contracts in trade and transition

the resurgence of barter

dalia marin and monika schnitzer

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Contracts in Trade and Transition

The Resurgence of Barter

Dalia Marin and
Monika Schnitzer

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to Martin
to Klaus, Klara, Hanna, and Laura

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Contents

List of Tables ix
List of Figures xi
Preface xiii

1 Introduction 1

I Barter Contracts in International Trade

2 Puzzling Facts and Popular Explanations 17

3 Creating Collateral 35

4 The Export Pattern: Paying with Goods 61

5 The Import Pattern: Securing Technology Transfer 77

Appendixes to Part I 93

II Contract Enforcement in Transition Economies

6 Stylized Facts and Competing Explanations 103

7 Arrears and Barter: Extending Trade Credits 127

8 The Output Decline: The Lack of Trust and Liquidity 137

9 Confronting the Data 153

Appendixes to Part II 167

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10 Contracts in Trade and Transition: An Outlook 173

Notes 185
References 193
Index 201

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List of Tables

Table 1.1 Cross-country pattern of barter in transition economies 4
Table 1.2 Estimates of countertrade in world trade 5
Table 2.1 Contract type and compensation ratio 20
Table 2.2 Pattern of trade with Eastern Europe in 1987 21
Table 2.3 Export promotion 24
Table 2.4 Contract type and region 27
Table 2.5 Market distortion and compensation ratio 28
Table 3.1 Value of collateral 58
Table 4.1 Ranking of commodity money 66
Table 4.2 Liquidity of commodity money 68
Table 4.3 Choosing collateral goods 70
Table 4.4 Creditworthiness and trade pattern 74
Table 5.1 Counterpurchase versus barter 88
Table 5.2 Determining the degree of tying 91
Table I-B Definition of variables and sample statistics 97
Table 6.1 Barter in transition economies 105
Table 6.2 Barter and firm characteristics 107
Table 6.3 Commodity composition of barter deals 107
Table 6.4 Ownership, debt, and barter 110
Table 6.5 Barter, arrears, and efficiency 113
Table 6.6 Barter, arrears, and efficiency by firm size 114
Table 6.7 Terms of trade of the non-cash economy 115
Table 6.8 Pricing behavior of sectors 116

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Table 6.9 Is Russia's economy virtual? 120
Table 6.10 Motives for barter 123
Table 7.1 Barter as credit 128
Table 7.2 Trade credit 129
Table 7.3 Barter and creditworthiness 130
Table 7.4 Barter, arrears, and liquidity squeeze 132
Table 7.5 Solving creditworthiness in cash deals 133
Table 7.6 Inverse U-curve 134
Table 8.1 Lock-in 138
Table 8.2 Close business ties 138
Table 9.1 Output decline in the former Soviet Union 156
Table 9.2 Terms of trade effects 160
Table II-B Definition of variables and sample statistics 168
Table 10.1 Debt to GDP ratio in selected countries 174
Table 10.2 Growth of real GDP in transition economies, 1990 to 1997 176
Table 10.3 Institutional structure of East–West trade 178
Table 10.4 Macro- and microeconomic determinants of barter 181

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List of Figures

Figure 1.1 Time pattern of barter in Russia 3
Figure 3.1 Time structure 41
Figure 5.1 Time structure 82
Figure 6.1 Output decline in transition economies 104
Figure 6.2 Total arrears as percentage of annualized GDP in Russia 104
Figure 8.1 Time sequence at production step 1 142

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Preface

Contracts are essential for many economic activities. Any economic relationship that involves some quid pro quo needs to be supported by some contractual arrangement to make sure that the parties involved abide to their obligations. But contracts are worth only as much as their enforcement can be relied upon.

Difficulties in contract enforcement are an important impediment to international transactions in the world economy and to domestic transactions in transition economies. In international trade, national sovereignty interferes with contract enforcement because national borders demarcate national jurisdictions. Such demarcations segment markets and impose severe transaction costs on exchanges across national jurisdictions. The hazards involved in international transactions are often disregarded, but they make headlines each time a sovereign debtor threatens to stop servicing its debt, as it happened in the international debt crisis in the 1980s or in the Russian financial crisis in 1998.

