Macroeconomic Performance in Germany and the UK –

Institutional Complementarities and Long-run Dynamics

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Abstract

The different post-war macroeconomic performances of Germany and the UK are analyzed using a concept called institutional complementarities. Imperfections on the labor and the financial market call for reinforcing solution mechanisms causing the accumulation of human capital necessary for technologies based on experience and incremental innovation. The absence of one of the solution mechanisms leads to the adoption of decreasing-returns-to-scale technologies.

Analyzing the institutional evolution we show that the incompatibility between the financial system and the labor relations in the UK has caused the traditional form of vocational training to be abandoned and low-skill technologies to be adopted.

Keywords: Institutional complementarity, labor relations, financial relations, international comparison

1. Introduction

Comparison between different economies has often been an instrument to understand differences concerning economic performance – be it unemployment, inflation, output and productivity growth or some other, convenient measure of macroeconomic outcome – and hence comparing the German and the UK economy cannot claim much novelty. Quite to the contrary, looking at the large amount of available literature, it can almost be considered to be a "classic" when confronting these two economies. Many have put weight on either of the following factors: the financial system which imposes short-run profit maximization on British managers, the vocational training system which does not provide sufficiently high standards in the UK in order to deliver constant skill upgrading of major parts of the workforce, or – alternatively, the conflictual way wages have been negotiated in the UK compared with a much more harmonious wage bargaining system in Germany.

Interestingly, none of the studies – to our knowledge – has tried to put these different factors together analyzing them as being part of a larger system with its own structural development and long-run dynamics which may provide a fuller picture only when considered over long time periods. Much of the reason why this has not been sufficiently taking into account in the existing literature has to do with the lack of a corresponding theoretical framework which would allow to analyze systemic effects of non-price mechanisms[2]. At first, an understanding of how price and non-price allocation mechanisms may spill over to different markets through their effects on microeconomic decision makers (e. g. investment decisions in physical as well as human capital) had to be developed before linkages between different markets in an economy – as they arise quite naturally in a general equilibrium framework – could be more fully taken into consideration by empirical investigations.

Recently, and following the renewed interest in institutional economics since the late 70ies as well as the developments in contract theory throughout the 80ies and 90ies, economists started to integrate contractual considerations more fully into macroeconomic analysis[3]. Here, contractual difficulties either are introduced exogenously or arise as a result of social interactions endogenously but in any case cannot fully be resolved through existing individual contracting. Institutions shaping the relations on labor or financial markets may constitute second-best mechanisms to overcome these problems, even though they quite often introduce distortions on their own. More importantly, however, institutional arrangements on one market may affect the impact of institutions on different markets.

In the most obvious case, a technological complementarity exists where supply for both complementary factors is partly determined by two different institutional arrangements. This can arise when innovative activity is determined by investment in R&D as well as the availability of skilled labor. Both factors are characterized by contractual difficulties of various nature. Investment in R&D is often constrained by long gestation periods which require patient financial investors willing to accept low profits in the short-run or even to rescue temporarily failing projects. Not all financial investors are in a position to deliver these kind of contractual arrangements (see Dewatripont and Maskin, 1995). On the other hand, the supply of skilled labor is constrained by imperfect capital markets, search costs and hold-up problems when human capital investment is specific. In such a situation, the marginal value of a specific contractual arrangement is affected by the contracts available on the market that supplies the complementary input factor. The arising interaction between institutional arrangements on both markets is therefore called "institutional complementarity"[4].

In order to apply these considerations to a comparative analysis of the German and UK macroeconomic performance we study a relation of institutional complementarity under dynamical aspects where the existence of institutions is not exogenously given but arises out of the development

[2] Such as institutions or institutional arrangements framed by trade unions, collective bargaining arrangements, labor law, types of available financial contracts, predominance of banks, etc.

[3] Without being exhaustive, most recent examples include Caballero and Hammour (2000), Ernst, (2000), Hall and Soskice (1999).

[4] Different definitions and approaches exist. Aoki (2000) speaks about "synchronic linkages".

of the economy and the institutional interplay. In a dynamic context this opens for an understanding of the conditions of existence and stability of the arising (very long-run) institutional equilibria.

For that purpose we use a process of endogenous human capital formation as a source of economic growth. As the education process comes at a cost for workers, they may initially not be interested in building up skills. Furthermore, underdeveloped financial markets do not allow long-term investment strategies and exclude firms from offering interesting opportunities for workers to leave the 'no-skill' trap. Growth therefore only occurs if workers are willing to invest in human capital and can expect to find opportunities to 'money' these investments; in this respect skilled labor and long-term finance are complementary 'inputs' for the innovative technology.

Institutional actors on different sectors in the economy may help to provide the necessary incentives. In a mechanism similar to Cahuc and Michel (1996), trade unions are supposed to rise the wage over the competitive level, reducing job offers for unskilled workers and hence producing unemployment which gives incentives (by lowering opportunity costs) to these unemployed to switch - after a schooling period - into the innovative sector. Banks, on the other hand, will only be present if there is a demand for long-term capital by innovative firms as the oligopolistic structure of the banking sector raises loan costs above the costs of finance on the stock market making them unattractive for homogenous goods firms. However, this self-selection situation with a interest rate differential creates the incentives to single out good entrepreneurs who find the necessary finance for their innovative projects. The resulting relation between trade unions and banks resembles that of an institutional complementarity.

