Introduction: barter networks and 'information islands'

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1 Money and barter

Due to a lack of pockets, wildebeest cannot carry cash or credit cards. Among animals, only marsupials have pockets, and then just to keep their young inside. And there are various difficulties, practical and theoretical, with an economic system based on inch-long blind and hairless kangaroos. (P. J. O'Rourke, *Eat the Rich*)

A reader of some of the remarkable stories of invention catalogued in this volume could be forgiven for thinking that baby kangaroos are among the very few items that have not at some point been employed as media of exchange in transition economies in recent years. Particularly in the countries of the former Soviet Union, an increasing proportion of economic transactions during the 1990s, especially those between large firms, have taken a complex non-monetary form. They have sometimes involved exchanges of goods for goods, more often circular chains of transfers of both physical and financial assets, sometimes the issue of bills of exchange (called *veksels* in Russian) that, whether denominated in money or not, frequently end up being redeemed in goods. What is notable about these transactions is not primarily their complexity – financial transactions in market economies (especially those involving derivatives) can be notoriously baroque – but rather two facts. First, they take place as part of the normal process of production and disposal of goods and services in the real economy. Secondly, they typically involve at least some party to a transaction accepting the delivery of goods they do not wish to own (or in specifications they would not choose) as part of the price of completing a transaction in which they have an overall interest. This second feature is the reason why it is convenient to refer to all of these types of non-monetary transactions as 'barter', even though many of them do not take the classic goods-for-goods form.

On the whole, transactions in mature market economies do not behave this way. It is precisely because of the complexity of *financial* transactions that, aside from holdings by professional speculators, real goods and services tend to be owned by those who produce them or wish to consume them. They are transferred from one to the other against either money or credit payable in money.

This difference between the phenomena recorded in this volume and the characteristics of market economies is one of degree rather than kind, and it should not be exaggerated. Barter trade exists in market economies – in the international arena (see Marin and Schnitzer, 1995), in informal networks of individuals known to each other such as families and ethnic groups (Kranton, 1996), and in organised networks of traders using various coordinating mechanisms including coupon currencies and internet links. The International Reciprocal Trade Association[1] estimates that the annual dollar value of barter trade by North American trade companies and trade exchanges rose from \$1 bn to over \$9.1 bn during the two decades up to 1996. Though still a tiny proportion of US GDP, this represents an increase of over threefold in real terms, and the internet has certainly led to explosive growth since then, as any web search using the word 'barter' will reveal. Conversely, some of what is recorded in the statistics as barter trade for transition economies differs little from financial transactions in market economies. A bill of exchange issued by a firm and subsequently redeemed in money is no different from a junk bond, except that it may be passed from one to another of a firm's creditors through ad hoc bargaining rather than traded in a recognisable market.

Nevertheless, it is clear beyond reasonable doubt that barter in transition economies is different – in its scale, in its complexity and in the extent to which it affects (and probably distorts) the channels through which real goods and services circulate in the economy. This is a puzzle. In a command economy the distinction between barter and monetary exchange did not really exist, but it was widely expected that as restrictions on trade were lifted, patterns of transactions would increasingly come to resemble those in established market economies, even if the process might be slow. In Central and Eastern Europe outside the CIS the incidence of barter has indeed been falling, though the evidence presented by Carlin *et al*. in chapter 9 in this volume shows that it has not disappeared. But in the CIS barter has been on the increase, at least until very recently. Why? Does it matter? And what light does it cast on the way money functions in more normal conditions?

Standard accounts of the role of money in societies characterised by the division of labour stress its ability to avoid the dependence on the double coincidence of wants that plagues barter transactions. It is hard

[1] See <www.irta.net/barterstatistics.html>.

enough finding someone who wants to buy my product without restricting my search artificially to that subset of people whose products I in turn would like to obtain. The best terms I can find from among that restricted group may be less attractive than the terms I can obtain from someone else whose products do not interest me, but who can offer me something I can store, and exchange for other products later. What something might this be? We can call it a *medium of exchange*.