In transition countries, poorly developed legal and financial institutions make contract enforcement unreliable and impose severe transaction costs on any economic activity. These costs become prohibitively large in times of historic change and revolution. Unstable business partner relationships and rapidly changing social norms limit the extent to which economic exchanges can be sustained by reputation, by repeated interaction or by embedding them in social networks.

This book is about how barter as an economic institution can help deal with the problem of contract enforcement across national borders in international trade and within borders in transition economies. The book is the result of almost a decade of joint research. We started this collaboration with the intention to write a short paper

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addressing one rather specific question. But, in the process of writing the paper, we touched an increasing number of issues that seemed worth exploring in greater detail. So one paper led to many others. Over time, a broader picture of how to interpret countertrade and barter emerged from our work, and we felt it would be worthwhile to put all these explanations in a broader perspective. So when Terry Vaughn, who at that time was the economics editor at The MIT Press, encouraged us to write a book on this subject, we were very enthusiastic to pursue this idea.

From this first idea of writing a book to actually finishing the manuscript took much longer than we had originally planned. Moving places and new responsibilities, both professional and private, delayed the project. Most important, however, in the wake of the political and economic changes in Eastern Europe since 1989, domestic barter trade became a dominant feature of the transition from the plan to the market in many of the transition economies. This development was quite puzzling to economic experts on transition. In 1996, when one of us was invited to a World Bank conference in Kiev to consult on barter, we quickly realized that forces similar to those driving barter in international trade are at work in transition economies. Several discussions with Daniel Kaufmann of the World Bank, who at that time worked at the Harvard Institute for International Development (HIID) in Cambridge, made us confident that we would be able to provide new insights on barter in transition economies. We conducted a joint survey with Daniel Kaufmann and with the help of the local office of HIID in Kiev and one of our students, Bogdan Gorochowskij, to collect data on barter in transition economies. What started as a project of writing a book on international countertrade turned into a much larger project on contracts in trade and transition.

Over these years, we have been deeply influenced by discussions and collaborations with colleagues, coauthors, and friends. Dalia Marin owes much of her knowledge in international trade to Elhanan Helpman from whom she learned how exciting economics can be when he visited the Institute for Advanced Studies in Vienna in the mid-1980s to teach international trade. Since then, over the many years she exposed the ideas of the book to Elhanan's critical and wise judgment. Richard Caves initiated the research on countertrade when he visited the Institute for Advanced Studies in Vienna in 1987. Dalia Marin and Richard Caves started to work on countertrade and

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price discrimination. From this collaboration, and the joint work with Erwin Amann on countertrade and risk sharing, it became apparent that several of the stylized facts of international barter remained unexplained. This is how contracts and incentives became the major research agenda to which this book is devoted. Monika Schnitzer is highly indebted to Klaus Schmidt and Georg Nöldeke. Innumerable discussions with them inspired her how to put contract theory to use, and their untiring critical questions very much contributed to making the analysis rigorous. She also benefited greatly from the unique research environment she experienced while working at Urs Schweizer's Institute at Bonn University.

We are highly indebted to Daniel Kaufmann for inspiring discussions and enjoyable joint research. His expertise in transition economics influenced the development of part II of the book. We are especially grateful to him for letting us borrow from the joint research with him in the writing of chapters 6 and 7. This book also owes much to Rachel Kranton. Rachel gave very detailed and thoughtful comments on the first draft of our book which greatly helped to improve the exposition of our ideas. Furthermore the numerous discussions with her in the faculty research seminar of the University of Maryland or while walking in the beautiful forest in the Maryland area helped to clarify many of the ideas developed in part II of the book.

In the course of so many years on this project, we have incurred debts to many other friends and colleagues. The research presented in part I of this book benefited from discussions and comments from Richard Baldwin, Avinash Dixit, Tore Ellingsen, Jonathan Eaton, Raquel Fernandez, Harry Flam, Avner Greif, Elhanan Helpman, Oliver Hart, Paul Krugman, Albert Ma, Georg Nöldeke, Peter Neary, Martin Rein, Michael Riordan, Dani Rodrik, Lars-Hendrik Röller, Klaus Schmidt, and Urs Schweizer. The research presented in part II benefited from discussions and comments from Philippe Aghion, Rüdiger Ahrend, Erik Berglöf, Guillermo Calvo, Jiahua Che, Peter Clark, Simon Commander, Theo Eicher, Horst Eidenmüller, Tore Ellingsen, Guido Friebel, Irena Grosfeld, Sergei Guriev, Elhanan Helpman, Bengt Holmström, Haizhou Huang, Barry Ickes, Michael Keren, Anna Meyendorff, Christian Mummsen, Peter Murrell, Gérard Roland, Luis Sanchez, Mark Schankerman, Paul Seabright, Claudia Senik-Leygonie, Judy Thornton, Ksenia Yudaeva, and Jeromin Zettel-

