

NBER WORKING PAPER SERIES

INSTITUTIONS, RESTRUCTURING,
AND MACROECONOMIC PERFORMANCE

Ricardo J. Caballero
Mohamad L. Hammour

Working Paper 7720
<http://www.nber.org/papers/w7720>

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
May 2000

Invited lecture, XII World Congress of the International Economic Association, 25 August, 1999, Buenos Aires, Argentina. The views expressed herein are those of the authors and not necessarily those of the National Bureau of Economic Research..

© 2000 by Ricardo J. Caballero and Mohamad L. Hammour. All rights reserved. Short sections of text not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

Institutions, Restructuring, and Macroeconomic Performance
Ricardo J. Caballero and Mohamad L. Hammour
NBER Working Paper No. 7720
May 2000
JEL No. E00, G34, J3, J4, O3

ABSTRACT

A growing body of new research has emphasized the macroeconomic consequences of transactional impediments in factor markets, and their role in the recurrent restructuring requirements of modern economies. We first review the function institutional arrangements play in facilitating transactions and explore the macroeconomic consequences of poor institutions. As an application, we discuss the lessons that can be learnt from observed changes in the nature of unemployment in Europe. We then analyze the effect the institutional environment can have on macroeconomic restructuring. In light of this framework we revisit the question of the relationship between recessions and restructuring activity, and review the recent evidence of reduced restructuring following recessions. We also discuss corroborating evidence from “merger waves” in the restructuring of corporate assets.

Ricardo J. Caballero
Department of Economics
MIT
E52-252g
50 Memorial Drive
Cambridge, MA 02139
and NBER
caball@mit.edu

Mohamad L. Hammour
DELTA
48, Boulevard Jourdan
75014 Paris
FRANCE
and CEPR
hammour@delta.ens.fr

“The American economy, clearly more than most, is in the grip of what... Joseph Schumpeter many years ago called “creative destruction,” the continuous process by which emerging technologies push out the old... It presupposes a continuous churning of an economy as the new displaces the old... How is this remarkable economic machine to be maintained? ... [T]echnological advances alone will not buttress the democratic institutions, supported by a rule of law, which are so essential to our dynamic and vigorous American economy... Institutions are needed that give free play to the inventive capacities of people and effectively promote the translation of conceptual innovations into increased output of goods and services that are the lifeblood of material progress.”
– Alan Greenspan (1999)

1. INTRODUCTION: TOWARD A “STRUCTURAL” MACROECONOMICS

1.1. Institutions and Restructuring

The core mechanism that drives economic growth in modern market economies is the massive ongoing 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 economic fluctuations and the functioning of factor markets. At the microeconomic level, restructuring demands innumerable decisions to create or destroy production units. The efficiency of those decisions hinges on the existence of sound institutions that provide a proper transactional framework. Failure along this dimension can have dire macroeconomic consequences. By limiting the economy’s ability to tap new technological opportunities and adapt to a changing environment, institutional failure can result in dysfunctional factor markets, economic stagnation, and exposure to deep crises.

A growing body of new macroeconomic research, which is the subject of this chapter, has emphasized the macroeconomic consequences of *transactional* impediments in factor markets, and their role in the recurrent *restructuring* requirements of modern economies. This literature has added a body of analysis and evidence to the macroeconomist’s toolkit that proved central in addressing many of the major macroeconomic developments of the last decade – which raised issues of little relation to the profession’s continuing internal debates on nominal rigidities and the role of technology shocks. Many post-communist Eastern European economies have seen their great potential for restructuring and growth catch-up stifled by an under-developed legal and institutional environment. In Western Europe, the weight of labour-market regulation

has caused persistently high unemployment, and deprived significant segments of the labour force from the fruits of economic growth. The recent emerging markets crisis exposed the fragility of economic systems that suffer from a lack of transparency and lax corporate governance standards. The prolonged U.S. expansion of the 1990s reflects the powerful potential that technological progress and unshackled creative destruction can reach under an effective institutional environment.

For a prolonged period of time, post-war macroeconomics, driven by Keynesian ideas, had built a dichotomy between the analysis of long-run growth and short-run fluctuations. Long-run outcomes were essentially determined by a rather efficient supply side, and short-run outcomes by a highly problematic demand side. Supply-side notions of restructuring and creative destruction were considered essentially relevant to growth theory (as exemplified by the vintage models of Johansen, 1959, and Solow, 1960), while institutions – mostly price-setting institutions – were relevant for business cycles.

This dichotomy placed severe limitations on the role restructuring and institutions could play in macroeconomic analysis. Those themes had been at the core of much pre-Keynesian thinking about aggregate economic phenomena, as exhibited in Schumpeter's work on creative destruction, and have retained their centrality in international and development economics. However, only recently did they regain strong theoretical and empirical footholds in mainstream macroeconomics. The literature on persistently high unemployment in Europe, for example, has made it clear that institutional obstacles are as relevant for long-run equilibrium as they are for the short run. To take another example, the literature that constructs and analyses high-frequency time series of gross job flows

(Davis, Haltiwanger and Schuh, 1996) is essentially motivated by the importance of restructuring at high frequencies.

1.2. A Common Thread: Specificity

There is a surprising degree of unity in the logic underlying analyses of institutions and restructuring. Essentially, our macroeconomic models need to be made more “structural” in a precise sense. The first modelling instinct is to assume that decisions are fully flexible, but much of what happens in reality involves a degree of irreversibility. What we need to introduce is the notion of *specificity*. Specificity means that factors of production are not fungible. More precisely, we say that a factor is specific with respect to a production arrangement – its current production relationship with other factors using a given technology – when it would lose part of its value if used outside this arrangement. Specificity introduces *structure* into the collection of production arrangements in the economy.

Figure 1 depicts the context within which specificity of different types arises 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 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*.

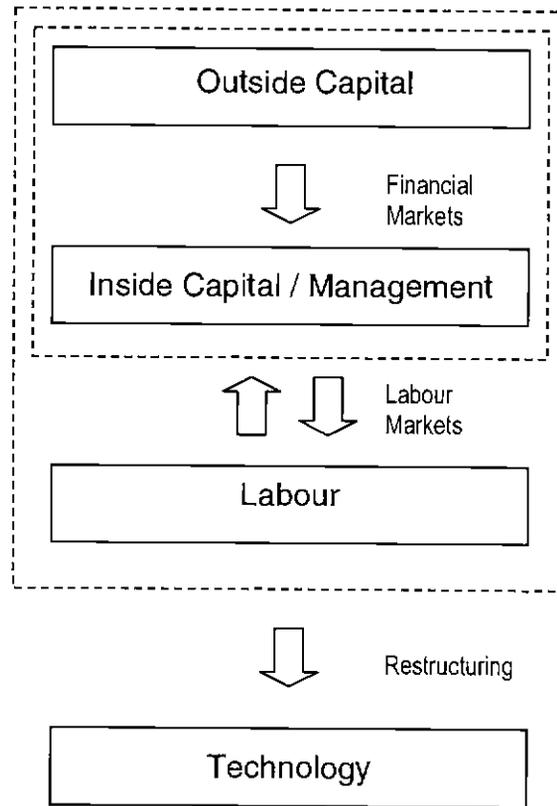


Figure 1 Specificity relations

Moving down the figure, the entrepreneur next needs to hire labour. The resources he invests in searching for workers, training them, and building organizational capital are embodied in labour – both individually and as a group. Regulations may increase the specificity of capital with respect to labour. The right to strike or legal protection against dismissal, for example, effectively reduce the value of using capital outside its current labour relationships. This collection 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 types of specificity: “relationship specificity” that characterizes financial or labour market relationships; and “technological specificity,” that characterizes production choices. Relationship specificity forms the underpinning of what *institutional arrangements* are about; technological specificity forms the underpinning of what *restructuring* is about. Most of the time, both are present simultaneously and interact in important ways.

It should be emphasized that the shift toward a more structural model has affected empirical as well as theoretical macroeconomics. We have already referred to what is perhaps the most notable empirical example of this shift: the extraordinary effort that has gone into reconstructing labour-market aggregates so as to distinguish between the gross job creation and destruction components of net employment change. This effort would be pointless if labour were fully fungible.