The dynamical process takes place when both institutions are allowed to change size with respect to the number of firms and workers. While increasing unionization leads to higher militancy and union wages, it creates also higher unemployment and undermines the long-term conditions of existence of unions. On the other hand, an increasing banking sector allows more and more firms to produce innovative goods; however, the raising competition between banks reduces the selection quality allowing even less able entrepreneurs to enter the innovative market. Therefore and under certain conditions, the dynamic relationship between banks and trade unions gives raise to multiple equilibria of which the stability is analyzed.

The existence of multiple steady states constitutes the starting point for the comparison between the German and the UK economy. Recognizing important differences in the macroeconomic outcome after WWII concerning unemployment and productivity as well as output growth[5] the paper argues that one major difference between both countries lies with the way relations on the labor and the financial market interact and have evolved during these fifty years. In fact, having been characterized by similar labor relations with wide-spread wage negotiations and a related (public policy) approach in human capital accumulation – namely through a strong vocational training system with the objective of generally recognized diploma – but also by marked differences concerning the way investment is financed and contractual difficulties are overcome in both countries, complementarities between a certain type of human capital and the kind of innovative activity made possible by specific financial relations have led to a successful and self-enforcing institutional environment in Germany while in the UK these relations have not been compatible which each other. Given the long time periods involved with institutional change, these developments have finally led to the abandoning of the traditional form of labor relations much to the advantages of the kind of financial relations already in place in the UK[6].

[5] As will be shown in the following, on a basis of man-hour output growth (taking into account increased leisure and hence welfare) the German economy has outperformed the British one throughout the entire period. A similar record holds for unemployment and investment.

[6] In fact, there is no necessity to obtain this kind of outcome. Institutional change is often shaped by political conflicts with no predefined result. The development of British labor and financial relations shows clearly that – especially during the 70ies – that a more labor friendly outcome could have been possible.

The paper is organized as follows: Section 2 starts by presenting a simplified model of institutional complementarity and coevolution and analysis the arising equilibria. Section 3 recalls the major macroeconomic developments between 1950 and the beginning of the 90ies in Germany and the UK. Section 4 presents the evolution of the labor relations in both countries taking into account the wage bargaining dimension as well as the way skill acquisition has been organized. Section 5 compares financial relations in both countries with a particular weight being put on the kind of contractual difficulties that have been solved by either type of relation. Section 6 puts both aspects into perspective and tries to give a possible outlook to further developments. Section 7 concludes.

2. Theoretical considerations

In order to give a theoretical direction to our comparison we present in the following a rough outline of the theoretical underpinnings of a model with institutional complementarities and coevolutionary change of the institutional setting. The model is based on Ernst (2000) and kept as simple as possible in order to allow easy application to the empirical data.

2.1. A simple search model

Suppose an economy with two production sectors (alternatively two industrial activities): one which is characterized by increasing returns to scale (constant returns to capital), the other with constant returns to scale (and hence decreasing returns to capital). In order for the economy to grow at a positive rate in equilibrium, a non-trivial amount of firms have to produce in the first sector. Similarly to Amable (1995) we want to make the assumption that technological progress spills over to the decreasing returns to capital sector. This way, a non-trivial sector distribution can exist in equilibrium.

Investment in the increasing returns to capital sector is supposed to depend on two factors: the existence of a sufficiently high skilled labor force and the presence of so-called "patient" capital – guaranteeing the possibility of investment in project with long gestation periods but high returns and knowledge spillovers.

In such a framework, costly human capital investment as well as (costly) financial intermediation will only arise when both factor suppliers (i.e. workers and financial investors) have sufficient high levels of expectations that they meet the complementary factor and that they can realize their expected returns thanks to firms investing in these innovative technologies. In general, strategic complementarities combined with uncertainty gives raise to coordination problems which may be solved through public signals. All these factors will play a role in explaining the comparative performances in Germany and the UK.

2.1.1. Job market flows

Firms are supposed to be heterogeneous with respect to their innovative ability and to labor demand elasticity. Now, suppose that workers have the choice to stay in the competitive segment of the labor market, to get unionized or to invest in human capital to look for a firm in the innovative sector. Let J^c, J^u and J^e be the respective values for these three labor markets (see figure 2.1. for the different labor market flows[7]). Trade unions in the unionized segment negotiate wages for workers. An increasing organization rate, n, (compared to the remaining competitive segment) lowers firms fallback' positions and hence increases the wage bargaining power; therefore $J^u = U(n)$, $U'>0$.

Given firms' labor demand elasticity heterogeneity, increasing unionization will lead to a more than proportional increase in unemployment (supposing that firms with low labor demand elasticity get organized first), making it increasing difficult for unions to impose their wages, hence $U''<0$. Those unemployed face a double choice: either they may consider queuing in front of a unionized firm waiting to get paid the higher wage, or they may consider to switch back to the competitive segment

[7] All figures and tables can be found in the appendix.

or, finally, they may decide to invest in human capital to get access to the innovative sector (which only employs skilled labor).

All three options are considered to be costly (represented by c_o and c_e in figure 2.1), as queuing may imply a minimum waiting time (especially if some LILO rule applies to the waiting pool), the competitive segment may require search costs and the training period a costly up-front investment or a prolonged period of low wage. Given these costs and flows and holding net inflow in the education sector constant, the unionization rate is determined by:

$$J^u(n) - c_o = J^c - c_s \quad \Rightarrow n^* \tag{1}$$

where c_s stands for the search costs on the competitive segment.