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meyer. To this list, we should add the various anonymous reviewers who read a previous draft of this book. We thank them for all their comments and encouragement.

Our joint research was started when Dalia Marin visited Harvard University and Monika Schnitzer visited Massachusetts Institute of Technology and Boston University, and it benefited from further research visits to Stanford University and the Science Center Berlin. We are grateful for the hospitality and stimulating environment we enjoyed at these places.

We also benefited from the support of our home institutions, the Institute for Advanced Studies in Vienna, Humboldt University Berlin, University of Bonn, and University of Munich, and from the intellectual diversity of these institutions.

Our research was supported by the German Science Foundation through Sonderforschungsbereich 303 at University of Bonn, and through grants Ma 1823/2-1, Ma 1823/2-2, Schn 422/2-1, and Schn 422/2-2, and by a Erwin Schroedinger Grant of the Austrian Science Foundation. The survey on international barter that was conducted in Austria was supported by the Jubiläumsfonds of the Austrian National Bank. Angela Köppl, who at that time was a research assistant at the Institute for Advanced Studies in Vienna, was important for the success of the survey. The survey on barter in transition economies was conducted in Ukraine and was supported by the Harvard Institute for International Development. Special thanks go to Januz Szyrmer of the Kiev office of the Harvard Institute for International Development and to Vira Nanivska of the International Center for Policy Studies in Kiev for logistic support for the survey among firms in Ukraine. The discussions with Luis Sanchez, who at that time worked as a consultant to the World Bank in Ukraine, helped us in adopting our ideas to the circumstances in Ukraine. We also thank Daniel Bauchet, Bogdan Gorochowskij, Alexis Giesen, and Thomas Müller for valuable research assistance for part II of the book.

We are grateful to Terry Vaughn for encouraging us to write this book for The MIT Press and to Elizabeth Murry and her team from The MIT Press for their support in realizing and completing the book.

The greatest thanks go, of course, to our families, who make it all worthwhile. To them we dedicate this book.

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Contracts in Trade and Transition

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1 Introduction

Barter trade has received much attention lately. But it is not a new phenomenon. In the 1980s, in the aftermath of the international debt crisis, barter became prevalent in international trade with developing countries and Eastern Europe. Since the 1990s, with the domestic debt crisis in transition economies, barter has continued to be a dominant phenomenon in domestic trade in these countries. What explains the appearance of barter in international trade in the 1980s and in domestic trade in transition countries in the 1990s? What makes barter, or countertrade, as it is more generally called, preferable to conventional forms of trade?

In this book we will argue that in both environments, in international trade and in transition economies, contract enforcement is problematic, and hence conventional contracts cannot be relied on as the main mechanism to sustain economic exchange. As we will show, barter and countertrade can be explained as an institutional response to such contractual problems arising in imperfect capital and goods markets.

Before we set out to explore these issues, we need to clarify the terminology used throughout this book, since the terms used in practice and in writings vary greatly. In particular, the term "barter" is used with different meanings, sometimes as a term that refers to countertrade transactions in general, sometimes in a more specific sense. In part I, in dealing with international trade, we will use the term "countertrade" as the general term to denote transactions in which a party from an industrialized country supplies goods, services, or technology to a second party in an Eastern European or developing country, and in which, in return, the first party purchases from the second party an agreed amount of goods, services, or technology. Our terminology will take the point of view of the second

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party, and so the first transaction will be called "import" and the second transaction "export."

