regard as "trust."[26] The important point is that an external authority is not necessary for such cooperation to emerge and be sustained. Nor is it necessary to assume rationality, commitment, altruism, friendship, or foresight, although the existence of any of these among agents could help speed up the emergence of cooperation. Rather, necessary for cooperation are that: (i) agents can recognize individuals with whom they have dealt in the past; (ii) agents can recall their experiences (especially recent ones) from such interactions; (iii) there is a high probability that the relationship will continue "far" into the future; and (iv) that successful strategies (in terms of payoffs) in interactions do thrive (evidenced by increasing frequency of occurrence in subsequent play of the game in future generations), via the operation of some effective selection mechanism involving learning and imitation, while

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[24] It has been noted by others, though, that strategies can be devised which successfully invade a community of tit-for tat players [see, e.g., Vronen (1995, p.183) for references].

[25] The importance of the expectation of continuing relationship for the foundation of cooperation had been widely recognized for a long time; see, for example, Macaulay (1963) and Geertz (1978).

[26] See, for example, Miller (1992) who regards trust as present if there is a "belief that other members [of a group] are currently cooperating and will do so as long as it appears that everyone else will" (p. 186). Similarly Seabright (1993), in discussing the importance of trust for cooperation, defines trust as "the expectation by members of a group that other members will cooperate" (p. 122). Seabright goes on to suggest why trust can come to be regarded as a kind of capital good embodied in individuals or organizations, influencing the probability of future cooperation independently of the direct payoffs. Also, he argues that institutions can channel trust in the sense that the presence or absence of trust may depend on past institutions.

unsuccessful strategies (even if gradually) become extinct[27]. As in other evolutionary processes,[28] a source of variation in strategies (for instance, experimentation and/or mistakes) will be good for the evolution of cooperation. It is also important that the process be able to prevent, in Axelrod's terms, "echo effects," whereby each side always responds to the other's last defection with a new defection of its own, since this can set off a long string of recriminations and counter recriminations with both sides' payoffs suffering .[29] Under these

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[27]Fundamental in the economic evolutionary process is the idea that success breeds success—that is, successful strategies will tend to spread and less successful strategies will decline in frequency in the strategy state (the "population" of strategies). In economic environments with human agents this occurs not only through learning, adaptation, and imitation, but also via market or some other form of social selection. Central in the game dynamics involved is the notion of a *replicator equation*, which makes precise the hypothesis that the rate of increase of a strategy I depends on the difference between the average payoff for strategy I and the average payoff for the whole population of strategies. Suppose n strategies with frequencies denoted by $s_i,.....s_n$. Suppose also a_{ij} is the average payoff of strategy I in contests/competition against strategy j. Then $\Sigma_j a_{ij}s_j$ is the average payoff from using I, while $\Sigma_j\Sigma_i s_i a_{ij}s_j$ is the average payoff for the whole population of strategies. Then, the hypothesis is that the rate of increase of strategy I is determined by the difference between the average payoff for strategy I and the average payoff in the whole population; namely, we have

$$\frac{ds_i}{dt}=s_i(\Sigma_j a_{ij}s_j-\Sigma_i\Sigma_j a_{ij}s_i s_j)$$

as the *replicator dynamics* describing the evolutionary process (see, Taylor and Jonker (1978) and Schuster and Sigmund (1983)). For a recent economic application see Sethi and Somanathan (1996).

[28]See, e.g., Alchian (1950), Arthur (1988), the papers in England (1994) especially that of Radzicki and Sterman (1994), Hirschleifer (1977, 1982), Hodgson (1993), Nelson (1995), and Vronen (1995).

[29] See Axelrod (1984, pp. 37-38, 186). The assumption that there be no echo effects means that the strict tit-for-tat strategy is most applicable in a world where players do not make mistakes—that is, their hands do not *tremble* in the sense of Selten (1975) and play 'defect' by mistake. For in that case, if players are highly committed to the tit-for-tat strategy, one mistake could send the players to a world of noncooperation until the hand of one of them trembles and plays 'cooperate' by mistake [see also Skyrms (1996, pp. 40-41) on this point]. This is one reason why Sugden (1986, especially pp. 113-121) seems to prefer a variant of the tit-for-tat strategy which allows mistakes. In such a strategy, players cooperate with other players who are 'in good standing'. To be in good standing a player that defects in one round must pay reparation by cooperating in one or more subsequent rounds (depending on what it takes to return to good standing in the community); during the periods of reparation, the other

(continued...)

conditions, cooperation of the tit-for-tat type can begin with a small cluster of tit-for-tat players and survive and grow over time, even in a world initially dominated by selfish (pure defecting) players.

The possibility of the existence of a norm of cooperation (with implications for the existence of altruistic behavior), as well as the clear evidence of self-interest in behavior, make difficult the task of discussing the evolution of cooperation without broaching the issue of the biological roots of human nature.[30] Rational self-interest has served well a good chunk of the social scientific enterprise, especially in economics and political science, but also in certain areas of sociology.[31] Advances in decision theory and the economics of information over the last five decades have led to the modification of a strict interpretation of the rationality assumption, and it is now traditional to assume that rationality is bounded and that rule-following is not necessarily harmful to rational choice.[32] The self-interest assumption has had no such systematic modification. This assumption is also a biologically based one about human nature; otherwise it would not be so generally applied to the whole of the human world. Its survival has reflected its success in yielding falsifiable hypotheses of economic behavior that have been supported by empirical evidence. The assumption of a norm for cooperation/ altruism is also a biologically based assumption about human nature, and there is evidence of cooperation that cannot be explained by self-interest in the strict sense,[33] luckily, as has been argued, it is not necessary to modify the strict assumption of self-interest to explain the emergence of some—perhaps even most—cooperation, although as stated before altruistic behavior can be important in reputation building and in fostering cooperation. Indeed, even

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[29](...continued)
player(s) of course is (are) playing 'defect' against the first. In general, the point is that the tit-for-tat strategy adopted must be robust against small random deviations. This is essentially contained in the definition of evolutionary stable strategy.

