

FINANCIAL CRISES AND THE WORLD'S POOR*

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1. SUMMARY EVIDENCE

The world's poor had no part to play in the pattern of behaviour that precipitated the financial crisis in rich countries during 2007-2008. An extended period of unsustainable credit expansion had gained momentum in the rich world since the early 1980s, when deregulation of banks, mortgage brokers, and markets for derivatives began to be introduced in the United States (US). Financial companies in rich countries were now allowed to support loans under far less stringent conditions than previously.

There were errors also in macroeconomic management. Fine-tuning is inevitably difficult, but it can be argued that the US Federal Reserve kept interest rates too low for too long. When the institution began to increase the rates banks charge one another for overnight loans, it did so only slowly.¹ Continued fiscal and trade deficit in the US and the corresponding accumulation of reserves by China exacerbated global imbalances. Financial deregulation and a failure of governments in the US (and the UK also) to pursue counter-cyclical monetary policy encouraged an unprecedented leveraging of equity capital and a rapid expansion of liquidity in the rich

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¹ Taylor (2010) argues that had the US Federal Reserve started raising interest rates as early as 2002 (as would have been suggested if the famous 'Taylor rule' had been applied), the housing market would not have grown as fast as it did.

world. Borrowing as much as thirty times one's equity capital was not disallowed to fund a real estate bubble.

The liquidity expansion was accompanied by excessive risk-taking by both borrowers and lenders. The cost of risk fell sharply during the boom period preceding 2007, from a high of about 14 percentage points in 2001 to under 8 percentage points in 2006. As the real estate market was a transparent symptom (even forerunner) of the malaise, the 'financial bubble' was for some time referred to as a 'real-estate bubble'.²

The bubble was also accompanied by a lowered cost of capital, which for poor countries fell by 400 base points in the period 2000-2007. The financial market became what can only be called an institutionalized Ponzi-scheme, no different from the much publicised private version Bernard Madoff engineered over those years. Borrowers in rich countries eventually paid the price, but they cannot be absolved from the charge of borrowing beyond their real means.

1.1. *From Financial to Economic Crisis*

The financial crisis of 2007-2008 was followed shortly by sharp reductions in real economic activity. That was both predictable and widely predicted by economists. Under prevailing economic institutions in most of the world, a country's gross domestic product (GDP) is strongly correlated with employment. GDP is therefore a good index of economic activity in the short term. The most succinct summary statistic of the economic recession is the rate of growth of GDP, which in rich countries declined from 2.6% in 2007 to -3.3% in 2009.

Predictably, recession in the rich world has had serious implications for people in poor countries. World Bank (2010) has provided an account of

² Stiglitz (2010) contains an impassioned account of the economic and political philosophy underlying the deregulation process in the United States. But supporters of the process have begun to counter. Alan Greenspan, who ran the US Federal Reserve for 20 years until 2006, has been reported as insisting (*The Guardian*, 10 April 2010) that the financial bubble was demand driven. In his view rampant demand for property investment encouraged Europeans to buy mortgage-backed securities that were tagged by dubious credit-rating agencies as low risk.

In recent decades financial bubbles and stock market crashes have been much studied by economists. See, for example, Dewatripont and Tirole (1994), Tirole (2002), and Durlauf (2005).

the problems poor countries have faced and are now facing. The authors of the report have shown that the problems themselves and the ability of those countries to respond to them have varied across the poor world. The annual growth rate of GDP in sub-Saharan Africa, for example, fell from a high of 6.5% during 2004-2008 to 1.1% in 2009, whereas the corresponding rates in South Asia (where India dominates the picture) were 8.5% and 5.7%, respectively; and in East Asia (where, with Japan excluded from the statistics, China dominates) the rates were 11.4% and 6.8%.

Admittedly, 5.7% and 6.8% are rates of growth rich countries can only dream of, but Southern and Eastern Asia are operating at a far lower economic base than rich countries. China and India have withstood the global recession well because they are huge, diversified economies. Both countries have been fiscally and financially prudent, with substantial foreign reserves. Domestic demand under good macroeconomic management in large, diversified economies is less vulnerable to external traumas than it is in the myriad of small countries in sub-Saharan Africa. A string of bad monsoons, for example, can cause greater havoc in India than financial meltdowns in London and New York. World Bank (2010) report evidence (such as there is in macro-economic data) that countries with the greatest imbalances (e.g., the public debt to GDP ratio; the public deficit to GDP ratio) have suffered the biggest declines in GDP.

1.2. *Contagion from the Rich to the Poor*

Regardless of the quality of their macro-economic management, poor countries have suffered from the recession that was created in the rich world. The recession has seen the deepest percentage reduction in global output since the Great Depression of the 1930s. Global GDP fell by 2.2% from 2008 to 2009. Although a slow recovery appears to be on the way in rich countries (GDP growth is expected to rise to 2.3% in 2011), economic activity is projected to remain below their productive potential for at least a decade.