A distinctive feature of countertrade is the existence of a link between the two transactions, the import and the subsequent export. Countertrade transactions take a variety of forms. The three forms we will distinguish throughout this book are "barter," "counterpurchase," and "buyback." Barter in the strict sense of the word refers to an import that is paid entirely or partly with an export from the latter country without using foreign exchange. Counterpurchase refers to a transaction in which the import is paid with foreign exchange but the industrialized country commits to buy export goods from the Eastern European or developing country in return. Buyback is a transaction in which the first party supplies a production facility and the parties agree that the supplier of the facility will buy goods produced with that production facility. All three forms of countertrade are frequently observed in international trade.

In part II, in dealing with domestic barter in transition economies, we refer to transactions where the term barter is used in the strict sense of the word. This means a bilateral exchange of goods and services, without the use of money as a medium of exchange.

Under central planning, countertrade was especially observed in international trade among CMEA (Council for Mutual Economic Assistance) countries as well as in East–West trade. Before 1989 barter and countertrade accounted for up to 40 percent of total trade between East and West.[1]

After 1989, domestic barter in Russia exploded after macroeconomic stabilization in 1994 from 5 percent of GDP to 60 percent in 1998. In Ukraine the share of barter in industrial sales is estimated to have been 51 percent in 1997.[2] The survey of 200 firms by the Russian Economic Barometer (1999) since 1992, in turn, suggests that noncash payments rose steadily from 8 percent in 1992 to 54 percent in mid-1998 (see figure 1.1). Since the financial crisis in August 1998, barter and the use of other money surrogates have started to decline, accounting for 43 percent of sales of industrial firms in February 1999.

The importance of barter varies across transition economies. Table 1.1 gives figures of the World Business Environment Survey in twenty transition economies and shows that Croatia exhibits the highest share of barter of 33 percent in 1999. Russia and Ukraine show a barter share of about 24 percent and Central European

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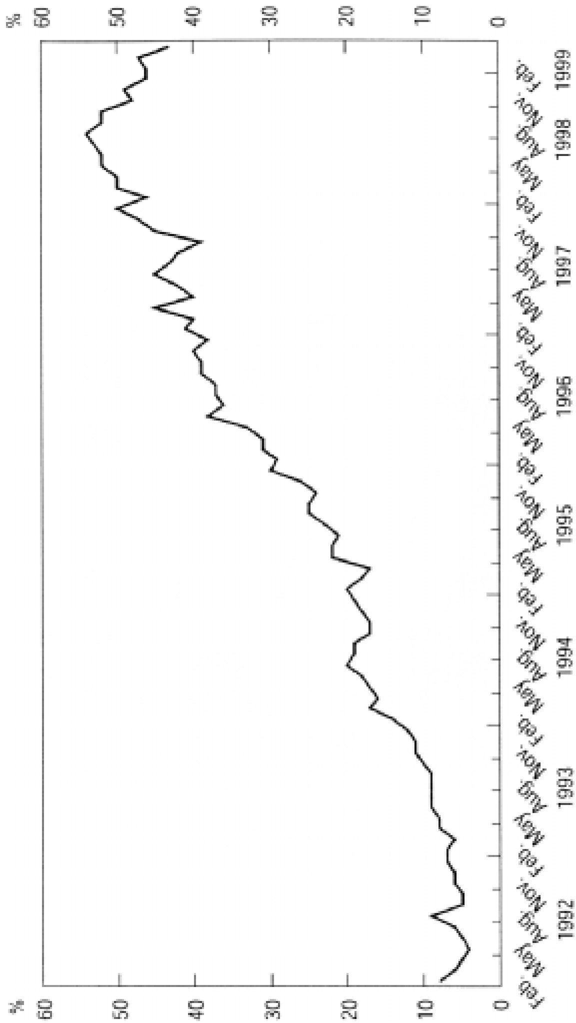

Figure 1.1
Time pattern of barter in Russia. Source: *Russian Economic Barometer*, various years, Moscow.