[30] A good introduction to the debate which has emerged on the issue of human nature in the social sciences can be obtained by reading Brunner (1987), Dawkins (1989), Goldsmith (1991), Masters (1989), Rhoads (1990), Schwartz (1986), and Wilson (1978).

[31] See, for example, Riker (1990) and Ordeshook (1990) for the case of political science and Friedman and Hechter (1990) for the case of sociology.

[32] See, e.g., the collection of papers in Cook and Levi (1990), as well as Koford and Miller (1991), Griffith and Goldfarb (1991), Goldfarb and Griffith (1991), Hodgson (1993), and Conlisk (1996).

[33] Social scientists have now begun to call these, inter alia, "homemade priors;" see Andreoni and Miller (1992).

the tit-for-tat strategy cannot explain the first move endogenously. Some exogenous factor(s) cannot ultimately be avoided in models of human behavior.[34]

In this light the view has been advanced that biological evolution may have selected for reciprocal altruism. Trivers (1971), who has defined altruistic behavior as behavior that benefits another organism, not closely related, while being apparently detrimental (in terms of "inclusive fitness") to the organism exhibiting the altruistic behavior, has, among others, argued this point.[35] As long as people can select those with whom they interact—that is play the game—and can recognize those with whom they have interacted in the past and remember what transpired during those interactions, it is easy to see that an ESS can emerge with the population containing both strict self-interested persons and strict reciprocal altruists in some relation k/(1-k)—for example, in a hawk-dove or prisoners' dilemma type of situation—where k is the fraction of the population practicing reciprocal altruism towards each other and forming what Axelrod calls a "cluster." Rather than two pure types—one selfish the other a reciprocal altruist—it is, of course, possible that natural evolution has selected for a population of individuals who on average each use a mixed strategy (k, 1-k). This hypothesis, we suspect, is implicit in the assumption of a norm of cooperation.[36]

B. Cooperation and Economic Order

As outcomes of cooperative behavior the spontaneous emergence of *conventions*—important regularities of behavior—*norms*, and various economic *institutions* (property rights, etc.) have been widely discussed in various writings stretching over many decades. In practice, starting from a situation with or without a minimal state, the individuals in a society would

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[34] This, we believe, is the main thrust of the argument in Goldsmith (1991). In economics, elements of the natural environment and of tastes and preferences have been the ultimate exogenous factors. It is with respect to tastes and preferences that the biological factors come into play. The paper by Frank (1987) is also relevant in this respect.

[35] Note the similarity between the Trivers reasoning and the line of reasoning of Axelrod (1984, pp. 48-54) referred to earlier to test the robustness of tit-for-tat in a wide variety of environments against other strategies, submitted in his (second) computer tournament, analyzing the evolution (survival) of tit-for-tat over several rounds that mimic a typical evolutionary process with no mutation—that is no new strategies entering the contest once the contest starts.

[36] Indeed, the existence of a norm of cooperation may have to be necessary to explain why humans have culture. See, for example, Carrithers (1992), who argue that humans have culture as an aspect of their sociality and that is one way in which they relate to each other. The possibility of an evolutionary dynamics ending in polymorphism is also used to explain a *norm of fairness* observed in the *ultimatum game* [see, e.g., Skyrms (1996, pp. 28-33)]. On the ultimatum game, see also Thaler (1988).

typically bring about, via an evolutionary process, an economic order that can be described in the form shown in Table 6.[37] Here we present some basic ideas in certain important contributions to the theory of the spontaneous emergence of conventions and norms.

A defining feature of conventions is that they are self-enforcing; it is in the self-interest of all parties to have than not to have the conventions.[38] They emerge from repeated interactions of agents to deal with problems of pure coordination, property, and reciprocity. Their development is fostered by certain *focal points* and by the recognition of *asymmetries*

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[37] In the evolutionary process of the economic order, an important determining factor would be the cultural beliefs of the individuals of the country [see, e.g., Greif (1994)]; these beliefs, in our view, would relate to (i) the nature of human nature and (ii) distributive justice. In terms of methodology, we would favor the *institutional individualism* approach of Agassi (1975); in other words, although it is accepted that the institutional context in which the individuals in the country find themselves influences and conditions their behavior, yet it is the behavior and interaction of individuals in pursuit mainly of their self-interests that generate, perpetuate and determine the evolution of the institutional context in the first place. For a good review of the debate between methodological individualism and holism (the latter insisting that the whole is more than the sum of its parts) in this context see, e.g., Rutherford (1994), pp. 27-50. Holton (1992) also has a general discussion of the role methodological individualism plays in positive economics. The approach supported by Brunner (1987) for studying human behavior is also consistent with institutional individualism. Brunner compares what he calls the REMM model, associated with the economic approach to human behavior, with the SRSM model, purportedly the sociological approach to human behavior. In the former, man is resourceful, evaluative, and maximizing; in the latter, we have socialized, role-playing, and sanctioned man. Perhaps sociologists with their recognition of both agency and structure (see, e.g., Sewell, 1992) will find this caricature somewhat unfair. At any rate, Brunner argues that REMM can serve as the basis for a unified approach for social sciences, "so that social science can emerge as a single discipline with branches differentiated.....by a variety of problems, aspects and issues." For an insistence on the need to distinguish *institutions* from *organizations*, see also Khalil, (1995).