The value of a job in the competitive segment not only depends on the wage rate to be obtained but also on the tightness of this segment of the labor market: the less unemployed there are to look for a job, the tighter the market and hence the higher J^c. Therefore, all flows out of the pool of the unemployed towards the education system and into the innovative sector will increase the value of a job in the competitive segment and consequently raise the degree of organization:

$$n^* = n(\theta), \;\; n' < 0, \quad \theta \equiv \frac{N - L}{L} \tag{2}$$

where q represents the unemployment rate in the unskilled labor market, with N: total unskilled workforce and L: employed unskilled workers.

2.1.2. The education decision

In order to determine the education decision of unemployed workers we have to consider their possibilities to earn a return on their investment.

Workers are characterized by different learning abilities, h_i, which may impose different costs of going through the educational system (e.g. by attending school for a longer period of time). Given a job value J^u that can be gained in the innovative sector (and that may depend on the development of an appropriate financial market), the marginal worker, i, faces the following switching decision:

$$J^c(\theta) - c_s = J^e - c_e(\eta_i) \tag{3}$$

with $\partial J^c / \partial q < 0$ and $c_e'(h) < 0$. In order to better understand the impact of the banking sector on the education decision, we want to make the assumption that in the absence of any financial intermediation, and hence without any innovative firm present, unemployed workers would not consider to attain the educational system.

Equation (3) defines implicitly the sustainable rate of unemployment given the job value for skilled workers; with no employment alternatives, workers are forced to switch back to the competitive segment, reducing the bargaining power of unions by reducing the maximum amount of people laid-off leaving the unskilled labor market.

2.1.3. Finance for innovative investment

Innovative investment is often characterized by uncertainty, informational asymmetries and sometimes long gestation periods[8]. If a firm wants to get funding for this kind of investment, outside investors need to provide monitoring or some kind of incentive scheme to make sure that their financial investment yields the expected return.

[8] In some cases, implicit, specific capital is built up when (skilled) workers are dealing for longer periods with a given technology, gradually improving its functioning. This experience capital is, however, difficult for an outside investor to verify and to evaluate.

In this set-up, we want to suggest a self-selection mechanisms that makes sure that only the firms with the better industrial projects gets funding. We have already pointed out that firms are distinguished by the – un-observable – innovative ability d_i supposed to be uniformly distributed between zero and unity. Suppose moreover, that all firms dispose of the same amount of collateral[9]. Then an interest differential between finance for an innovative investment and finance for an investment in the decreasing returns to capital sector makes sure that only those firms will ask for funding that have sufficiently high prospects of success; a self-selection situation prevails.

Using a Monti-Klein model of oligopolistic banking (Klein, 1971; Monti, 1972), we can derive that the interest rate proposed by the bank, r^b, varies with the total amount of disposable loans, D. Suppose that every bank has only a given amount of loans to lend, d, we can conclude that:

$$r^b = r^b(b), \ \frac{\partial r^b}{\partial b} < 0, \quad b \equiv \frac{D}{d} \tag{4}$$

with b the number of banks in the innovative sector and a measure of the size of the innovative sector. This is of course a standard result in industrial organization. Now suppose that the value of an innovative project is given by $V_i = V_i(d_i)$. Then the free entry condition into the innovative sector from the point of view of banks is given by:

$$V_i(d_i) \overset{!}{=} r^b(b) \tag{5}.$$

Given that $\P V_i/\P d_I < 0$ and increasing size of the banking sector allows more and more underperforming firms to get access to banking finance.

2.1.4. Matching banks with innovative workers

Given the strategic complementarity between financial investors and workers, we have to determine the maximum amount of unemployed workers willing to invest in skills and of financial investors willing to form a bank and propose their funds in the innovative sector.

Given an expected matching rate p' to find a bank, a worker willing to switch needs a minimum qualification given by:

$$\left\{\theta \middle| E\left[J^e - c_e(\theta) \middle| p'\right] > E\left[J^c - c^s \middle| p'\right]\right\} \ \Rightarrow \quad p' > \bar{p} = \frac{c_e(\theta)}{J^e - \left(J^c - c^s\right)} \tag{6}$$

hence all workers with sufficiently low schooling costs such that $\bar{p} < p'$ will decide to switch. On the other hand, financial investors expect q' workers to invest in education and to enter the innovative sector. Hence, they would only decide to form or join a bank when their expected pay-off is higher than in the bond market:

$$E\left[r^b(b) - c^b \middle| q'\right] > E\left[r \middle| q'\right] \ \Rightarrow \quad q' > \bar{q} = \frac{c_b}{r^b(b) - r} \tag{7}.$$

In the expectational equilibrium, beliefs will adjust to the minimum value, and hence we can define a coordination parameter $\psi = \min\left(p'(\bar{q}), q'(\bar{p})\right)$ that gives the maximum coordination rate between both players. Obviously, the higher either $\bar{q}$ or $\bar{p}$ the lower will be the coordination success.

2.2. Coevolution

The above model give raise to a coordination problem and therefore to potential multiplicity of equilibria. With sufficiently smooth value functions, three equilibria can be shown to exist with two of them being stable. Given (2) and (4), at least the upper one will not be a corner solution, while the

[9] I.e. the collateral cannot be used to sort out firms.

lower one will be characterized by a complete absence of an innovative sector given the thresholds that prevail due to uncertainty of the matching and the inherent difficulties for unions to organize potential members. The resulting phase diagram of the dynamic on *b* and *n* is given by figure 2.2.