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Table 1.1
Cross-country pattern of barter in transition economies (% of sales)

	1996	1999	Percent change
Armenia	2.9	2.9	0.0
Azerbaijan	5.1	4.0	−21.6
Belarus	13.1	13.9	6.1
Bulgaria	4.0	4.2	5.0
Croatia	21.7	32.8	51.2
Czech Republic	3.8	3.3	−13.2
Estonia	5.5	4.1	−25.5
Georgia	6.8	5.2	−23.5
Hungary	1.7	0.8	−52.9
Kazakhstan	20.7	17.9	−13.5
Kyrgyzstan	16.5	17.4	5.5
Lithuania	3.1	2.8	−9.7
Moldova	29.6	26.3	−11.1
Poland	3.9	4.7	20.5
Romania	8.6	7.3	−15.1
Russia	23.5	24.1	2.6
Slovakia	19.2	19.2	0.0
Slovenia	17.4	16.3	−6.3
Ukraine	20.3	24.0	18.2
Uzbekistan	23.2	10.2	−56.0
Total	12.5	12.1	−3.2

Source: World Business Environment Survey, World Bank-EBRD 1999.

countries like Hungary, Poland, and the Czech Republic have barter shares between 0.8 and 4.7 percent. It is also interesting to see that some of these countries experienced an increase in the importance of barter over time, like Croatia, and Ukraine, while barter declined in Uzbekistan, Kazakhstan, and Moldova. In Uzbekistan, the fall of barter was particularly pronounced.[3]

In international trade a similar boost of countertrade was experienced in the 1980s, when the international debt crisis led to a dramatic decline in private lending to developing and Eastern European countries. Even though debtors hesitated to invoke total repudiation, commercial banks were reluctant to provide new loans, skeptical that they would ever be repaid in full.[4] As highly indebted countries found it increasingly difficult to finance their imports, unconventional forms of trade and trade financing experienced a resurgence,

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Table 1.2
Estimates of countertrade in world trade

Source	Barter and countertrade in percent of world trade
IMF (1980, 1984)	1–10
Business International (1983)	10
GATT (1984)	8
Economic Intelligence Unit (1984)	15–20
OECD (1985)	4–5
Group of Thirty (1985)	8–10
UNCTAD (1987/1988)	15–20
ifo Institut (1988)	10–12

including countertrade. Bussard (1987) reports that the number of countries engaged in countertrade rose from 27 in 1979 to 88 in 1984. Likewise the number of countertrade transactions that was reported by a group of survey respondents increased on average by 50 percent between 1980 and 1981, by 64 percent between 1981 and 1982, and by 117 percent between 1982 and 1983.[5] Hammond (1990) observes that precedents of this striking comovement of debt and countertrade can be found in the late nineteenth century and in the depression of the 1930s. Table 1.2 summarizes different estimates of countertrade in world trade. It highlights the importance of countertrade in the international trade of the 1980s. More recent estimates suggest that international countertrade has not declined in East–West trade.[6]

What explains these two waves of countertrade and barter in the last two decades of the twentieth century, in international trade in the 1980s and in domestic trade in transition economies in the 1990s? What are the common themes of trade and transition that help us to understand why firms turn in large numbers to unconventional trade forms of notoriously ill repute? Why would parties in a fully monetized economy want to pay in goods rather than money? Is it indeed, as many experts have argued, a regression to bilateralism and reciprocity, or can we find efficiency reasons for this type of trade?

Our view is that we need to take an institutional approach in order to explain barter and countertrade. Traditional trade theory does not provide an answer to these questions. In this book we introduce contracts and institutions into trade theory and explain barter and countertrade as institutions that are designed to deal with contrac-

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tual problems. Thus the answer we propose to the questions raised above is that parties might want to pay in goods rather than cash or link an import with an export as in countertrade if, by doing so, they can solve incentive problems that otherwise would prevent any trade from taking place. This institutional approach will help us see the common themes of international trade and economic transition that explain the emergence of barter and countertrade in the 1980s and the 1990s.

In both environments, contract enforcement is problematic, and hence conventional contracts cannot be relied on as the main mechanism to sustain economic exchange. In international trade, the enforcement of contracts is in the hand of national authorities. If, for whatever reason, these authorities fail to perform this function, trade partners have no higher instance to which they can turn to enforce the law due to the lack of supranational authorities. Similarly, in transition economies, relying on contracts is problematic as long as state authorities have not established a functioning legal system, and hence contract enforcement through state authorities cannot be counted on.[7]

If contract enforcement through state authorities cannot be relied on, trade partners have to seek other means of protecting their interests in business transactions. One possible substitute for formal contracts would be relying on reputation as an enforcement mechanism. Trade partners voluntarily stick to the terms of the contract if the risk of losing their reputation and of not being able to do business in the future is a sufficiently large punishment for misconduct. However, the extent to which reputation can help as an enforcement mechanism is limited. In the context of international trade, Bulow and Rogoff (1989a) have shown that reputation may fail to induce sovereign countries to repay their debt. And even if this reputation mechanism sustains some international trade, firms may look for means to overcome the limits set of this mechanism. In transition economies the problem is even more conspicuous, since in times of historic change the future is uncertain and business partners may not know whether they or their partners will be in business in the future for a variety of reasons. Thus, in both environments, trade partners may look for alternative means to enforce contracts and to sustain their economic activities.