For a medium of exchange to be attractive it has to have a number of characteristics:

- It has to be reasonably easy *to store and to transport*. Water is a poor medium of exchange even in arid conditions where it has considerable value.
- It has to be sure *not to lose its value before I resell it* – through decay, vulnerability to theft, or simply through my own inability to tell the difference between good quality and bad. Bread is too perishable. Clothing, even valuable clothing, is too easy to steal. Diamonds, though highly valued, fantastically durable and easy to hide from thieves, have rarely been used as a medium of exchange because too much expertise is required to tell the difference between gemstones and fakes.
- It has to be *more widely acceptable* by other buyers than my own goods are. If it were not, then there would be no point in my accepting it either; I could just hold inventories of my own products until the time came to exchange them.

There has been a substantial literature examining in detail the implications of these features of media of exchange. The last point implies in particular that many possible commodities might serve as media of exchange provided there was a reasonable expectation on the part of citizens that other citizens would accept them (a point emphasised by Kiyotaki and Wright, 1989). Conversely, otherwise ideal media of exchange may fail to gain acceptance purely because citizens believe other citizens will not accept them. There is thus no guarantee that the media of exchange that emerge in a society will be efficient ones. To the extent that the state has some ability – through laws relating to legal tender, for example – to influence the expectations of citizens, its behaviour may significantly affect the character of the media that predominate.

The various threats to the value of media of exchange have also been widely explored. Banerjee and Maskin (1996) emphasise that the attraction of money has historically been that ordinary citizens could tell good from bad with a minimum of expertise. The reason for making money difficult and dangerous to counterfeit is not just to restrict supply (protect the state's monopoly) but also to sustain demand, by upholding citizens' confidence in the medium of exchange itself.

However, the state, although the guarantor of money's quality in one dimension, has in many circumstances proved also the greatest threat to its value. So-called 'fiat money' (consisting of intrinsically worthless notes and coins) is a socially valuable invention, because its value in circulation greatly exceeds the resource costs of producing it, thereby liberating real resources for more useful purposes than acting as a medium of exchange. But this fact itself makes money a tempting way of raising revenue without the politically unpopular necessity of announcing tax increases. Governments have often sought to use inflation to avoid explicit taxes and have paid an eventual price in high inflation. In chapter 1 in this volume, Dutta presents an account of the way in which *inflation* – which reduces money's attractiveness as a store of value – thereby also threatens its ability to function as a medium of exchange. This, then, has real costs to society.

In chapter 2 in this volume, Prendergast and Stole explore these costs in more detail. Without money, there will tend to be over-production of goods that can function as surrogate media of exchange (these will also tend to be goods of relatively low quality). In addition, trading networks will tend to be more restricted than otherwise, since simultaneous exchange may be harder to ensure in a barter than a money economy. When trades do not take place simultaneously, *money can substitute for trust* between the parties, and in the absence of money they are well advised to restrict their trades to those whom they know well.

In chapter 3 in this volume, Humphrey reviews the anthropological literature on barter, and considers especially the effect of *inadequate trust* on the relations between trading partners. Although barter has often been documented in a reasonably stable context in societies characterised by low levels of industrialisation, the kind of barter observed in transition economies today is perceived by its participants as neither normal nor desirable. Indeed, the trust demanded of participants (the need for which would be reduced by money), far from cementing social relations places new kinds of stress on them which Humphrey's chapter documents in some detail.

The social costs of barter may be clear, but the reasons why barter has become more rather than less prevalent in the CIS are much harder to assess with confidence. Transition economies have seen high rates of inflation in the early years after liberalisation of the command economy, and the CIS saw higher rates than in Central and Eastern Europe. However, inflation fell sharply in the CIS by the mid-1990s (by 1995 it was as low in Russia as in Poland), and yet barter has continued to grow significantly since then (see chapter 5 by Commander and Mummsen in this volume). Furthermore, other parts of the world – such as Latin America in the 1970s – have had long periods of hyperinflation without the appearance of barter on a comparable scale. These considerations suggest that, even if inflation was a factor in predisposing transition economies towards the use of non-monetary transactions, other factors have since become more important.