1.3. Outline

In this chapter, we attempt to describe the general principles at work in this structural type of macroeconomics, derive some of the lessons we have learned, and illustrate the usefulness of this approach with a number of applications. We do not attempt to provide a survey of the vast existing literature.

In section 2, we explore the function institutional arrangements play in facilitating transactions and give an overview of the macroeconomic consequences of poor

institutions. As an application, we discuss the underpinnings of the European unemployment problem and the lessons that can be drawn from the phases of its evolution.

In section 3, we turn to the effect that the institutional environment can have on macroeconomic restructuring. In light of our framework, we revisit the question of the relationship between recessions and restructuring activity, and review the surprising evidence of reduced restructuring following recessions. We also discuss corroborating evidence from “merger waves” in the restructuring of corporate assets.

Section 4 summarizes the main points of the chapter.

2. INSTITUTIONS AND MACROECONOMIC PERFORMANCE

2.1. Why Institutions?

Before we can explore the relation between institutions and macroeconomic outcomes, we must take a step back to discuss the role institutions play in economic transactions.

Institutional arrangements are mechanisms that help address the problems that arise from the need to cooperate. Consider two factors of production that can either produce independently in an *autarkic* mode, or cooperate in a *joint-production* mode. This is illustrated in figure 2. In the context of the financing relationship, our two factors are outside capital on one hand, and inside capital or management on the other. In the context of the employment relationship, our two factors are labour and capital. Autarky for labour may correspond to producing in an informal sector where there is little need for capital, retiring from the labour force, or joining the unemployment pool. Autarky for capital may mean investment abroad, or consumption rather than saving.

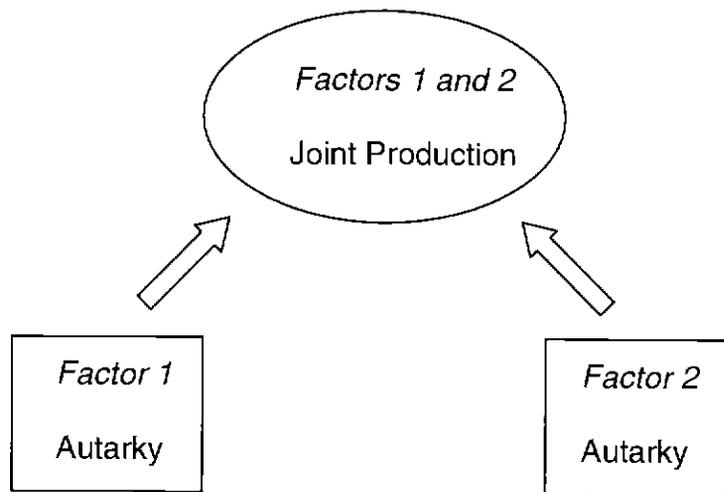


Figure 2 Autarky and cooperation

The main problem with cooperation is that it involves some irreversibility, some degree of specificity of one factor with respect to the other. This gives rise to *specific quasi-rents*. A generic account of the way such quasi-rents arise is the standard “*hold-up*” problem (Klein, Crawford and Alchian, 1978). While the terms of trade between the two factors may be competitive before they commit to joint production, they will find themselves in a bilateral monopoly situation *ex post*. The specific quasi-rents thus created become appropriable, and will have to be divided.²

Ideally, each factor should pre-commit to getting a share of the quasi-rents commensurate with its *ex-ante* terms of trade. This arrangement would preserve the *ex-ante* competitive terms of trade and guarantee transactional efficiency. But such pre-commitment is often problematic. The factor may have or acquire an informational advantage that would be tempting to exploit; its commitment may not be enforceable in court; or the contingencies that the contract in question would need to address may be

hopelessly complex. The rules that govern the process by which specific rents are created and divided typically reflect, in their limitations, the problematic nature of pre-commitment, and result in less-than-efficient outcomes. We refer to those rules, be they the result of a private or a social contract, as “institutional” arrangements.

Examples of the institutions that govern transactions in financial markets are corporate governance arrangements, financial accounting and auditing rules, debt covenants, or bankruptcy procedures. Examples of labour-market institutions are the tenure profile of wages, dismissal rules and procedures, or the regulations that govern collective action.

Institutions play two distinct functions: *efficiency* and *redistribution*. It is naïve to think that markets can generally function properly without an adequate institutional framework. In their efficiency role, the basic principle that determines institutions is that each factor ought to get out the social value of what they put in – i.e., absent any externalities, their ex-ante terms of trade. It is equally naïve to think that such institutions, being partly determined in the political arena, will not also be used as an instrument in the politics of redistribution. A poor institutional framework is the result of a combination of under-development in the realm of contracting and regulations and of overly powerful political interest groups who have tilted the institutional balance excessively in their favour.

2.2. Macroeconomic Symptoms of Poor Institutions

A highly developed institutional framework that is relatively insulated from political tinkering can bring the economy close to its first-best efficient outcome. But what

happens when institutions are poor? At this level of generality, it may seem that not much can be said. However, because the basic problem is common, one of unprotected specificity, a set of robust generic conclusions arises. When the hold-up problem is not resolved at the microeconomic level, it gives rise to a highly inefficient macroeconomic “solution” that is characterized by a number of symptoms (see Caballero and Hammour, 1998a).

At the level of individual interactions, a poor institutional environment *discourages cooperation* between factors of production. In equilibrium, this results in *under-employment, market-segmentation* and *technological exclusion* of the “appropriating” factor. We explore those consequences in the context of the simple framework outlined in figure 2, and illustrate them with the example of institutional failure in the labour market. More specifically, we assume that, starting from an efficient outcome, heavy regulation is introduced that gives an excessively strong advantage to labour in the employment relationship. In terms of figure 2, we consider that autarky for labour corresponds to unemployment and autarky for capital corresponds to investment in the international financial marketplace.

The macroeconomic symptoms of poor institutions are multi-faceted:

i) *Reduced cooperation.* The partial-equilibrium effect of poor institutions, by definition, is that one of the factors no longer gets its ex-ante terms of trade at the margin. We refer to this factor as the “appropriated” factor, and to the other one as the “appropriating” factor. The appropriated factor will be reluctant to enter into cooperative relationships. In our labour-market example, the introduction of heavy regulation shifts the ex-post terms of trade from capital to labour. At the margin,

capital no longer gets a return commensurate with what is obtainable in international capital markets, and becomes reluctant to invest in new job creation.

ii) *Under-employment.* Naturally, in equilibrium, a factor will not accept to enter a new relationship knowing that its ex-post terms of trade will fall short of its ex-ante position. The free-entry condition of the appropriated factor will determine the new equilibrium, where fewer relationships are formed in the joint-production sector. The result is a misallocation of resources characterized by under-employment in joint production of the appropriating factor. In the labour-market example, job creation will be insufficient and labour will be forced into an increasingly crowded unemployment pool. This weakens the outside option of labour in the employment relationship, and causes a terms-of-trade shift that helps restore equilibrium by raising the return on capital back to the level required by international markets. In this context, unemployment is an endogenous equilibrium response through which the economic system takes back from labour some of the advantage it had acquired through regulation.

iii) *The role of supply elasticities.* The two factors' elasticities of supply into joint production are central determinants of the new equilibrium. This is easiest to see in a small-open-economy version of our labour-market example, where the supply elasticity of financial capital is infinite. In that case, the poor-institutions equilibrium exhibits the same return on investment as an efficient equilibrium – equal to the world interest rate. As far as new jobs are concerned, capital is not appropriable in equilibrium and unemployment will have to be high enough to reduce labour compensation to a level compatible with this outcome. The regulatory burden

backfires, and its inefficiency cost is entirely born by labour. In contrast, suppose that the appropriated factor in our example is not financial capital but land. The supply of land is fully inelastic. Land has nowhere else to run, and will have to accept the lower returns induced by regulation. In that case, the regulatory push will be much more successful, and will have much milder unemployment consequences. Generally speaking, the appropriated factor will be less appropriable in equilibrium the higher its supply elasticity is. This idea will play an important role in our discussion of the changing face of unemployment in Europe.