[38] David Lewis (1969, p. 58) has defined a convention as follows:

> A regularity R in the behavior of members of a population P when they are agents in a recurrent situation Γ is a *convention* if and only if it is true that, and it is common knowledge in P that, in any instance of S among members of P,
> (1) everyone conforms to R;
> (2) everyone expects everyone else to conform to R;
> (3) everyone prefers to conform to R on condition that the others do, since Γ is a coordination problem and uniform conformity to R is a coordination equilibrium in Γ.

Table 6. Economic Agents and Economic Order

Rational Economic Agents

Economic Order (Stable)

I. Institutions: Rules governing behavior 1. Norms (informal rules) 2. Constitutions 3. Property rights II. Conventions Regularities of behavior III. Economic Organization 1. Markets 2. Hierarchy a. Government b. Nongovernment 3. Nonmarket organizational forms	IV. Enforcement Mechanisms 1. Self-enforcement (informal) 2. Outside authority (formal)

often embedded in the structure of the game/situation.[39] The focal points are clues that provide a key to the possible solutions of the game. In general, characteristics of focal points in coordination and/or bargaining situations include prominence, uniqueness, simplicity, and precedent. Asymmetries could relate, for instance, to factors such as power, size, importance, and ownership position.[40] Conventions evolve from payoff experience and the resulting emergence of expectations, in trial and error responses in repeated interactions of agents; the

[39]See, especially, Hayek (1973), Schelling (1960), Schotter (1981, 1986), and Sugden (1986, 1989). Knight (1992) has emphasized the role distributional conflicts play in the emergence of institutions.

[40]Skyrms (1996) uses the term *broken symmetries* to characterize some of these asymmetries. It appears that he does so in those asymmetrical situations that arise because a person *behaves* differently depending on which side of an otherwise symmetrical situation she finds herself--for example, playing hawk if "owner" and dove if "intruder." In this context, it has been observed that ownership itself changes a person's attitude to, and implicit valuation of, a good [see Kahneman, Knetsch, and Thaler (1991)].

payoff experience from experimentation and mistakes play a major part in this evolutionary process.[41]

Another outcome of cooperative behavior is the emergence of *norms*—especially social, political, and economic.[42] While conventions are regularities of behavior that are self-enforced, we can think of norms as informal rules governing behavior that are enforced by the individuals of the community at large without the assistance of a central authority such as the state.[43] In other words, violation of a norm is expected to invite costly punishment by other members of a community. This also means that, for a single individual, observance of a norm does not necessarily yield the best payoff at a particular time if there is no probability that someone in the community would choose to enforce the norm on that occasion. In this context, it is possible to visualize laws as formalization of actual and desired norms, with the advantage that laws also help to solve the collective action problem of who will bear the cost of enforcement.

An interesting finding by many game theorists—particularly in the context of the so-called ultimatum game[44]—is that experience leads people to use rules of thumb to settle coordination problems that arise in situations, particularly involving bargaining, that embody "fairness" criteria in addition to focal points embedded in the situation/environment. In using a social norm in a situation to which it is well adapted, man behaves as if he is optimizing in the classical sense of the economist. Similarly, when he is optimizing, man behaves as though he is employing a social norm that is well adapted to his problem, in the classical sense of the sociologist.

The fundamental problem in the emergence and stability of norms is that they involve a prisoner's dilemma game at two stages: (i) whether or not to cooperate and obey the norm; and (ii) whether or not to participate in punishing violators of the norm. The second dilemma arises from the fact of an enforcement cost borne by a person trying to enforce a norm. Using

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[41] See Young (1993a, 1993b, 1996).

[42]See, for instance, Ullmann-Margalit (1977), Axelrod (1986), Ostrom and Walker (1993), Ostrom, Walker, and Gardner (1992), Elster (1989), and Sethi and Somanathan (1996).

[43] Cohen (1991) has argued that society generally chooses between norms and (formal) rules on the basis of cost. In other words, society chooses the most efficient enforcement mechanism. This, of course, is a direct application of the Coase theorem and transactions cost economics. On the emergence of institutions, see also the interesting case study and analysis by Grief, Milgrom, and Weingast (1994).

[44] In the ultimatum game, Player I proposes a division of a given sum of money between two players . Player II responds by saying yes or no. If the response is yes, the proposed division is implemented. But if the response is no, both players get nothing.

a computer simulation to illustrate his point, and making reasonable assumptions with regard to the cost of punishment, if caught violating, and the punisher's enforcement cost, Axelrod shows that no one will have any incentive to punish violation of a norm, unless there is some mechanism to counteract this disincentive effect of enforcement. Such a mechanism is another norm—a *metanorm*—to punish those who do not enforce the norm by punishing those whom they witness violating the norm. Axelrod discusses other mechanisms, apart from metanorms, that can support and help maintain norms.[45]

Sethi and Somanathan (1996) adopt an explicit evolutionary approach and apply it to the case of common pool resources[46] to show that norms of restraint and punishment can be stable against invasion by narrowly self-interested players. They use a model with defectors (who over-exploit the common pool resource), cooperators who do not over-exploit but do not engage in punishing defectors either, and enforcers who punish defectors and must bear a cost in so doing. The payoffs to defectors are adversely affected by the punishment they must bear from enforcers. Sethi and Somanathan show, inter alia, that, for any given stock of the

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[45]In particular, he discusses: (i) *dominance*, that is, having a metanorm requiring one to punish another member of one's own group for failing to observe a norm regulating behavior against persons of another group dominated by the first group; (ii) *internalization* of a norm so that persons who violate the norm will have a bad conscience about it; (iii) *social proof*, meaning that one observes as correct behavior in a given situation whatever one sees others predominantly doing in a similar situation; (iv) *membership* in a group dedicated to pursuing a given end; (v) *law* as a device to give clarity to, and official enforcement of, a norm, thereby spreading the enforcement cost to all taxpayers; and (vi) *reputation*, with obedience to a norm becoming a signal to others in the community of one's type.

