Labour Institutions and Economic Growth: a Survey and a "Regulationist" Approach

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Abstract. The paper argues that it is detrimental to assume perfect competition and total flexibility of labour markets in order to understand the intensity and stability of growth. Whereas development theories emphasize the impact of imperfect labour markets, this is not so for modern endogenous growth theories. By contrast, the *régulation* approaches (in the French meaning) both theoretically and empirically suggest that the transformations in labour institutions might have played a crucial role in the post World War II boom: an unprecedented division of labour associated with long-run labour relations contracts have enhanced the genuine Fordist growth model. Furthermore, international comparisons among OECD countries suggest that job regulations and active minimum wage policies may have created some short-run disequilibria but have stimulated dynamic efficiency, via more technological and organizational innovations. Consequently, this area requires more active researches by labour economists.

I. From Perfect Labour Markets to a Spectrum of Labour Institutions

The last decade has experienced a renewed interest for labour market institutions. On one side, most advanced industrialized countries, specially in Europe, have incurred high levels of unemployment, which have resisted both Keynesian and conservative strategies. Consequently, many applied studies have investigated the impact of the prevailing labour regulations and collective agreements upon possible rigidities and therefore unemployment (OECD, 1986). Even if the topic is still highly controversial, a large consensus blames most labour institutions for causing competitive losses, de-industrialization and finally unemployment. On the other side, ever more economists have per-

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ceived that conventional economic theory was not dealing adequately with the specificity of labour markets as social institutions (Akerlof, 1984; Solow, 1990). These are not only rigidities and constraints upon micro and macro adjustments, but they can be opportunities and advantages in order to solve the trade-off between efficiency and equity which is inherent to the wage labour contract.

Simultaneously but separately, macroeconomic theory has somehow shifted its emphasis from an exclusive concern for short/medium-run adjustments and manifested and renewed interest for long-run growth, as the result of the cumulative process of technical change. For example, Lucas, a key theoretician of the new classical macroeconomy has recognized that the possible losses associated to inadequate economic policies were small in comparison with the continuous increase of production due to endogeneous technical change. Even if these models deal explicitly with division of labour, education and learning by doing, they still suppose that the labour market is perfectly competitive, and full employment always prevails: these hypotheses seem crucial for most of the results obtained.

The core argument of this paper is that economic theory should consider simultaneously the process of technical change and the dynamic efficiency of labour market institutions. This seems a clear requisite perceived from a brief survey of both growth and development theories and might be one basic weakness of the so-called new endogeneous growth theories (II). Some French and European approaches in terms of *régulation* have investigated the consequences of institutional changes upon macroeconomic stability and growth and put a strong emphasis upon the wage labour nexus as a key component of any viable development mode (III). An international comparison of advanced industrialized countries suggests that some job regulations, labour contracts or collective agreements might have adverse effects on short-run efficiency but a significant impact upon technical change and growth (IV). These stimulating and challenging results call for more systematic investigations and the exploration of a new area of research in both institutional growth theory and labour markets analysis (V).

II. Labour Institutions, Growth Theory and Development Economics: a Brief Retrospect

Clearly, development economics was initially concerned with grand issues such as Markets and Government, the process of growth and

change, trade and industrialization (Stern, 1991: 165–193). It might be enlightening to provide a short survey about the teaching of conventional growth theory, then to specify the alternative hypotheses adopted by development economists concerning the functioning of labour markets and finally to challenge the related hypotheses adopted by the new endogeneous growth theories.

1. Pure and perfect labour markets: a simplifying and key hypothesis of growth theories

Modern growth research emerges from the paradoxical conclusion of the first Keynesian models (Harrod, 1939): the very dynamics of the multiplier and the accelerator imply the existence of a steady but unstable growth rate, since any deviation from this path would be explosive and still would not converge toward full employment. Basically, this initial result is the extension to long-term growth of the similar mechanisms which lead, in the short run, to the Keynesian unemployment equilibrium. For Keynes and most of his followers, the labour market is not self-equilibrating for it is simply exhibiting the discrepancy between the level of employment required by effective demand and that of working population (Table 1).

In fact, neo-classical theory has been built by the rebuttal of this concept and the adoption of quite opposite hypotheses. On one side, the substitutability of capital and labour is opposed to the complete complementary assumed by Keynesians. On the other, the existence of pure and perfect markets for capital and labour allows smooth allocation of saving to investment and of workers to jobs. All the subsequent and numerous growth models have followed the same track, and have only refined marginally this founding assumption about labour markets. For example, vintage models assume that technical change is partially embodied in equipment and simultaneously the seniority of workers might imply learning by doing and more productivity (Table 1). Consequently, this framework gives a more detailed analysis of technical change which is decomposed into an embodied and disembodied part and implies that a higher investment rate is associated with faster productivity growth over a medium/long-term period. But this assumes again that labour is totally malleable across each vintage and that all workers are paid the same competitive wage which is equal to the productivity on the oldest equipment in use, given the level of demand.

The same vision of the labour market is encapsulated into the seminal Arrow (1962) model in which a continuous learning by doing allows an improvement of each vintage of equipment and consequently

Table 1. The Role of Labour Institutions in Growth Theories

Theories and/or authors	Labour institutions	Other relevant institutions	Impact upon growth
1. **Keynesian models** Harrod (1939)	No self-equilibrating labour market	Adaptative expectations in investment decisions	1. Unstable growth 2. The growth rate related to saving: $g = s/v$
2. **Neo-classical theory** Solow (1956, 1957)	Walrasian labour market	Perfect financial markets	1. Stable growth 2. The growth rate is related to technical change and population
3. **Vintage models** Salter (1960)	Possible learning by doing	Technical change is partly embodied in equipment	1. The saving rate has a possible role 2. Labour mobility is needed to capture learning by doing
4. **Cumulative causation models** Kaldor (1956, 1957 and 1967)	Role of migration from agriculture to industry	Role of the embodiment of technical change in equipment	Growth is limited by the availability of labour
5. **Learning by doing** Arrow (1962)	Problem-solving triggers learning by doing	Learning is embodied in equipment	1. Unlimited growth is possible with limited labour
6. **Knowledge-based endogeneous technical change** Romer (1986)	Division of labour allows to specialize and extend knowledge	Perfect competition and rational expectations	1. Cumulative growth with limited resources 2. Private investment decisions might not be optimal
7. **Education-led growth** Uzawa (1965) Lucas (1988) Schultz (1988)	Perfect labour markets	Externalities associated to education	Sustained growth, even with limited labour force

a self-sustained growth even in the presence of a limited supply of labour force. Even the various theoretical and more empirical models proposed by Kaldor (1956, 1957, 1966) do not propose a breakthrough in the formalization of the labour market. Explicitly or implicitly, growth is still limited by labour resources availability but the migration from agriculture to industry allows to capture the increasing returns to scale inherent to modern manufacturing processes. The same full employment hypothesis is necessary in the genuine model of endogenous growth proposed by Uzawa (1965): the labour force is divided into directly productive workers and teachers training these workers, but no new hypothesis about possible segmentation is brought into the analysis.

This benign neglect for existing labour market institutions has been recognized by Solow (1988) as a purely *ad hoc* device designed to show that growth was possible, at least under some theoretical hypotheses. But it is evident that in most labour markets parity arguments, collective bargaining and agreements, and the mixing of efficiency and equity deliver a genuine pattern for average wage formation as well as income disparities across sectors, skills, regions, firms... More generally, a series of new micro theories of the wage contract recognize its many specificities with respect to a typical contract for goods or services: implicit contract, asymmetric information, principal/agent relationships, efficiency wage, problems of control and commitment (Stiglitz, 1988).

Until now, these developments have been embedded into static or at least temporary equilibrium models, with few attempts to deal with their impact upon labour mobility, growth, technical change and so on. Nevertheless, this apparent novelty for core economic theory had long been recognized as being of special importance for development economics.

2. The imperfection of labour markets, a basic feature of most development theories

For conventional growth theory, two-sector models distinguished between equipment and consumption goods but kept unchanged the hypothesis of perfect labour markets. On the contrary, seminal research about development has pointed out a different distinction beween an agricultural and rather archaïc sector and a modern industrial one. Organization of production, nature of products, saving behaviour and income formation differ drastically in such a dualistic economy (Lewis, 1954; Ranis and Fei, 1961). In the more elementary formalization, labour is redundant within the agricultural sector, and in an extreme

case its marginal productivity is nil. Consequently, the neoclassical or classical hypothesis has to be replaced by the equivalent of an institutionally determined wage, be it a minimum subsistence floor, redistribution within peasant families or the enforcement of a minimum wage by the state.

Such an institutional feature has been shown to have far-reaching consequences upon income distribution, employment in both sectors and finally the rate and stability of growth (Kelley, Williamson and Cheetham, 1972). Generally speaking, one could expect that the migration of workers attracted by the higher wage of the modern sector will progressively erode the agricultural labour surplus, until the structural change ends up with a totally modernized economy, but many other configurations might emerge from the precise modelling of labour demands and supplies. Many other studies have followed the same path and have, for example, tried to explain why durable wage differentials tend to exist between the two sectors (Harris and Todaro, 1970).

One of the most challenging hypotheses about wage formation was coined in order to explain why a minimum positive wage was paid to workers even if open and disguised unemployment is very important. If the ability to work and the efficiency of labour is related to nutrition, then fully rational firms would not pay the market-clearing wage but the level which minimizes the unit production cost (Leibenstein, 1957; Stiglitz, 1976). This explains why a large surplus labour might coexist with positive wage for the employed workers. This crucial exception to the neo-classical vision of wage as a purely allocating and market-equilibrating device has spread from the development theory to modern micro analysis of non market-clearing wage in industrialized countries, but of course the mechanisms are quite different: adverse selections, moral hazard or gift exchange theory of the labour contract (Akerlof, 1984).

Therefore, it seems that development theoreticians have been pioneers in investigating some of the major specificities of the capital labour relations (Table 2). Another example concerns the search for explanations about the possible coexistence of different production modes from the purely capitalist form to the cooperative (Sen, 1984), not forgetting the huge literature about the agricultural household and its specific behaviour and rationality (Chayanov, 1925; Singh *et al.*, 1986). This opens a rigorous basis for economic system comparisons as well as a possible path to link the search for micro foundations with an explicit formalization of the impact of existing institutions upon individual behaviour and, finally, macroeconomic regularities. Concerning the agricultural household model, the efficiency of the related equi-

Table 2. The *Implicit* Labour Institutions in Some Key Development Theories

Theories and/or authors	Labour institutions	Impact upon equilibrium
1. Surplus Labour Theories Lewis (1954) Ranis & Fei (1961)	a. Shadow wage in the agriculture is nil b. Migration triggered by higher urban wage	•Generally positive: wage moderation allows capital accumulation
2. Agricultural household model and complete markets Chayanov (1925) Singh *et al.* (1966)	a. Integration of production and consumption b. All markets exist and are competitive	•Separability of production and consumption •Efficiency of allocation
3. Household model with absent markets Sen (1966)	Absence of labour market, or access to credit and land	•Inefficiency •Disguised unemployment •Possible dualism associated to the property of land
4. Efficiency Wage Theory Leibenstein (1957) Stiglitz (1976)	a. The work effort is related to nutrition b. Firms select the wage minimizing unit costs	•Existence of a wage floor •Dualism of the labour market, absence of impact of underemployment on wages
Two-sector unemployment equilibrium models Todaro (1969) Harris & Todaro (1970)	a. Migration from rural to urban zones b. Migrants take into account the risk of unemployment	•Durable wage differentials •Urban unemployment and growth
Theories with coexisting production modes Sen (1976)	a. Potential existence of various production modes: family, wage employment, cooperative system	•Possible explanation of dualism •Variability across countries and epochs, depending on technology, costs, ...

librium depends heavily on the existence of a complete set of labour and credit markets. If, on the contrary, the access to credit and land is limited and imperfect, then inefficiency and disguised unemployment might prevail. Still more, the distribution of property of land is a possible origin for dualist structures in developing economies. They differ not so much by the lack of rationality of the peasants and/or urban workers, but by the legal organizations, the institutions and markets according to which they interact (Stiglitz, 1988).