If contract enforcement is weak, problems may arise on both ends of a business transaction: the seller may fail to deliver the good, and

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the buyer may fail to pay for the goods. If buyers have no cash to pay, and thus face liquidity constraints at the time of delivery, the business transaction can take place only if the seller can trust the buyer to pay in due course. On the other hand, the buyer is willing to engage in a business transaction only if she can trust the seller to deliver the right goods.

Both problems are prevalent in trade and transition. In each environment, enforcing the payment of goods can pose serious problems. In the aftermath of the debt crisis in the 1980s, highly indebted countries were liquidity constrained and could not finance necessary imports. Given their level of indebtedness, debt repayment could not be relied on. The debtor country could create more liquidity by not repaying its debt rather than receive a new loan. Similarly firms in the former Soviet Union are highly indebted, vis-à-vis each other, vis-à-vis the state and vis-à-vis their workers. The phenomenon of inter-firm tax and wage arrears exploded in the 1990s, making it more likely that these firms would repudiate on their payments.

As we will argue, in both environments, countertrade and barter emerged as institutions to deal with the lack of creditworthiness of countries and firms. Barter and countertrade introduce a deal-specific collateral that serves to protect the interests of the creditor for one particular business transaction. In this way barter and countertrade can mitigate the contractual hazards associated with indebtedness.

There are also important problems arising on the seller's side. In international trade, the most conspicuous example is the technology transfer problem. It is often reported that explicit contracts cannot be relied on to make sure that developing countries receive the advanced technology as promised. These countries often complain that firms from industrialized countries sell inferior technology to them, a technology that is outdated and cannot be sold on Western markets. In transition economies, the dominant problem for firms seems to be to receive the inputs they need in order to produce. Often they need to invest in finding the right input supplier and then face the risk that the seller will exploit the fact that there are no other sellers around from which the firm can buy. In market economies long-term relationships and explicit contracts help to protect the firm's investment. But in transition economies these alternatives are less reliable, as we have just argued.

As we will show, the very lack of liquidity that makes it difficult to finance imports and input purchases can actually help when it comes

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to dealing with problems on the supplier's side. We find evidence for this in both contexts, international trade and transition economies, even though the actual mechanics are very different. This goes to prove that in an imperfect world in which contract enforcement is weak, like the former Soviet Union or imperfect capital markets, something that seems to be worse—that contractual problems arise on both sides of the business transaction rather than only on one side—can improve contract enforcement. In international trade, the liquidity constraint helps to solve the technology transfer problem. In transition countries, firms can take advantage of their lack of liquidity to protect themselves against sellers who would cheat them by not providing the correct input.

Our analysis of countertrade and barter proceeds on two fronts. We first develop a theoretical framework in order to explain barter and countertrade as optimal institutional responses to contractual hazards and incentive problems in international trade and economic transition. Part I of the book deals with the problems of contract enforcement in international trade, part II with the problems of contract enforcement in transition economies.

Second, we confront these theoretical explanations with empirical evidence. For this purpose we draw on two unique data sets. The empirical analysis of part I examines a sample of 230 countertrade contracts signed by firms from OECD countries and trade organizations in Eastern Europe or developing countries in the period 1984 to 1988, when industrialized countries were struggling with the consequences of the international debt crisis. In part II our empirical study is based on a survey among firms in Ukraine in 1997, from which we obtained information on 165 domestic barter deals. Both data sets contain contract specific information that allows us to test for the contractual hazards put forth in our theory.

The issues we deal with in this book have received relatively little attention in the literature on international trade and in the reform programs of transition countries.