[46]A fertile area for testing and observing the evolution of norms has been the governance of common pool resources (CPR). Examples include forests, fishing grounds, grazing fields, and some water and irrigation facilities. The basic issue has been whether norms and credible commitments governing exploitation of CPRs can emerge and be enforced without the intervention of an external agent (government or the state). Empirical evidence and experimental observations tend to support the view that self-governance is indeed possible. Apart from the conclusions of Sethi and Somanathan discussed in the text, among the most important conclusions reached so far are that for efficient (and indeed stable) norms to emerge and be sustained: (i) the agents must have the opportunity to communicate repeatedly; (ii) essential are sanctioning mechanisms to "punish" defectors; and (iii) it is preferable for agents to have the right to choose the institutional framework regulating exploitation of and investment in the resource as well as the sanctioning mechanism to punish defectors--that is, the institutional framework should (endogenously) come out of the communication that takes place among the agents exploiting the resource.

common resource, the state consisting of only defectors is, indeed, asymptotically stable.[47] More importantly, under the same circumstances, they show that for sufficiently high punishment (of defectors by enforcers) in relation to the benefit of defecting (higher payoffs from over-exploitation) there exists a set of stable states consisting of a mix of cooperators and enforcers and no defectors. Endogenizing the resource stock does not change this conclusion but brings out the main beneficial effect (higher resource stock) of the stable cooperators-enforcers equilibria over the defectors equilibrium.

At the macro (some would probably say constitutional) level of cooperation, the evolution of *democracy* from various nondemocratic forms of government has been of particular interest. What seems to have emerged is that important for the spontaneous evolution of democracy is the absence of the typical conditions that generate autocracy (Olsen, 1993). According to this view, democracy is advanced by historical developments that leave a balance of power between competing groups—"a dispersion of force and resources that makes it impossible for any one leader or group to overpower all of the others" (Olsen, 1993, p. 573).

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[47]Sethi and Somanathan define a stable equilibrium point of a dynamic system as a point such that for each neighborhood U of the point there exists a neighborhood U_1 contained in U such that if the system starts from a state (e.g, a vector of proportions of player types in the population) in U_1 the state of the system will never leave U. An *asymptotically stable equilibrium* is one which is stable and has a neighborhood such that, starting in the neighborhood, the system will converge to the equilibrium in the long run. As had been pointed out by Foster and Young (1990), if stochastic events (due to environmental shocks, mutation, immigration, mistakes, experimentation, etc.) occur continuously, even if each is arbitrarily small, such events could qualitatively change the long-run ESS outcome. For some succession of perturbations could accumulate and kick the system out of any locus of an ESS. In a stochastic setting, then, the ESS condition is not fully adequate as a criterion of stability because it is only a local criterion. Foster and Young address the issue by augmenting the replicator equation with a stochastic factor--some small noise term. They show that the introduction of stochastic effects could qualitatively change the asymptotic behavior of an evolutionary system. In particular, they find that the introduction of a vanishing small noise term can cause a system to effectively select among a number of ESSs. In addition, although some of the ESSs may be stochastically stable (Foster and Young use the term *stochastically stable equilibrium* instead of *asymptotically stable equilibrium*), some of them may not be. Most significantly, perhaps, in some systems, none of the ESSs may be stochastically stable. Two important conclusions emerge. First, a system could be shocked out of its basin of attraction into a new equilibrium from which it could be shocked again; hence the problem becomes the probability of finding a system at any particular equilibrium. Second it is possible for such probability to be so overwhelmingly in favor of one particular equilibrium that the evolutionary process tends to that equilibrium; the SSE becomes history free with no path-dependent effect.

V. EARG Emergence and the Evolution of Cooperation

Thus the individuals of a country with a successful record of past cooperation (during $-\infty \leq t < 0$) would have established structures of nongovernment organization. They would also have evolved conventions, norms, and rules; contractual and noncontractual modes of social interaction; as well as modes of enforcing compliance.[48] Under perfect cooperation, or in the strategic bargaining process to move from E_H and E_D to E_1, the focal points would include the existing institutions and conventions in the country, which have evolved from past interactions, and own experience of the country under S and G organization. The recognized asymmetries embedded in the situation may be both old and new. Important new asymmetries would probably be forms of power (especially in the strategic bargaining situation)—for instance, new (modern) educated elite versus traditional leaders. Ambiguities also may arise, especially in the area of asymmetries in general and power asymmetries in particular. Since the individuals lack some relevant experience with performance under S and G organization in the envisaged new economic environment, they may, particularly in forecasting x-efficiency, rely partly on *trusted authority* (the opinions of those in a position to know and trusted to have the interest of the community at heart) and partly on *analogy*—by examining the experience of other countries with which they feel a certain affinity with respect to value systems. We shall argue now that the process of EARG emergence in t=0 will have implications for the continuing evolution of cooperation, during t=1, between government and business and between government and society.

A. Cooperation Between Government and Private Enterprise

When H and D cooperate for EARG emergence, with appropriate incentive compatible constraints on the agency of G, it is reasonable to expect them to be conscious of their bounded rationality preventing them from visualizing all socially efficient ways in which S and G could cooperate in the future. Hence they will find it optimal (that is, in their mutual interest) to specify rules for future cooperation between S and G. There are at least two important aspects to this particular element of cooperation. First, there could be efficiency gains to permitting secondary allocations (in t=1) of activities between S and G after the initial (t=0) allocation. The reallocations will be based on experience following the initial allocation of activities and must be approved by H and D, in view of possible distributional effects.