iv) *Market segmentation.* We saw that, in partial equilibrium, poor institutions cause the appropriated factor to get less than its ex-ante terms of trade. As a counterpart, the other factor – the “appropriating” factor – can capture quasi-rents above its ex-ante terms of trade. This creates a rush out of autarky, but the catch is that too few units of the appropriated factor are willing to join in production. Indeed, as we saw previously, it is the free-entry condition of the appropriated factor that determines the general-equilibrium level of joint-production activity. As a result, the limited number of joint-production opportunities for the appropriating factor will be *rationed*. The market for the appropriating factor will be segmented, with those who are successful in accessing joint-production opportunities earning rents above what they can get in autarky; and the market for the appropriated factor will clear. This rationing phenomenon is the direct result of the lack of contractual pre-commitment ability, which is the very root of institutional failure. In the labour-market example, the implication is that unemployment is involuntary. Concretely, the persistence of market segmentation is due to labour’s inability to pre-commit not to exploit its

regulatory advantage – e.g., its inability to waive its legal protection against dismissal, its right to collective action, or its right to receive a minimum wage.

v) *Technological exclusion*. Institutions also affect the direction of technological development. Suppose there is a choice of joint-production technology, with different factor proportions. Which factor determines the technology to be used? It is effectively the appropriated factor that does so, because the other factor, being rationed, is in no position to impose its terms. The appropriated factor will choose a technology that reduces its degree of specificity with respect to the other without being excessively inefficient. In the labour-market example, this will typically imply a partial exclusion of labour from joint production and will translate into capital deepening. Technology choice is an escape route for capital that provides an alternative to investment abroad, and weakens the position of labour further through increased unemployment and reduced labour compensation. It also implies that under-employment in joint production is not necessarily accompanied by under-investment.

2.3. Application: European Unemployment

As an application of the ideas presented above, we now turn to the European unemployment problem, which represents many of the macroeconomic symptoms of poor institutions. More particularly, we will concentrate on the representative case of France. The analysis in this sub-section is based on Caballero and Hammour (1998b).

Figure 3 summarizes three decades of French macroeconomic experience.³ Panel (a) shows the well-known build-up of unemployment over the 1970s and 1980s.

Although unemployment was rising for most of this period, its underlying nature had been changing. One can distinguish between two distinct phases. In the first phase, which lasted until the early eighties, the increase in unemployment was accompanied by brisk wage increases (panel b), a rise in the labour-share of value added (panel c), and a fall in the profit rate (panel d). Observers at the time saw a clear case of “Classical unemployment.” In the second phase, the rise in unemployment was, to the contrary, accompanied by a slowdown in wage growth and a fall in the labour share. As a consequence, the interpretation of unemployment became Keynesian. Observers started describing the situation as a “European depression.” The problem is that the notion of a Keynesian depression did not fit well with the brisk recovery in the profit rate. Labour and capital had clearly parted company.

A highly parsimonious account of the French experience can be constructed based on the effect of an institutional push in favour of labour in face of a supply elasticity of capital that differs in the short and in the long run. The institutional push is well documented. There are indications that, until the late 1960s, labour had not shared evenly in the fruits of post-war prosperity. This caused tensions to build up, which exploded with the labour revolts of May 68. The resulting Grenelle accords started a process through which labour gained significantly in terms of union representation, wages, and the workweek. Similar events took place elsewhere in Europe, most notably in Italy during the Hot Autumn of 69.

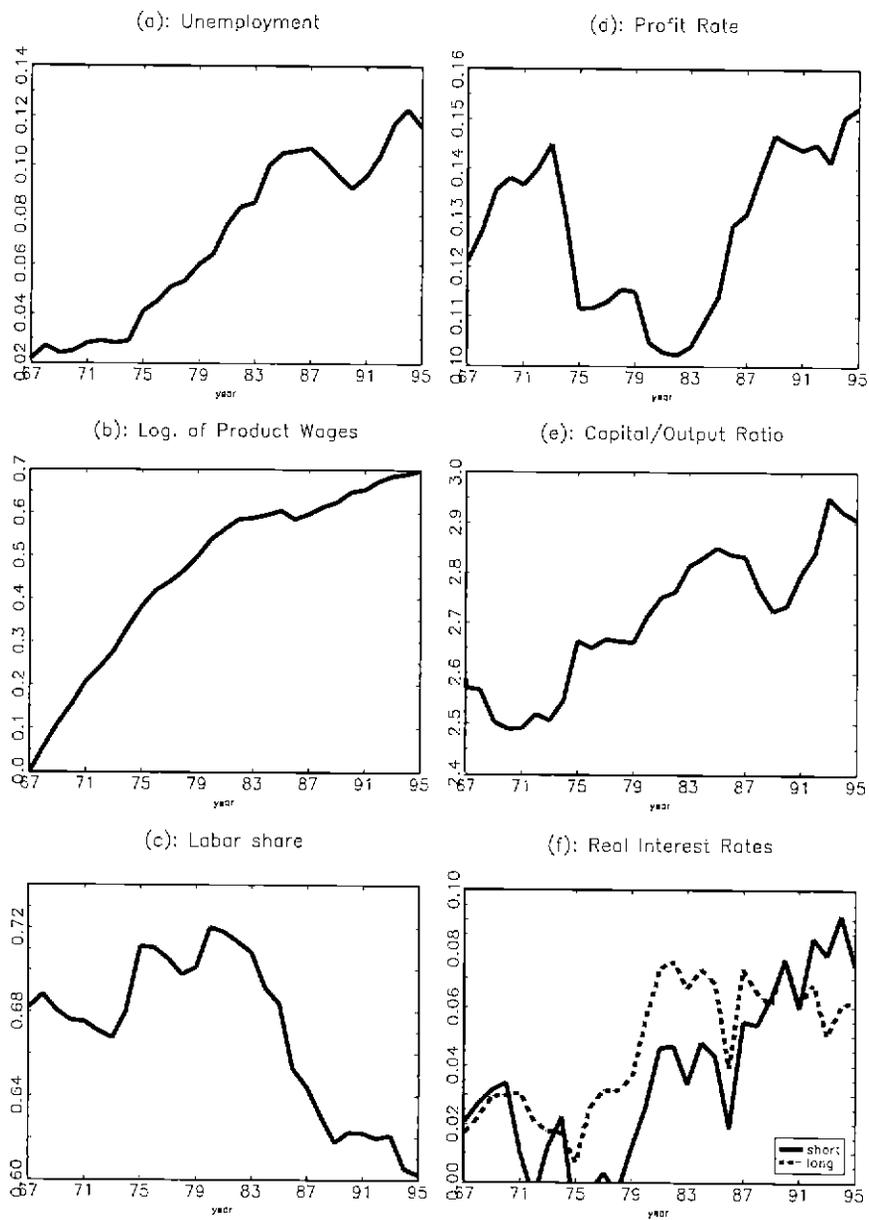


Figure 3 France: 1967-95

The political momentum of the late sixties' labour movement continued into the seventies. Following the oil shock of 1973, the agenda shifted to the regulatory protection of existing jobs. In France, the labour movement reached its apex following the 1981 presidential election of François Mitterrand, when the *Programme Commun* coalition of Socialists and Communists came to power. Over the next two years, an array of regulations were put in place that covered wage increases, hours reduction, restrictions on temporary work, employee representation, and the creation of public-sector jobs.

The impact of this regulatory push during the first phase is best understood as characterizing a situation where capital had few short-run options. Investment was sunk and embodied a given labour intensity. Labour's gains during this period materialized in the form of brisk wage growth during the 1970s, despite the two oil shocks. Corporate profits plunged, and labour's share of value-added rose. While the rise in unemployment was to be expected as a result of the oil shocks, the brisk pace of wage growth in a recessionary period pointed to a more worrying prognosis.