In all these approaches, labour institutions matter as regards the nature of the short-run equilibrium and the welfare of a society. Nevertheless, however stimulating they might be, these approaches suffer from two major drawbacks. Firstly, they all compare the existing set of institutions to a totally fictitious Walrasian economy which would deliver a Pareto optimum, without considering that large transaction costs could finally make such an ideal out of scope and without any relevance for existing economies (Williamson, 1985). It would be better to compare two institutional arrangements — for example, labour contracts and institutions — and assess their impact upon short-run equilibrium, inequality of income distribution and so on. Secondly, many studies suggest that purely static welfare losses are generally small, even when the discrepancy with respect to the optimal behaviour is large (Akerlof and Yellen, 1985). The impact upon the determinants of long-term growth is usually far more important: one year of sustained growth might represent an extra production superior to the static welfare losses. The second issue is specially important for development economics. All the labour institutions should be related to the process of technical change, the mobility from obsolete to new jobs, the nature of competition, i.e. the structural features which interplay in setting the long-term rate of growth and the evolution of income and wealth distributions (Rodgers, 1991).

Among the recent surveys about the state of the economics of development (Stern, 1991; Chenery and Srinivasan, 1988; Summers, 1992; Srinivasan, 1990), very few explicitly deal with the impact of labour institutions upon endogeneous growth. But, precisely under this heading, some prominent economists have recently investigated again the origins of cumulative growth, and sometimes intended to bridge the gap between pure growth theory and development analyses (Lucas, 1988; Stiglitz, 1989). Given the aim of this paper, the question is: what role do these models attribute to labour market institutions?

3. Endogenous growth theories: division of labour but few, if any, labour institutions

The starting point of most of these models is the famous introductory chapter of *The Wealth of Nations*, according to which productivity increases are to be related to the deepening of division of labour, whereas the size of the product market is the limiting factor of endogenous technical change. This used to be a key reference for Kaldor (1966, 1981), himself quoting Young (1928) and this cumulative causation approach has stimulated a significant number of studies during the

1970s and 1980s, including Boyer and Petit (1991a, b) and Boyer and Coriat (1986).

This theme has been legitimized again within the neoclassical approach by Romer (1986), who has shown that full intertemporal maximization of individuals and firms would lead to a definite equilibrium, provided that the increasing returns to scale associated to labour division, product and design differentiation are external to each of the economic units. In a sense, rational expectations and individual maximization are replacing the social welfare functions which used to be set by a central planner in the Uzawa (1965) model of endogenous growth (Table 1). More precisely, labour division occurs when the size of the market is sufficient to make some engineers specialize in designing new intermediate products or equipments (Romer, 1986), or training production workers (Lucas, 1988), or improving quality as a method for capturing oligopolistic rents and market shares (Grossman and Helpman, 1991).

Consequently, labour markets set not only the average wage but the wage differentials between blue-collar workers and engineers, unskilled and skilled workers, or between production engineers and researchers looking for new products and processes. But, apart from this complexification of the aggregate labour market hypothesis, all the features of totally conventional modelling in the neoclassical spirit are kept by this new vintage of growth models. In some other formalizations, the emphasis is on learning by doing, i.e. the joint production of knowledge and goods in the production process, or on the positive role of general education in enhancing the abilities and competence of workers. The only departure from previous neoclassical modelling is that a pure market equilibrium does not correspond in general to a Pareto optimum, since individuals invest too little in R&D, education and, more generally, innovation. Adequate taxes or credit subsidies are therefore proposed to correct these discrepancies, with few or any considerations to labour market organization.

Some authors have contemplated explaining both development and under-development as the outcome of institutions which in some cases foster investment, learning by doing, spending in infrastructures and, in other instances, quite on the contrary, block any move toward increasing returns to scale due to the spillover of investment (Stiglitz, 1989). According to my knowledge, few authors have investigated the impact of the same labour division pattern upon the nature and defense of workers' interests, and the possible impact on industrial relations and ultimately wage formation (for an exception, see Leijonhufvud, 1986). In a sense, all these models remain quite abstract and consequently do

not apply easily to any field or case study: growth is the direct outcome of a myriad of individual economic units interacting only via markets, and there exist no intermediate institutions such as unions, R&D agencies or business associations, i.e. organizations which usually play a role in coordinating a series of decentralized strategies. The new models provide richer insights and potentially more realistic representations of technical change, but they grant no role to labour market institutions or any other organization. This contradicts the common sense observation: under-development is also a question of inadequate or insufficiently diffused institutions, by comparison with the sophisticated organization displayed by the more advanced industrialized countries.

It is therefore not a surprise if the existence of contrasted national trajectories is not easily explained. For example, in a recent lecture Lucas (1991) asked why India had not followed the same fast industrializing process as South Korea or other Asian NICs. In spite of a clever use of the tools of endogeneous growth theory, the author was unable to provide any satisfactory answer, basically because the model was not rich enough to discriminate the key conditions for cumulative development. Finally, he recommended going to South Korea and visit the businessmen and politicians in charge of the economy! Clearly, there is still a gap between the charm of high theory and the basic question of development economics: what are the necessary and/or sufficient conditions for taking off? The terminology might seem obsolete; the question is left basically unanswered by modern theoreticians. The inherent difficulties of such an issue are evident, but the benign neglect addressed to economic institutions might be one of the key reasons for such an apparent failure.

This *lacuna* is not a fatality since a variety of theories now deal with the logic, the outcome and the evolution of economic institutions (Arrow, 1974; Williamson, 1985; Eggertsson, 1990). If most of them focus upon the nature of short-run equilibria, some do address the issue under review: the impact of institutions on development (North, 1981; 1991). The subsequent sections are devoted to the presentation of one of these approaches. Initially designed for the analysis of the secular transformations of American, French and European capitalism, the so-called *régulation* school (Aglietta, 1982; Boyer, 1990) has proposed a set of concepts to assess the impact of institutions on inflation, growth and unemployment. Within the major changes observed, labour market institutions and the wage labour nexus have turned out to be a key determinant in the succession of growth regimes punctuated by deep structural crises. After a general presentation, some comparisons of labour institutions across developed nations will deliver a central

message: in the long-term view, some institutionalization of labour might benefit growth, stability and even equity. This framework has been applied to some Latin American countries and has already delivered some provisional but stimulating results. Building on this tradition, it could be extended to Asian NICs.

III. Long Term Capitalist Growth in Retrospect: the Method, Concepts and Results from the Regulation Approach

This approach adopts a strategic hypothesis: economic adjustments cannot be disentangled from social relationships and values, political and economic rules of the game, and more generally the web of interrelated institutions. Basically, the name of this school of economic analysis derives from the transformation of a concept borrowed from biology: a *régulation* mode describes the set of negative and positive feedbacks in relation to the stability of a complex network of interactions. When transposed to economics and completely re-elaborated, a form of *régulation* denotes any dynamic process of adaptation of production and social demand, resulting from the conjunction of economic adjustments linked to a given configuration of social relations, forms of organization and productive structures (Boyer, 1988). Let us prevent a possible misunderstanding by pointing out that the French word *régulation* has only scant links with the English meaning of regulation. State intervention related to public utilities or price formation is only one of the many facets of modern economic institutions, along with industrial relations, welfare systems, banking and financial systems. By nature, the regulation approaches are mainly macroeconomic oriented and try to understand why growth rates differ, why the great depression of 1929–1932 was not repeated after the recent Wall Street crashes and, finally, why an economic regime is first successful and diffuses itself and up to a point matures, then generates relative decline and/or instability.

1. Four basic institutions at the core of growth regimes

This theory has provided two series of macro-modelling. Some have focused upon short and medium-run adjustments of income, money, inflation and unemployment (Boyer and Mistral, 1978; Benassy *et al.*, 1979). Others have addressed the issue of development and consequently proposed some analyses and formalizations of long-term growth. This paper will focus on the latter. Three distinctive features

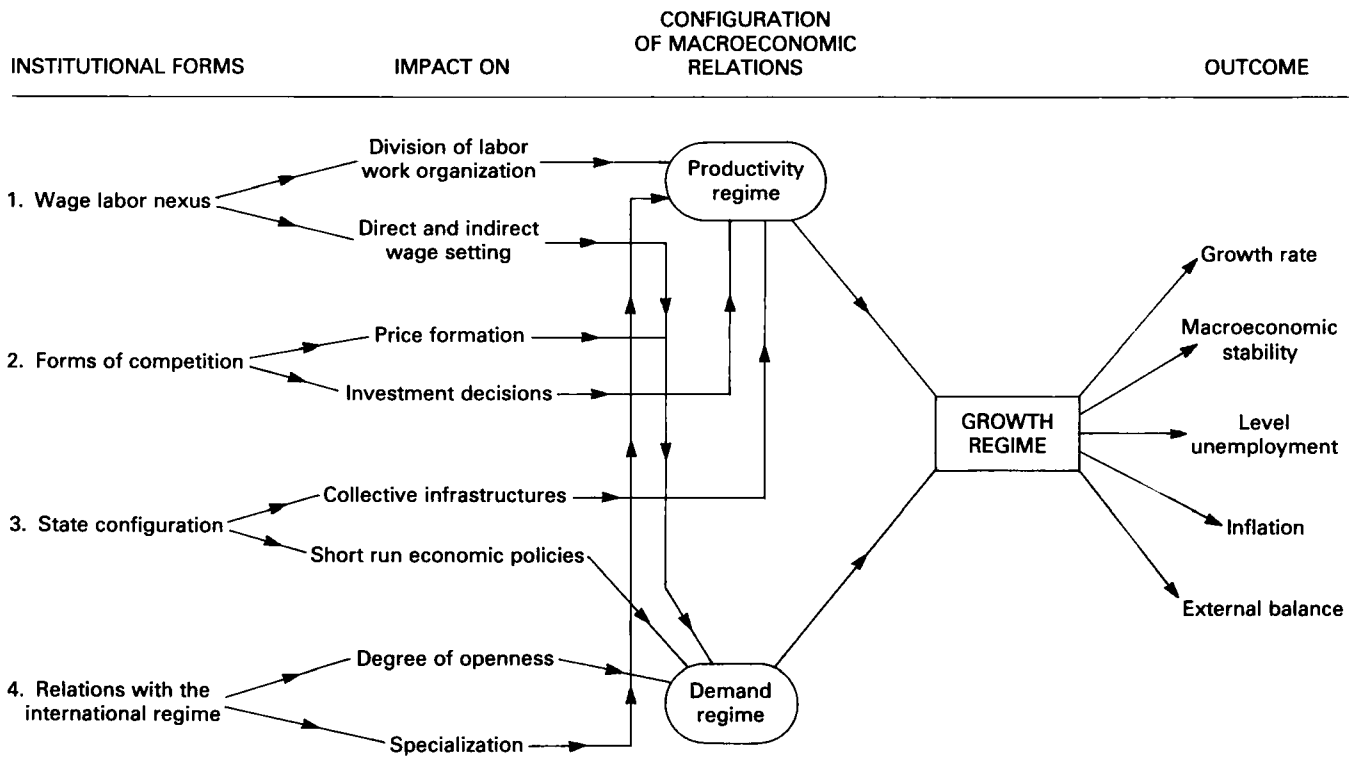
have to be stressed. First, this research program tries to combine inductive and deductive methods, in other words intends to launch bridges between the stylized facts shown by economic historians about capitalism development and the highly abstract growth theory. Second, there is probably no grand theory able to explain synthetically the whole set of relevant stylized facts: in my view, this is the Achilles' heel of conventional economic theory, including the more contemporary and promising ones. By contrast, the regulation approach looks for local and period-dependent analyses of development, by proposing a set of intermediate concepts which describe the coordination mechanisms in use for a given economy and historical epoch. Finally, capital accumulation is supposed to be the driving force of capitalist society and, conversely, its blocking might be the main source of under-development. But since accumulation is a fairly uneven and contradictory process, we have to investigate under what conditions the conflicts and disequilibria inherent in capital accumulation nevertheless deliver the possibility of periods of sustained growth.