The two equilibria E and O are the stable ones while F is the unstable one. The outcome of the complementarity process between banks and trade unions depend on the initial position of the economy. Given the fact that equilibrium F is a saddle-point, the basins of attraction can be calculated be deriving the stable branch (S-S) of this saddle. Every initial point below or to the left of this stable branch leads to a reduction of both institutions; the economy produces then only the homogenous good and has a completely competitive labor market. Every initial point above or to the right of the stable branch of F leads to equilibrium E where a highly organized labor market for the homogenous good production and a big banking sector for the innovative sector prevails.

Government intervention in the process can improve the innovative equilibrium or provide necessary conditions for its existence. The shape of the bank-isocline depends on the reaction of the inflow into the banking sector which in turn is influenced by the interest rate banks can charge and the failure of innovation. Any government policy which decreases the rate of innovation failure or which changes the distribution of success rates towards less drop-offs reduces the exit-rate out of the banking sector. This leads to a steeper isocline and to a higher cutting point E (or to the development of a second equilibrium if there had not been before).

An interesting role is played by the coordination failure parameter ψ. As ψ goes down, coordination fails more and more often. The inflow in the innovative sector reduces and the equilibrium position exposes reduced organization of trade unions and banks. Notice that it is possible for ψ to reach a point where both isoclines do not cross any more. In this case, the level of coordination failures does not allow an institutionalized equilibrium any more. Again, government intervention may help to overcome this problem by providing signals such as certified school leaving exams to increase the matching rate.

Three main hypotheses therefore arise out of these theoretical considerations:

Hypothesis 1: A sufficiently compressed wage structure reduces employment in the unskilled labor market giving incentives for unemployed to look for alternatives, maybe at the cost of getting through the educational system.

Hypothesis 2: The financial sector has to favor innovative, skilled-labor-intensive technologies in order for prospective skilled labor to anticipate sufficient returns to schooling,

Hypothesis 3: In case of a strategic complementarity paired with uncertainty concerning the outcome of the game, multiple equilibria with highly different performances may arise.

These three hypotheses will now be the object of our empirical investigation comparing the long-run evolution of the German and the British economy and their explanatory power for the divergent macro-economic performance that have been observed during the forty post-war years.

3. Macroeconomic performance in Germany and the UK – a quick reminder

Before turning to the institutional evolution of both countries this section is intended to give a short reminder of the long-run macroeconomic performances of Germany and the UK. What is important for our argument here, is to analyze the impact of the institutional arrangements in both countries on the competitiveness of firms and their investment strategies. This said, given that firm level data for a period over fifty years is not available the comparison has necessarily to be reduced to highly aggregate data, as we will see in the following.

Comparing Germany with UK shows a consistently divergent performance over at least the period 1950-1980 if not even until the beginning of the nineties (where the break occurred due to the reunification makes the type of analysis suggested here substantially more difficult to carry out): lower unemployment, higher net investment, higher GDP growth (at least when measured on a per man-hour basis) and higher labor productivity growth (see table 3.1.).

This is all the more surprising given the more favorable starting point for the British economy after the war and has been partly ascribed to some catch-up effect combined with a "good", i.e. very liberal, macroeconomic policy (Giersch, Paqué and Schmieding, 1992). The catch-up effect seems indeed to be of some importance but cannot account for all of the increase in TFP growth (Carlin, 1994, p.4) and – more importantly – cannot explain how the German economy managed to overturn the British economic performance from the middle of the sixties (see table 3.2 and 3.3).

Towards the end of the period under considerations, there seems to be some slowdown in the economic performance in Germany compared to the one observed in the UK. Two points can, however, be made to adjust the comparison: first, net investment (see table 3.1), returns to capital (Tadde? and Coriat, 1993) and world market export shares for manufacturing goods remain important and stable for German enterprises throughout the eighties (Carlin, 1994, p. 27). Second, a major labor market policy measure had been the negotiated working time reduction; a comparison of GDP growth per hour worked shows that the German economy continued to grow faster than the British one (Scarpetta, Bassanini, Pilat and Schreyer, 2000).

A second important difference stems from the different approaches, German and British firms took towards competition on world markets for manufacturing goods. As has been recalled by Oulton (1996), the lower human capital input in British firms can explain their lower export shares. Finegold and Soskice (1988) make the point that the lower skilled labor input forced British firms to compete on price-sensitive segments of world markets while German firms with a much higher skill input had the possibility to switch to innovation intensive technologies that are usually much less price-sensitive.

4. Comparative evolution of the labor relations

In order to understand the long-run institutional evolution both countries have gone through, we first will present the different approaches Germany and the United Kingdom have taken with regards to the labor market. Our argument here will be to show how the similar starting point with regards to up-skilling[10] of the labor force failed to deliver the expected results in the UK, how this led to an increasing abandoning from the 1970's on of incentive wage bargaining and how the individualized wage determination took over during the 1980's. Moreover, we will look into some specific reasons why the two vocational training systems delivered so different results.