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[48]In the context of the prisoner's dilemma game, Lichbach (1996) has employed a fourfold typology to classify the solutions that have been proposed to get cooperation for collective action in the public goods area—namely, markets, community, contract, and hierarchy. So far we have argued that the individuals in the country with a long history of successful cooperation would use a combination of community (embedded norms, values, and institutions) and market (expectation of benefits), to initiate cooperation; they would use a combination of community, contract, and market to reach agreement addressing the distributional and efficiency issues. The norms, values, and institutions embedded in community themselves evolved via a combination of market, contract and possibly hierarchy.

Suggestions for reallocation, at any point in time, could come from the agents in G or those within S. The important point here is that the rules for such secondary allocations (including any authority relations between S and G in proposing changes) will also form part of the initial EARG agreement between H and D individuals.

Second, as part of the rules for S and G cooperation, H and D will create formal mechanisms to structure S and G cooperation on an ongoing basis. Indeed H and D would build on experience with such structures in their past cooperation. To monitor the cooperation between S and G, the population of H and D individuals may form special citizens committees, use their parliament, grant some authority to G to monitor S as an element of the agency contract of G, or have some combination of all three. In our analysis, then, any direct governance over S by G will be constrained by rules agreed by the individuals (the principals) of the country.

B. Cooperation Between Government and Society

Important consequences for cooperation between government and the society will flow from the EARG emergence process. When EARG emerges under conditions of noncooperation, the institutions which impose constraints on government will remain weak, and there will be a realizable *corruption revenue* (rent) from controlling government. It has been argued (Johnson, 1975) that, in any such situation, political teams will seek control of government in order to extract this corruption revenue. The attempts to capture this corruption revenue, in turn, have major allocative and welfare effects. There will be excessive resource flow into political activity; a government-civil service-business coalition will emerge to facilitate maximum collection of the corruption revenue and to share its proceeds; and different corruption tax rates will be levied on different economic activities. One of the net effects of these activities is to cause the economy to operate inside its social production possibility frontier (Johnson, 1975).[49]

Fighting for control of government in a situation in which such control has major distributional effects could result in a *war of attrition* among major competing groups, during t=1.[50] Depending on the payoff (including opportunity to collect corruption revenue) from

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[49]We can think of this government-civil service-business coalition which results from this process as a sort of loyalty relationship in the sense of Hirschman (1970)—but one effectively purchased by the government. It is, in that sense, *purchased loyalty*.

[50]Alesina and Drazen (1991) have argued that distributional conflicts could also delay stabilization that is clearly socially efficient, as a war of attrition situation develops between competing groups waiting for each other to cede control of the agenda for reform and thus leaving the winner the right to determine the distribution of the burden of adjustment. In our context, this situation arises because of the absence of cooperation among the citizens of the

(continued...)

winning the contest to control government for any length of time, the duration of the contest could be quite long. One of the obvious ways in which a war of attrition can manifest itself is a long drawn out civil war.[51] Each side in such a war will be willing to prolong the war for one more period of time until the expected gain from doing so, if the other side surrenders or is defeated, just equals the additional cost incurred from the prolongation—the standard result from war of attrition models. Such costly conflict is a kind of *voice*, in the Hirschman (1970) sense—but a *loud voice*. This loud voice manifests itself in several ways, apart from long drawn out civil wars, such as political assassinations and coup d'état, encapsulated by the term *political instability*, which, in some models, has been shown to be negatively correlated with growth.[52]

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[50](...continued)
country. The authors show that there is a Nash equilibrium involving the surrender of one of the parties. From an evolutionary perspective, when the solution does not emerge from cooperation (that is, all surrender together), there is the danger of recurrence of the war of attrition; the surrender of one of the parties, then, could be only a tactical retreat with the intention of starting the fight another day—perhaps once it has obtained some badly needed resources.

[51] In an empirical investigation of the economic causes of civil war, Collier and Hoeffler (1996) found—using data for the period 1960–92—four variables to be significant and strong determinants of both the duration and the probability of civil wars. In particular, they found that: (i) the higher per capita income and the greater the inequality of income at the start of the period the lower the risk of war; (ii) ethno-linguistic fractionalization increases the chance of civil war when the degree of such fractionalization is not too high, so that it results in, say, two equally matched groups pitched against each other, while homogeneous and highly fragmented societies have lower probabilities of war; and (iii) as the share of natural resources in GDP rises, initially the risk and duration of civil war increase, but beyond a certain share the relationships appear to be negative. [See also Collier (1996) for normative (policy) applications of the findings to Africa.] In our analysis, the above study, while clearly important, is about proximate and not ultimate causes. In particular, it is not clear why one would launch a civil war for economic reasons if: (i) one could take control of government via a democratic process, and/or (ii) if once one takes control of government there is no rent/corruption revenue to be captured because of institutional constraints. Thus the probabilities of civil wars discussed above would seem to be conditional on: (i) the absence of democracy, and (ii) on the presence of opportunities for corruption revenue as elaborated in Johnson (1975). Of course, we recognize that other (noneconomic) reasons exist for civil wars—political ideology and religion, for example.

[52]See, e.g., Barro (1991) and Mauro (1995); but see Levine and Renelt (1992) on the need to be cautious about the robustness of some of the relationships involved.

Whether it takes place in the form of several political teams competing for control of government or major competing groups engaged in a war of attrition game (also for control of government), the struggle hinders the evolution of cooperation in the economy at large with adverse effects on institution building and growth. Once the struggle begins it may be difficult to attain stability as long as the war continues. One of the consequences of such a long struggle could be *exit* of major elements of the population (that is, loss of human capital and productive enterprise).[53]

The conclusion, then, is that when EARG does not emerge under conditions of cooperation at the start of the process of transformation of the economy, it triggers an evolutionary path with considerable opportunity for extracting corruption revenue by controlling government, a situation that in turn will most likely result in corrupt government. This gives rise to further loud voice, exit, and purchased loyalty—all with adverse welfare (including growth) effects—while simultaneously posing a further impediment to the evolution of cooperation in the economy at large. Detailed analysis of this evolutionary process (which takes place after t=0) is outside the scope of this paper.