The answer is simple: cumulative growth will be possible if the four basic institutional forms which define a capitalist economy propel a productivity regime on one side and a demand regime on the other which *ex post* are coherent, i.e. able to define a growth regime, with the property of self-equilibration with respect to internal dynamic as well as possible external shocks. Let us present briefly the broad relationships between the four institutional forms and long-term growth (Figure 1).

First, the wage labour nexus describes the configuration associated to a given state of division of labour, as well as income distribution. Following the seminal hint by Adam Smith, and pushed a step forward by Marx, the forms of internal productive organization within the firms and its relations with the market are the key factors shaping a productivity regime. Each stage in the history of the division of labour is associated with definite factors of productivity increases, which combine in various proportions the impact of specialization, learning by doing, design of equipment, the size of minimum efficiency scale (Boyer and Schmeder, 1990). An economy composed exclusively of craftsmen or pin manufacturers, or Fordist assembly-line or Silicon Valley high tech firms, would clearly exhibit contrasted productivity regimes. This distinction is crucial for development economics: there is no natural and general form of production function. It would be absurd, for example, to look for a significant influence of R&D expenditure in a poor African country.

Similarly, conventional growth theory has privileged the hypothesis of pure competition, just for simplicity's sake (Solow, 1988). But it is

Figure 1. An Institutional Analysis of Growth Regimes: Basic Concepts of the *Regulation* Approach



clear that in most economies imperfect competition prevails, whatever its origin: barriers to entry, uncertainty about quality, collusion among few producers. Consequently, defining the forms of competition is important for any formalization of price formation and investment decisions. The new theories of industrial organization argue convincingly that the dynamics of profit, investment and price is highly sensitive to the institutional setting codifying the relations between firms (Tirole, 1988). This theme, which was very important during the interwar era, can explain contrasted trajectories in terms of capacity utilization, investment or even innovation. In a sense, productivity regimes result partially from the forms of competition (Figure 1).

The state then has to be inserted into the analysis. On one side, the property rights theoreticians have pointed out the role of the constitution and law in providing the prerequisites of any capitalist market economy. The current experience in implementing market mechanisms in Eastern Europe clearly shows how crucial these institutions are for investment and growth. A similar remark can be made concerning the poorest under-developed countries: the weakness or inexistence of their basic institutions might explain a significant fraction of their recurring scarcities or even famines. Under this general heading, the viability of any contract supposes not only laws and jurisdictions but also a stable monetary system. Remember that in the writings by Adam Smith, specialization and deepening of labour division can only occur if stable market relations are warranted over a foreseeable future. On the other side, the state in advanced capitalist countries has largely extended its interventions toward the supply of many collective goods necessary for the efficiency and growth of a market economy: education, training, health, transport infrastructure, telecommunication, credit and subsidy in favour of innovators. Consequently, state interventions contribute to both the productivity and the demand regime.

A fourth institutional form relates to the nature of the international regime and, the insertion of a given country or region into this regime. At each historical epoch, there exists a set of institutions: explicit or implicit rules which define the rights and duties of any country, concerning external trade, short-run capital movement, exchange rate determination, foreign investment, property rights and so on. Consequently, the constraints and opportunities created by a given international regime are to be taken into account in any analysis of long-term national growth (Mistral, 1986; Keohane, 1984). Similarly, within such a regime, the countries may experience varying degrees of openness, control over the price of exports and, of course, contrasted specialization (primary or intermediary products, low or high quality consumer

goods, equipment goods and patents). Therefore the productivity regime is clearly influenced by the insertion into the international economy: from a quasi-closed continental economy to a small open country, there is a whole spectrum of configurations, with a key influence upon growth and stability.

It remains now to be proved that these institutional differences actually matter significantly for growth. Such a demonstration is especially difficult but numerous studies on *régulation* have delivered a coherent and convincing set of evidence.

2. Development is structural and institutional change, not only growth

A study of the French economy over two centuries provides a fairly good confirmation of this (Table 3). First, the growth pattern has not been steady but exhibits contrasted periods of rapid growth, then quasi-stagnation and instability and, finally, a renewal of growth along a new pattern. A survey of political and institutional history confirms that structural changes and economic dynamism are closely interrelated.

During some episodes, the disequilibria and conflicts are so acute that they cannot be accommodated within the previous institutional setting: during such structural crises, the coordinating mechanisms transform themselves by the erosion of the old ones and a trial and error process takes place and involves the political sphere. The period 1873–1896, the 1930s and probably the years since 1973 experienced a flux in the wage labour nexus (nowadays the search for flexibility), in the nature of competition (globalization at world level and deregulation at home), in the objectives of state intervention (preserve financial stability at the cost of rising unemployment), whereas the old international regime evolves under the impact of a declining hegemonic power and the rise of competitors.

On the contrary, the two world wars, and specially the second, give examples of a rapid change in almost all the economic institutions, which turned out to be able to propel a rapid growth, without major disruption, with the possible exception of accelerating inflation after 1967. Consequently, development intimately mixes organizational change and economic adjustments, but the causality and the timing are quite complex. It would be impossible to maintain the hypothesis that these changes were only marginal and accidental: could one imagine modern French industry within the same political and legal structures which used to prevail before 1789? Similarly, in the absence of the second war, would have the French economy grown as quickly as observed?

Table 3. In the Long Run, the Major Institutional Forms have been Transforming Themselves: the French Case

Institutional forms	1789	1848	1873	1896	1914–1918	1929		1939–1952	1967	1973	1980
WAGE LABOUR NEXUS											
- **Work organization**	Manufactures replace craftsmen	Work duration is extended but reaches crisis level	Limitations of malleability of work rules	Early scientific Management	Massive use of Taylorist methods…	…implemented for civilian goods…	…but workers oppose it	Industrial disruption and recovery	Fordism becomes dominant…But hits some limits		The search for new forms
- **Lifestyle**	Basically out of the capitalist sector	Slight evolution in consumption	Slow insertion of wage earners in society			Social wage is recognized as a principle		Launching of a complete •Welfare system •Workers benefit from mass consumption			The slowing down shakes Welfare State financial stability
COMPETITION											
- **Concentration and centralization**	Large plants are emerging…	…Tendency towards concentration	Financial capital is strengthening		Cooperation large firms/State	Industrial cartels and financial holdings		Basis for national planning	Concentration of markets…	…French holding become international…	…a new balance between home and international strategy
- **Price formation**	Controlled by guilds	Principle of free market	Price clear the market	Early monopolistic pricing	State price controls	First example of mark-up pricing		State controls	•Administrated prices, public control •Medium term strategy in pricing decisions		…the return to more price competition
STATE											
- **Budget & taxes**	Limitated to general functions	…even if regulations are important	Significant economic interventions (railways)	Small size of budget/GDP	Unprecedented surge	Budgetary cuts…	Relative growth in the depression	New and high level for public spending/GDP	Fast growth…	stabilization… growth of the size of State	…tentative to curb state expenditure
- **Money & credit**	Metallic reserves limit money creation	Credit is checked by external balance and interest rate variations			The war financed by pure money credit…	…so is the postwar boom	Return to gold standard		Credit money has now a leading role…	…periodic devaluations… …tentative monetary controls	…crisis of economic policy
INTERNATIONAL REGIME											
- **Hegemonic country**	England is the core of industrial revolution…			and the banker of the world. United States and Germany are challenging British hegemony	British decline is reinforced	…surge of US might		US are now hegemonic, organize and stabilize the international regime…		…which is challenged by new competitors	Underlying crisis of US leadership
- **Cohesive forces**	Exchange of manufactured goods versus primary commodities		The relative stability derives from the position of England		The loss of competitiveness …destabilizes the system			A new international order…	…allows OECD growth	…till the crisis of the Bretton Woods system	A very unstable system

Source: CEPREMAP-CORDES "Approches de l'inflation" (1977), updated.

More elaborate arguments would be needed to convince the sceptical reader, but this historical record makes clear the inadequacy of the conventional interpretation of instutitions by neoclassical theories: at best, they would introduce frictions and minor discrepancies with respect to a Walrasian equilibrium and would be inessential in the long run; at worst, they would totally inhibit competition, innovation and consequently standards of living. On the contrary, the new role of the state in collective infrastructures and the design of the welfare system, the emergence of large firms and conglomerates, the rise of unions and political organization have transformed the inner economic mechanisms concerning productivity, wage income, price formation. The case of industrial relations is enlightening: along with labour division, collective organizations emerge, from the workers as well as the business side, the bargaining process is significantly altered and new *régulation* modes might emerge from the unfolding of capital accumulation. It now has to be shown that this had a significant impact on such things as productivity and demand regimes.

The endogeneity of economic institutions has definite consequences for the strategies of the research on development. If this view is correct, one cannot take the complex set of local institutions as exceptions to a general model of development, but they have to be taken seriously for they are shaping the behaviour of economic units, their interactions and, finally, macroeconomic equilibrium. Quite significantly Stern (1991: 206) concludes his survey by praising the "essentially microeconomics, tightly focused on particular question, (which) take careful account of the major institutions associated with the issues under study". The present proposal tries to derive some consequences for macroeconomic modelling ... even if abstraction and relevant hypotheses are far more difficult to work out at this aggregate level. Consequently, theories of development should first be local and only then try to diagnose the contours of a possible general theory of development. A careful investigation of the institutional setting is therefore needed before any formalization. This fits with the strategy of structural macroeconomics (Taylor, 1991) and partially responds to the challenge put forward by Rodgers (1991).

3. Labour institutions matter for wage formation

The second stage of the analysis has to exhibit instances in which long-run institutional changes have significantly or totally altered economic mechanisms. The formation of nominal wages in France gives an insight into the amplitude of these changes (Boyer, 1979). Closely associated to the transformations of the wage labour nexus, at least four wage patterns have been observed. During the 18th century, the

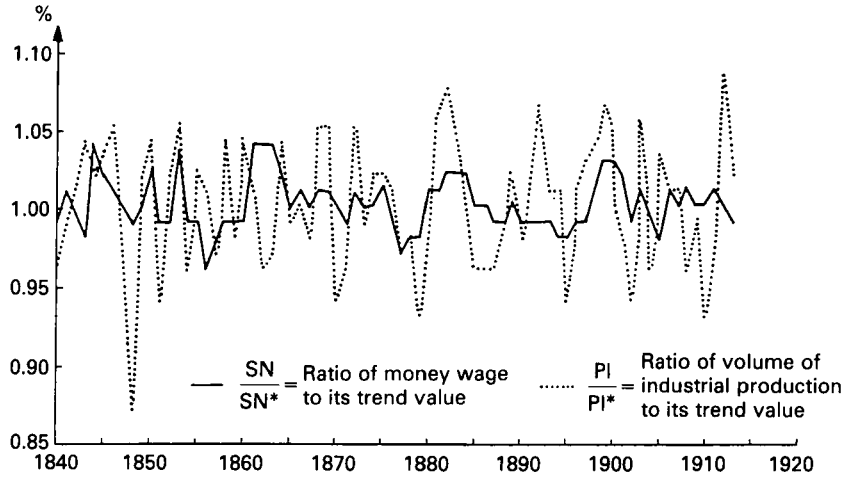
nominal wage was quite rigid, insensitive to labour market disequilibria and not indexed with respect to price level. In "*régulation à l'ancienne*", the real wage fell rapidly during the inflationary crisis due to insufficient crops and this was the consequence of the marginal role of wage earners, totally embedded into an economy moved by the agricultural sector, whereas wage formation was modelled by the conventions typical to craftsmanship.