Perhaps because the world's poorest countries remain economic backwaters, the banking systems there had limited exposure to sub-prime loans. Nevertheless economic activity in the poorest countries has been affected badly and sharply. Industrial production in poor countries fell by 13% between 2008 and 2009. The number of people living under \$1.25 a day (the World Bank's criterion for acute poverty) is now some 65 million more as compared to what the number would have been if the crisis had not hap-

pened. It is estimated too that between 30,000 and 50,000 additional children in sub-Saharan Africa have died of malnutrition in 2009. The annual growth rate of GDP in sub-Saharan Africa during 2004-2008, as noted above, was 6.5% a year, but declined to 1.1% in 2009. As population there grew at about 2.9% last year, per capita GDP *fell* by 1.8%. Income per head in sub-Saharan Africa is some 30 times lower than the average person's income in rich countries. The poor, as always, have had to carry a disproportionate burden of the folly of the rich.

The rate of growth of potential output in poor countries over the next 5 to 7 years will be reduced by 0.2 to 0.7 percent annually. Compared to the pre-crisis era there will be a permanent reduction by 3.4 to 8.0 percent in potential output. As was expected, the recession has cut sharply into government revenues in poor countries, just as it has increased the need for essential government services (e.g. support programmes for the poorest in their countries). The total financing gap in 2010 in poor countries is likely to be \$315 billion.

2. TWO QUESTIONS

Having given you a quantitative feel for the effects of the current recession on poor countries, I want to change direction by discussing two sets of questions:

- (i) Why do recessions in the rich world transmit their contagion to the poor world?
- (ii) When unregulated, why are financial systems particularly vulnerable to excessive risk-taking?

A catalogue of reasons for (i) is provided in Section 4. Question (ii) is addressed in Section 6. There I show that financial deregulation of the kind and extent that has been engineered in the rich world over the past three decades has eroded *trust* among buyers and sellers of risk. I argue also there that the erosion of trust has occurred because deregulation has encouraged *dishonesty* among those who manage the risks faced by others. Deregulation is especially problematic in the financial sector because those with funds (but with little knowledge of financial markets) have no idea of the risks inherent in the portfolios selected by fund managers (i.e., financial traders).

Because deregulation of financial markets of the kind that was carried out in the 1980s is best read as a cause of a breakdown of trust among buyers and sellers of risk, it proves useful to have a catalogue of the circum-

stances under which a group of people can trust one another to do what they said they would do under the terms of an agreement they have reached. That is why the analysis of the particular problems besetting financial markets is presented in reverse order from the general (Section 5) to the particular (Section 6). The Appendix provides the details of the arguments sketched in Section 5.

3. FUND MANAGERS AND MEDICAL PRACTITIONERS

In a ground breaking article, Arrow (1963) observed that societies long ago found ingenious ways to minimize the problems of *moral hazard* (doctors choosing treatments that are not in their patients' best interest) and *adverse selection* (quacks practising medicine) that potentially plague the health sector and can destroy the ability of people to find adequate health care.³ Arrow went on to provide an analysis of the way institutions have evolved to nurture a special relationship between patients and their doctors. That special relationship (at least in its ideal form) is a far cry from the one between anonymous buyers and sellers in the market-place. Imagine what would happen to health care if the health sector was to be deregulated in quite the same way as financial markets. It would involve deregulation in the market for pharmaceuticals, a weakening of the role of national Medical Associations in overseeing the conduct of doctors at their practices, a loosening of the qualifications required for practicing medicine, and so on. Borrowing from Arrow (1963, 2009), I argue below that the character of the relationship between owners of funds (who could be bankers, not just households) and managers of funds should resemble that between patients and their doctors at its ideal. Unfortunately they are far from that. Moreover, deregulation has made the two pairs of relationships even more different. In Section 6 I show why.

³ The inability to pay is, to be sure, a prime cause of people not receiving adequate medical care in countries where health care is an entirely private commodity. The parallel that I want to draw between financial services and medical services depends on other matters, namely, the problems of asymmetric information between 'buyers' and 'sellers'.

4. CONTAGION

Speculative bubbles have been much studied in the financial literature. That economic recessions are contagious among rich countries has also been much explored, both theoretically and empirically. However, that those same recessions can be contagious for poor countries as well has been studied less, perhaps because they are relatively obvious. Empirical analysis of the effects of the current recession on poor countries is however difficult because the increased difficulties poor countries now face follow a period of boom, when the widened development possibilities open to them were unsustainable. But as rapid deterioration in the prospects for development pose special hardship for poor countries, it makes sense to compare their needs between the unsustainable boom years and the present.

There are seven reasons poor countries suffer when rich countries undergo a recession:

1. Poor countries experience heightened difficulties in the external market for credit and insurance. It has been estimated, for example, that the borrowing costs over the medium run could rise by 110 and 200 base points compared to their levels during the boom period of 2000-2007. Syndicated loans to poor countries in 2009 amounted to \$123 billion, compared to \$236 billion in 2008.