VI. Cooperation, Governance, and Macroeconomic Performance

The process of emergence of EARG ultimately affects macroeconomic performance through its impact on: (i) the economic policymaking process; (ii) the incidence of government corruption; and (iii) the occurrence of disruptive distributional conflicts. We quickly summarize the well-known and obvious arguments for the first two. The last we have previously covered.

A. Economic Policy-Making Process

Because of bounded rationality, policymaking is, perforce, a process that involves search and interactive learning. For this reason, it is preferable that the institutional context within which economic policy takes place permits a smooth working of such a process. The empirical evidence is strong that even the most successful policy reformers have had to search, experiment, and learn over time and be willing and able to adapt policies in the face of changing circumstances, or unexpected consequences of past policies, in an attempt to achieve an appropriate and timely mix of policies to ensure high growth and other elements of good

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[53] See Hirschman (1970) for a discussion of exit, voice, and loyalty as responses to deteriorating economic situations. Orbell, Schwartz-Shea, and Simmons (1984) have designed experiments to test whether, if the option of exit is added to the binary choice of cooperate or defect, in PD games, cooperators will exit more readily than defectors. They found no evidence for this and some evidence for the reverse. What we are proposing in this paper is that many among the players on both sides will exit (and we cannot say in theory with what relative frequencies), once the game has settled down to the 'defect' equilibrium.

economic performance.[54] The point here is that the willingness and ability to change policies when they are not yielding satisfactory results and to adapt policies to changing circumstances, in a timely manner, are likely to be greater when policies emerge from consensus or concord after open rational discussion (that is, under conditions of cooperation) than when they are merely imposed by some dominant group (noncooperation). For in the former case the blame for policy failures will be widely shared; a norm against policy inertia is likely to have evolved in the community; and vested interests frustrating change are not likely to be powerful.[55] The exact opposite would be expected in the situation when policymaking takes place under noncooperation.[56]

B. Government Corruption

Government corruption would tend to be more pervasive when EARG has emerged under noncooperation than when it has emerged under cooperation. The theoretical and empirical case that corruption is inimical to economic efficiency, growth, and stability is strong.[57] The transmission processes include adverse effects on resource allocation and on investment. The effects on investments include capital flight, as corruption revenue gets siphoned off abroad where it is harder to detect, and reduction in the marginal efficiency of investment (MEI) discouraging domestic investment whether by nationals or foreigners. The MEI reduction results both from adverse impact on the marginal productivity of investment—as the effective price of capital goods go up due to the corruption tax—and from decline in the marginal productivity of capital—as the return to capital gets reduced by corruption tax on the revenue of firms. In addition, the MEI declines from distortions in investment resulting from differential corruption tax rates on different economic activities.

VII. Some Policy Implications

Our analysis has policy implications in at least two areas. One is the role that policy advice can play in the policy reform framework, and the other is how to promote cooperation.

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[54]See, e.g., World Bank (1993) for the case of the East Asian economies.

[55]In addition, the degree of implementation of policies is likely to be greater as the government will typically then have the legitimate authority to carry out the policies (see Johnson, 1994).

[56]This view is consistent with the findings of Ball and Rausser (1995) that durable economic reforms and political freedom appear to be complementary. In particular, they find that success in reducing inflation over the medium run (as opposed to only the short run) tends to be greater the more democratic the society, which they interpret to be a reflection of the gains from consensus building.

[57]See Johnson (1975), Mauro (1995), and Shleifer and Vishny (1993).

A. Policy Reform Strategy and Policy Advice

In the policy reform literature, it is now generally recognized that institutional reforms are crucial and perhaps paramount.[58] More generally, institutions have been shown to matter for explaining the economic performance of countries over time, and, as we have seen, it has been demonstrated repeatedly that stable institutions can emerge spontaneously and endogenously without central planning and direction. In fact we would argue, based on the theory and the evidence (on the evolution of cooperation, conventions, and institutions), that endogenous determination, including autonomous emergence, promotes stability of these institutions.

An implication for the normative theory of policy reform is that institutions could be allowed to emerge endogenously from a process of cooperation. This is not merely a matter of "ownership" of the policy framework; it is, rather, a question of *stability*, which in the policy reform area includes *sustainability of policies and durability of reforms*. In other words, from this perspective, policy advice and reform would focus on creating the conditions for cooperation to emerge among the individuals of the country; it is the resulting cooperation that would then provide the environment for appropriate institutions to be chosen by the citizens of the country. The main role of the policy advisor would be to provide information relevant for decisionmaking and to help ensure a proper forum for communication and rational discussion among the parties involved in making choices. This does not mean that the policy advisor could not be a "preacher" promoting certain institutions,[59] so long as this is done under conditions that do not threaten the autonomy of the individuals making the final choices, in order to assure the stability of the choices.

B. Promoting Cooperation on EARG—Some Examples

From a normative perspective, we would argue that to enhance cooperation in public policy, there are a number of obvious steps that could be taken in the exercise of government agency in the economic sphere. But it is not clear how one can get the process started without a desire of the groups to cooperate in the first place. We illustrate with four broad areas where enhancing cooperation would greatly improve governance, namely: (i) economic ideology; (ii) political power; (iii) government jobs and resources; and (iv) contribution to taxes. Table 7 lists the areas, some suggested policy instruments that would promote cooperation, and the problem(s) that would be addressed by the policy instruments. In the case of economic ideology an objective would be to ensure legitimated policies and hence full support during implementation. The policy decision making process would be open and flexible, preventing inertia and vested interest from frustrating timely changes and at the same time ensuring that

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[58] See, e.g., Krueger (1992) and World Bank (1993).