When industrial revolution takes off, these mechanisms are slowly altered and local and urban labour markets progressively emerge, but are still largely disconnected due to the cost of transportation. Initially, workers associations were forbidden by law, each labour contract was essentially individual, with no collective bargaining. Few employment contracts had long-term duration. All these institutional features might explain the genuine factors of wage formation at this epoch: heterogeneity of wage across skills, sectors and regions; absence of any clear meaning of the modern concept of average wage; strong competitive forces operating at the local level; inability of workers to pass any consumer price increases onto wage hikes. This is a typical competitive *régulation* (Figure 2), which recalls some features of the pure labour market of neoclassical theory, but does not have the same property of maintaining full employment nor providing an equal wage for the same skills, due to the local nature of most labour markets.

As industrialization unfolds, from one business cycle to another the whole institutional setting evolves: the average size of plant increases, so does the wage earning population and consequently their ability to organize themselves and create unions to defend their collective interests, to go on stike for better wage, protective regulations and work duration limitation. Initially, the impact is quite small: for instance, wages become somehow inert in response to cyclical downturns but still react positively in boom periods. Similarly, after WWI unprecedented high inflation makes the indexing of wages more necessary and the specific political circumstances make such an innovation possible or even inescapable. Consequently, a new pattern emerges for wages. The larger integration of the various local markets, the implementation of careers and the stratification of skills by collective agreements now give a central role to the average wage, since most individual wages tend to follow roughly the same increase rate. During the inter-war era, the evolution of nominal wage reacts both to the fluctuations of industrial production, as previously for local markets, and to the cost of living index, specially designed by state statisticians in order to track the evolution of the standards of living of wage earners and so respond to

The Configuration of the Wage-Labour Nexus Shapes Wage Formation

Figure 2. The XIXth Century: Atomistic Labour Contracts: No Indexing and a Strong Sensitivity to Local Market Conditions



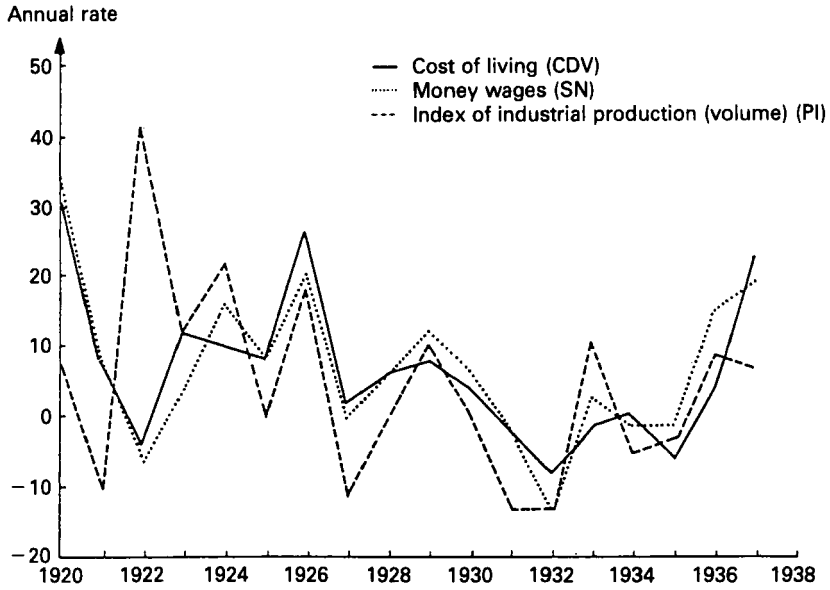
For the whole period 1841–1913:

$$\frac{SN}{SN^*} = \underset{(2.3)}{0.11} \times \frac{PI}{PI^*} + \underset{(2.1)}{10.1} \qquad R^2 = 0.074 \qquad DW = 1.10$$

the demands of unions (Figure 3). It is worth stressing that a significant lag takes place between the changes in the institutional setting and their actual impact even if they are sufficiently large potentially to alter wage formation. Clearly, structural transformations only take place over several decades, for they often suppose the renewal of generations and the shaping of industrial structures by the new institutions.

A fourth wage pattern emerges progressively from the political and social turmoil which takes place during and after the second world war: a large welfare state provides minimal security to wage earners, collective bargaining is disconnected from the direct pressure of unemployment, itself quite limited until the 1960s, permanent inflation pushes toward a full and fast indexing of wages with respect to prices. This underlying deep transformation was not totally perceived until the two oil shocks which made it apparent to everybody that wage formation had significantly changed with respect to the inter-war era (Figure 4): in spite of a large increase in unemployment, nominal, and

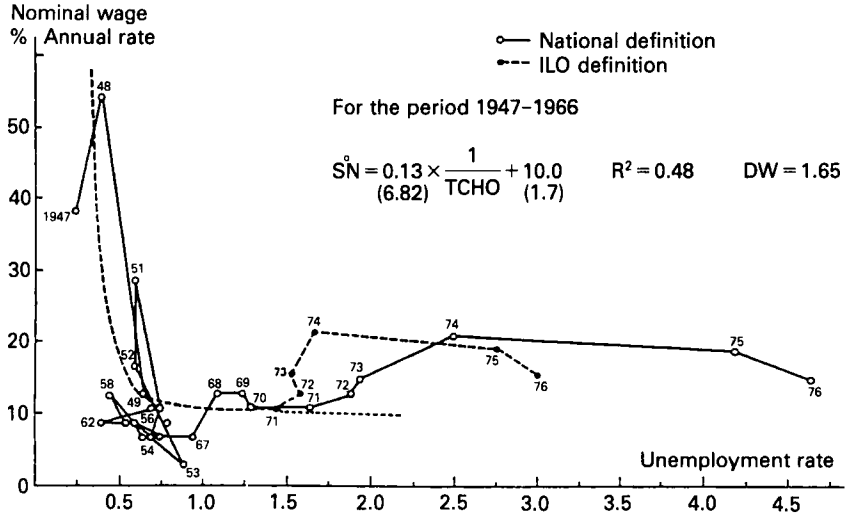
Figure 3. The Inter War Period: Collective Bargaining but Still Competitive Wage Formation



during a few years even real wages have kept growing, in accordance with previously negotiated pay systems. Note that this evolution supposed a prolonged boom of the world economy, the acceptance of an accommodating monetary policy, the sustainability of counter-cyclical and/or large public deficits and the persistence of buoyant investment in spite of poor profits and deterioration of the financial stability of firms and banks.

This summary delivers three major insights. First, labour institutions do not represent mere frictions or approximations with respect to a canonical and unique pure labour market, but shape individual behaviour and consequently their macroeconomic outcomes. This does not mean that any labour law will succeed in altering the functioning of labour markets, and improving the welfare of the wage earners: French history is rich with such misplaced hopes! Nevertheless, via a trial and error process, the institutional building of the wage labour nexus is clear

Figure 4. A Fully Institutionalized Wage Labour Nexus: Quasi Full Indexing and/or Decline of Competitive Mechanisms



Source: Boyer (1979).

1947-1958	$\hat{SN} = 2.3 \times \hat{PI} - 1.8$ (3.1) (0.3)	$R^2 = 0.52$ DW = 1.47
1959-1968	$\hat{SN} = 0.003 \times \hat{PI} + 7.5$ (0.01) (5.3)	$R^2 = \varepsilon$ DW = 1.19
	$\hat{SN} = 0.44 \times \hat{CDV} + 0.09 \times \hat{PI} + 4.9$ (4.2) (0.6) (4.8)	$R^2 = 0.72$ DW = 0.99
1969-1976	$\hat{SN} = -0.45 \times \hat{PI} + 15.2$ (1.8) (11.3)	$R^2 = 0.36$ DW = 1.51
	$\hat{SN} = 0.92 \times \hat{CDV} - 0.12 \times \hat{PI} + 6.3$ (7.7) (1.3) (5.1)	$R^2 = 0.95$ DW = 1.55
Total for the period 1947-1976	$\hat{SN} = 1.15 \times \hat{PI} + 6.1$ (3.0) (2.2)	$R^2 = 0.25$ DW = 1.13
	$\hat{SN} = 0.78 \times \hat{CDV} - 0.03 \times \hat{PI} + 5.6$ (15.0) (0.2) (5.9)	$R^2 = 0.92$ DW = 1.69

enough: compare, for example, the American and the Japanese configurations, or the German and the French ones. In the very long run, labour institutions matter as regards mobility, wage formation, technical change and ultimately standards of living (Boyer, 1988c). Second, the time scale needed for such an adjustment of institutions and economic dynamics is far longer than most economists imagine and

politicians hope: at least a decade and more likely a quarter of a century ... but this has been observed for European countries and will not necessarily apply to unprecedently fast-growing Asian NICs.

Finally a third specificity of this vision has to be stressed. In new institutional economics, each organization or type of contract is analyzed through its microfoundations and the compatibility of a complete set of incentives. Sometimes one gets the impression that an optimal design could deliver the best practice in a fully decentralized manner with few or no considerations for surrounding other institutions. On the contrary, the *régulation* approach, without denying the importance of sound microfoundations, stresses the structural compatibility of the major institutional forms. No Fordist wage formula without a permissive monetary system, a rather closed economy or at least a stable international system. Conversely, what many economists attribute to an inherent flaw at the micro level (for example, wage rigidity) might result from the inadequacy of the labour institutions given the new macroeconomic context and the occurrence of unprecedented shocks, at least in the present configuration (decay of the international system, shift in the objectives of economic policies, consequences of global competition and financial deregulation).

Hence an important issue: do labour innovations matter for growth regimes or do they simply follow trends set by other spheres such as technical change?

4. A multiplicity of growth regimes

It is necessary to summarize all the previous arguments by a crude model which nevertheless warrants the possibility of a multiplicity of regimes (Insert 1). This gives a formal representation of the general ideas sketched by Figure 1. From a theoretical point of view, the wage labour nexus can play a role in the two major components of a long term growth model.

On one hand, the productivity regime derives from the nature of division of labour, even if it is difficult to capture such a subtle mechanism by crude macroeconomic variables. For example, a craftsman-style economy with high skills probably exhibits significant learning by doing effects, measured imperfectly by the cumulated output. On the contrary, if innovation is embedded into machinery and equipment, the rate or capital formation will be the leading factor. Finally, in technologically leading countries, the basic sources of innovation may result from scientists and researchers, via R&D expenditure and patenting of innovations. More subtly, the very characteristics of the wage labour

nexus in manufacturing and services can play a role in fostering either an external and numerical flexibility or an organizational malleability, cumulative learning and permanent product innovations (see IV.1).