2. Export revenues fall because of a decline in (a) the demand for their goods (world trade in dollars declined by 30% between Summer 2008 and Spring 2009) and (b) the export prices of primary goods (commodity prices, excluding energy, *declined* by 22% in 2009 in contrast to the previous year's experience, which was an *increase* of 21%).

3. The value of foreign holdings decline because of lowered equity returns. The Dow Jones Average declined by 28% during the first half of 2008.

4. Reductions in foreign investment. The flow of foreign direct investment to poor countries fell from \$123 billion in the first quarter of 2007 to \$69 billion in the third quarter of 2009.

5. Reduced aid. It is too soon to judge how deep the cuts will be in foreign assistance to poor countries. But the magnitude of the additional needs of poor countries is huge. It is estimated that 'IDA countries' (countries eligible for soft loans and grants from the International Development Association of the World Bank) will require an additional \$35-50 billion in funding just to maintain current levels of programming, let alone meet the finances required for those additional people thrown into poverty. The total external financing needs of poor countries are expected to be about \$1.1 trillion in 2010.

6. Reduced foreign remittances. Workers' remittances to poor countries declined by 6.3% in 2009, in contrast to an increase by 23% in 2007.

7. Reduced tourism. In recent years tourism receipts in North Africa, for example, amounted to some 15% of GDP. Tourism receipts increased by 20% in 2006 but declined by 5% in 2009.

Reasons (4)-(6) together mean a reduction in capital inflows. Net private capital inflows to developing countries have fallen by nearly \$800 billion in 2009, relative to the high in 2007 (a reduction of 70%).

Recessions are contagious.

5. THE PROBLEM OF TRUST

The common problem facing people who wish to transact with others, whether or not the trade is in the buying and selling of risks, is to trust those others to do what they have agreed to do. So, trust among one another comes allied to honest behaviour by all. In the Appendix I go outside my remit here by framing the problem of mutual 'trust' in a general context. Here I summarize the account there so as to apply it to the performance of financial markets. In order to preserve a semblance of continuity in the exposition here, the summary is necessarily brief. If it is found to be too brief, readers should read the Appendix before Section 6.

Imagine that a group of people have discovered a mutually advantageous course of actions. Imagine next that the parties have agreed to share the benefits and burdens of following that course of actions in a certain way. Under what circumstances would the parties trust one another to keep their word?

There are five, possibly overlapping, sets of circumstances in which they are able to do so. Those circumstances are:

- (1) The people involved care about one another.
- (2) The people involved are known to be honest even when the cost they bear in being honest is large.
- (3) There is a trustworthy external enforcer of agreement. When the external enforcer is the State, trust is created and sustained by a reliance on the *rule of law*, whose practice involves the imposition of penalties on those who break agreements without cause. (Of course, ensuring that the external enforcer is trustworthy involves the creation of appropriate incentives, which are the subject of (4) and (5) below).

(4) The parties care about their reputation. They could care either because people unconditionally care that others recognise they are honest

((2) on our list) or because sanctions will be imposed on them if they are found to be dishonest ((5) on our list).

(5) The parties mutually enforce the agreement by a reliance on *social norms* of behaviour. Social norms involve the (credible) imposition of social sanctions. Entering into long term relationships is an aid to the practice of norm-based behaviour.

Suppose we now think of the respective parties as fund-managers and those with funds seeking others to manage their funds in the owners' interest. Then clearly (1) is not applicable. Moreover, even though in an ideal world our upbringing would be so tailored that honesty is a natural behavioural trait, there is no reason to think that fund managers are especially disposed to be honest when opportunistic behaviour reaps financial rewards. I conclude society should not rely on (2) to elicit honesty in financial markets.

As (1) and (2) do not apply, *incentives* are required to elicit trustworthy behaviour. In Section 6 it is argued that such incentives have been dulled by deregulation. Deregulation has meant a weakening of (3), because regulators do not even have to judge whether financial traders and fund managers are acting in the best interests of their clients. That leaves us with (4) and (5). I show that, unfortunately, deregulation has also weakened the scope of both (4) and (5).

6. MARKETS FOR RISK

Financial markets involve trade in risks. There is a general reason markets encourage risktaking even among people who are otherwise risk averse and even when the risks are commonly known. Limited liability (a good thing) means that the worst that can happen to a firm if things go dreadfully wrong through no fault of its own is that it goes bankrupt. That sets a floor to losses. So, a 50% chance of bankruptcy (amounting, say, to a loss of 5 million dollars), when allied to a 50% chance of success (amounting, say, to a gain of 55 million dollars) can look better than a sure bet yielding 25 million dollars even to someone who is otherwise risk averse. Limited liability leads to risky behaviour.

