1
Introduction

Nothing endures but change. There is nothing permanent except change. All is flux, nothing stays still.—Heraclitus, ca. 500 BCE

1.1 Restructuring and Institutions

The core mechanism that drives economic growth in modern market economies is the massive ongoing microeconomic restructuring and factor reallocation by which new technologies replace the old. This process of Schumpeterian "creative destruction" permeates major aspects of macroeconomic performance—not only long-run growth, but also business cycles, structural adjustment, and the functioning of factor markets.

At the microeconomic level, restructuring is characterized by countless decisions to create and destroy production arrangements. These decisions are often complex, involving multiple parties as well as strategic and technological considerations. The efficiency of these decisions depends not only on managerial talent but also on the existence of sound institutions that provide a proper transactional framework. Failure along this institutional dimension can have severe macroeconomic consequences.

This book provides a unified framework to analyze and understand a wide variety of macroeconomic phenomena stemming from the limitations of the institutions aimed at alleviating microeconomic transactional problems. Some of these limitations are unavoidable, as they derive from the sheer complexity of these transactions. Others are man-made, originating from a wide variety of sources, which range from ill-conceived economic ideas to the achievement of higher human goals, such as the inalienability of human capital. In moderate amounts, these institutional limitations give rise to business-cycle patterns such as those observed in

the most developed and flexible economies. They can help explain perennial macroeconomic issues such as the cyclical behavior of unemployment, investment, and wages. In higher doses, by limiting the economy's ability to harness new technological opportunities and adapt to a changing environment, institutional failure can result in dysfunctional factor markets, resource misallocation, economic stagnation, and exposure to deep crises.

Many of the major macroeconomic developments of recent decades fit naturally into this perspective. For example, in the early stages of transition, many post-communist Eastern European economies saw their potential for restructuring and catching-up stifled by an under-developed legal and institutional environment. In Western Europe, the heavy weight of labor market regulation has caused persistently high unemployment and sclerosis. The emerging markets crises of the 1990s exposed the fragility of economic systems that suffer from a lack of transparency and lax corporate governance standards. The United States' prolonged expansion in the 1990s, and its dramatic acceleration away from the rest of the world's advanced economies, reflected the virtues of an unshackled process of creative destruction. Japan's stagnation during the same period highlighted the dire macroeconomic consequences of a weak banking system that stifled creative destruction through its reluctance to liquidate zombie firms.

1.2 Specificity: A Common Thread

There is a logical unity in the analysis of institutions that affect the transactional environment (positively or negatively) and microeconomic restructuring. Essentially, macroeconomic models need to be made more "structural" in a precise sense. Although the basic modelling instinct is to assume that decisions are fully flexible, much of what happens in reality involves a degree of irreversibility. What one needs to introduce is the notion of *specificity*. Specificity means that factors of production are not fungible. More precisely, a factor is specific with respect to a given production arrangement—its current production relationship with other factors using a given technology—when its value would diminish if used outside this arrangement. Specificity introduces structure into the collection of production arrangements in the economy.

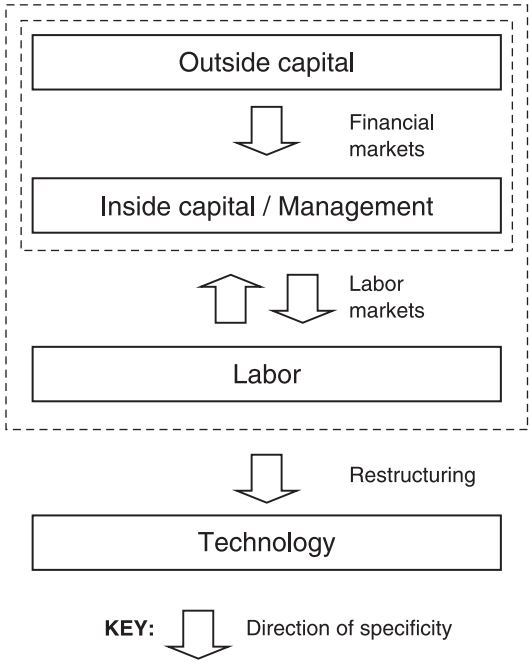

Figure 1.1
Specificity relationships
Source: Caballero and Hammour (2000).