On the other hand, each wage labour nexus exhibits a specific wage formation mechanism, with contrasted consequences for the nature of the demand regime (Insert 1, equation II). At one extreme, an atomistic competition, the inexistence of unions and the scarcity of public regulations might induce a wage dynamics quite similar to that observed in early competitive capitalism: modest indexation with respect to consumer prices and strong influence of labour market disequilibria, local, regional or national. At the other extreme, a strong union can negotiate centrally and simultaneously wage, working conditions and possibly welfare. Another intermediate case is productivity sharing at the firm level. In different configurations, small open economies might exhibit wage formation closely related to world prices and the productivity in the export sector. If needed, the model could explicitly deal with the evolution of wage earners' lifestyle, but to be totally convincing this would call for a disaggregate approach of the productive system, with a distinction between agriculture and industry. This is done by structuralist models elaborated by Taylor (1983).

Nevertheless, this elementary model is sufficiently rich to provide a variety of regimes. On one side, the productivity regime can be upwards-sloping with growth in case of positive feedback from growth to investment and innovation. But if wages are strongly competitive, profit might be squeezed and hinder investment and productivity: the productivity regime would be downward-sloping. On the other side, the demand regime might increase or decrease along with productivity, according to the strength of the relative impact of income distribution upon investment, consumption and external competitiveness.

Therefore, many contrasted regimes can be generated by this elementary framework (for a complete discussion see Boyer, 1988c). If now one assumes a given set of institutional forms and the related components of the productivity and demand regime, this framework allows one to assess the viability of a given form for the wage labour nexus: in some instances, growth will be unstable, in others, it will be slow and economic decline may even take place. This gives an illustration about the macro-compatibility of labour institutions with the other characteristics of the economy to be modelled. But these possibilities may remain totally abstract: now it remains to be shown that some capitalist economies have experienced a shift from one growth regime to another and that the transformations of the capital labour relations have played a significant role.

INSERT 1. A GENERAL, BUT SIMPLE, MODEL WITH MULTIPLE REGIMES

Growth is represented as the outcome of two complementary mechanisms: from growth to productivity (a productivity regime) and from productivity to American demand (a demand regime).

A. An Aggregate Productivity Regime

$$pr = F(q,Q,I/Q,MES,INNO,\ldots) \quad [1]$$

$$I/Q = G(q,PRO/PQ,INNO,\ldots) \quad [2]$$

$$MES = H(Q,\ldots) \quad [3]$$

$$INNO = J(STOCKINNO,q,RD,\ldots) \quad [4]$$

where Q is level of production, q its growth rate, I the level of investment, INNO an index for innovation, MES minimum efficiency scale, PRO/PQ the share of profit in value added, R&D the expenditures in research and development. The first equation gives the main factors for productivity increases (growth, size of the market, investment rate, minimum efficiency scale, innovation). The second explains the rate of investment by demand growth, profit share and innovation. The third gives the minimum efficiency scale in function of the size of the market, whereas the fourth describes current innovation with respect to past stock of knowledge, demand growth and R&D expenditure. This system leads to the following reduced form for the productivity regime:

$pr = pr(q,Q,INNO,PRO/P.Q,\ldots)$ Productivity regime [I]

B. A Demand Regime

Productivity increases can act upon the various components of demand either through price effects or changes in wages and profits. Therefore, in order to explain the link between productivity and demand, one needs to account first for the parting of productivity gains between price or distribution changes, and then the impact of these price and income effects on the various components of demand. Household consumption C, firm investment I, net export $X-M$ define the components of demand Q (in constant terms and ignoring public expenditure). According to conventional hypotheses, let us propose the following structural equations, in which each capital letter labels a variable expressed in absolute levels, while the same lower-case letter describes growth rates.

$$Q = C + I + (X - M) \quad [5]$$

$$C = c.(N.RW) + g \quad [6]$$

$$I/Q = a.(PRO/P.Q) + b.q + d \quad [7]$$

$$X - M = e.\underline{QW} + f.Q + h(P - \underline{PW}) \quad [8]$$

$$NW = k.PR + I.P + o.N + u \quad [9]$$

$$P = m.(SN/PR) + r.\underline{PW} \quad [10]$$

$$RW = NW/P \quad [11]$$

$$PRO/P.Q = 1 - (SN/PR) \quad [12]$$

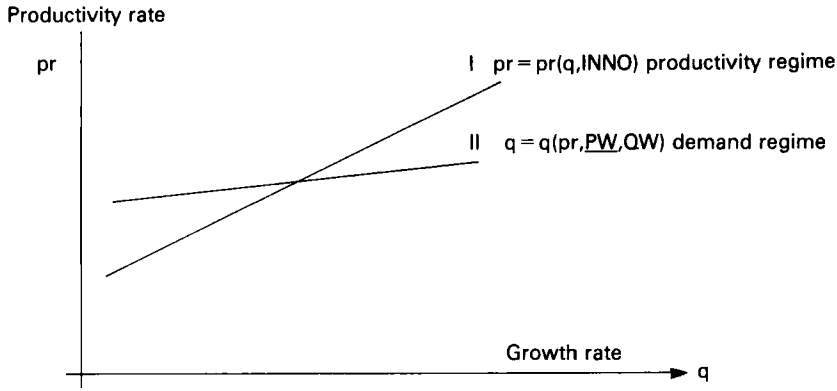
$$N = Q/PR \quad [13]$$

$q = q(pr,qw,pw,\ldots)$ Demand regime reduced form [II]

Aggregate production [5] varies according to effective demand, a Keynesian and Kaldorian hypothesis. Household consumption [6] derives from real wage (RW) and the employment level. It would be a minor difficulty to add a positive propensity to consume out of profit (Hagemann, 1989); but the model will be kept as simple as possible. The rate of investment (I/Q) [7] is linked jointly to the profit share and the rate of growth, and relative intensity of these two factors distinguishing between Keynesian ($b \gg 0$ and $a \approx 0$) and classical ($b \approx 0$, $a \gg 0$) regimes of investment. The shift could be made endogenous (Marglin, 1989); net exports [8] are related to the trends in world and home demand (QW and Q) as well as to a price competitiveness factor, comparing domestic and foreign prices. The nominal wage [9] is the outcome of a double indexation, with respect to productivity increases and inflation. In the following discussion, the degree of indexation with respect to productivity will play a major role in generating various demand regimes. The general level of prices [10] is set according to a mark-up applied to labour unit cost, given the world prices. The three last equations define respectively real wage [11], the share of profit [12] and the employment level [13].

From this complete system of structural equations, one derives an aggregate demand function, which can be conveniently summarized by a demand regime reduced form (function [II]). Basically, it describes the impact of any given productivity trend upon demand generation. It shows the variety and complexity of the transmission mechanisms which are crucial to any analysis of the self-reinforcing adjustment of technical change and demand; the core of Smith, Young and Kaldor's views about the growth process. But, the conditions on the elasticity of demand (Kaldor, 1972) can now be addressed precisely. On one side, for a given regime the demand may shift according to international and exogeneous changes. On the other side, in the long run, the very dynamics of the system might lead to significant changes in some crucial parameters, basically productivity sharing between wage and profit, the degree of openness and the competitiveness of each national economy.

C. A Graphical Representation



5. The wage labour nexus: a key component of the post WWII Fordist growth regime

Converging studies have checked this hypothesis for the American economy (Aglietta, 1982; Caussat, 1981; Leroy, 1988). A short summary of the major findings is provided by Insert 2, derived from Boyer (1989). How to interpret the significant change in the growth pattern observed after WWII: faster growth, dampening of business cycles, persisting inflation and still more absence of any cumulative depression of the 1929–1932 type? The answer by the *régulation* approach is that a new growth regime has emerged, generated by the compatibility of far-reaching institutional and technological changes. Two kinds of evidence suggest that the alteration in the wage labour nexus has played a key role. In fact, a crude estimation of the major equations of the model proposed by Insert 1 delivers three major conclusions.

First, the large inventory of innovations due to the World War II can be implemented into new processes and industries, given that the equivalent of a capital labour compromise takes place: workers accept the Fordist methods provided that the related productivity gains feed significant wage increases and the implementation of some components of the welfare state. Consequently, the exogenous trend in technological change increases whereas significant returns to scale continue to prevail (equation 1, Insert 2). Many cases studied suggest that the evolution in industrial relations related to this burst of innovation and productivity (Freeman and Medoff, 1984).

But a second and more significant change relates to wage bargaining. Strong unions have the bargaining power to impose three-years collective agreements with explicit indexing to price (COLA) and implicit indexing to productivity and, more generally, the financial results of the leading industrial firms. From an econometric point of view, the previous competitive mechanisms about wages are progressively replaced by a more institutionalized income formation (Leroy, 1988, 1992). This structural change is broadly confirmed by the second equation of Insert 2. Note that the transformations are similar to those occurring in France, and summarized by Figures 2–4. French managers and public authorities have been copying the American model and have turned out to be quite successful in such an adaptation process (Boyer, 1990). This suggests the existence of a limited number of wage labour nexus for a given epoch and consequently makes the building of a taxonomy and an institutional theory of labour markets simpler and not too costly.

A third transformation concerns the shift from a profit and investment-led demand regime to a wage and consumption-led regime, itself related to the access of wage-earners to mass consumption (equation 3, Insert 2). Simultaneously, the dynamics of investment is more stable than it used to be in the inter-war period and does not seem very sensitive to profit or interest rates but closely related to household consumption, in line with the old but robust concept of an accelerator effect for investment.

However limited and shaky, this model allows the equivalent of a counterfactual history: what would have been the growth pattern of the U.S. economy in the absence of any transformation in wage formation? Interesting conclusions emerge from such an exercise (Part II, Insert 2). The demand regime before WWII was actually stagnationist since, given the limited sensitiveness of wage with respect to productivity, any burst in innovation and productivity was simultaneously associated with an increase in equilibrium productivity rate and a reduction in the growth rate. This roughly corresponds to the experience of the 1920s: booming demand but slow development of mass consumption. Consequently, if the capital labour compromise had been kept unchanged after WWII, the acceleration of productivity would have triggered such a disequilibrium: reduction of growth even during fast technological change. One realizes how different this growth regime approach is with respect to standard neoclassical models which assume Say's law and permanent full employment. By hypothesis, such a stagnationist outcome is impossible, due to extreme and possibly unrealistic hypotheses.

Therefore, the new growth pattern observed could not have taken place without some structural changes in the wage labour nexus: when wages become more (but not too much) indexed with productivity, the demand regime is exhilarationist (Marglin and Bhaduri, 1990) and interacts with the cumulative causation model about innovation, investment and increasing returns to scale. Consequently, the economy is propelled toward a new growth path, with a higher equilibrium growth rate.

According to this evidence, changes in labour institutions have mattered for American growth and for the French economy, as well as many other European countries (Basle, Mazier and Vidal, 1984). It is therefore interesting to compare advanced industrialized countries and check whether their labour institutions play a role in their relative macroeconomic achievements.