A number of surveys of barter (such as those discussed in Part II of this book) indicate that it is significantly associated with reported credit shortages on the part of bartering firms. Indeed, a strong credit squeeze has been associated with the stabilisation efforts of a number of transition countries, especially Russia and Ukraine. In other words, barter now seems to be linked to an unwillingness to offer money in transactions, not to an unwillingness to accept it. But since the only point of holding money is to be able to offer it subsequently in exchange, this does not explain how barter transactions might drive out monetary ones. Why does a shortage of credit not simply result in a fall in prices of goods, which would restore equilibrium in demand and supply?

Two important explanations suggest themselves. The first relies on the fact that *debt creates important externalities between creditors*. If a bank makes a loan to a firm that is already highly indebted, the effect of the loan may be as much to increase the chances of the firm's paying off its existing creditors as to undertake a profitable activity with its new resources. In these circumstances a bank has very little incentive to make new loans: it cannot readily collateralise the debt and appropriate the benefits of that loan for itself instead of seeing them appropriated by other creditors. Both financial activity and real production may therefore be stifled by a problem known as debt *overhang*.

If banks will not lend, who else might? Other firms might be induced to extend trade credit. However, if they extend trade credit for settlement in money, they face potentially the same problem as the banks – namely, the unenforceability of the loan contract in the face of claims by other existing creditors. But other firms can do something that banks are not allowed to do: they can *extend credit for repayment in kind*. Marin, Kaufmann and Gorochowskij argue in chapter 8 in this volume that this may be the most important explanation for barter. A barter deal is equivalent to a trade credit repayable (and therefore collateralised) in the very same goods that are produced by the borrowing firm. If the firm were required to repay in money, its other existing creditors would attempt to assert a claim. Requiring repayment in goods effectively shuts out the claims of the other creditors who are already in the queue. And the longer the queue, the more attractive an option barter becomes.

A second, and no less ingenious explanation is put forward by Prendergast and Stole in chapter 2 in this volume. If all firms were credit-constrained, and therefore all potential purchasers of my product were equally unwilling to offer me money, I might indeed simply lower my price until a buyer could be found. But Prendergast and Stole suggest that credit constraints may be distributed quite asymmetrically. Suppose that some potential buyers of my product could afford to pay the asking price in cash. By lowering the price to those who are credit-constrained I risk forgoing revenue from those who are not credit-constrained. So instead I may keep the cash price high, while arranging barter deals with those who have no cash to offer. In effect, the barter option allows me to engage in *price discrimination*. Not only may this explain why barter emerges in a situation of tight (though asymmetrically distributed) credit constraints. It also shows why prices may be less flexible than they would otherwise be – or, to put it another way, why the response of price inflation to monetary restraint may be particularly sluggish.

For the motive of price discrimination to be credible requires that there is an appreciable degree of *monopoly power* in the economy. There is a general consensus that conditions in the CIS are indeed highly conducive to the persistence of monopoly power. Furthermore both chapter 6 by Guriev and Ickes and 9 by Carlin *et al.* in this volume find a significant statistical association between the degree of market power and the likelihood that a firm will engage in barter (Kranton, 1996, also provides reasons for thinking that these two phenomena will be associated). Among other things monopoly power in the CIS has been held responsible for a large degree of 'disorganisation' (Blanchard and Kremer, 1997) in the process of reconfiguring production structure to meet the demands of the market economy. In particular, if production chains have previously been characterised by bilateral monopoly, then when one party to a transaction chooses to find a trading partner elsewhere the other will lose production opportunities for which there may be no ready substitute. In these circumstances trading networks can easily acquire the characteristics of defensive arrangements in which the fortunes of all the parties are interconnected: the disappearance of one part of the network threatens the economic viability of all.

Trading networks of this kind pose three particular threats to the efficiency of economic activity. One is that individual firms lose the incentive to produce efficiently since they know that other firms in the network have an incentive to support them if they perform poorly. The second, more subtle threat is to the division of labour: firms will prefer to trade with those in their network rather than seek better opportunities elsewhere. Prendergast and Stole in chapter 2, in particular, show how the insurance provided by its trading partners makes a firm less willing to deal with others who may produce better goods at lower cost, and thereby reduces the efficiency of production in the economy as a whole.