There are further, related problems. When I purchase a security, I am promised a payment on condition that a set of specified events occurs. Payments on government and corporate bonds and bank loans are no doubt specified in time and quantity, but there is always a risk of default (no matter how slight in the case of government bonds) contingent on certain

events. The interesting and important point here is that the events on which default is contingent depend at least in part on economic variables (e.g., an economic 'crisis'). In short, the returns on securities are dependent on happenings that are not exogenous to the economic system (e.g., weather), but are endogenous to it (e.g., expectations people hold about future prices of good and services). Moreover, the risks are not measurable. As each transaction involves in effect a one-shot risk, there are no objective probabilities for guiding decisions. The buyer of a security and the trader in securities will typically have different assessments of the risks, but as the assessments are lodged in the mind, there is no way for the buyer to verify whether the trader is acting in the buyer's interests.

That is why traders' fees are based on performance (the bonus culture), a natural thing on which to base fees, since performance (*viz.* returns) can be observed by both parties.⁴ But as a security's risks are played out over time, performance payments should be spread out over years. Currently though, they are not. Traders are rewarded for short run success, but are not punished for long run failure. They therefore have an incentive to choose strategies that have a high probability of short run success even if that means a high probability of long term failure. Even in the medium run they are not to be seen: traders in derivatives appear to retire early with their earnings. This prevents the development of long-term relationships between those who desire to invest their funds and those who manage the funds. The fund manager's word is no longer a bond. This contributes to bankruptcies and market volatility.

In Section 5 we noted that of the five circumstances in which buyers and sellers can trust one another to behave in accordance with their agreement, the first two do not apply. Deregulation has vastly weakened the power of the third (external enforcement of agreements).⁵ In the Appendix I show why, if either the fourth or fifth set of circumstances is to prevail in the financial market, society should put in place accountability over a long period of time, not just a year or thereabout. As in other kinds of transaction, external enforcement, the force of social norms of behaviour, and the cultivation of honesty are all needed if financial markets are to operate well.

⁴ Payment based on performance was a familiar matter in plantations, where workers were paid a piece rate, not time rate. That way there would be no need to enforce hard work: workers would have the incentives to work hard. Piece rates in agriculture are rare now because machines set the pace of work.

⁵ Stiglitz (2010) has a good discussion of the regulatory measures that are now needed.

APPENDIX⁶

A1. TRUST AND COOPERATION

Imagine that a group of people have discovered a mutually advantageous course of actions. At the grandest level, it could be that citizens see the benefits of adopting a Constitution for their country. At a more local level, the undertaking could be to share the costs and benefits of maintaining a communal resource (irrigation system, grazing field, coastal fishery); construct a jointly useable asset (drainage channel in a watershed); collaborate in political activity (civic engagement, lobbying); do business when the purchase and delivery of goods can't be synchronized (credit, insurance, wage labour); enter marriage; create a rotating saving and credit association (as in the institution of *iddir* in Ethiopia); initiate a reciprocal arrangement (I help you, now that you are in need, with the understanding that you will help me when I am in need); adopt a convention (send one another Christmas cards); create a partnership to produce goods for the market; conduct an instantaneous transaction (purchase something across the counter); hand over funds to a fund manager; and so on. Then there are mutually advantageous courses of action that involve being civil to one another. They range from such forms of civic behaviour as not disfiguring public spaces and obeying the law more generally, to respecting the rights of others.

Imagine next that the parties have agreed to share the benefits and costs in a specified way. At the grandest level the agreement could be a social contract among citizens to observe their Constitution. Or it could be a tacit agreement to be civil to one another, such as respecting the rights of others to be heard, to get on with their lives, and so forth. Here we will be thinking of agreements over transactions in goods and services. There would be situations where the agreement was based on a take-it-or-leave-it offer one party makes another (as when a purchaser accepts the terms and conditions in a supermarket). In other contexts, bargaining may have been involved (as in a Middle-Eastern bazaar). I do not ask how agreements have been reached, nor look for principles of equity that might have been invoked during negotiation (but see below). I ask instead: *Under what circumstances would the parties who have reached agreement trust one another to keep their word?*

⁶ This Appendix is based on Dasgupta (2009).

Because one's word must be credible if it is to be believed, mere promises wouldn't be enough. (Witness that we caution others, and ourselves too, not to trust people 'blindly'). If the parties are to trust one another to keep their promise, matters must be so arranged that: (1) at every stage of the agreed course of actions, it would be in the interest of each party to plan to keep his or her word if all others were to plan to keep their word; and (2) at every stage of the agreed course of actions, each party would believe that all others would keep their word. If the two conditions are met, a system of beliefs that the agreement will be kept would be self-confirming.

Notice that condition (2) on its own wouldn't do. Beliefs need to be justified. Condition (1) provides the justification. It offers the basis on which everyone could in principle believe that the agreement will be kept. A course of actions, one per party, satisfying condition (1) is called a *Nash equilibrium*, in honour of the mathematician John Nash (he of *the beautiful mind*) who proved that it is not a vacuous concept (Nash, 1950). By their very definition, Nash equilibria (there can be more than one equilibrium; see below) are *self-enforcing*, which is why the parties in question would seek to identify them.