Over time, as new investment was needed to replace outdated capital, the picture started to change. Uncommitted capital is very elastic. New investment must earn the rate of return available in the global economy. In the second phase, the reluctance to invest in jobs under heavy labour regulation led to a further build-up in unemployment, which induced wage moderation and permitted capital to earn the rates of return required by markets. The profitability of capital recovered progressively. At the same time, the technologies selected for new investments tended to economize on labour use, and the capital-output ratio climbed (see figure 3, panel e). This led to further wage moderation and higher unemployment. As a result of both wage moderation and higher capital

intensity, the labour share fell significantly below its initial level. Because of the high long-run elasticity of capital, labour's initial regulatory gains backfired and caused that factor ultimately to bear the bulk of the resulting inefficiency.

In fact, the relationship between job protection – as one dimension of labour-market regulation – and capital-labour substitution can be found more generally in the data. This is shown in figure 4 for the OECD countries over the period 1970-90.⁴

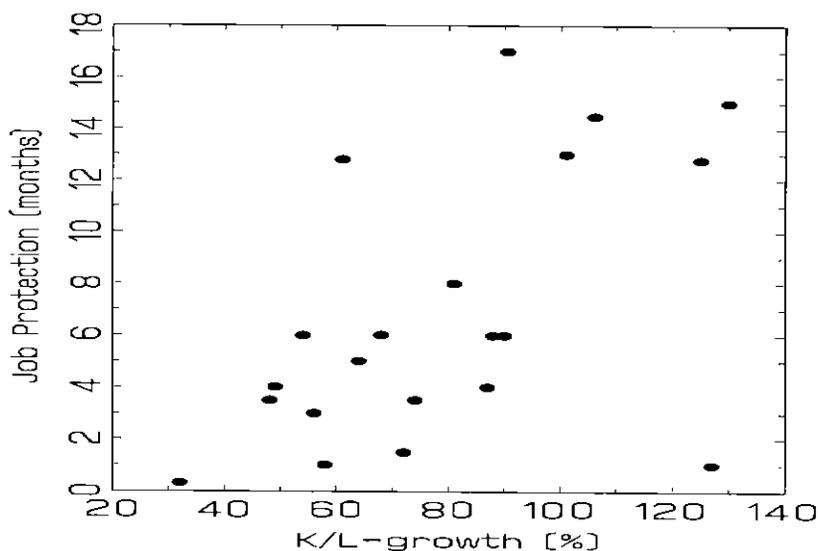


Figure 4 Capital-labour substitution and job protection

The ability of the institutional shift to account parsimoniously for the rich joint dynamics of unemployment, wages, profits, and capital intensity in Europe over the past three decades strongly supports the notion that institutions are the main culprit behind persistent unemployment in Europe.

3. RESTRUCTURING

3.1. Creative Destruction, Sclerosis, and Unbalanced Restructuring

We now turn to restructuring, and the role of the institutional environment in that process. The need to restructure arises from the other dimension of specificity in production arrangements: specificity with respect to technology. Technology – taken in its broadest sense – is typically embodied in capital, in the experience of the workforce, and in the organization of production. This implies that a change in technology necessitates that factor components that are technology-specific be scrapped and replaced.

In a modern market economy, the productive structure is in a state of permanent adjustment. It must adapt to technological innovations, to the introduction of new products, to changes in modes of organization, and to the evolution of international competitiveness. Production units that incorporate the newest techniques and requirements must be continuously created, and outdated units must be destroyed. This process is what Schumpeter (1942) referred to as *creative destruction*. In this process of restructuring, production factors must be *reallocated* away from contracting activities and into newly expanding ones.

Recent empirical work allows us to quantify this process of ongoing restructuring. Traditionally, the construction of economic aggregates has often fallen short of the measures appropriate from a structural perspective. In terms of employment, flows were typically measured as net changes in stocks, without distinction between simultaneous positive and negative flows. Recent work has tried to remedy this state of affairs, and a rich literature developed that tries to measure gross job flows in the labour market (see Davis, Haltiwanger and Schuh, 1996). Measured gross job flows are surprisingly large,

and reflect the extent of creative destruction. About 10 percent of US manufacturing jobs disappear on average every year, and are replaced by new jobs.

The ongoing restructuring process requires innumerable transactions to create and destroy production units. The institutional environment is crucial for the efficiency of those transactions. Poor institutions are disruptive to the creative destruction process, giving rise to two additional macroeconomic symptoms: *sclerosis* and *unbalanced restructuring* (see Caballero and Hammour, 1998a).

First, a poor institutional environment results in technological “sclerosis” – it permits outdated, low-productivity units to survive longer than they would in an efficient equilibrium. This causes the creative destruction process to stagnate. Sclerosis is directly related to the under-employment and, therefore, under-valuation of productive resources. Underemployment causes the appropriating factor’s autarky sector to be over-crowded, and its “shadow” value of moving to autarky to be lower than in an efficient equilibrium. The result is weakened cost-pressures on outdated production units to be scrapped, and therefore technological sclerosis.

Second, poor institutions cause the restructuring process to be unbalanced. Although destruction is insufficient compared to an efficient equilibrium, it is, paradoxically, excessive given the economy’s inefficiently sluggish creation rate. This is easiest to see in our labour-market example in the special case where no social value – related to leisure or a matching function – is associated with unemployment. From a social perspective, as long as unemployment is positive, job destruction decisions should be based on a zero shadow wage. However, from a private worker’s point of view, the shadow value of being unemployed is positive and determined by the opportunity of

capturing quasi-rents in a new job. This puts excessively high private cost pressures on production units along the exit margin. Excessive destruction given the depressed rate of creation is not limited to the case where unemployment carries zero social value. It is a general consequence of the fact that capturing rents enters as a component of the appropriating factor's private but not social shadow values.

Crises are times when adjustment in factor prices is especially critical, and the unbalanced nature of restructuring is magnified. This mechanism is particularly relevant for an understanding of employment crises during structural adjustment episodes, characterized by a surge in destruction that is not accompanied by a simultaneous rise in creation (Caballero and Hammour, 1996a). It is also relevant for the destruction-driven surge in unemployment observed during recessions, which we examine in the following section.

3.2. Recessions and Restructuring: A Reverse-Liquidationist View

In addition to measuring the average pace of job reallocation, the new measures of gross job flows allowed us to get a glimpse at the way the creative destruction process is affected by the business cycle. Figure 5 presents the gross job creation and destruction time series constructed by Davis and Haltiwanger (1992) for the US manufacturing sector. Most notable in those series are the sharp peaks in destruction at the onset of each recession, while the fall in creation is much more muted. Although this asymmetry between creation and destruction may not be as strong in other sectors, or when the economy is subject to shocks of a different nature, this evidence confirmed the long-held view that liquidations are highly concentrated in recessions.

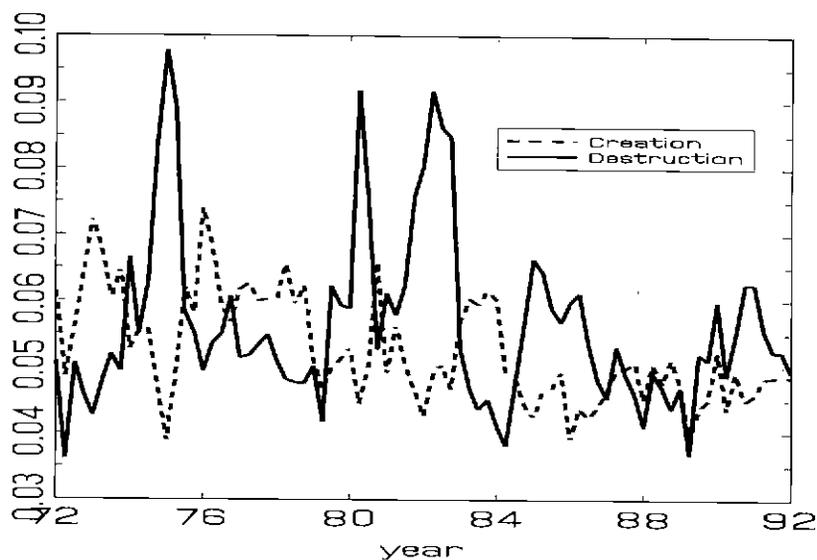


Figure 5 Gross job creation and destruction rates in US manufacturing

Concentrated liquidations were considered a central feature of recessions by pre-Keynesian economists. Unlike the Keynesian school that followed, those economists paid close attention to the supply-side of the economy at high frequencies. Many of them – Hayek, Pigou, Robbins, Schumpeter – saw in liquidations the main reason for recessions (see De Long, 1990). “Liquidationists,” as they came to be known, conceived of recessions as unavoidable times of intense restructuring. Lionel Robbins (1934) summarized this view as follows:

In ... a boom many bad business commitments are undertaken ... [Goods] are produced ... which it is impossible to sell at a profit. Loans are made which it is impossible to recover... [W]hen the boom breaks, these ... commitments are revealed ... Nobody wishes ... bankruptcies. Nobody likes liquidation as such...