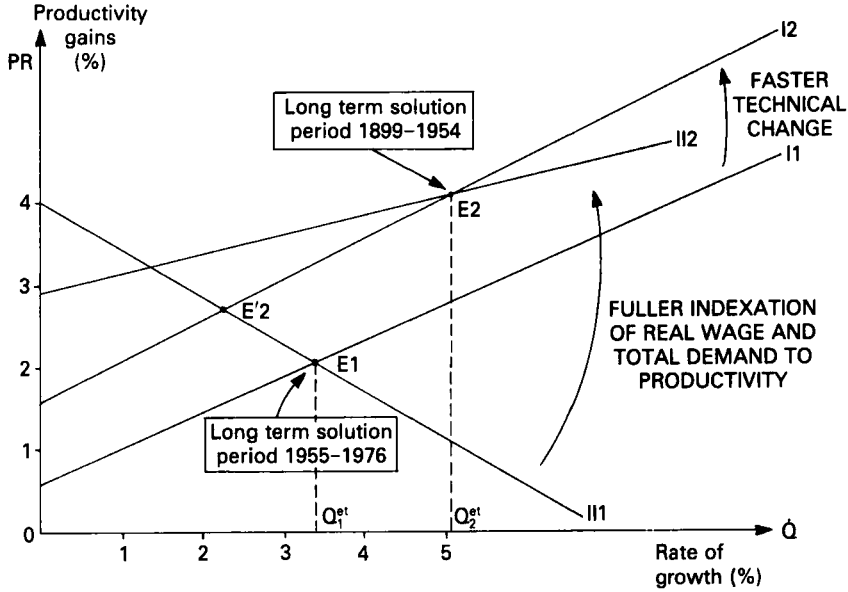
Insert 2. SOME EVIDENCE ABOUT CHANGING GROWTH REGIMES FOR THE UNITED STATES (1899–1976)

I. Three possible structural changes in the wage-labour nexus

	1899–1954			1955–1976	
1. A new vintage of innovations allowed by the the wage-labour nexus	$\dot{PR} = \underset{(0.7)}{\boxed{0.60}} + \underset{(3.0)}{0.40} \times \dot{Q}$	$R^2 = 0.5$	PRODUCTIVITY	$\dot{PR} = \underset{(2.9)}{\boxed{1.60}} + \underset{(3.7)}{0.47} \times \dot{Q}$	$R^2 = 0.69$
2. A higher indexation of wage with productivity	$\dot{SR} = \underset{(2.7)}{1.09} + \underset{(2.9)}{\boxed{0.32}} \times \dot{PR}$	$R^2 = 0.49$	REAL WAGE	$\dot{SR} = \underset{(0.6)}{-0.59} + \underset{(2.6)}{\boxed{0.67}} \times \dot{PR}$	$R^2 = 0.53$
3. A consumption and wage-led demand regime	$\dot{I} = \underset{(1.6)}{-2.67} + \underset{(8.1)}{\boxed{1.68}} \times \dot{Q}$	$R^2 = 0.88$	INVESTMENT AND DEMAND	$\dot{I} = \underset{(0.3)}{-1.0} + \underset{(1.9)}{\boxed{1.20}} \times \dot{Q}^{(x)}$	$R^2 = 0.38$
	$\dot{Q} = \underset{(1.6)}{1.48} + \underset{(0.5)}{\boxed{0.20}} \times \dot{WR} + \underset{(2.1)}{0.43}.I$	$R^2 = 0.88$		$\dot{Q}^{(x)} = \underset{(2.5)}{1.7} + \underset{(3.6)}{\boxed{1.1}} \times \dot{WR} + \underset{(10^{-3})}{0.0004}.I$	$R^2 = 0.83$
Accounting identities	$1 + \dot{N} = (1 + \dot{Q})/(1 + \dot{PR})$		EMPLOYMENT AND REAL WAGE INCOME	$1 + \dot{N} = (1 + \dot{Q})/(1 + \dot{PR})$	
	$1 + \dot{WR} = (1 + N) \times (1 + \dot{SR})$			$1 + \dot{WR} = (1 + \dot{N}) \times (1 + \dot{SR})$	

Notations: PR = Productivity; RW = Unit real wage; Q = Volume of production; N = Employment; WR = Total real wage bill.

II. These transformations imply a shift in both the productivity and the demand regimes



THE REDUCED FORMS

1899–1954

(I1) $P\dot{R} = 0.60 + 0.40 \times \dot{Q}$

(II1) $\dot{Q} = 6.9 - 1.74 \times P\dot{R}$

Solution $\dot{Q}_1^{et} = 3.4\%$

STABLE since $|BD| = 0.4 \times 1.74 = 0.7 < 1$

1955–1976

(I2) $PR = 1.60 + 0.47 \times \dot{Q}$

(II2) $\dot{Q} = -13.1 + 4.54 \times P\dot{R}$

Solution $\dot{Q}_2^{et} = 5.1\%$

UNSTABLE since $BD = 0.47 \times 4.54 = 2.1 > 1$

Comments:

1. Had the wage formation and the demand regime kept constant, and had technical and organizational change (associated to fordism) accelerated, the equilibrium growth rate would have declined after 1954.
2. The change in wage formation has been crucial in promoting a higher growth rate, but the growth pattern might later have turned unstable.

Source: Extracts from BOYER (1988).

IV. Labour Institutions and Economic Performance: a Comparison of OECD Countries

Since the mid-1980s, a lively debate has taken place concerning the rigidities, which were implicit to the post-WWII wage labour nexus and have been revealed by the two oil shocks, the recurrent instabilities in the world economy and the stiffening of competition among industrialized and industrializing countries. Many authors have pointed out that more decentralized wage bargaining meant more flexibility and consequently less unemployment (Klau and Mittelstadt, 1986). On the contrary, others have suggested that centralization and strong unions actually delivered better results (Bruno and Sachs, 1985). Finally, some synthetic models deliver an eclectic message: both totally centralized and decentralized industrial relations may deliver good employment results, but the intermediate configuration would be detrimental (Calmfors and Driffill, 1988; Cahuc, 1991 and Bowles and Boyer, 1990).

A different avenue has been explored (Boyer, 1990a, b, c) and will be summarized here, in order to give the analytical tools which have been or could be used for analyzing Latin-American and Asian developing countries. The basic idea is simple: any configuration of the labour institution has to search for a trade-off between static efficiency and economic performance in the long run, i.e. dynamic efficiency.

1. Some job regulations may enhance productivity and quality, at the possible cost of short-run inefficiencies

Under the pressure of worker demands, many collective agreements and even legislation have implemented some controls on firing, layoff and hiring. What have been the consequences of such transformations in the wage labour nexus? Conventional labour economics deliver a clear message: the constraints thus imposed upon firms imply extra costs; consequently, the demand expressed will be negatively affected by such a burden and ultimately the employment level will be lower, with a likely loss of welfare for the society. Of course, the job of a majority of wage earners is consequently protected from unfair dismissal, but the restricted employment will hurt newcomers on the labour market. According to this analysis, any job regulations is unambiguously detrimental (OECD, 1986).

Other approaches deliver a more balanced view and compare the macroeconomic performances of major OECD countries when their labour regulations vary (Buechtemann, 1992). Our analysis stresses the

Table 4. Are Job Regulations Hurting Efficiency?

LESS LABOUR MOBILITY . . .			. . . BUT MORE PRODUCTIVITY INCREASES
Institutional Setting	Legal constraints IL	Statistical fit	**1970–1980 Job Preservation Legislation Enhances Productivity . . .**
Perceived Constraints	Hiring HR — Lay off LR; Global G	$G = 36.7 + 12.3 \times IL$ (2.7) (2.3) $R^2 = 0.46$	(1) $PR = 1.6 + 0.64 \times IL$ (2.6) (2.2) $R^2 = 0.23$ (18 countries) (2) $PR = 1.6 + 0.02 \times G$ (3.5) (2.9) $R^2 = 0.54$ (9 European countries) (3) $PR = 0.23 + 0.68 \times Q + 0.007 \times G$ (0.8) (5.8) (1.7) $R^2 = 0.93$ (9 European countries)
Effective Mobility	Recruits and separations NR — Job instability IS		**. . . and Real Wage Increases** (4) $RW = 1.4 + 0.03 \times G$ (3.1) (4.3) $R^2 = 0.72$ (9 European countries) (5) $RW = 0.20 + 0.79 \times PR + 0.02 \times G$ (0.4) (2.9) (2.0) $R^2 = 0.88$ (9 European countries)
Impact Upon Labour Market Performance	Long run unemployment LD Unemployment rate U	$LD = 5.6 - 1.1 \times NR$ (3.6) (1.7) $R^2 = 0.34$ $U = 2.0 + 0.16 \times LD$ (1.4) (4.8) $R^2 = 0.59$	**Whereas Too Much Employment Flexibility Hinders Productivity** (6) $PR = 4.7 - 0.09 \times IS$ (6.0) (2.9) $R^2 = 0.51$ (8 OECD countries)

Source: Boyer (1990b: 23 and 57).
Method: Cross-section analysis for OECD countries.

dilemma between short-run labour market equilibria and adjustments which are privileged by neoclassical theory and the long-run impact of these regulations upon the growth regime. This trade-off can be summarized by two opposite results (Table 4).

As far as short-run labour market adjustments are concerned, a simple statistical analysis across 18 OECD countries suggests that legal constraints imposed upon hiring and firing are clearly perceived by firms and affect the frequency of recruitment and separation. If the promotion of job stability is the only objective of such regulations, they have been successful. If, on the contrary, their ultimate aim is to fight against unemployment, then they seem to fail: a reduction in job instability is paid by larger long-run unemployment and ultimately a higher unemployment rate (first column in Table 4). If such crude cross-section regressions are to be taken seriously — sophisticated economists and theoreticians do not, but applied economists and decision-makers are tempted to — the legal constraints imposed upon employment decisions have stabilized employment but have possibly exacerbated unemployment during the 1970s.

If the short-run adjustments of labour markets are adversely affected by these regulations, their impact upon long-term growth is seemingly favourable. In countries such as Germany, the legal constraints as well as the mood in industrial relations induce a careful use of permanent workers, an interest of firms to invest in upgrading their skills, in order to foster quality-oriented innovations (Streeck, 1991). In the Japanese case, no such legal obligation is binding, but the implicit compromise between managers and workers in large firms, as well as first rank contractors, severely limits the ability of firms to reduce employment of full-time male workers. Consequently, management and workers share a joint interest in learning by doing, high investment, long-term productivity gains and product innovations (Aoki, 1988). If, on the contrary, the labour contract is essentially a spot transaction or at least is of short duration, firms will underinvest in the specific skills of workers and will prefer layoff to internal flexibility, employment reduction to product innovation.

A cross-section analysis does not confirm this hypothesis. First, in countries where firms perceive important constraints on employment variations, productivity grows faster, even if one takes into account the possible existence of increasing returns to scale (equations 1, 2 and 3, Table 4). Simultaneously, the bargaining power of workers is enhanced and consequently real wages grow faster in countries where the constraints upon jobs are severe, whether due to collective agreements or public regulations (equations 4 and 5). This finding tends to support a

theory which insists on the opposition between insiders and outsiders in wage formation (Lindbeck and Snower, 1986). Therefore, constraints upon firing have a double influence on both productivity and wage formation, in accordance with exit and voice models: the protection of workers might induce more commitment and consequently better productivity results which are ultimately shared by wage earners. This introduces an important caveat with respect to the conventional vision, according to which unions are simply capturing oligopolistic rents without any productive contribution, in line with the arguments put forward by Freeman and Medoff, 1984.

Conversely, the economies with larger job instability seem to exhibit slower productivity increases (equation 6, Table 4). This gives some support to a positive influence of collective agreement or regulation which would limit such instability. On one side, the neo-Schumpeterian argument about the role of the renewal of firms and the workers does not fit with the cross-national data. On the other side, the free functioning of labour markets does not always and necessarily imply an inducement to productivity increases. In other words, the static efficiency provided by flexible labour markets might be a drawback in the search for long-term competitiveness. It is sufficient to compare Germany, Sweden and Japan with the United States and Canada to get a rough confirmation of this possible conflict between two criteria in assessing the influence of labour market regulations.