Notice that condition (1) on its own wouldn't do either. It could be that it is in each agent's interest to behave opportunistically if everyone believed that everyone else would behave opportunistically. In that case non-cooperation is also a Nash equilibrium, meaning that a set of mutual beliefs that the agreement will not be kept would also be self-confirming and, thereby, self-enforcing. Stated formally, a Nash equilibrium is a set of strategies, one per agent, such that no agent would have any reason to deviate from his or her course of actions if all other agents were to pursue their courses of actions. Generally speaking, societies harbour more than one Nash equilibrium. Some yield desirable outcomes, others do not. The famous Prisoners' Dilemma is a game that has a unique Nash equilibrium in which all parties are worse off than they could have been if a suitable cooperative infrastructure had been in place. The fundamental problem facing a society is to create institutions where conditions (1) and (2) apply to engagements that protect and promote its members' interests.

Conditions (1) and (2), taken together, require an awful lot of coordination among the parties. In order to probe the question of which Nash equilibrium can be expected to be reached, if a Nash equilibrium is expected to be reached at all, economists study human behaviour that are *not* Nash equilibria. The idea is to model the way people form beliefs about the way the world works, the way people behave, and the way they revise their

beliefs on the basis of what they observe. The idea is to track the consequences of those patterns of belief formation so as to check whether the model economy moves toward a Nash equilibrium over time, or whether it moves about in some fashion or other but not toward an equilibrium.

This research enterprise has yielded a general conclusion: Suppose the economic environment in a certain place harbours more than one Nash equilibrium. Which equilibrium should be expected to be approached, if the economy approaches an equilibrium at all, will depend on the beliefs that people held at some point in the past. It also depends on the way people have revised their beliefs on the basis of observations since that past date. This is another way of saying that history matters. Model building, statistical tests on data relating to the models, and historical narratives have to work together synergistically if we are to make progress in understanding our social world. Unfortunately, the study of disequilibrium behaviour would lengthen this Appendix greatly. I show below though that, fortunately, a study of equilibrium behaviour takes us a long way.

A2. CREDIBLE PROMISES

We began by observing that mutual trust is the basis of cooperation. In view of the multiplicity of Nash equilibria and the possible awfulness of equilibria in those social environments where a cooperative infrastructure is absent, we look for environments in which cooperation is possible. To do that it proves useful to classify the social environments in which the promises people make to one another are *credible*. Five come to mind (Dasgupta, 2007).

A2.1. *Mutual Affection*

Promises would be credible if the parties cared about one another sufficiently. Innumerable transactions take place only because the people involved care about one another and rationally believe that they care about one another (each knows that the others know that they care about one another, each knows that the others know that each knows that they care about one another, and so on) and thus trust one another to carry out their obligations. The household best exemplifies institutions based on care and affection. Because people who cohabit are able to observe and know one another, they can be sanguine that members will not be unduly opportunistic. The problem is that, being few in number, members of a household, as

a group, are unable to engage in those enterprises that require large numbers of people of varied talents and locations. That is why mutual affection is not the basis of cooperation in most other contexts.

A2.2. Pro-social Disposition

Promises would be credible if it were common knowledge that those making the promises were trustworthy, or that they reciprocated by keeping their promise if others displayed trust in them. The new behavioural economics emphasises this aspect of human character (see, e.g., Rabin, 1993; Fehr and Fischbacher, 2002). Nature and nurture play a still little-understood combined role in developing in us a general disposition to reciprocate (Hinde and Groebel, 1991; Ehrlich, 2000). Our capacity to have such feelings as shame, affection, anger, elation, obligation, benevolence, and jealousy would appear to have emerged under selection pressure. No doubt culture helps to shape preferences, expectations, and thus, behaviour, which are known to differ widely across societies. But cultural coordinates enable us to identify the locus of points *upon* which shame, affection, anger, elation, obligation, benevolence, and jealousy are put to work; they don't displace the centrality of those capacities in the human make-up. The thought I am pursuing here is that as adults we not only have a disposition for such behaviour as paying our dues, helping others at some cost to ourselves, and returning a favour; we also practise such norms as those which prescribe that we punish those who have hurt us intentionally; and even such higher-order-norms as shunning those who break agreements, on occasion frowning on those who socialise with people who have broken agreements; and so forth. Often enough, the disposition to be honest would be toward members of some particular group (clan, or neighbours, or ethnic group), not others. This amounts to group loyalty (Ehrlich, 2000, has an excellent discussion on these matters).

By internalizing specific norms, a person enables the springs of his actions to include them. He therefore feels shame or guilt in violating the norm, and this prevents him from doing so, or at the very least it puts a break on him, unless other considerations are found by him to be overriding. In short, his upbringing ensures that he has a disposition to obey the norm, be it moral or social. When he does violate it, neither guilt nor shame would typically be absent, but frequently the act will have been rationalized by him. For such a person, making a promise is a commitment, and it is essential for him that others recognise it to be so (Arrow, 1974).