[But] when the extent of mal-investment and over-indebtedness has passed a certain limit, measures which postpone liquidation only make matters worse.

Schumpeter (1934) held a very similar view:

[D]epressions are not simply evils, which we might attempt to suppress, but ... forms of something which has to be done, namely, adjustment to ... change. (p. 16)

Liquidationism was very influential in the Hoover administration's initial response to the Great Depression. President Hoover (1952) bitterly recalls:

The 'leave-it-alone liquidationists' headed by Secretary of the Treasury Mellon ... felt that government must keep its hands off and let the slump liquidate itself. Mr. Mellon had only one formula: 'Liquidate labour, liquidate stocks, liquidate the farmers, liquidate real estate' ... He held that even panic was not altogether a bad thing. He said: 'It will purge the rottenness out of the system.'

Although few economists today would take the extreme position of early liquidationists, many see in increased factor reallocation a silver lining of recessions. Although recessions *per se* are undesirable events, they are seen as a time when the productivity of factors of production is low and, therefore, offers a chance to undertake much needed restructuring at a relatively low opportunity cost. Observed liquidations are seen as a prelude to increased restructuring.⁵

The evidence in figure 5 supports the notion that recessions have a "cleansing" effect on the production structure – in the sense that they are times of intense liquidations that affect mostly outdated, low-productivity jobs (see Caballero and Hammour, 1994). Does cleansing constitute a silver lining of recessions? Under the presumption that poor institutions cause technological sclerosis, increased restructuring can be considered beneficial. However, there is an important difference between increased *restructuring* and increased *liquidations*. The fact is that lost jobs during recessions typically feed into

unemployment, not creation – which is not surprising, given the “unbalanced” nature of restructuring in poor institutional environments. The question is whether, ultimately, increased liquidations lead to increased restructuring. In order to assess this question, one needs to examine the *cumulative* impact of a recessionary shock on creation and destruction. This is illustrated in figure 6, which shows that an unemployment recession (bottom panel) that starts with a spike of liquidations may cumulatively result in increased, unchanged, or decreased restructuring.

We tried to examine this question empirically in Caballero and Hammour (1999). Unfortunately, the available data are limited to the US manufacturing sector. The impulse-response function from our simplest regression is reported in figure 7.⁶ The bottom panel reports the cumulative impacts of a recessionary shock on creation and destruction. Surprisingly, recessions seem to *reduce* the amount of restructuring in the economy. This result of “chill” following recessions is significant and robust in several dimensions, including the introduction of a second, reallocation shock. Given the limitations of the data, our conclusion can only be tentative. But, if there is any evidence, it does not support prevailing views that recessions are the occasion for increased restructuring.

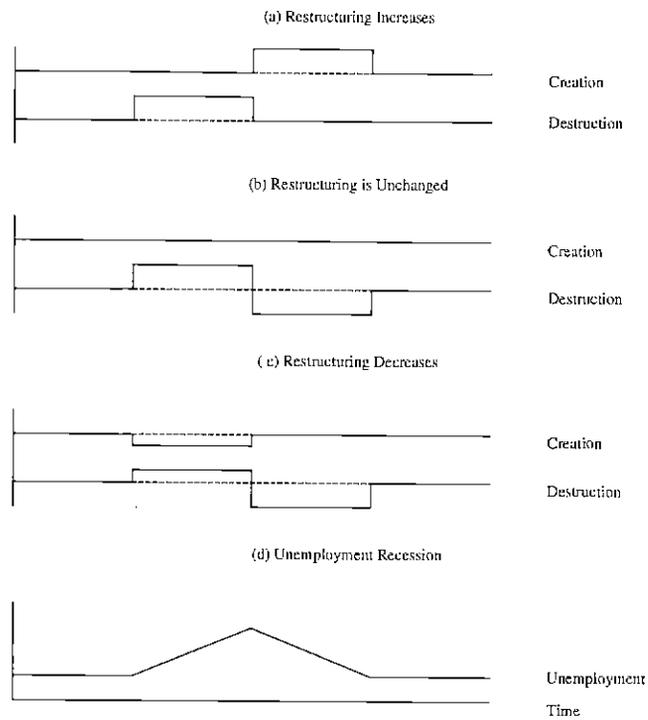


Figure 6 Recessions and cumulative restructuring

Why would recessions freeze the restructuring process? Our interpretation is that the underlying factors are financial – again, a case of institutional failure. Recessions squeeze liquidity in financial markets and reduce firms' ability to undertake healthy restructuring.