4.1. Unionization and wage bargaining

The United Kingdom has been – and continuous to be – the country with the higher unionization rate compared to Germany (see figure 4.1.1). At first, one would therefore think of a higher impact of incentive wage bargaining there than here. However, a number of reasons have prevented a more compressed wage structure to emerge, reducing the impact of unionization of the labor force on the supply of skilled productive workers.

The British trade union system is one of the oldest among European countries, dating back to the start of the 19th century where it obtained official recognition and the possibility to bargain over wages and working conditions. However, coming out of the Guild system, unions largely have been organized according to professional lines – an important factor explaining the conservative training structure as we will see in the following – but more importantly bargained contracts only had local value as the

[10] Implicitly in this article, we oppose two forms of human capital investment: investment into skill up-grading of productive workers and research relevant human capital of white-collar employees.

state did not intervene to enforce them or even to enlarge their application. As can be seen from figure 4.1.3 this had an important impact on degree of labor conflicts and contributed to low cooperative labor-management relations (Lane, 1989, pp. 203-211).

This lack of cooperation together with the local impact of wage bargaining and the lack of coordination among different unions greatly contributed to a more individual wage schedule right from the beginning. Despite efforts during the sixties to follow a more corporatist approach with respect to labor relations (see figure 4.1.2 reflecting union Herfindahl indices; Crouch, 1993, p. 241), British union-management relations never reached the degree of coordination we observe in Germany.

Branch-level wage bargaining has been further hindered by the already mentioned fact that British trade unions have been organized on the occupational level. More than once, the TUC had to step back from its intention to increase coordination and to impose a common wage policy.

During the eighties the political winds turned against trade unionism in general. Legislation related to minimum wage and employment protection has been gradually abandoned and – more importantly – trade union (legal and customary) rights abolished, such as closed shops and unofficial strikes (Chapman, 1994, p. 274).

Moreover, a purely economic fact ads to the general decline of unionization, that is rapid industrial change, away from manufacturing – where most of the workforce had been unionized – towards the various service industries. Wage bargaining in general therefore is declining as the bargaining power of the organized workforce steadily decreases.

Bargaining strategies – where they existed – had been reoriented to reestablish enterprise profitability and employment stability, reducing the bargaining contract even further to the individual firm level. The effect of this combined uncoordinated bargaining with declining bargaining power can be easily detected in the available data. Being characterized by a higher wage disparity from the beginning, the British economy exposes ever increasing wage inequality over the eighties (Brown and Walsh, 1991), being substantially higher than during earlier periods (Ingram, 1991).

At the end of the eighties, therefore, the UK had flexibilized wage determination down to the individual level, leaving no room for any incentive element in the way it has been described by our theoretical considerations. They are only oriented towards static efficiency without any dynamic effect on skill upgrading or technological advancement.

Starting from a similar point at the beginning of the fifties, Germany has had a remarkable stable evolution of its labor relations. Having been reconstituted after the war, they never managed to gain as high a membership rate as the British did. However, for historical reasons as well as for reasons of their recent deconstruction, trade unions in Germany were organized on an industry basis, with the exception of the white-collar workers union (DAG, “Deutsche Angestellten Gewerkschaft”) and the civil servants union (DBB, “Deutscher Beamtenbund”). This is easily reflected in much higher Herfindahl indices (see figure 4.1.2.) and an average of 17 trade unions in Germany compared to about 92 at the heydays of the British trade union movement.

A number of legislative rules and characteristics of the German wage bargaining system – clearly described procedure rules, limitation of strike measures, fixed objectives of wage bargaining outcomes (wages and workplace organization only) and strongly organized employer organizations – have greatly reduced the number of industrial conflicts and pushed both bargaining sides to find cooperative agreements. Strike has usually been seen as the last means of pushing through one’s interest, not as a quasi-natural means to be employed as in the United Kingdom (Lane, 1989, p. 202 and 211).

Cooperation in this sense usually increases the cake to be divided and makes the established system more acceptable to both sides. Unionization becomes easier and – more importantly – the locally negotiated agreements can be extended without too much resistance to other regions and industries in

the economy[11]. Moreover, the fact that wage bargaining takes place on the industry level allows for a truly solidaristic bargaining wherein the wage structure is more compressed than under competitive conditions with the lowest wages pushed further ahead than higher wages.

At the same time, German unions usually do not oppose any internal reorganization of firms due to changed competitive conditions. Even though they act in general as an additional employment protection mechanism, a fluid and lively external labor market does exist, partly due to the fact that qualifications are certified, allowing workers to switch firms without loosing to much compared to their actual status – a point we will come back when discussing the vocational training systems.

The stability of the established bargaining system together with a high acceptance of both sides of the labor market has moreover contributed to shape durably anticipations of new entrants on the market. This is probably the most essential feature of the industrial relations in Germany: that young people can reliably count on a certain wage structure and have (long-run) incentives to avoid the low-wage segments of the labor market through initial investment into their human capital[12].

Even though the unionization rate is decreasing since the middle of the eighties – due to sectoral change and increased unemployment – the coverage rate has been kept exceptionally high (at around 90%, see OECD, 1997, p. 78), preventing increased individualization as has been observed in the UK and guaranteeing continuing dynamic incentives for vocational training.

4.2. Vocational training systems

The implied incentives to undertake a vocational training are obviously just one part in the long-run comparison of both economies. In order for these incentives to be effective, the existing educational system has to provide the necessary assets, helping young people to avoid the low-skill, low-wage trap. It is therefore necessary to analyze to what extent both training systems have delivered the necessary schooling and how this may have influenced the dynamic path we can observe.