A third threat comes through the diminished ability of firms to know about market opportunities if they continue to operate within restricted trading networks. There is a big puzzle about barter, which is that it implies firms are willing to hold goods in the marketing and disposal of which they have no comparative advantage. I produce shoes, and presumably know something about the market for shoes, and I trade with a firm that produces leather. My supplier knows something about the market for leather but much less about the market for shoes. Any arrangement which involves my using shoes as a medium of exchange to pay my supplier will result in the leather producer having to expend time, effort and investment resources in stocking, marketing and disposing of shoes. This is such a flagrant violation of the principle of comparative advantage – upon which all modern economic organisation is based – that it cries out for an explanation.

A very plausible explanation is simply that, in the conditions of economic chaos that have resulted from the transition process, particularly in the economies of the CIS, the degree of comparative advantage enjoyed by one firm over another in marketing and disposal may be extremely slight. A firm that has traditionally enjoyed monopoly power over its customers may have very little knowledge about potential markets elsewhere. As soon as economic liberalisation threatens the captive position of these markets the firm has no real idea where to turn. It may have enjoyed a geographical monopoly (within a region of Russia, say), but outside this region it may know no more about potential markets than any other firm chosen at random. Indeed, its supplier (who may be a firm located in a different region) might even know more about where to find customers for its final product than the firm does itself. We can think of the firm as inhabiting an 'information island' outside which its comparative advantage no longer exists. Trading networks may therefore represent its only points of contact outside the island – and barter a way to utilise the information these points of contact make possible. In an informationally transparent economy, it would make no sense for a leather producer to sell shoes. In an economy characterised by an informational fog, a leather producer in Minsk may know more about new opportunities for selling shoes there than a shoe producer in Moscow.

As barter becomes an economy-wide phenomenon it may even make the informational fog more dense. As Kranton (1996) suggests, the higher the proportion of traders who are locked into networks of reciprocal exchange, the higher the costs of searching for trading partners outside one's own network and therefore the greater the incentive to stay with the network rather than breaking away.

We can therefore see a way in which barter may become seriously entrenched in a society seriously disrupted by the circumstances of transition. 'Information islands' lower the private costs to firms of using barter transactions. Using barter makes firms highly dependent on their existing networks of trading partners and very reluctant to experiment with possibilities outside the network. It therefore ensures that new information does not become available which would increase the incentive of firms to avoid using barter. In these circumstances barter can be seen as a symptom of wider social dislocation of a kind that has undoubtedly characterised some transition economies (and markedly more so in the CIS than in Central and Eastern Europe). But, disturbingly, it may also reinforce that dislocation.

2 The structure of this book

This book brings together a large amount of material, both theoretical and empirical, that can help in the understanding of why barter transactions have emerged in transition economies, whether they matter and what light they cast on the role of money in more normal times. Contributors come from a range of disciplines including economics, sociology and social anthropology. Their collaboration is all the more important because of the fact that barter is a *network* phenomenon – it is frequently impossible to understand the reasons for a single barter transaction without understanding the network of transactions of which it forms a part (a point emphasised by Ledeneva and Seabright in chapter 4 in this volume). Theoretical economics has made valuable advances in recent years towards linking an account of the properties of networks to the behaviour of the individual participants in (or components of) those networks. It has particularly stressed the significance of network externalities, and the consequent fact that the structure of networks that emerges from the decentralised decisions of individuals may have properties that none of the participants would have wished. However, these theoretical advances have not been matched by empirical studies, where applied economics continues to rely on large-scale survey or census-based studies that take the individual, household or firm as the unit of analysis. Here the richer insights of smaller-scale studies such as those conducted by sociologists and anthropologists are particularly valuable, since they can show the character of network interactions in great detail. Naturally, the benefits of detail are purchased at the price of statistical representativeness, so it is precisely the interaction of large- and small-scale empirical studies that is particularly fruitful.

The volume is in three main parts following this introduction, and there is a concluding chapter. Part I contains the principally theoretical chapters by Dutta, Prendergast and Stole and Humphrey (chapters 1–3) that were described above. Chapters 1 and 2 contain a mathematical appendix for those who wish to follow the technical arguments closely, but the main text makes little if any formal demands.