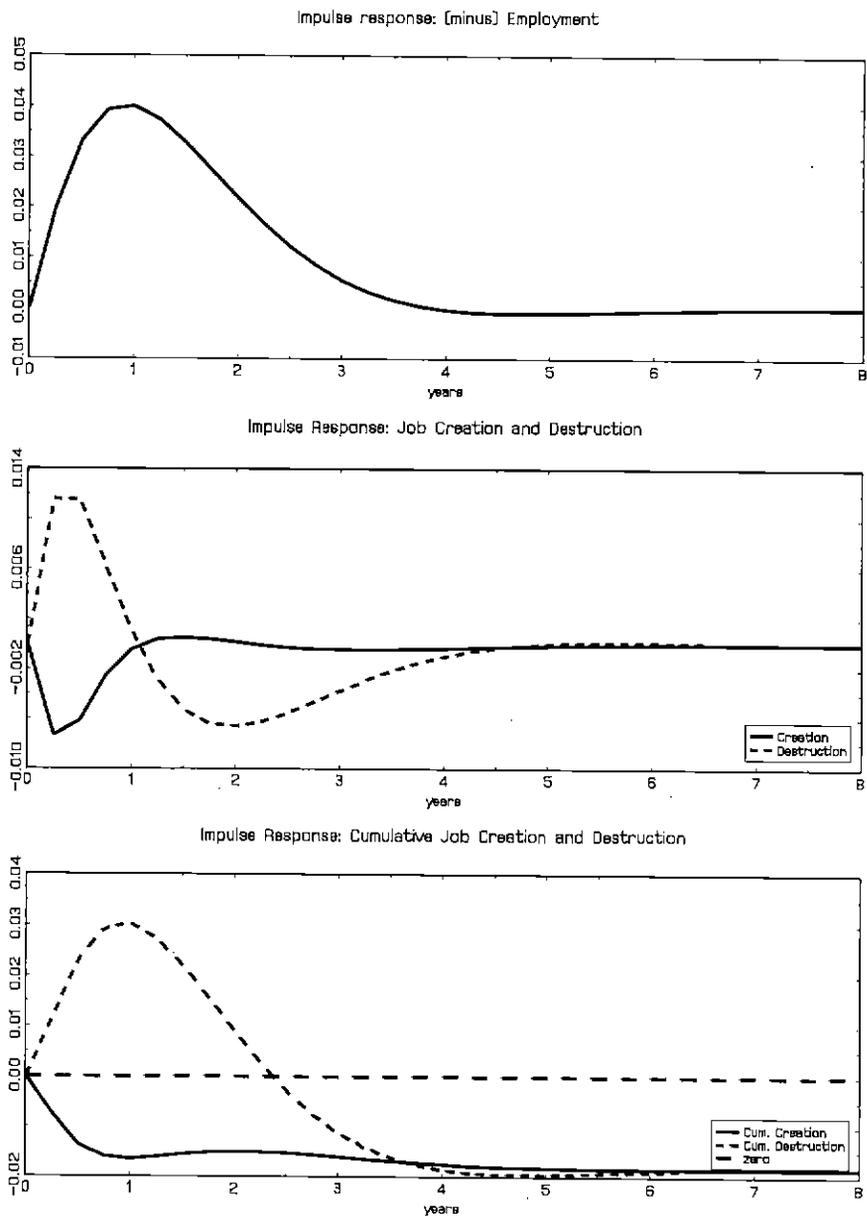


Figure 7 A case of chill

3.3. Merger Waves and the Stock Market

Fluctuations in the pace of restructuring can be approached from a very different angle, by moving from job reallocation to the *restructuring of corporate assets*. Looking at merger and acquisition (“M&A”) activity over time, and at its institutional underpinnings, we reach a conclusion that also amounts to a rejection of the liquidationist perspective (see Caballero and Hammour, 2000). Essentially, a liquidationist perspective in this context would consider fire sales during sharp liquidity contractions as the occasion for intense restructuring of corporate assets. The evidence points, on the contrary, to briskly expansionary periods characterized by high stock-market valuations and abundant liquidity as the occasion for intense M&A activity. Again, financial factors and their institutional underpinnings seem to be at the core of this restructuring phenomenon.

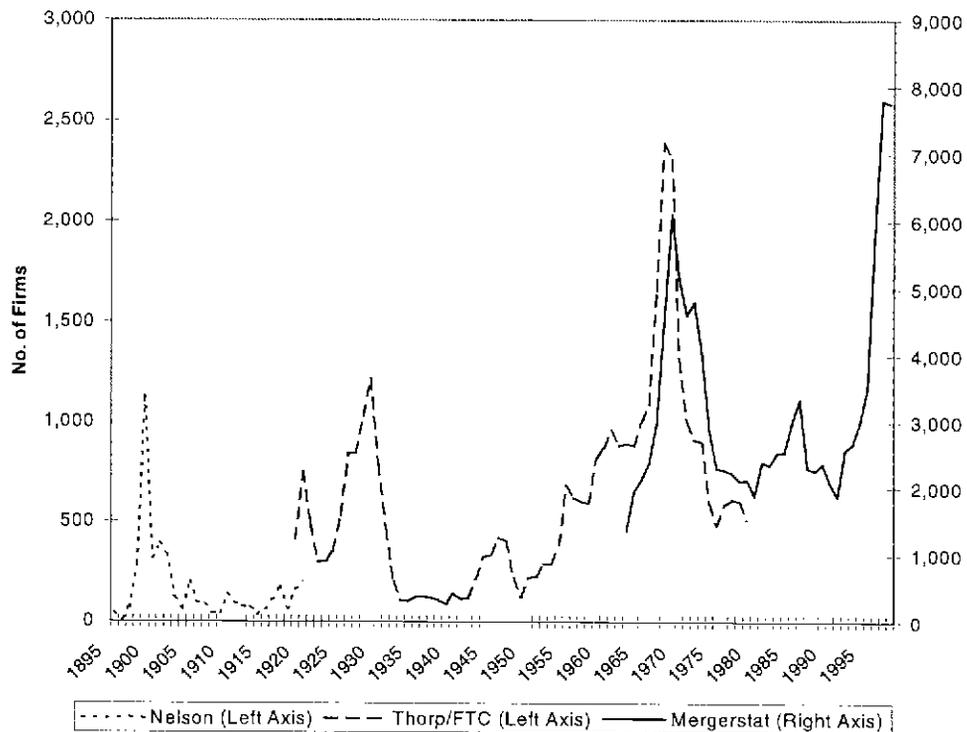


Figure 8 US merger waves: 1885-1998

Figure 8 presents data on the number of mergers and acquisitions in the US over the past century. Without going into the data construction issues, it is important to note that the figure is based on three distinct data sets that are not directly comparable and contain a natural upward trend (see Golbe and White, 1987).⁷ What the figure shows is the extreme concentration of US M&A activity over time, into essentially *four merger waves*.

The first merger wave took place at the turn of the century. It consisted, to a large extent, of the simultaneous horizontal consolidation of several enterprises that took advantage of scale economies and often created a near monopoly in their industry. The landmark transaction of this era was the Great American Steel Deal led by Andrew Carnegie, which combined ten companies into U.S. Steel. The second merger wave took place during the “Roaring Twenties” and affected nearly one-fifth of manufacturing assets. Dozens of today’s major US companies were formed at that time. The frenzy ended abruptly with the Great Crash of 1929. The third was the conglomerate merger wave of the late 1960s – the Go-Go Years of the stock market – and consisted mostly of corporate diversification across industries. Advances in management science were supposed to allow conglomerates to manage effectively a multitude of businesses that span a variety of industries. Retrospectively, much of the earnings-per-share growth demonstrated at the time by leading conglomerates was financially driven. Finally, we are currently in the middle of another merger wave, which rivals in scale any of the previous ones. Enterprise restructuring is driven by trends toward globalisation, corporate refocusing, and consolidation in the new IT industries. Overall, mergers have played a key role in the evolution of industrial structure in response to technological and organizational revolutions.

The one robust determinant for the aggregate volume of M&A activity – as documented in most studies on the subject – is the valuation of the stock market (Golbe and White, 1987). As an example, the positive correlation between US M&A volume and the price/earnings (“P/E”) ratio of the S&P 500 index is illustrated in figure 9 for the period 1963-98.

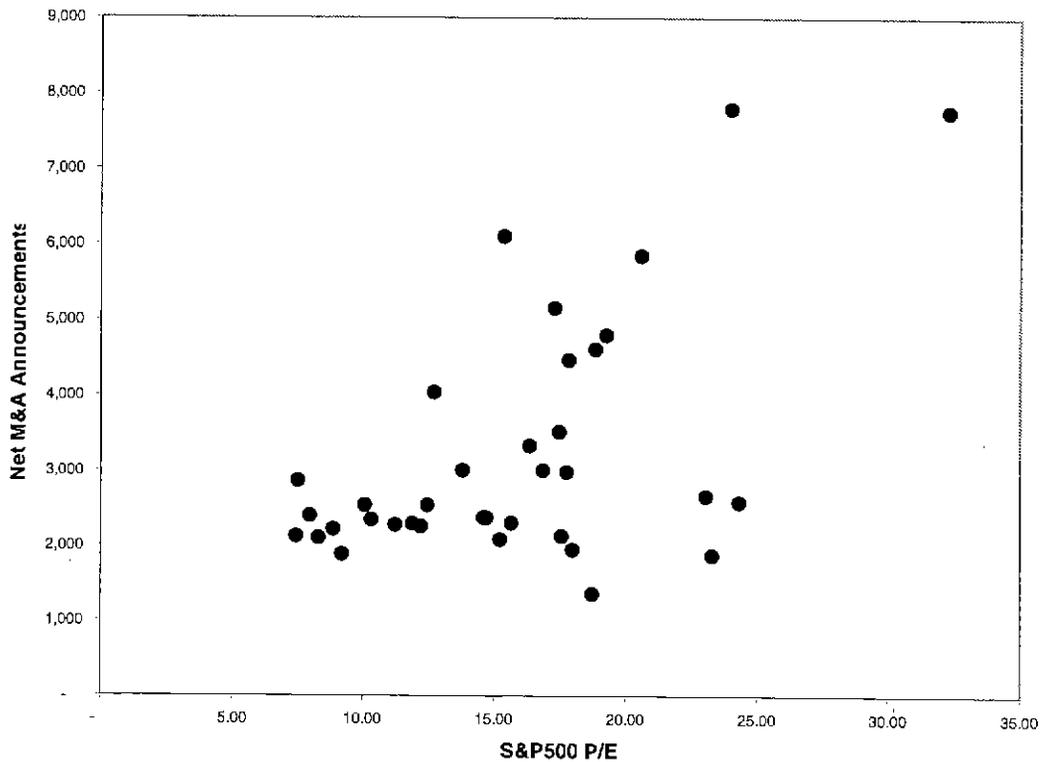


Figure 9 M&A volume and the stock market: 1963-1998

If we concentrate exclusively on the buyer’s motives, the correlation between M&A activity and market valuations is difficult to explain. Why would the buyers of assets increase their demand when prices rise? It is true that – along the lines of Kiyotaki and Moore (1997) – a rising market will increase the collateral value of financially constrained buyers, thus increasing the volume of assets they are able to acquire. But, by the same token, a declining market also increases transactions volume, as shrinking

collateral values force asset sales. This implies a correlation between M&A transactions and *changes* in market valuations – unless we introduce, as we discuss below, transaction costs on sellers.