In traditional trade theory, contracts and institutions as a determinant of trade do not figure prominently. A notable exception is Greif, Milgrom, and Weingast (1994) who analyze merchant guilds in the middle ages as an efficiency enhancing institution to deal with moral hazard problems in "international" trade.[8] The main reason for this neglect seems to be that contract theory and international trade theory belong to two strands of the literature with separate

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traditions. Traditional trade theory is based on general equilibrium with perfect competition. In the last fifteen years imperfect competition, product differentiation, and economies of scale have been incorporated broadening the range of insights considerably. But the treatment of the decision whether to organize an activity within the firm or via the market, which is relevant for such international business activities as foreign direct investment, joint ventures, alliances, barter, countertrade and other forms of international partnerships, has remained limited.

The "internalization question" belongs to the domain of contract theory, a theory that has made much progress in recent years (Hart 1995; Holmström and Tirole 1989; Tirole 1999). As we will show in this book, much is to be gained by merging these two fields. Incentives and economic institutions can play an important role in explaining international trade beyond the known determinants of trade like factor endowment, productivity, preferences, imperfect competition, and economies of scale. Similar to the way the incomplete contracts literature revolutionized our thinking about "institutional arrangements" like firms, we expect it to revolutionize our understanding of "institutional arrangements" in international trade. As we will see, this contractual approach is particularly relevant for the explanation of international business activities such as barter and countertrade. But it will also influence the way we think about international capital and goods flows in general, and help us to understand why it takes particular forms like foreign direct investment, portfolio investments, joint ventures, or international alliances.

In the reform programs of transition countries, contractual issues have been thoroughly ignored. As Clement and Murrell (2000) note, Leszek Balcerowicz's description of his early reform program in Poland contains hardly any reference to legal and institutional reform (Balcerowicz 1994). Similarly small is the emphasis Vaclav Klaus puts on the rule of law in his discussion of economic reforms (Klaus 1997). And Yegor Gaidar in his description of Russian reform does not mention institutional reform at all (Gaidar 1995). Ten years after the fall of communism, it becomes apparent that one of the biggest mistakes in the assessment of how to organize the transition from the plan to the market was the strong emphasis on stabilization policy, price, and trade liberalization and privatization, while the importance of legal and institutional issues was underrated. Today it seems that economic experts consulting on the transition reforms

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have underestimated the importance of microeconomic and institutional issues relative to macroeconomic issues.[9] Contract enforcement problems and nonfunctioning legal institutions have become the key issue in explaining differences in the performance in transition countries. We will look at the differences in contract enforcement problems that can explain why the economic performance in Russia and the former Soviet Union was so much worse than that of the early transition countries.

Outline of the Book

In part I we consider the problems of contract enforcement in international trade. We start by presenting in chapter 2 what may be called the "stylized facts" of countertrade and discuss some popular explanations. The following chapter 3 studies the problem of enforcing debt repayment if the importing country is liquidity and credit constrained. In this chapter we show why it makes a difference if trade partners promise a payment in goods rather than a payment in cash. The basic idea is that goods can be used as a deal-specific collateral for the "credit" granted for the original trade.

Chapter 3 also confronts the theoretical predictions with empirical evidence on actual countertrade contracts. We show that the size of the deal-specific collateral will be the larger the less creditworthy the country and the less reputation can be relied on as an enforcement mechanism.

Our argument that payments in kind may have advantages over payments in cash contradicts the conventional wisdom in the theory of money. The common view is that barter is inefficient because it does not overcome the double coincidence of wants problem as money does. A seller may need to accept goods for which he has no use himself. Moreover payments in goods are problematic, since it is difficult to judge the quality of the goods offered as means of payment. In chapter 4 we rank goods with respect to their liquidity and anonymity properties, and we show that these incentive problems have natural implications for which type of goods qualify as means of payment in international countertrade. This will explain the export pattern of countertrade. We find evidence that in contrast to the descriptive literature on countertrade, "new" goods may be chosen as export goods in countertrade because these goods are specifically equipped to mitigate contractual hazards.