Recent work in behavioural economics has re-affirmed among economists that trustworthiness isn't alien to human nature. The problem is that, as people don't have their inherent trustworthiness stamped on their forehead, they can't know in advance whom to trust. In any event, if relative to the gravity of the misdemeanour the pecuniary benefits of opportunistic behaviour were high, transgression could be expected. The problem is that one wouldn't know in advance who would be likely to transgress. Punishment assumes its role as a deterrence because of these agency problems. As someone's trustworthiness isn't publicly observable, punishment is usually tailored to the 'crime'. In the next section we study the remaining three contexts in which people are able to trust one another to keep their promises. We will confirm that, by looking into someone's personal history it becomes possible to tailor punishment not only to the 'crime', but also their past behaviour and circumstances.

A3. INCENTIVES TO KEEP PROMISES

The promises the parties have made to one another to keep to their agreement would be credible if they could devise an institution in which keeping promises would be in the interest of each party if everyone else were to keep them. The problem therefore is to devise an institution in which keeping to the agreement is a Nash equilibrium. Recall that a strategy is a sequence of conditional actions. Strategies assume the forms, 'I shall choose X if you choose Y, otherwise I shall choose Z', or 'I shall do P if Q occurs, otherwise I shall do R', and so on. If promises are to be credible, it must be in the interest of those making promises to carry them out if and when the relevant occasions arise.

Societies everywhere have constructed solutions to the credibility problem, but in different ways. *What all solutions have in common is the imposition of collective sanctions on those who intentionally do not comply with agreements.* Of course, a credible threat of punishment for misdemeanours would be an effective deterrence only if future costs and benefits aren't discounted at too high a rate relative to other parameters of the social environment, a matter to which I return presently.

Broadly speaking, there are three types of situation where parties to an agreement could expect everyone to keep to their words. (Of course, none may be potent in a particular context, in which case people would find themselves in a hole they cannot easily get out of, and what could have been

mutually beneficial agreements will not take place. The behaviour reported in the Mezzogiorno by Banfield, 1958, is an illustration of this possibility). Each gives rise to a set of institutions that capitalize on its particular features. In practice, of course, the types would be expected to shade into one another; but it pays to study them separately. So, in the next three subsections I assume that the discount rates agents apply to their future costs and benefits are low relative to other parameters of the social environment.

A3.1. *External Enforcement*

It could be that the agreement is translated into an explicit contract and enforced by an established structure of power and authority; that is, an external enforcer.

By an external enforcer I imagine here, for simplicity, the State. (Depending on the social environment, the 'external enforcer' could be the tribal chieftain, the warlord, the priest, or the village elders). Consider that the rules governing transactions in the formal market-place are embodied in the law. So markets are supported by a legal structure. Firms, for example, are legal entities. Even when you go to a supermarket, your purchases (paid in cash or by card) involve the law, which provides protection for both parties (the grocer, in case the cash is counterfeit or the card is void; the purchaser, in case the product turns out on inspection to be sub-standard). The law is enforced by the coercive power of the State. Transactions involve legal contracts backed by an external enforcer, namely, the State. It is because you and the supermarket owner are confident that the State has the ability and willingness to enforce contracts that you and the owner of the supermarket are willing to transact.

What is the basis of that confidence? After all, the State apparatus is run by people, which means a further agency problem. In any event, the contemporary world has shown that there are States and there are States. Simply to invoke an external enforcer for solving the credibility problem won't do. For why should the parties trust the State to carry out its tasks in an honest and effective manner? A possible answer is that the government worries about its reputation (Section A3.2). So, for example, a free and inquisitive press in a democracy helps to sober the government into believing that incompetence or malfeasance would mean an end to its rule, come the next election. Knowing that they worry, so the parties trust their government to enforce agreements. Even if senior members of the ruling party are getting on in years and don't much care what happens in the future,

younger members would worry that the party's reputation would suffer if the government were not to behave.

The above argument involves a system of interlocking beliefs about one another's abilities and intentions. Consider that millions of households in many parts of the world trust their government (more or less!) to enforce contracts, because they know that government leaders know that not to enforce contracts efficiently would mean being thrown out of office. In their turn, each side of a contract trusts the other not to renege (again, more or less!), because each knows that the other knows that the government can be trusted to enforce contracts. And so on. Trust is maintained by the threat of punishment (a fine, a jail term, dismissal, or whatever) for anyone who breaks a contract. We are in the realm of equilibrium beliefs, held together by their own bootstraps.

Unfortunately, cooperation isn't the only possible outcome. Non-cooperation can also be held together by its own bootstrap. At a non-cooperative equilibrium the parties don't trust one another to keep their promises, because the external enforcer cannot be trusted to enforce agreements. To ask whether cooperation or non-cooperation would prevail is to ask which system of beliefs are adopted by the parties about one another's intentions. Social systems harbour multiple equilibria.