Figure 1.1 depicts an example of a context within which different types of specificity arise in factor markets. Starting with the upper box, consider an entrepreneur who needs to find external financing for a project. Given the entrepreneur's informational advantage, special expertise, and effective control over the project, external capital becomes partly specific with respect to the entrepreneur once it is committed to the project. External financiers would lose some of their investment's value if they part with the entrepreneur. This gives rise to specificity in the *financing* relationship.

Moving down the figure, next the entrepreneur needs to hire labor. The resources he or she invests in searching for workers, training them, and building organizational capital are embodied in labor—both individually and as a group. Regulations may increase the specificity of capital with respect to labor. The right to strike or legal protection against dismissal, for example, effectively reduces the value of using capital

outside its current labor relationship. This set of factors gives rise to specificity in the *employment* relationship.

Finally, moving to the bottom of the figure, the entrepreneur dedicates the project's resources to producing a certain range of goods using a certain process, and therefore builds specificity with respect to a certain *technology*—understood in its broadest sense.

The project, therefore, gives rise to two different types of specificity: "relationship specificity," which characterizes financial and labor market relationships; and "technological specificity," which characterizes production choices. Relationship specificity forms the underpinning of what *institutional arrangements* are about, as these arrangements determine the degree to which one party's specificity is exposed to the other party's opportunistic behavior. Technological specificity forms the underpinning of what *restructuring* is about, as outdated production units must be replaced by new ones.

The economy's continuous adaptation to new conditions consists of a large number of microeconomic decisions to initiate and terminate projects. In practice, each of these projects is infinitely more complex in terms of relationships and technology than that illustrated in figure 1.1. High specificity is the norm rather than the exception, and with it comes opportunism and inefficiencies that can only partially be resolved by contracts. It is this complex and dynamic world that constitutes the background for the macroeconomic analysis that follows.

1.3 Macroeconomic Implications and Outline

This chapter is followed by a summary of empirical work, contained in chapter 2, regarding the magnitude, main characteristics, and aggregate importance of the process of creative destruction in the United States and other developed and developing economies. The evidence points to a massive and persistent process of ongoing restructuring which takes place mostly within (rather than across) narrowly defined sectors. This process is important throughout all regions of the world; it is a key factor behind productivity growth; and it is hampered by institutional obstacles to adjustment in labor, financial, and goods markets. At the cyclical level, liquidations are countercyclical but, contrary to conventional wisdom, restructuring and reallocation appear to be procyclical.

Box 1.1
An empirical measure of relationship-specificity in investment across industries

Nunn (2005) constructs a measure of relationship-specificity for intermediate inputs transactions in the United States using the 1997 U.S. input-output tables. Table B1.1 presents the twenty six-digit industries for which the relationship-specificity index is the highest and the lowest. The index should be read as the proportion of intermediate inputs that are specific to the industry. The numbers are large. For example, in important industries such as automobile and light truck manufacturing almost 100 percent of transactions are relationship-specific. Nunn finds that countries with worse contract enforcement shy away from industries that rely heavily on relationship-specific investments.

Table B1.1
An empirical measure of relationship-specificity

20 least relationship-specific industries		20 most relationship-specific industries	
Measure	Industry	Measure	Industry
0.023	Poultry processing	0.979	Automobile and light truck manuf.
0.024	Flour milling	0.974	Heavy duty truck manuf.
0.034	Petroleum refineries	0.956	Electronic computer manuf.
0.035	Wet corn milling	0.895	Other computer peripheral equip. manuf.
0.050	Nitrogenous fertilizer manuf.	0.894	Audio and video equipment manuf.
0.053	Aluminum sheet, plate, and foil manuf.	0.890	Aircraft manuf.
0.056	Fiber, yarn, and thread mills	0.889	Broadcast and wireless comm. equip.
0.057	Primary aluminum production	0.885	Search, detection, and navig. instr.
0.096	Rice milling	0.875	Telephone apparatus manuf.
0.101	Coffee and tea manuf.	0.875	Aircraft engine and engine parts manuf.
0.112	Prim. nonferrous metal, ex. copper	0.857	Electricity and signal testing instr.
0.132	Tobacco stemming and redrying	0.854	Musical instrument manuf.
0.144	Other oilseed processing	0.850	Breweries
0.150	Noncellulosic organic fiber manuf.	0.839	Book publishers
0.150	Plastics packaging materials	0.832	Packaging machinery manuf.
0.153	Nonwoven fabric mills	0.825	Other engine equipment manuf.
0.157	Phosphatic fertilizer manuf.		
0.161	Resilient floor covering manuf.		