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In chapter 5 we consider the import pattern of countertrade and thus the problems that arise on the seller's side of a transaction. We show that imports from industrialized countries are predominantly technology goods. We argue that tying an import to an export induces the technology seller in an industrialized country to deliver high-quality technology, even though the original import and the subsequent export are not technologically related. Interestingly we find that the lack of creditworthiness of the technology-importing country can help give the technology supplier the right incentives. Introducing a second transaction in the form of an export to an industrialized country can serve as a hostage that deters cheating on the quality of the technology. This contractual arrangement makes the technology supplier internalize the externality her technology has on the Eastern European or developing country. Thus countertrade is a first-best substitute for foreign direct investment when these countries are reluctant to give access to foreign ownership in their markets.

In part II of the book, we turn to contract enforcement in transition economies and thus to the phenomenon of domestic barter. In chapter 6 we start by reporting some "stylized facts" of transition economies that distinguish the development in the countries of the former Soviet Union from that in the early transition economies. It seems that the countries of the former Soviet Union have experienced a more pronounced output decline, have larger inter-firm debt, and have more domestic barter trade than the early transition economies in Central Europe. We first trace the connections among the output decline, arrears, and barter, discuss some competing explanations for these phenomena, and confront them with data on bartering firms in Ukraine.

In chapter 7 we turn to the question why firms are willing to give loans to other firms in form of trade credits when the banking sector is reluctant to provide capital. As we show in this chapter, the possibility of undertaking a business in form of barter trade becomes important in this context. As in international trade, one special advantage barter trade offers in transition economies is that it can be used to collateralize trade credits.

In chapter 8 we present a theoretical framework that explains the output decline in the former Soviet Union with problems that arise on both the seller's and the buyer's side. On the seller's side we discuss the "lack of trust" problem, or, to use the terminology of con-

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tract theory, the "holdup problem." A firm that needs to invest in finding the right supplier in order to produce will potentially be exploited by the input supplier when there are no or only a few alternative suppliers. This problem has been discussed in the transition literature under the heading of "disorganization." Disorganization arises when old relationships break down before new ones can be established, as is the case in the former Soviet Union when the system of centralized planning was abolished. In such a "no future" environment, firms cannot trust their input suppliers and cannot rely on legal support to protect their interests. Output collapses due to an input shortage.

On the buyer's side we discuss the "liquidity problem." Firms are liquidity constrained and banks in transition countries are reluctant to provide capital. In order to alleviate the financial squeeze, firms turn to other firms for trade credits. This has led to the phenomenon of inter-firm arrears in transition economies. Interestingly we find that when both problems are present, the holdup problem on the seller's side and the credit problem on the buyer's side, one can help with the other, rather than making things worse. More specifically, we find that inter-firm arrears can alleviate contract enforcement problems in the economies of the former Soviet Union. When the input buyer is short of cash, the fact that the input seller has to worry about getting paid gives the input buyer bargaining power. This bargaining power reduces the supplier's ability to exploit the input buyer's need for the input. We also show that when the liquidity problem gets very large and thus credit enforcement becomes too costly for the supplier, barter can be used as a commitment device by the buyer not to exploit his bargaining power. This way barter provides a mechanism to deal with disorganization when the problem of credit enforcement becomes very large.

Chapter 9 confronts our theoretical predictions with data on bartering firms in Ukraine. It summarizes the links between output decline, inter-firm arrears and barter and shows how our theory is able to explain the cross country as well as the time pattern of arrears and barter in transition countries.

Chapter 10 is the concluding chapter of our book in which we speculate about the contracts that may arise in the future to deal with the capital transfer and technology transfer problem. We establish that for many countries creditworthiness has declined and income gaps between poor and rich countries have widened in the last dec-

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ade, creating an even stronger demand for institutions to deal with these problems than in the past. Based on our analysis of the 1980s, we speculate that foreign investment is likely to replace countertrade as a contract in international trade. The perspective of foreign investment as an institution to evolve has shifted since the fall of communism. Under central planning foreign investment was rare because of a political ownership constraint. Foreign firms were not allowed to own assets in these countries. Today foreign investment is increasing surprisingly slowly because of an uncertainty constraint. Foreign firms are reluctant to invest in these countries because of insecure property rights.

For transition economies we are less optimistic. We discuss the long-term costs of barter in the danger of an institutional trap that hinders the banking sector from developing. This might make it more difficult to remonetize the economies of the former Soviet Union. We also discuss the role of monetary and exchange rate policy in a barter economy such as Russia's as well as policy lessons learned from the financial crisis in Russia.

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