In fact, the quality and characteristics of the vocational training systems – being of utter importance for the success of coordination between the financial sector and the labor market – have evolved under the influence of the incentives set by the wage structure and due to regular policy interventions. But again, a stark contrast can be detected when comparing the British experience to the German one.

4.2.1. Vocational training in the UK

Initially, both systems have largely viewed an investment into skill upgrading of productive workers as immensely important for the functioning of their productive system. But already in the initial focus some slight differences appear.

Traditionally, vocational training had be seen in the UK as belonging to the private sector only, depending only on the engagement undertaken by entrepreneurs (Keep and Mayhew, 1994, p. 308), a stance that had not immediately been challenged after the war due to macroeconomic outcomes considered to be satisfying (Finegold and Soskice, 1988, p. 25).

It was not until the sixties – together with the general objective of moving to a more corporatist system with tripartite macroeconomic policy making – that various British governments tried to increase the role of the State in the provision of schooling in general, and of vocational training in particular. From 1964 on, Industrial Training Boards (ITB) had been created, levying taxes and distributing subsidies

[11] Even though in Germany negotiations take place on an industry level, usually only a specific region will be picked out to establish an agreement which then is in general extended – with minor modification to all other regions of the same industry.

[12] This investment is quite substantial from the point of view of young people given their lower wage during their initial years of training and work.

according to whether or not a particular firm had contributed to the overall skill investment. Supervised by a board of employers' and trade unions' representatives, their objective was to guarantee the continuous up-grading of available skills in the workforce.

Rising critiques due to rigidities and inefficiencies pushed the government to move even further ahead (Crouch *et al.*, 1999, pp. 157-159). From 1973 on, the Manpower Services Commission (MSC) – a tripartite commission composed of employers, trade unions and the State – was meant to better control and coordinate the efforts of the various ITBs in order to take into account the actual capacities of different firms to invest into vocational training and to better coordinate regional demand and supply disparities – without much success.

A number of reason can be put forward to explain this failure. One recurrent feature of the British industrial relations concerns the lack of coordination among various microeconomic (collective) actors. Neither the CBI (Confederation of British Industry, the employers association), not the TUC had sufficient power to impose on their local components to follow the policy adopted on the national level.

Moreover, the fact that trade unions had been organized according to professional lines and were able to determine in part the structure and contents of the training actually carried, meant that an important blocking power existed inside the system, able to conserve existing structure and only slowly adapting to any change coming from various pressures on the sectoral distribution. Trade unions continued to defend their "job territory" even though this meant to give up certain opportunities requiring modification of the distribution of professions.

Consequently, only a small minority of secondary education school leavers considered vocational training as being an interesting way of integrating the labor market; mostly they preferred to access it directly. This is all the more surprising as – contrarily to their German counterparts – they could count on almost 100% of an adult's salary for most of the labor market segments. No financial loss would have therefore occurred when spending time in vocational training.

Given the increasingly disappointing results the MSC system delivered, it came without surprise that the Thatcher administration completely reversed the objectives, counting much more as before on market incentives. Most ITBs had been closed by 1981 and the MSC changed its orientation. Trade unions have been excluded from the organization of vocational training, considered to relieve only in the hands of employers associations (Keep and Mayhew, 1994, p. 313).

Only towards the end of the eighties, the administration finally introduced new measures, meant to guarantee some minimum standards and delivering a certification, the National Vocational Qualifications (NVQ, introduced in 1988). Their concentration on a specific field reproduced, however, the same mistakes that had been characterized by the earlier approach: polyvalent training and continuously changing professions – integrating competencies from various fields – could barely be integrated in this system (Crouch *et al.*, 1999, p. 129; Keep and Mayhew, 1994, p. 320).

The resulting low skill-level of the average productive worker in the UK, had drastic consequences for the competitive strategies of British firms (Finegold and Soskice, 1988, p. 27). Instead of competing with their German counterparts on the high-quality non-price segment, they had to accept the price-sensitive low-quality segment due to insufficient and uncertain supply of skilled labor.

Even though the British administration returned attention to the development of a sustainable vocational training system with the introduction of various certifications and the newly formed Training and Enterprise Councils (TECs) – local councils meant to form local enterprise networks to better organize the vocational training and to promote skilled worker mobility – the success seems to be relative and hence not yet allowed to durably quit the low-skill trap (OECD, 1998, p. 145).

In order to understand the lock-up of the British economy in this situation it does not suffice, however, to concentrate only on the labor market. Given the complementarity between skilled labor and patient

capital to allow investment in R&D intensive technologies our theoretical considerations have shown that we need to analyze the financial relations as well. Before turning to that point, however, we will first take a look at the vocational training system in Germany.

4.2.2. The German "Dual System"

In a similar way to the labor-management relations we described in the previous section, the vocational training system in Germany has been characterized by an extraordinary stability throughout the forty years in question. In fact, the system can largely be viewed as a success story given the high acceptance by young people. While some 50% of young school-leavers decided to participate in the system in 1950, this ratio increased to 70% at the beginning of the nineties. In other words, the system has obtained a status of a *quasi*-obligation to access the labor market. Even those who do consider to go to university still may prefer to get a vocational training first (12% of all apprenticeships).