Box 1.1
(continued)

Table B1.1
(continued)

20 least relationship-specific industries		20 most relationship-specific industries	
Measure	Industry	Measure	Industry
0.167	Carpet and rug mills	0.819	Other electronic component manuf.
0.167	Synthetic dye and pigment manuf.	0.818	Air and gas compressor manuf.
		0.801	Electromedical apparatus manuf.
		0.801	Analytical laboratory instr. manuf.

Source: Nunn (2005).

After the two chapters that comprise part I, the rest of the book develops an analytical framework to shed light on these patterns and related phenomena. It also provides many contextual applications. The latter include an analysis of trade liberalizations, the transitional dynamics driving Western Europe's unemployment problem during recent decades, and the impact of financial frictions on cyclical restructuring and the cost of recessions in the United States. The book includes numerous boxes which summarize related work and provide real-world examples to illustrate the conceptual analysis. Examples of such boxes, to give a few, include discussions of Japan's experience during the postbubble era; the evidence that excessive labor market regulation has a negative impact on the speed of economic restructuring; the cyclical nature of merger waves; and summaries of the Danish model of active employment policies, the German Agenda 2010, and the institutional buildup in French labor markets over the postwar period.

The core of the book is organized into three main parts (in addition to the introduction and conclusion of the book). Part II, comprised of chapters 3 and 4, covers the basics and contains the key arguments behind the view presented in this book. Chapter 3 focuses on *relationship specificity* and its aggregate consequences; chapter 4 on *technological specificity*. Chapter 3 develops a simple static model to illustrate the main macro-

economic implications of opportunistic microeconomic behavior in the presence of relationship specificity and incomplete contracts. (*Opportunism* refers to the bargaining advantage that a member of a relationship acquires when the partner's investment in the relationship is specific.) These implications include involuntary unemployment, depressed creation, productivity sclerosis, excessive destruction during cyclical contractions, and bottlenecks during expansions.

Chapter 4 develops a dynamic version of the efficient (complete-contracts) counterpart of the static model in chapter 3, where the reason for ongoing restructuring is technological specificity. As time goes by, old units become outdated, and factor reallocation toward new and more productive units is required. This model can account for the average level of gross flows and, by adding a search friction or an unrealistically flat labor supply, it can also be used to generate significant unemployment fluctuations over the business cycle. However such a model fails to explain the decoupled nature of job flows over the business cycle—destruction rises during recessions while creation falls. Counterfactually, an efficient model of restructuring has a strong incentive to synchronize creation and destruction flows, as the main reason for the latter is to facilitate creation when the opportunity cost of reallocation is low (i.e., during recessions). Moreover, if for some reason creation cannot rise, then the incentive for destruction is also depressed. This tight link between the creation and destruction margins often implies, again counterfactually, that the Beveridge curve would be upward-sloping even if employment fluctuations are entirely driven by aggregate shocks (rather than by sectoral reallocation shocks).

This tendency toward synchronization, as exhibited by the efficient model, serves as a motivation for part III on inefficient restructuring, composed of chapters 5–7. I combine the insights of part II to discuss dynamic models which account for the facts of cyclical restructuring more naturally. Chapter 5 retains the dynamic structure of the model in chapter 4, but adds opportunism (incomplete contracts). In the first step, the model simply breaks the Hosios-Diamond condition for efficient search by changing the relative bargaining strength of the parties. Yet, this inefficient search model still has a strong tendency to synchronize the gross flows, although now the intensity of restructuring during the business cycle is inefficient. This result brings us to the second step, which

introduces opportunism on specific investments, as treated in chapter 3. This single modification yields a substantial improvement in the model's ability to fit the facts. Not only does the nature of unemployment change from being an efficient reallocation mechanism to become an inefficient rationing outcome, but gross flows are decoupled: destruction rises and creation falls during cyclical downturns. This decoupling rotates the Beveridge curve, which is now downward-sloping as in the data. Moreover, if there is a reason to smooth creation, this exacerbates rather than dampens destruction's response to aggregate shocks.