A3.2. Reputation as Capital Asset

Political parties are not the only entities that view reputation as a capital asset. Individuals and firms view it that way too. Consider someone who doesn't care what his reputation will be after death. Even he would care to build a reputation for honest dealing if by so doing he could cash in that reputation at the time of retirement. Brand names are an instance of such cases. The person owning the brand name no doubt changes over time, but the name itself remains. Consider a firm whose dishonest behaviour has been exposed. Suppose too that customers deal only with firms that have an unsullied reputation. On retirement, the owner would find no buyer for the firm. Knowing that in advance, the owner may well wish to maintain the firm's reputation for honesty. If the owner cared sufficiently about his quality of life after retirement, honesty would then be an equilibrium strategy, just as boycotting ill-reputed firms would be a corresponding equilibrium strategy for customers (Kreps, 1990).

Of course, even in situations where reputation can be accumulated as a capital asset, it may be that agents don't accumulate reputations for hon-

esty. It cannot be repeated often enough that social systems possess multiple equilibria.

The formal analysis of reputation as capital asset is similar to one where the parties expect to face transaction opportunities repeatedly in the future. Let us study those situations.

A3.3. *Long-term Relationships*

Suppose the agents expect to face similar transaction opportunities in each period over an indefinite future. Imagine too that the parties can't depend on the law of contracts because the nearest courts are far from their residence. There may even be no lawyers in sight. In rural parts of sub-Saharan Africa, for example, much economic life is shaped outside a formal legal system. But even though no external enforcer may be available, people there do transact. Credit involves saying, 'I lend to you now with your promise that you will repay me'; and so on. But why should the parties be sanguine that the agreements won't turn sour on account of opportunistic behaviour?

They would be sanguine if agreements were mutually enforced. The basic idea is this: a credible threat by members of a community that stiff sanctions would be imposed on anyone who broke an agreement could deter everyone from breaking it. The problem then is to make the threat credible. The solution to the credibility problem in this case is achieved by recourse to social norms of behaviour.

By a *social norm* we mean a rule of behaviour, or strategy, that is followed by members of a community. For a rule of behaviour to *be* a social norm, it must be in the interest of everyone to act in accordance with the rule if all others were to act in accordance with it. Social norms are (Nash) equilibrium rules of behaviour.

To see how social norms work, imagine that the gain to a party from breaking the agreement unilaterally during a period is less than the discounted value of the losses she would suffer if all other parties were to punish her subsequently. The punishment could involve all others refusing to engage in any transactions with the erring party in the following period, shunning her for suitable numbers of periods, and so on. Call a party 'conformist' if she cooperates with parties who are conformists but punishes those who are non-conformists. That sounds circular, but it isn't, because the social norm we are studying here requires all parties to start the process by keeping their agreement. It would then be possible for any party in any period to determine

which party is conformist and which party is not. For example, if ever someone were to break the original agreement, he would be judged to be non-conformist; so, the norm would require all parties to punish the non-conformist. Moreover, the norm would require that punishment be inflicted not only upon those in violation of the original agreement (first-order violation); but also upon those who fail to punish those in violation of the agreement (second-order violation); upon those who fail to punish those who fail to punish those in violation of the agreement (third-order violation); and so on, indefinitely. This infinite chain makes the threat of punishment for errant behaviour credible because, if all others were to conform to the norm, it would not be worth any party's while to violate the norm. Keeping one's agreement would then be self-enforcing (Fudenberg and Maskin, 1986).

All traditional societies appear to have sanctions in place for first-order violations. Anthropologists and novelists have noted the use of sanctions for second-order violations. That sanctions against higher-order violations haven't been documented much may be because they aren't needed to be built into social norms if it is commonly recognised that people feel a strong emotional urge to punish those who have broken agreements. Anger facilitates cooperation by making the threat of retaliation credible.

Social norms that are enshrined in the culture of a community depends not only on the character of the agreements themselves, but also on the relative ease with which prospects are expected to arise for opportunistic behaviour. Sanctions can range from the punitive and unforgiving ('one strike and you are out!', known in the literature as the 'grim strategy'), which have been observed in places where tempting short-term outside economic opportunities appear from time to time. However, many rural communities (e.g. in the mountains of Nepal) are like enclaves: they live far from established markets. Adopting such unforgiving norms as 'one strike and you are out!' would prove counter-productive there. That is why sanctions there have been found to be graduated: the first misdemeanour is met by a small punishment, subsequent ones by stiffer punishments, persistent ones by punishments that are stiffer still (Ostrom, 1992). Where information is imperfect, a small penalty for the first misdemeanour would be warning that others were watching, or it could be that others signal their acknowledgement that the misdemeanour could have been an error on the part of the offender and that he should try harder next time. And so on.

It can be shown that the scope for cooperation can be increased by *tying* several agreements (e.g., agreements over the mutual provision of credit, insurance, and labour, respectively), so that the norm has it that violation

of any one agreement is met by withdrawal of cooperation in all other engagements (Dasgupta, 2007). Interestingly, tied relationships are a common feature of traditional societies.