Among the reasons to explain this success we already mentioned the incentives given to young people to continue their schooling in order to avoid to be trapped in the low-skilled job market segment characterized by high unemployment. As we have seen in the case of the UK, this can only be part of the story; the other part has to explain high skilled labor demand and the willingness of employers to secure the vocational training through continuous investment.

The so-called "dual system" is organized by the local chambers of commerce – constituting obligatory enterprise organizations around a local industry with one third of the member of its administration board being selected among employers representatives. The chambers have the statutory power to impose and administer a public policy in some domains, in particular concerning the development of a sufficient supply of skills to the local enterprise community.

The possibility to determine the contents of the various skills, to control their implementation and certification and to use formal and informal means to constrain all enterprises in their network to comply to their duties guarantees the acceptance of the training in their local employers basin and beyond. This increases considerably the possibility for skilled workers to quit a particular firm without being penalized with respect to their current status. A certain flexibility – at least at the local level – even allows social and economic progression making the German labor market much more fluid than its British counterpart (Marsden et Ryan, 1991; Burda and Wyplosz, 1994, p. 1288).

This has obviously beneficial effects for the participating firms as well to the extent that the supply of skilled labor in the local pool depends only partly on his own investment. In case of need, he often has the possibility to recur to the market instead of building up the necessary capital himself. This can be particularly important in times of a slowdown of the business cycle: even though it may be individually rational to discontinue investment in vocational training, the reduction of supply would have important negative consequences once the up-turn sets in again. The pressure the chambers can excerce to comply with the training system allows them to smooth out the business cycle and to guarantee a continuous supply of skilled labor.

A second reason for the success has been the gradual but continuous adoption of the skill contents to the needs of industry – at least within a given industrial specialization[13]. As the local enterprises have been the principal actors for modification of the curriculum, the vocational training could be rapidly adjusted to new industrial developments. Trade unions have been largely excluded from this adaptation process, contrarily to their British counterparts (Sengenberger, 1992, p. 248). Moreover, their organization on the industry level did not push them to defend a particular profession but rather to insure the employability of their membership within the wider area of the industry. In this respect, they are playing an active role in defending the current system in general, providing a large workforce with the necessary skills to access a high-wage segment of the labor market.

[13] This qualification is indeed important as it may explain the recent difficulties of the German economy to adopt its industrial specialization to invest into new and more promising sectors such as IT and biotechnology (see also Lane, 1989, p. 68).

The comparison of the organization of the two labor markets thus far therefore shows that in Germany the conditions put forward in the theoretical considerations of section 2 seem to be satisfied while in the UK – even though initially be present – they lost their strength throughout the analyzed period. We have seen that one possible factor explaining the weaker impact of the incentive element in the wage structure in the UK has been the lower union organization rate and a somewhat less effective vocational training system. However, the decreasing dynamic observed from the end of the sixties on can not be explained by these structural characteristics; another element has to be added, reflecting the importance of the financial relations for the realization of certain types of investment and consequently rewarding the effort of the education system.

5. Comparative evolution of the financial relations

Financial systems and the differential organization of the financial sector affect the real sphere of an economy in various ways. In the absence of complete markets and symmetric information, transaction costs, liquidity problems and informational asymmetries have to be overcome to assure the investment in pareto-optimal technologies. In our theoretical considerations in section 2, we have concentrated on problems of asymmetric information in order to explain why some technologies may not find the necessary funding to get installed. The comparative part in this section therefore focuses on the impact the different organization of the financial sector in Germany and the UK may have had on their respective economic performance. Again, the important point here will be whether or not the existing financial relations may have favoured the incentives for human capital build-up provided by the labor market institutions – and if not – how this may explain the long-run modification of labor relations observed in the UK.

5.1. The banking sector

One of the most prominent oppositions in financial theory has been that between bank-based and stock-market based financial systems. While the former is supposed better in providing funds for long-run investment with high monitoring costs and needs for temporary refunding (among many others Mayer, 1988; Dewatripont and Maskin, 1995), stock-markets allow more efficient investment, provide checks against unprofitable industrial projects and allow a better aggregation of heterogeneous information and expectation (Allen and Gale, 1995; Allen and Santomero, 1998).

In this respect, at the beginning of the nineties the German and the British financial sector find themselves on the opposite side of a scale that ranges from bank-based to stock-market based financial systems as can be seen in table 5.1.1. This difference is historic given the divergent approaches taken to economic development in both countries.

While the UK with its early industrial revolution already introduced the London Stock Exchange (LSE) in 1802, Germany – lagging behind in the development of its industrial sector – relied on private banks – piloted by public subsidies – in order to catch-up from the late 19th century with the rest of Western Europe (Dyson, 1986, p. 120).

Even more importantly, the simultaneous development of the British banking sector still led to quite different bank-firm relations than in Germany, a point we want to take up in the following before turning to the question whether the stock market have a constituted a reliable substitute in the UK.

Our theoretical considerations have put forward the long-run character of a financial relation in order to allow the build-up for certain technologies with long gestation periods. In this respect, it seems that the British banking sector has almost exclusively favored a short-run approach. Most of the debts are much more short-term than in other countries (see figure 5.1.1) with the possibility to get "rolled-over" when there is a need to do so, and this has been so for most of the period under consideration.

Such a bias obviously favors investment strategies with high short-term cash flows to refund outstanding debt, reducing the time horizon for management and workers and hence reducing incentives to the build-up of long-term assets such as human capital and in particular vocational training. Two questions therefore have to be addressed: (i) first we have to understand the characteristics of the supply and demand of bank finance in the UK and (ii) we have to compare these characteristics with the bank-firm relations observed in Germany.