Ultimately, these inefficient cyclical responses result from a form of wage rigidity. This rigidity, however, can be "overt" or "covert." If covert, the wage itself may appear highly flexible—even as flexible as in the efficient economy—in terms of its equilibrium response to aggregate shocks: the rigidity in this case is hidden in the large quantity fluctuations that come with such a wage response. Another feature displayed by this economy is sclerosis: an inefficiently slow pace of restructuring that depresses productivity. Absent structural reforms that remedy the source of opportunism at its roots, the two margins of inefficiency—unemployment and productivity—require a policy package with incentives fostering creation and production that vary in intensity over the business cycle.

Chapter 6 takes the degree of inefficiency one step further by adding an opportunism problem to the relationship between entrepreneurs and financiers. This extension exacerbates the problems stemming from the labor market opportunism discussed in chapter 5 and, most important, by further depressing the pace of restructuring in an already sclerotic economy, it adds an important cost of recessions. This yields a view on the connection between restructuring and recessions which is quite different from prevailing views. On the one hand, there is the (mostly partial equilibrium) labor literature that argues that because a significant share of separations are privately inefficient, an increase in restructuring during recessions is costly. On the other hand, there is the liquidationist Schumpeterian view that increased restructuring during recessions is necessary to cleanse the economy of excesses created during the preceding boom. As argued earlier and contrary to conventional wisdom, however, most of the evidence points not to a rise but to a fall in restructuring during

recessions. The model presented in this chapter attributes this drop to the contraction in available funding that occurs during recessions.

Part III concludes with chapter 7, which applies the results from previous chapters to the problem of a transition economy opening up to the rest of the world. In this case opportunism manifests itself at the aggregate level through a sharp rise in destruction in the contracting sectors, an action which is not matched by an equal rise in creation in the expanding sectors. While in practice this outcome is often associated with a policy recommendation toward gradualism, such a response is at best a marginally beneficial policy if decoupled flows stem from opportunism. The reason is that gradualism exacerbates sclerosis by further depressing an already suboptimal level of creation in the expanding sectors. An optimal policy package, aside from directly addressing the source of opportunism, is to combine aggressive creation incentives in the expanding sectors with moderate and temporary production support in the contracting sectors.

Part IV, which completes the core section of the book, looks at the endogenous response of political institutions and technology to opportunistic exploitation of relationship specificity. Chapter 8 begins by observing that in the political arena, each factor of production has an incentive to build institutions that increase the other factors' net specificity. However, the incentive to do so is limited by the aggregate costs associated with opportunism as emphasized in the previous chapters. This is because it is the appropriating factor that suffers directly from segmentation, and it also shares the costs of unemployment and sclerosis. The political process' balancing act takes place slowly, but it has the potential to limit the extent of long-run inefficiencies if players are sufficiently forward-looking.

The more interesting endogenous response, however, involves technology. In addition to its normal productive efficiency role, technology selection now affects net specificity and hence influences equilibrium opportunism. The model shows how in equilibrium, technology selection is mostly determined by the appropriated factor of production. In turn this can lead to a phenomenon of excess substitution, whereby an initial institutional push by (say) labor can end up with lower employment *and* wages, once technology adapts to the new conditions.

Chapter 9 uses these insights to explain the dynamics of labor markets and technology in France—which is taken to be representative of the large continental European economies—in response to labor's institutional push in the late 1960s. It turns out that a dynamic model along the lines of the one developed in chapter 5, but enriched with a putty-clay structure and an endogenous technological menu, offers a parsimonious account for the highly nonlinear path of labor market variables in France since the late 1960s. The initial rise in unemployment and wages following the institutional push by labor corresponds to the system's short-run response to an increase in capital's net specificity, since much of the investment and technology selection is sunk. This classical response, however, became more complex in the 1980s when unemployment kept rising but wages began to fall rapidly, eventually bringing the labor share below prepush levels. This turn of events is the natural outcome of the model in response to an institutional push, once the passage of time depreciates old capital and facilitates technological substitution. Indeed, a noticeable fact throughout much of continental Europe during this episode was the sharp rise in capital-output ratios.

Part V concludes the book, and chapter 10 offers a brief summary of the view presented in this book and highlights its broad applicability to macroeconomic phenomena at all frequencies.

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