Unfortunately, even when cooperation is a possible equilibrium, non-cooperation is an equilibrium too. To see why, imagine that each party believes that all others will renege on the agreement. It would then be in each one's interest to renege at once, meaning that there would be no cooperation. Failure to cooperate could be due simply to an unfortunate pair of selfconfirming beliefs, nothing else. No doubt it is mutual suspicion that ruins their chance to cooperate, but the suspicions are internally self-consistent. In short, even when people don't discount future costs and benefits at a high rate and appropriate institutions are in place to enable people to cooperate, it can be that they do not cooperate. Whether they cooperate depends on mutual beliefs, nothing more. I have known this result for many years, but still find it a surprising and disturbing fact about social life.

A4. BREAKDOWN OF COOPERATION

We have so far assumed that the discount rates people apply to their future gains and losses are small. It is, of course, obvious that if the rates were large, cooperation wouldn't be possible. So we now have in hand a tool to explain how a community where members have been cooperating can skid to a state of affairs where members cease to cooperate. Ecological stress (caused, for example, by high population growth and prolonged droughts) often leads people to fight over land and natural resources (Homer-Dixon, 1999; Diamond, 2005). More generally, political instability (in the extreme, civil war) would be a reason why people discount the future benefits of cooperation at a high rate, if for no other reason than a heightened fear that their community will not survive in its present shape. In the sphere of financial markets, that traders are able to reap high benefits in a brief span of time (the bonus culture based on short run performance) and then disappear translates into high discount rates. Which is when the bubble bursts. For whatever reason, if discount rates were to increase sufficiently relative to the parameters characterising the social environment, cooperation would cease. Mathematicians call the points at which those switches occur, 'bifurcations', sociologists call them 'tipping points'. Social norms work only when people have reasons to value the future benefits of cooperation.

Contemporary examples illustrate this. Local institutions have been observed to deteriorate in the unsettled regions of sub-Saharan Africa. Communal management systems that once protected Sahelian forests from unsustainable use were destroyed by governments keen to establish their authority over rural people. But Sahelian officials had no expertise at forestry, nor did they have the resources to observe who took what from the forests. Many were corrupt. Rural communities were unable to switch from communal governance to governance based on the law: the former was destroyed and the latter didn't really get going. The collective vacuum has had a terrible impact on people whose lives had been built round their forests and woodlands (Dasgupta, 1993).

Ominously, there are subtler pathways by which societies can tip from a state of mutual trust to one of mutual distrust. We have seen that when discount rates are low, both cooperation and non-cooperation are equilibrium outcomes. So, a society could tip over from cooperation to non-cooperation simply because of a change in beliefs. The tipping may have nothing to do with any discernable change in circumstances; the entire shift in behaviour could be triggered in people's minds. The switch could occur quickly and unexpectedly, which is why it would be impossible to predict and why it would cause surprise and dismay. People who woke up in the morning as friends would discover at noon that they are at war with one another. Of course, in practice there are usually cues to be found. False rumours and propaganda create pathways by which people's beliefs can so alter that they tip a society where people trust one another to one where they don't.

The reverse can happen too, but it takes a lot longer. Rebuilding a community that was previously racked by civil strife involves building trust. Non-cooperation doesn't require as much coordination as cooperation does. Not to cooperate usually means to withdraw. To cooperate, people must not only trust one another to do so, they must also coordinate on a social norm that everyone understands. That is why it's a lot easier to destroy a society than to build it.

How does an increase or decrease in cooperation translate into macro-economic performance? Consider two communities that are identical in all respects, excepting that in one people have coordinated at an equilibrium where they trust one another, while people in the other have coordinated at an equilibrium where they don't trust one another. The difference between the two economies would be reflected in the productivity of their assets, which would be higher in the community where people trust one another

than in the one where they don't. Enjoying greater incomes, individuals in the former economy are able to put aside more of their income to accumulate capital assets, other things being equal. So it would become relatively more wealthy. Mutual trust would be interpreted from the statistics as a driver of economic growth, but the statistics wouldn't reveal how that trust was created and maintained.

A5. DECENCY AND THE RULE OF LAW

Many thinkers point to the primacy of the rule of law for societal well-being. The rule of law, however, is consistent with many forms of government and international political arrangements. It isn't only a political democracy in the Western mode that can be expected to protect and promote the rule of law. Practice of the rule of law, more generally, an expectation of *decency* in the public domain, creates trust among people, as they go about their daily lives. That is why we economists should now work more closely with educationists and other social scientists so as to better understand the social environments that promote the growth of pro-social disposition. To be true to oneself is in all probability the surest route to being true to others. The mystery is how to enlarge the set of those 'others' beyond one's neighbours. The deepest question in the social sciences remains unanswered: how does grace and decency establish themselves among wide and disparate groups of people?

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