[59] See Buchanan (1993) Chapter 15. The preacher need not have an economic self-interest in the behavior modification being promoted.

changes are efficiency enhancing. Thus a norm should be established for sufficiently free and rational discussion of policies coupled with policy selection procedures and criteria to ensure survival of only the "fittest" policies for implementation. This, unfortunately, will be difficult to accept by a government that has emerged under noncooperation, without some change in its relative bargaining power or a general move in the direction of democracy in the selection of the government. Thus, consistent with other writings in this area, in the area of political power the institution of majoritarian or pluralist democracy with free and fair elections will greatly promote cooperation.[60]

Table 7. Promoting Cooperation on EARG: Some Examples

Areas	Policy Instruments	Problems Directly Addressed
Economic ideology	(i) Mechanisms to ensure evolutionary and process approach to policy making (ii) Forum for free and rational discussion of alternatives	Stifling the emergence of efficient economic policies
Political power	(i) Majoritarian democracy (ii) Pluralist democracy	(i) Stifling the emergence of efficient economic policies (ii) Government corruption
Government jobs and resources	Selection and allocation criteria: merit, rate of return, widely shared distributional norms and conventions	Disruptive distributional conflicts, including civil war
Contributions to taxes	Use of widely shared social norms of fairness	Disruptive distributional conflicts, including civil war

As regards government jobs and resources, cooperation will be enhanced if there is a perception of fairness and objectivity with regard to access and to selection and allocative criteria. Some countries have succeeded in achieving these. For instance, in the case of civil service employment, most important to forestall distributional conflicts would be to establish

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[60] On pluralist democracy, Lijphart (1977) has described four types of "consociational" democratic solutions that have proved successful in particular plural societies, namely: (i) *grand coalition* of the political leaders of all significant segments of the society; (ii) the *mutual veto*; (iii) *proportionality* in allocating government posts and resources; and (iv) *segmental autonomy*, which allows rule by the minority over itself "in the area of the minority's exclusive concern" (p. 41). Lijphart discusses the advantages and disadvantages of the different solutions; indicates some of the favorable conditions for them to succeed; and gives country examples of where the different solutions have been tried. In this general context, see also Nordlinger (1972).

credible merit-based recruitment and promotion policies.[61] In the allocation of government resources, objective benefit-cost (rate-of-return) criteria as the fundamental basis for choice, complemented by distributional norms and conventions that are widely shared, will facilitate legitimation of the practices and hence cooperation among the various interest groups. Similarly, with respect to contribution to taxes, use of widely shared norms of fairness as the focal points for taxation will facilitate cooperation and alleviate distributional conflicts.

VIII. Concluding Remarks

In this paper we have advanced a theory of the emergence of the economic agency role of government (EARG) and how it is related to the emergence of governance (most particularly, economic governance). We have argued that EARG emerges in the context of initial differences in expectations regarding government x-efficiency and the distributional impact of government economic activity (in comparison with the private sector); the history and state of cooperation between different groups in the society; relative bargaining power (ability to win all-or-nothing fights and willingness to fight when the chances of winning are no more than even); and the initial set of norms, rules, and conventions governing behavior of individuals in the country. These initial factors determine who decides the initial EARG—that is, the role of government in the economic sphere—and the constraints placed on that role. In particular, we have emphasized as most important the need to distinguish between an initial state of cooperation among competing groups from that of noncooperation. Apart from the dichotomy of cooperation versus noncooperation, we distinguished between the emergence of EARG under war, domination/capitulation, perfect cooperation, and strategic bargaining. The first two we considered elements of noncooperation, and the last two elements of cooperation (on the assumption that strategic bargaining results in a stable equilibrium).

In the context of this paper, governance is a measure of the honesty and efficiency of the agent in economic management. We argued that good governance emerges as a consequence of appropriate incentive compatible constraints designed by principals with incentive and ability to do so. With opposing groups of principals, the *incentives* of groups to design such constraints are related inversely to the expected relative frequency of controlling government and directly to the expected relative share of the costs of poor agency. The *ability* is related directly to bargaining power in determining EARG. Poor governance is a consequence of EARG emergence under noncooperation.

In addition, we argued that the process of emergence of EARG has implications for the future evolution of cooperation in the society and macroeconomic performance. Most notably, under cooperation, the policy decision-making process would be open and flexible, preventing inertia and vested interest from frustrating timely changes and at the same time ensuring that changes are efficiency enhancing.

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[61]See, e.g., World Bank (1993, especially Chapter 4).

From a policy perspective, we argued that addressing poor governance could start with the problem of cooperation. In addition, in the interest of stability, the conventions, social norms and economic institutions which have evolved in the society cannot be ignored as focal points in the selection process for EARG. For the conventions, norms and institutions are themselves the survivors of an evolutionary process of selection involving interactive learning, imitation, experimentation, and natural selection.