Another piece of evidence that is difficult to interpret from the buyer's viewpoint concerns the method of payment in M&A, i.e. whether acquisitions are paid for with cash, with the buyer's stock, or a combination. Figure 10 plots the share of all-cash transactions in US M&A against the market's P/E ratio over the period 1973-98. It is clear that the share of all-cash transactions is lower – and the share of stock transactions is higher – when the market's valuation rises. The question is, why should the volume of stock transactions, which raises no issue of collateral valuation for external financing, rise with the stock market? Why does it rise proportionally even more than the volume of cash transactions?

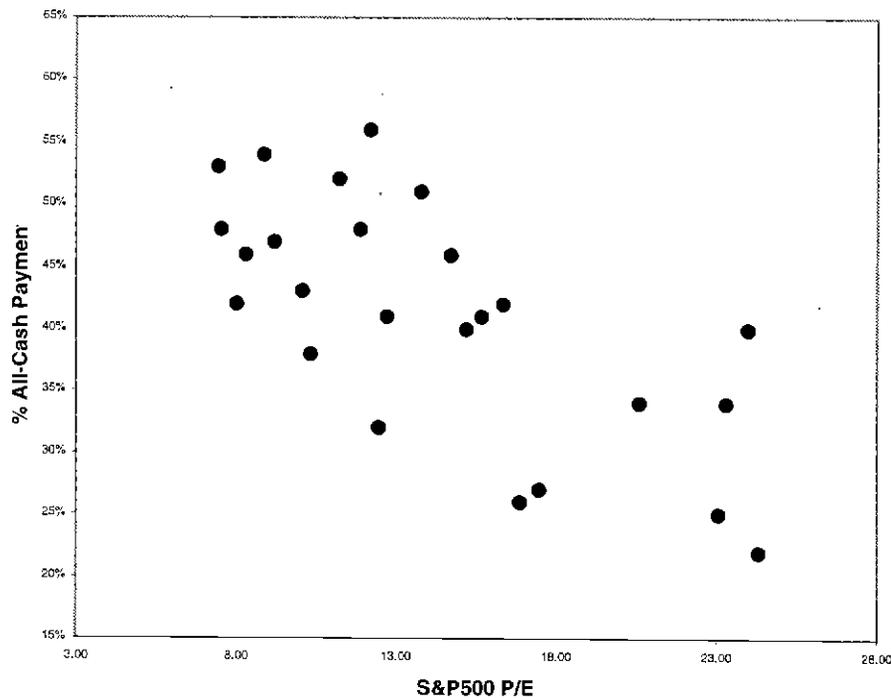


Figure 10 Method of payment in M&A: 1973-1998

The evidence indicates that action is coming from the sellers' side. Our interpretation of merger waves centers on the "liquidity" of the seller. When market valuations rise, sellers become more liquid and are more willing to sell control. Generally speaking, illiquidity arises when a *financially constrained* asset-owner faces a *transaction cost*. Transaction costs in the market for corporate control are mostly information-based. Financial constraints are central to the notion of illiquidity, because in the absence of such constraints the owner would be able to contractually transfer the asset's future cash flow without incurring the transaction cost. When a seller is illiquid, an increase in the price of his asset does two things: (i) it increases his willingness to incur the transaction cost; and (ii) it relaxes his financial constraint. The latter effect enters as a pecuniary externality that helps explain the highly concentrated nature of merger waves. The fact that the share of stock transactions rises with market valuations confirms that the sellers' side is at work, because buyers who pay with their stock are, in fact, also a sort of seller.

The above interpretation of merger waves highlights another dimension of aggregate restructuring where institutions – here financial-market institutions – play a central role. The lesson that we draw from it reinforces the reverse-liquidationist view we developed based on labour-market evidence. One could conjecture that times of crisis produce fire sales and increase the pace of corporate asset restructuring. That would correspond to the liquidationist perspective. But the evidence is otherwise. Great waves of asset restructuring have, on the contrary, come during good times, and have come about through waves of liquidity.

4. SUMMARY

In this chapter, we outlined the basic ingredients that are needed to explore the macroeconomic effects of institutions and their impact on the restructuring process. We illustrated the usefulness of the approach in a few applications.

Our main propositions can be summarized as follows:

1. The study of the macroeconomic consequences of institutional arrangements and their impact on aggregate restructuring requires a “structural” type of analysis, one which emphasizes the *technological* and *relationship specificity* that characterize the production structure.
2. Institutional arrangements determine the *rules* that govern the process by which specific quasi-rents are created and shared. In their *efficiency*-enhancing role, they help each party obtain the social value of what it put in; in their *political* role, they constitute an instrument of redistribution.
3. At the level of individual interactions, a poor institutional environment *discourages cooperation* between factors of production. In equilibrium, this results in *under-employment, market segmentation* and *technological exclusion* of the “appropriating” factor.
4. *Application*: The European macroeconomic experience over the past three decades reflects the impact of shifts in labour relations when, in the *short run*, capital in place has few options, and, in the *longer run*, the supply of new investment is highly elastic and can choose from a range of technologies.

5. A poor institutional environment results in “*sclerosis*” – the inefficient survival of low-productivity jobs. Moreover, it causes the restructuring process to be *unbalanced*: given the level of creation, destruction is excessively high.
6. The concentration of liquidations during a recession is associated with productivity *cleansing*, but not necessarily with an overall increase in restructuring. On the contrary, the limited evidence we have from US manufacturing job flows contradicts the “*liquidationist*” view.
7. Similarly, the restructuring of corporate assets is not concentrated during times of liquidity crunch and fire sales. Merger waves are concentrated at times when stock-market *valuations* are *high* and *sellers* are highly “*liquid*”.

Notes

¹ DELTA is a joint research unit, CNRS - ENS - EHESS.

² While it makes a world of difference for the contract theorist, for our purposes the specific rents that arise from the hold-up problem are similar to the informational rents that arise from asymmetric-information problems. In the latter case, one factor commits a production opportunity to another factor that has, or will have, an informational advantage. Specificity arises from the fact that the decision to commit the production opportunity cannot be reversed based on the outcome. For our purposes, we will treat specific rents as a single, generic type.

³ Data sources: OECD Business Sector Data Base and the IMF's *International Financial Statistics*.