It is important to note that these relations, which used to prevail in the 1970s, apparently vanished during the 1980s (Boyer, 1990b), which implies a historical approach to the viability of any precise labour institutions. If competition becomes more acute, economic policies change and new forms of technological change emerge, then the previous set of labour regulations might become inefficient, in the short as well as the long run. This is the issue of the coherence beween various institutional forms.

2. Minimum wage and complete welfare system: possible stimulation of technical change and labour mobility

A similar trade-off seems to characterize the other components of the wage labour nexus, but of course the mechanisms are different (Table 5). Minimum wage policies intend to raise wages above their equilibrium level, which in the short run — if everything is kept equal — will expand labour supply and, on the contrary, reduce labour demand of firms. Consequently many authors discard such measures since they disturb the smooth functioning labour markets, induce unemployment

Table 5. *Laissez-faire* or Labour Regulations? Static Versus Dynamic Efficiency

Type of regulation impact upon	Termination of employment	Minimum wage	Welfare system	Training scheme	Union Membership
Short run static efficiency	1. Lagged adjustment of employment 2. Adverse impact upon profit 3. Possible stabilization of wages and consumption	1. Reduction of inequalities 2. Exclusion of low productivity workers 3. Possible unemployment	1. Reduction of inequalities 2. Increase of unit costs 3. Possible unemployment	1. Extra cost for firms 2. Possible shift of labour demands	1. Less wage flexibility 2. Collective agreements against outsiders 3. Possible unemployment
Medium–long run dynamic efficiency	1. Incentive to internal flexibility 2. Negative impact upon employment due to the cost of job regulations 3. Stimulation of technical change	1. More work intensity and commitment 2. Inducement of labour-saving technical change 3. Upgrading of skills and product quality	1. Enhancement to labour mobility 2. Built-in stabilizers 3. Ingredient for social peace	1. Higher wage incomes over life cycle 2. Larger occupational mobility 3. Skill-driven technical change 4. Possible financial problems	1. Possible positive impact on work organization and productivity 2. A powerful and large union can internalize the impact of wage upon employment 3. Voice possibly better than exit

and are counterproductive in terms of both efficiency (more output could be produced) and equity (the better wage of employed workers is paid by the unemployment of others). The argument has some truth but is too systematic in forecasting a negative outcome for any effort to raise wages above their equilibrium level.

On the contrary, modern theories of the labour contract deliver more ambiguous results: under some circumstances, the outcome might be beneficial to the society. At least four mechanisms can be put forward, all of them implying possible positive impacts of an adequate minimum wage policy. Higher wage may induce more work intensity, commitment or loyalty and in some cases promote a reduction in unit production costs: efficiency wage theories conclude that the level of pay is an important determinant of productivity. If, due to institutional inertia or myopic behaviour, firms were not optimizing their profit by paying too low wages, then an exogenous increase may trigger a shift in labour management style. An X-efficiency theory *à la* Leibenstein would conclude similarly.

According to one variant of these theories, a minimum wage hike which promotes more equity is able to induce greater efficiency at the firm level. By nature the wage labour nexus is the locus of value judgments; consequently, in labour markets fairness and efficiency are often closely related (Akerlof, 1984; Solow, 1990). From a historical point of view, when some societies experienced a drastic reduction in income inequalities, also resulting from minimum wage policies, productivity has been more enhanced than inhibited by this larger equality: Sweden in the 1930s, Japan and Taiwan after World War II are good examples of a levelling-off in income disparities associated with an unprecedented surge in productivity and growth. It is now widely recognized that income equality does not necessarily hurt growth: quite the contrary (World Development Bank, 1991: 137).

A third argument challenges the alleged invariance of the demand curve of labour, in reaction to a general increase of wage, fed by a significant alteration of minimum wage which progressively diffuses to the rest of the wage structure. For instance, after May 1968 in France, an impressive wage hike was the response to social protest and has been associated to a boost in employment and real wages, at the cost of a moderate increase in the inflation rate. Consequently, low-paid workers thus had access to consumption, and demand expanded in an economy experiencing large unused capacities. An equivalent move in 1981 did not deliver the same positive results, probably because a progressive alteration had shifted the demand regime from wage and consumption-led to profit and export-led. In any case, the viability of a wage labour

nexus is up to its compatibility with the existing (or evolving) demand (and productivity) regimes.

Finally, even standard neoclassical theory can be used in order to contrast static versus dynamic efficiency (Insert 3). In the short run, if the supply and demand are not shifted by the macroeconomic consequences associated to a minimum wage increase, and commitment and loyalty effects are small enough, a higher minimum wage will be paid by some unemployment. This is the static efficiency argument, widely used in development literature to blame the role of minimum wage policies (Bauer, 1991, pp. 11, 109; Lal, 1983). But imagine that innovation partially responds to relative prices and that firms optimize the speed and direction of technical change in order to minimize costs. The literature about technical progress functions (Wan, 1971; Hahn and Matthews, 1972) shows that a labour saving bias will occur in response to any alteration in the relative price, and in the long run the share between wage and profit will remain constant. Thus, growth path embedding constraints on real wages will finally exhibit a higher labour productivity rate. If the demand regime and the labour institutions are adequate, a higher minimum wage economy will be in a better position: the transitory acceptance of a short-run disequilibrium ultimately delivers dynamic efficiency.

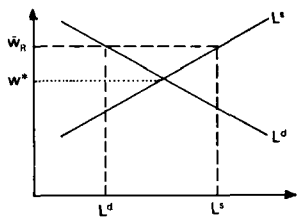
This apologue is not totally abstract, since some Asian NICs have exhibited such a virtuous long-run dynamics. Have not Singapore's leaders promoted substantial wage raises from 1979 to 1981 in order to push the economy to higher technology (Vogel, 1992; Tissier, 1981)? Therefore, it would be erroneous to conclude that for any economy and any period, ambitious labour regulation will fail to deliver their suggested benefits. The issue has to be investigated carefully by sufficiently rich theoretical models and checked against the empirical data. The standard and static neoclassical model for labour markets cannot help very much in such an assessment, for it is too simple and one-sided.

An equivalent demonstration could be made about welfare systems (Table 5). On one side, their financing usually increases production costs and consequently may have a negative impact upon employment if the related elasticity is important. But on the other side, such a system may feed built-in stabilizers, when entitlements are defined independently from financing and if the net transfers go to the income groups with the higher propensity to consume. Furthermore, when the welfare is complete and identical across sectors, firms and regions, then labour mobility is enhanced by comparison with a segmented welfare with social rights exclusively linked to a given firm. Again, a possible short-run cost may be associated with a collective good enhancing the adapt-

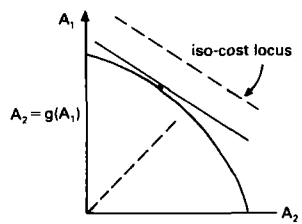
Insert 3. Two Visions of the Impact of Wage Regulations

THE THEORETICAL ARGUMENTS

1. A loss of welfare in the short run if the wage is too high



2. An inducement to labour-saving innovations



Then a labour-saving technical change will occur, according to the share of wage

$$A(t) = h(a/1-a) \quad h' > 0$$

Supply $L = L^s(w) \quad s' > 0$

Demand $L = L^d(w) \quad d' < 0$

If $w_r > w_*$, unemployment is

$$U = L^s(\bar{w}_R) - L^d(\bar{w}_R)$$

Production function

$$Q(t) = F[A_1(t)\,L(t), A_2K(t)]$$

Technical progress function

$$A_2 = g(A_1)$$

Minimization of cost reduction

$$aA_1 + (1-a)\,A_2$$

SOME EXAMPLES FOR DEVELOPING COUNTRIES

In many third world countries the numbers engaged in trade, and in the informal sector in general, are somewhat increased by the fact that wages in larger-scale employment are above the market-clearing level. Employment in the so-called organized sector is restricted, thereby increasing the supply of labour available in the informal sector. "...Thus wage regulation in LDCs does not improve the condition of the poorest; indeed it aggravates the situation." P. Bauer (1991: 11, 109).

As Ronald Dore and others have pointed out, there is a difference between the western stress on allocative efficiency, where the concern is to allocate resources to area where they can bring the best return, and "productive efficiency", where the concern is with the overall output and goal. East Asians put less stress on allocative efficiency, but their concern with providing for group members who devote themselves to the group reinforces loyalty that, in the long run, may bring more efficiency even by western standards. In the late 1970s, Singapore's leaders, frightened by the prospect that China, with its infinite supply of cheap labour, might begin exporting industrial products, sought ways to hasten Singapore's development of higher technology. Unhappy that companies paying low wages did not feel under pressure to introduce more efficient machinery, from 1979 to 1981 the government pushed through substantial wage raises. High wages, although they made some Singapore goods less competitive in international markets and thus contributed, along with the decrease in oil exploration and shipbuilding, to the economic downturn in the mid-1980s, allowed Singapore to accelerate its transition to higher technology in the late 1980s. E. F. Vogel (1991: 80, 100).

SOME ECONOMETRIC EVIDENCE

16 Latin and Asian countries, 1980–1989

Cross section analysis

$$(1)\quad \dot{Q} = 6.7 + 0.91 \times (\dot{P}R - \dot{R}W)$$
$$(5.0)\ (1.8)$$

Real wage against growth

$$(2)\quad \dot{P}R = 1.5 + 0.97 \times \dot{R}W$$
$$(1.0)\ (5.4)$$

$$(3)\quad \dot{P}R = 0.30 + 0.47 \times \dot{Q} + 0.69 \times RW$$
$$(0.4)\ (1.5)\qquad (2.7)$$

Real wage enhance productivity

Notations:

$\dot{Q}$ = annual rate of output

$\dot{R}W$ = annual rate of real wage

$\dot{P}R$ = productivity

ability of the economy. The Swedish configuration is enlightening; one of the more developed systems, far from inhibiting mobility and technical change, has enhanced innovation and the search for high value-added jobs and industries, at least until the mid-1980s.

3. Static versus dynamic efficiency: the dilemma of labour institutions

A systematic international comparison of labour regulations, wage formation, work organization and industrial relations (Boyer, 1990a, b, c) provides a synthetic outlook on labour institutions. They are not simple variations around the pure market adjustments, with more or less imperfections and frictions. Quite on the contrary, they define at least four configurations, with strong but distinctive complementarities among the components of the wage labour nexus (Table 6). All firms and industries have to solve similar short- and long-run problems: how to react to unexpected sector and macro disturbances on one hand, and simultaneously how to cope with innovation in order to survive to international competition on the other? Given the partial contradiction between these two issues, each national economy elaborates an original response, since there is not one best way in institutional design but a possible multiplicity, due to the basic historicity of organizational building. Four major configurations emerge and exhibit both strengths and weaknesses.

The first is based upon largely decentralized labour markets interacting via migration, exit more than voice, employment reduction instead of variation in hours worked. At the macro economic level, significant competitive forces are present in the context of a long-run decline of unions. The United States, Canada, and in some cases, the United Kingdom belong to this category. A largely external flexibility allows quick adjustments to unexpected shocks, which explains a moderate unemployment rate and the low degree of long-run unemployment. Similarly, the absence of any active public intervention on the minimum wage does not hurt a massive creation of low paid jobs, specially in the service sector. This static efficiency of the labour market nevertheless has some costs in the medium long run: the heterogeneity of labour regulations across regions makes the shift of industrial plants from old industrialized zones to new ones profitable, instead of direct pressure to adopt labour-saving devices in response to significant and uniform real wage increases.