One of the puzzles in economic policy reform is the successful pursuit of interventionist microeconomic policies by some among the so-called high-performing Asian economies (HPAEs)[62] without inviting rent-seeking behavior,[63] while, in contrast, many other developing countries have not been able to do so. Clearly the relevant HPAEs were, on the whole, able to introduce and enforce institutional mechanisms to ensure accountability and transparency consistent with a high degree of good governance (by the government, the bureaucracy, and state enterprises). The issue is why some countries are able to do so, much better than others. Consistent with the argument in this paper, we would posit that the institutional mechanisms promoting good governance in the former set of countries were the product of appropriate cooperation among the citizens. This shifts the question to that of explaining why the citizens in one set of countries could cooperate and those in many others could not. Consistent with the framework of this paper we would say that the simple answer is "history," which has resulted in the presence, in one case, and the absence, in the other, of a willingness and an ability of the citizens to communicate, negotiate, and reach agreement to design appropriate incentive compatible constraints on government agency.[64] Given an "unfavorable" history, the challenge facing countries, then, is how to initiate the appropriate cooperation. In the paper, we provide some examples of areas where cooperation could be promoted given some "homemade prior" desire for cooperation among competing groups. In the absence of such a homemade prior, the potential role of "preachers" who invest in "behavior modification" to convince the parties to cooperate [see Buchanan (1991)] may be the only hope for an early emergence of cooperation.

The historical evidence on the evolution of modern institutions lends support to the thesis in this paper that good governance emerges as a consequence of appropriate incentive

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[62]Japan, Hong Kong, Indonesia, Korea, Malaysia, Singapore, Thailand, and Taiwan, China. The degree of success of the HPAEs in avoiding rent-seeking behavior varied, of course.

[63] See, e.g., Rodrik (1996) and World Bank (1993). Such microeconomic intervention policies included subsidized credit, trade protection, and selective industrial promotion policies.

[64] Rodrik (1996) is right, in our view, to say that at least part of the explanation for their success in this area must be found in the initial conditions of the HPAEs prior to their economic take-off. What we are arguing is that the overarching factor among these initial conditions was the norm of cooperation that had evolved including, as an element, the ability to make credible commitments to cooperate in social dilemma situations.

compatible constraints designed by principals with incentive and ability to do so.[65] Nevertheless, it probably needs noting that the incentive to design effective constraints to discourage poor governance does not necessarily correlate strongly with the presence of democracy, as long as such democracy has not evolve spontaneously. Democratic systems—with broad-based taxation (inter alia, to finance agency costs)—will tend to foster an overall incentive in favor of agency arrangements with appropriate incentive compatible constraints when there is symmetrical power distribution among different opposing groups. Without this symmetry, one of the groups (for example, in the case of a country with two clearly differentiated groups) will tend to dominate the political landscape and to win general elections; this dominant group (with all the votes that matter) will not necessarily have any interest in designing effective controls on government agency. In contrast, where democracy has evolved spontaneously, it is likely to have done so mainly because of the emergence of symmetrical power distribution which made democracy an outcome of an evolutionary process.[66] In such a circumstance, a democratic regime is likely, indeed, to contain strong incentives for designing appropriate incentive compatible constraints fostering good government agency.

The paper has dealt with the initial state of emergence only. Hence it does not pursue possible autonomous changes in attitude towards cooperation, after period t=0. For example, it is conceivable that in the case of EARG emergence under perfect cooperation, elections are held soon after time t=0 and one of the two groups wins the first election outright (that is, gets an overall majority). That group can then proceed to alter the rules of the game in order to assure itself control of government in perpetuity. In that case, the effect is to negate the initial EARG emergence solution and change it into one of emergence under noncooperation (in particular, domination/capitulation). The effects on governance, the evolution of cooperation, etc., from that date onwards, are then as discussed in the paper for EARG emergence under domination/capitulation. By the same token, a government that takes over via the domination route can come to see the virtue of cooperation and, without any coercion, decide to take a cooperative approach. If this new stance is institutionalized, then the effect on governance, evolution of cooperation, and economic performance will, from that date onwards, be the same as for EARG emergence under cooperation.

The paper argues that poor governance is a consequence of EARG emergence under noncooperation. But, as implicit in the previous paragraph, it is not beyond the realm of possibility that a government which comes into power under conditions of noncooperation

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[65]In this regard, the discussion, in North and Weingast (1996), of the Glorious Revolution of 1688 in England, is of relevance.

[66]See, e.g., Olsen (1993).

could have what Olsen has termed an "encompassing interest" [67] in the welfare of the community and act as if EARG emerged under perfect cooperation. Our paper has nothing to say about how such a benevolent autocrat emerges; it would in our context be like an unexplained stochastic factor (a kind of mutation in the evolutionary process).

Finally, a major theme has been that, for the subject matter of the paper, cooperation matters. Now, cooperation in general, and institutions and modes of economic organization, in particular, are major forces in the economic growth and performance of countries.[68] In the recent literature, emphasis has been placed on *institutions*. In our view, particularly for a "new" country, a greater emphasis should be on *cooperation*. Institutions are an outcome of cooperation. Institutions coordinate expectations and constrain behavior in interactions. Persons who do not want to cooperate will not care about coordinating expectations or constraining behavior vis-a-vis each other. It is cooperation that produces the institutions, organizations and other components of the economic order that motivate and constrain behavior, for example, to save, accumulate physical capital, invest in human capital, imitate the technology of the technologically advanced countries, and keep external debt and inflation under control. It is true that, as with so many other instances in economics the two variables—institutions and cooperation— affect each other. Cooperation gives rise to institutions which then make possible further cooperation to design, or to create the conditions for the evolution of, more complex institutions, and so on. The point is that institutions regulate cooperative behavior but some prior desire for cooperation must exist.

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[67]See Olsen (1982) and McGuire and Olsen (1996).

[68] See, for example, North (1981, 1990), North and Weingast (1996), Mathews (1986), and Eggertsson (1990). Miller (1992) has also stressed the importance for the performance of firms and organizations (hierarchies) of cooperation among employees and between employees and management. Miller defines cooperation "as occurring when individuals in a social dilemma select alternatives that are *not* rewarded by the formal incentive system but that result in Pareto-efficient outcomes. Cooperation will offer efficiency gains that short-term hierarchical incentives cannot promise" (p. 177; emphasis in original).

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