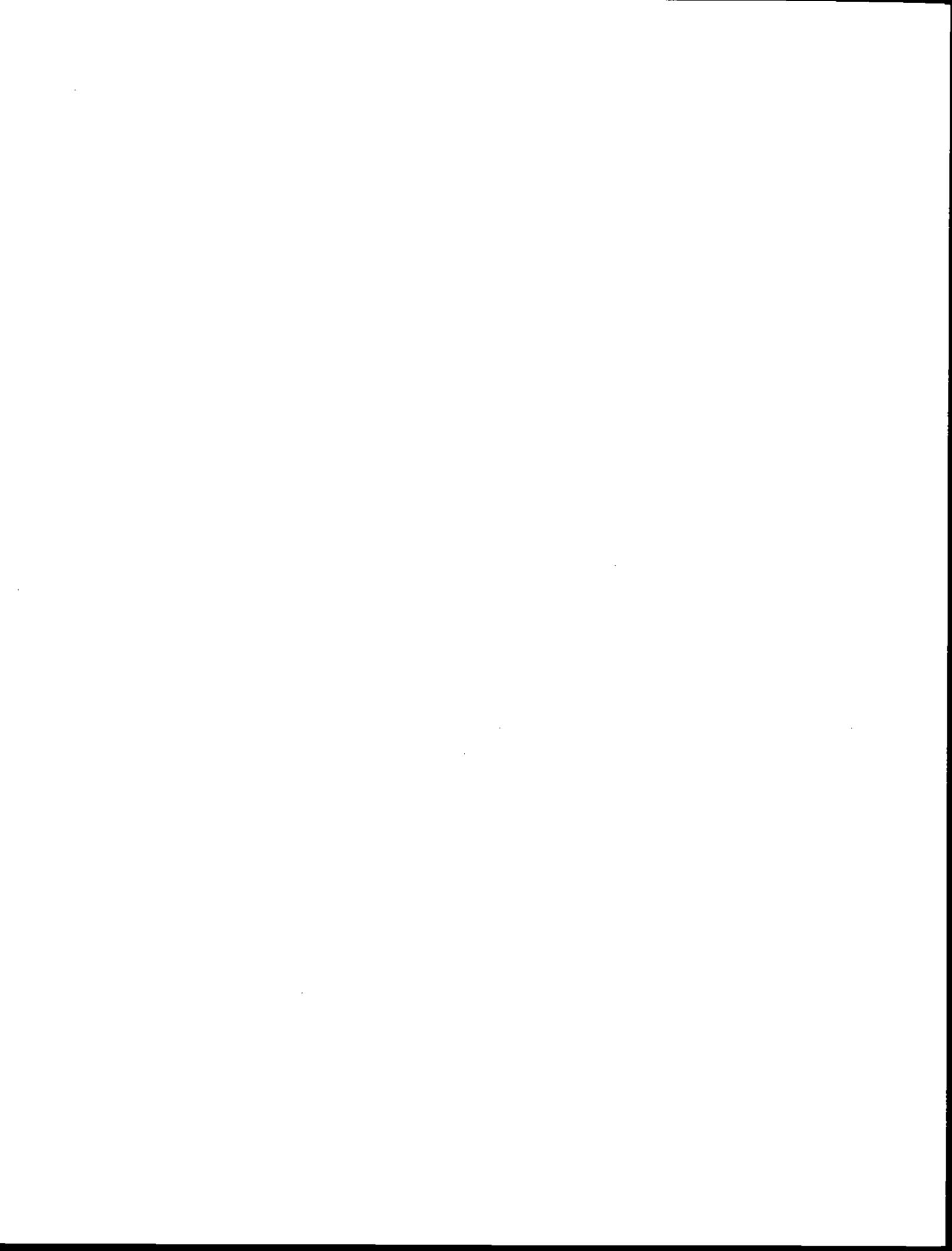
⁴ The index of job protection is the sum of the maximum mandatory severance payments (in months of wages) and the advance notification period (in months). The source of both measures is OECD (1993), table 3-8, p. 97. The source of the K/L ratio is the OECD Business Sector Data Base. This figure was kindly provided to us by David Coe.

⁵ For a survey of this view of recessions as reorganizations, see Aghion and Saint-Paul (1993).

⁶ The regression underlying figure 7 uses manufacturing employment (N_t), the flow of gross job creation (H_t), and the flow of gross destruction (D_t) in deviation from their mean. The data are quarterly for the period 1972:1-1993:4. We assume that employment fluctuations are driven by a single aggregate shock. Given the identity $\Delta N_t = H_t - D_t$, a linear time-series model for the response of job flows to aggregate shocks can generally

be written either in terms of creation: $H_t = \theta^c(L)N_t + \varepsilon_t^c$; or in terms of destruction: $D_t = \theta^d(L)N_t + \varepsilon_t^d$, where $\theta^c(L)$ and $\theta^d(L)$ are polynomials in the lag operator L . Figure 7 portrays the estimated impulse-response functions for a 2-standard-deviation recessionary shock.

⁷ The “Nelson” series can be found in Nelson (1959); the “Thorp/FTC” series can be found in Thorp (1941) and in U.S. Federal Trade Commission (1981); the “Mergerstat” series can be found in Houlihan Lockey Howard and Zukin (1998).



References

- Aghion, P., and Saint-Paul, G. (1993): 'Uncovering Some Causal Relationships between Productivity Growth and the Structure of Economic Fluctuations: A Tentative Survey', NBER Working Paper No. W4603.
- Davis, S. J., and Haltiwanger, J. (1992): 'Gross Job Creation, Gross Job Destruction and Employment Reallocation', *Quarterly Journal of Economics*, vol. 107, pp. 819-864.
- Davis, S. J., Haltiwanger, J., and Schuh, S. (1996): *Job Creation and Destruction* (Cambridge: MIT Press).
- Caballero, R. J., and Hammour, M. L. (1994): 'The Cleansing Effect of Recessions', *American Economic Review*, vol. 84, pp. 1350-68.
- (1996a): 'On the Ills of Adjustment', *Journal of Development Economics*, vol. 51, pp. 161-192.
- (1996b): 'On the Timing and Efficiency of Creative Destruction', *Quarterly Journal of Economics*, vol. 111, no. 3, pp. 805-852.
- (1998a): 'The Macroeconomics of Specificity', *Journal of Political Economy*, vol. 106, no. 4, pp. 724-767.
- (1998b): 'Jobless Growth: Appropriability, Factor Substitution, and Unemployment', *Carnegie-Rochester Conference Series on Public Policy*, vol. 48, pp. 51-94.
- (1999): 'The Cost of Recessions Revisited: A Reverse-Liquidationist View', NBER Working Paper no. 7355.
- (2000): 'Technological Revolutions and Merger Waves', typescript.
- De Long, J. B. (1990): ' 'Liquidation' Cycles: Old-Fashioned Real Business Cycle Theory and the Great Depression', NBER Working Paper no. 3546.

- Golbe, D., and White, L. (1987): 'A Time Series Analysis of Mergers and Acquisitions in the U.S. Economy', in A. Auerbach, ed., *Corporate Takeovers* (Chicago: University of Chicago Press), pp. 265-305.
- Greenspan, A. (1999): 'Maintaining Economic Vitality', Millennium Lecture Series sponsored by the Gerald R. Ford Foundation and Grand Valley State University, September 8.
- Hayek, F. A. von (1931): 'The 'Paradox' of Saving', *Economica*, vol. 32, pp. 125-169.
- Johansen, L. (1959): 'Substitution versus Fixed Production Coefficients in the Theory of Economic Growth: A Synthesis', *Econometrica*, vol. 27, pp. 157-76.
- Kiyotaki, N., and Moore, J. (1997): 'Credit Cycles', *Journal of Political Economy*, vol. 105, no. 2, pp. 211-248.
- Klein, B., Crawford, R. G., and Alchian, A. A. (1978): 'Vertical Integration, Appropriable Rents, and the Competitive Contracting Process', *Journal of Law and Economics*, vol. 21, no. 297-326.
- Houlihan Lockey Howard and Zukin (1998): *Mergerstat Review 1998*.
- Nelson, R. N. (1959): *Merger Movements in American Industry: 1895-1956* (Princeton: Princeton University Press).
- OECD (1993): *Employment Outlook* (Paris: OECD).
- Robbins, L. (1934): *The Great Depression* (London: Macmillan).
- Schumpeter, J. A. (1934): 'Depressions', in Douglas Brown et al. (eds.), *Economics of the Recovery Program* (New York: McGraw-Hill).
- (1942): *Capitalism, Socialism, and Democracy*. (New York: Harper and Brothers).

- Thorp, W. (1941): 'The Merger Movement', in *The Structure of Industry*, Temporary National Economic Committee, monograph no. 27, part III, pp. 231-234.
- Solow, R. M. (1960): 'Investment and Technological Progress', in K.J. Arrow, S. Karlin and P. Suppes (eds.), *Mathematical Methods in Social Sciences* (Stanford: Stanford University Press).
- U.S. Federal Trade Commission, Bureau of Economics (1981): *Statistical Report on Mergers and Acquisitions, 1979* (Washington, D.C.: FTC).
- Williamson, O. (1985): *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting* (New York: Free Press).