The second and third configurations share the same concern for offensive flexibility, i.e. dynamic efficiency. The labour institutions are mainly designed in order to cope with product and process innovation, which supposes some degree of internal malleability of manpower

Table 6. Adjusting to Variability and Innovation: Four National Trajectories

Features \ Models	Decentralized defensive	Decentralized offensive	Social-Democrat offensive	Hybrid
Institution setting	●Very decentralized bargaining ●Declining unions ●External and market-oriented mobility ●Short run and adversarial strategies	●Compromise within large firms ●Weak unions ●Important internal mobility ●Long run and cooperative behaviour	●Highly centralized collective bargaining ●Strong and unified unions ●Internal and collectively organized mobility ●Founding social democratic compromise	●Intermediate decentralization (sectors) ●Divided and declining unions ●Obstacles to internal mobility, involuntary external mobility ●Adversarial industrial relations
Adjustment variables	●Lay-offs and employment adjustment ●Regional mobility ●Wage dispersion ●Plant closure	●Shift from job to job within the firm ●Retraining and polyvalence ●Bonus wage highly sensitive ●Product innovation	●Retraining inside or outside the firm ●Subsidized job creation ●Average wage variability ●Dynamic innovation	●Mainly dismissals, limited inside retraining ●Unemployment benefits and subsidies to reconversion ●Relative wage rigidity ●Rationalization bias
Employment management	●Few job tenure ●High turnover ●Deepening of labour market segmentation	●Ideal of long-run employment ●Low turnover ●Dual labour market but spillover effects from large firms	●Homogeneity of labour contracts ●Collectively organized mobility ●Active employment policy ●Full-employment commitment	●Ideal of job stability but multiplication of exceptions to standards contracts ●Low turnover ●Few active employment policies ●Increasing heterogeneity of labour contracts
Examples	United States, Canada, United Kingdom	Japan	Sweden, Austria, part of Germany	France, Italy, Belgium

Source: Boyer (1990b: 39).

within the firm, cumulative learning by doing effects and a form of employment security, either at the firm level (micro corporatist Japanese model), at the national level (social democratic model, for example in Sweden) or indirectly at the regional level (Germany). The major strength consists in delivering structural competitiveness, by a permanent adaptation of the quality and the nature of products. Various indicators of modernization confirm this diagnosis. But the other side of the coin has to be mentioned: if a dramatic down-turn occurs, it takes some time for this configuration to cope with short-run disequilibria, especially for social democratic countries.

This striking similarity between two systems usually considered as opposites is confirmed by specialists of the Japanese firms (Aoki, 1988), and raises two theoretical issues. On one hand, these contrasted configurations deliver similar if not identical results and, consequently, can be contemplated as functional equivalents. To get analogous results in different general institutional settings, the same components of the wage labour must not be adopted. Conversely, the implementation of a piece of given labour institutions, for instance job tenure, profit sharing or quality circle, will not deliver the same results since the whole *régulation* mode is different. On the other hand, sociologists have pointed out a second principle, called institutional isomorphism (Powell and DiMaggio, 1991): institutions and organizations which interact will have to be coherent with one another. Therefore, a similar flavour permeates most of the organizations of a given country: what has been observed for East Asian corporate firms is likely to apply to labour institutions in these countries. For OECD economies, the studies under review clearly point out such a congruence among the components of wage labour nexus.

A fourth hybrid configuration prevails in most European countries such as France, Italy, Belgium. On one side, the ideal of offensive strategies is embedded into industrial relations, education and training as well as in numerous public interventions, especially active minimum wage policy and quite a complete welfare system. On the other side, adversarial industrial relations, inadequate internal organization of firms as well as competition among firms simultaneously induce defensive strategies in line with the first model: job reduction is preferred to in-house firm training, hours reduction and wage adjustments, product innovation and diversification are not conceived as methods for preserving high value-added jobs. In this case, the isomorphism of labour institutions with the prevailing political and social organization seems to have prevented the success in finding a functional equivalent to the micro corporatist or social democratic model. This partially

Figure 5. Low Skills, Short-Run Duration of Labour Contract: High External Mobility and Low Pay

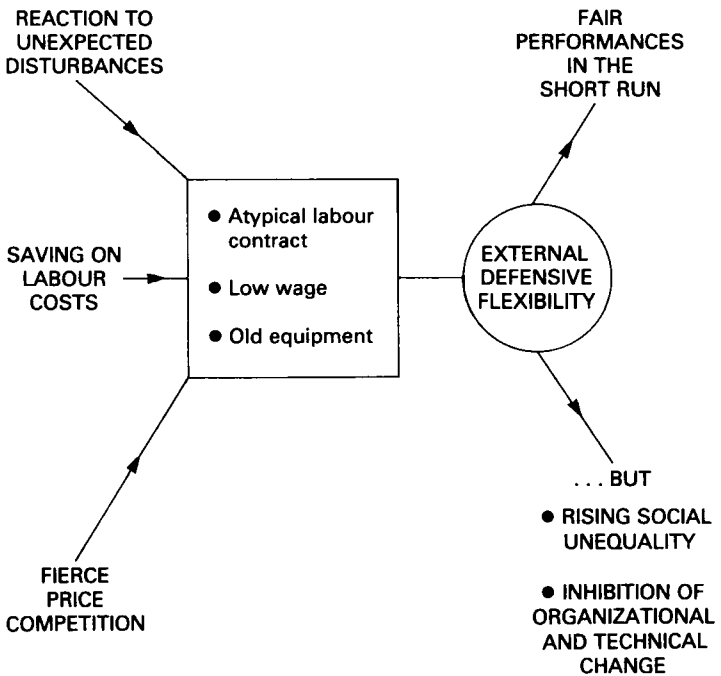
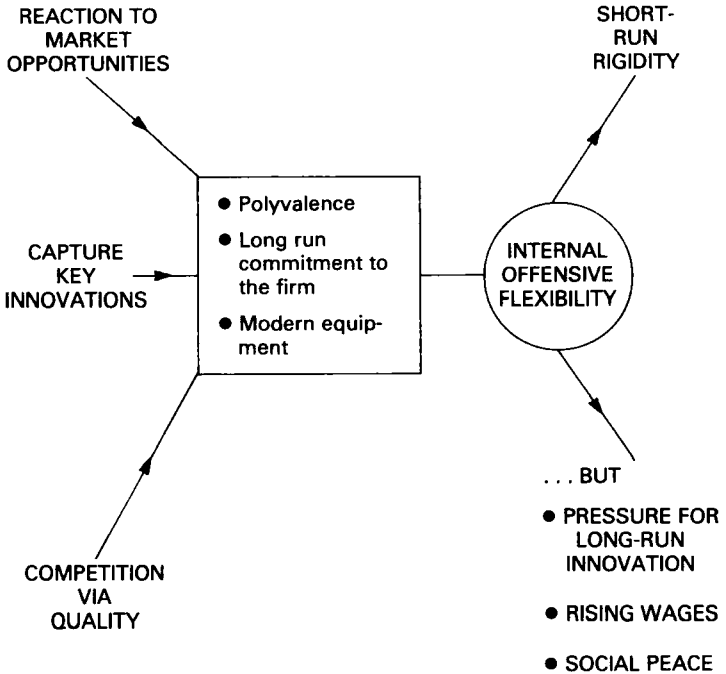


Figure 6. Polyvalent Workers, Learning by Doing Via Job Tenure, and Internal Mobility



Source: Boyer (1990b: 31, 33).

explains the mediocre performance of these European countries in global competition.

Finally, two broad concepts of wage labour nexus emerge. The first adopts defensive adjustments, by developing atypical labour contracts and sometimes preserving obsolete technology by low wages (Figure 5). This might be quite efficient in creating jobs and containing unemployment, but rising inequalities and poor productivity performance are usually the cost to be paid for such a short-run flexibility. The second model develops a long-term strategy based on innovation, product quality and differentiation, which supposes quite different labour contracts based on long-run commitment to the firm and a permanent modernization of organization and equipment (Figure 6). This cross-section analysis confirms the major conclusion derived from the historical study: labour institutions matter for growth competitiveness and employment.

V. For an Institutional Analysis of Labour and Growth

The provisional conclusions of this paper can be summarized by the following propositions.

1. Comparing conventional macroeconomic modelling with growth theories deliver an apparent paradox. Since the Keynesian theory, the short run analysis of activity and employment deals intensively with the possible impact of imperfections of labour markets and wage formation: involuntary unemployment is frequently attributed to the specificity of nominal wage formation in monetary economies, whereas, conversely, new neo-classical theories challenge the generality and coherence of this result. On the contrary, almost all growth theories — with the exception of development analyses — finally assume a near perfection of labour market adjustments with only short run frictions and adjustment costs. Consequently, according to the conventional wisdom of economists, long term growth is exclusively driven by demography and technical change (Table 7).
2. The renewal of interest for endogenous technical change and the so-called new growth theories bring back old ideas of the 1970s within the context of fully rational and utility maximizing individuals, interacting via markets. The emphasis upon innovation as a source for transitory oligopolistic rents takes seriously the hypothesis of imperfect product markets, but keeps untouched the core hypothesis of

Table 7. A Taxonomy for Macroeconomic and Labour Theories: The Forgotten Cell of New International Growth Theory

Time horizon	Short run	Long run
Labour market		
Perfect	1. Neoclassical models	2. Neo-classical growth theory
Imperfect	3. Keynesian theory	4. New institutional growth theory

the Solow (1956) model: perfect information and symmetry upon labour markets, which delivers a complete long run flexibility of nominal and real wages. Casual observation as well as systematic international comparisons suggest that this hypothesis is far from evident: how to explain, for instance, the persistence of the high European unemployment rate over two decades?

3. Basically, the paper argues for a new institutional growth theory which would take into account the full impact of the contemporary wage labour contract and collective bargaining. First, the influence of industrial relations upon division of labour and increasing returns, a core ingredient of the Romer (1986) model. Second, the consequence of the collective agreements upon labour mobility, layoffs, work reduction and, of course, wage formation. Finally, the two-sided causality between technological and organizational innovations on one side, the precise content of labour contracts on the other. Adding up these three elements might induce contrasted growth regimes, which attribute a key role to labour market institutions.
4. The very simple growth models elaborated by the 'régulation' theory suggest that this could be a promising avenue for future research along a neo-institutionalist spirit, be it mainly neo-classical or somehow heterodox. On one side, it can be argued that the unprecedented growth after World War II is now without any relationship to the genuine Fordist employment relationship: the acceptance by unions and workers of labour division and heavy mechanization has delivered very fast productivity increases which could be shared by firms, workers and even the state, via the welfare system. Innovations and their rapid spread have been stimulated by this very specific configuration of labour institutions. On the other side, an international cross section analysis among OECD countries in the 1970s and 1980s suggests that some constraints imposed by state legislations or collective agreements might have reduced the short-

run flexibility of contemporary labour markets but they have simultaneously stimulated labour-saving devices as well as product innovations. Finally, these highly institutionalized labour contracts might have delivered some unemployment, but simultaneously they have enhanced growth and productivity.

5. Finally, the current numerous studies on the efficiency impact of labour regulations should not restrict their investigations to short- or medium-run adjustments but should also contemplate their long term implications. The sketchy evidence from available literature suggests that minor short-run rigidity costs might be overcome by the dynamic efficiency promoted by a specific set of labour institutions. On the contrary, large short-run flexibility might inhibit technical change and the improvement in standards of leaving. For example, the external and defensive flexibility experienced in North America might deliver static efficiency, whereas the internal and organizational flexibility socially constructed in Germany, Sweden and, of course, Japan are promoting dynamic efficiency. More rigorous and detailed investigations would have to check the relevance and generality of such a hypothesis: for long term growth, labour institutions matter.

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