Part II contains six chapters based on relatively large-scale survey material. Chapter 4 by Ledeneva and Seabright is an overview, drawing together material from a range of sources to describe the character of barter in transition economies. Chapter 5 by Commander and Mummsen tries to assess the particular nature of barter in Russia through an examination of the recent economic history of the country and the results of a survey of Russian firms. It contains the most detailed breakdown of any survey of the different kinds of non-monetary transaction. Chapter 8 by Marin, Kaufmann and Gorochowskij puts forward their explanation for barter based on its capacity to provide collateral for trade credit, and tests this against some rival explanations on the basis of a survey of barter deals in Ukraine. Chapter 6 by Guriev and Ickes also uses survey data, this time from Russia, and emphasises that the 'credit-squeeze' explanation for barter has to be interpreted with some care. Firms may have an interest in reporting themselves to be credit-constrained in order to strengthen their bargaining position with one another. Their ability to do so depends, of course, on their enjoying some degree of bargaining power – in reasonably competitive markets any firm feigning credit constraints to bargain with its trading partners would soon be replaced by another firm that did not. So it is not surprising that Guriev and Ickes find a statistical connection between firms' market power and their propensity to engage in barter – and their explanation of it in terms of mechanisms to enhance price discrimination echoes the suggestions made by Prendergast and Stole in chapter 2.

Chapter 7 by Simon Clarke evaluates from a range of survey data the extent to which non-monetary transactions have had an impact on the welfare of Russian citizens. There have been widespread press reports of payment in kind to workers, as a poor substitute for the payment of wages; it has also frequently been suggested that workers are able to offset the impact of falling real wages by bartering goods. Clarke finds that, for good or bad, the quantitative impact of these phenomena appears to be small compared to the large falls in real wages suffered by workers during the 1990s. Finally in part II, chapter 9 by Carlin, Fries, Schaffer and Seabright reports the results of a large-scale survey of firms in 20 transition countries. The survey was carried out by the World Bank and the European Bank for Reconstruction and Development (EBRD), and its large scale, plus its detailed information about the nature of the firms involved, offsets to some extent the fact that it does not differentiate between the types of non-monetary transaction undertaken but includes them all under a single heading of ‘barter’. It finds significant inter-country differences in the character of barter; although it provides support for the view that barter in Russia and Ukraine is caused by market power and limited trading networks, and that barter has proved costly in terms of firms’ longer-term willingness to restructure and improve performance, these findings are not replicated in other countries.

Part III contains four chapters based on detailed empirical studies in Russia by sociologists and social anthropologists. In chapter 10 Humphrey presents her own case material from Buriatica and Moscow *oblast* (region). She describes how barter is actually carried out: face-to-face encounters, bilateral exchanges, barter chains, reaching agreements on prices, finding new partners, solutions to the problems of delay, the barter of wages, governmental participation in barter and the crucial relation between barter and taxation. In chapter 11 Ledeneva explores the murky character of barter in the underground economy, showing how complex barter transactions may be carried out purely in order to avoid the eyes of the tax authorities. Her work emphasises the caution with which we must draw conclusions based on official surveys: an important part of the barter phenomenon is sitting in the shadows. Chapter 12 by Anderson describes the important role of barter in a far-flung region of Siberia, and reports a series of fascinating innovations, including the issue of surrogate currencies by regional and local authorities, to facilitate barter exchanges and cope with the inefficiencies they generate. Chapter 13 by Ssorin-Chaikov describes in detail one particular series of transactions through which a particular barter item passes – in this case the skin of a bear. The significance of the item, and the nature of the exchange between the parties, differs a great deal according to the context of the transaction and the status of the participants. Ssorin-Chaikov shows how the point of the transaction may not always be understood as an exchange of commodities but often represents also a kind of bargain over status.

What emerges most strikingly from the detailed accounts in part II is the remarkable ingenuity that participants bring to the process of barter exchange. Barter involves a continual *reinvention of the processes of social interaction*. There is much to admire in this, as well as cause for regret that barter absorbs so much ingenuity that would be better devoted to the transformation of outmoded and inefficient production methods.