5.1.1. Supply and demand of bank finance in the UK

Traditionally, British firms have had a very high rate of self-finance compared to their German competitors, even though the rates have been very high even there too (see Corbett and Jenkinson, 1996, pp. 80-81). There has been a prolonged period where enterprises in the UK started looking for more outside finance during the fifties and sixties (Lisle-Williams, 1986, p. 242) before returning to a sensibly higher gearing ration during the eighties (Schmidt, Hackethal, Tyrell, 1997, p. 23). On top of that, the outside engagement has mostly been short term as we already mentioned (figure 5.1.1).

Moreover, low demand for long term debt faced slowing supply of banks long-term engagement. After the liberalization of financial markets at the end of the seventies, net interest margins got under pressure (Prevezer, 1994, p. 200) reducing the self-selection element as described by our model. Even though the overall funding possibilities may have increased (in fact they did not given the simultaneous rise of world interest rates), the effectiveness with which the banking sector – given the short-run bias in debt – may select industrial projects definitively decreased. Reduced interest margins, moreover, made impossible any further engagement of banks with respect to their debtors, be it direct monitoring or long-term scheduling of debt contracts.

Bank finance may obviously not be he only source of selecting and monitoring industrial activities. In relation with our theoretical considerations, however, the available data show that bank finance did not provide the necessary incentives in the UK to select human capital intensive technologies. The diminishing engagement after the seventies may therefore help to explain the downturn in existing labor relations at increasing speed.

5.1.2. Bank-firm relations in Germany

Compared to the British competitors, enterprises in Germany had much closer and longer relation with their banking investors. However, the picture generally drawn on Germany as being characterized by a bank-based financial system does not entirely correspond to the reality of German financial relations.

First, as Corbett and Jenkinson (1996) mentioned the major industrial countries – with the notable exception of Japan – are characterized by high self-financing ratios. The difference between Germany and the UK has much more to do with the fact that the existing bank-firm relations are much tighter in Germany. In this respect, the selection process stems more from the direct monitoring of industrial projects than through a self-selection process through higher interest rate[14].

Two types of controls exist in this respect, depending on the size of the firm and the type of outside finance: first, many banks hold equity in their debtor-firms, often in a preferential relation. Again, even though German banks are not the only ones to have relations with firms on the active and the passive side of the balance sheet (see table 5.1.2), the particular form these equity stakes take give them a high leverage in the firm's control.

Second, smaller firms often have exclusive relations with one particular bank, mainly some regional (development) bank, partly controlled by regional governments or at least backed by unlimited deposit guarantees by local governments. Here, the control mechanism stems from reputational capital built up

[14] This difference may only be a semantic one; as has been shown by von Thadden (1995) and others, long-term financial relations are subject to the familiar hold-up problem thus increasing the opportunity cost for switching financial investors.

by banks and high switching costs for firms that help to held the hold-up problem on both sides in check (see Allen and Gale, 2000, ch. 12).

These characteristics of the financial relations in Germany improves considerably the control and monitoring of industrial projects, contributing to a more efficient use of available funds. As figure 5.1.1 makes clear, the long-term engagement of German financial intermediaries may not even by among the highest of the developed economies: the underlying incentives given by the particular relations, however, outperform the short-term approach of British banks leading to a proper reward of accumulation of human and specific physical capital.

5.2. Stock market finance as a reliable substitute ?

Could there have been a substitute for the banking relation in the UK in order to promote the same incentives as in Germany ? Ownership relations may play a similar role to a close monitoring by banks. In particular, when a single share holder owns an important part of the stock, he may have incentives to watch more closely what the management is doing. This obviously only applies to the public corporations; the mass of small and medium enterprises would not have benefited from such a mechanism.

Even though the UK (together with the USA) benefits from important information disclosure legislation (La Porta et al., 1997), the "outsider control" may still not work when the ownership of the stock is widely dispersed (the "free riding problem of corporate control"). This seems indeed to be a problem in the UK with the largest three shareholders on average holding just 19% of the stock (USA: 20%, Germany: 48%, France: 34%, see La Porta et al., 1998).

This leaves out the possibility for majority shareholders to substitute for the control by banks. Given that even very tight information disclosure rules do not allow to evaluate certain assets (especially those with high specificity), there is no one left in the financial relation to play the role of an effective selector with a longer time horizon.

Both sides of the complementary relation between skills and patient capital therefore have not satisfied some minimum incentive constraint to deliver sufficient supply of the appropriate factor to develop a more high-tech approach of British firms for international competition. Even worse, their weak incentives have reinforces each other, reducing even further the possibilities provided by the initial framework.

6. Conclusion and outlook

The preceding made an attempt to understand the comparative macroeconomic performance of Germany and the UK by applying the concept of institutional complementarity between financial and labor relations. In this respect, a coherent configuration – one that allows mutual reinforcement of incentives to undertake certain industrial activities – was shown to lead to superior economic outcomes while a configuration that provides contradictory incentives lead to poverty trap or at least an underperforming macroeconomy.

When introducing this complementarity among institutional arrangements in a dynamic framework, a coevolution between both may emerge, to the extent they depend on outside actors with varying economic impact such as banks and trade unions. In the theoretical considerations we presented at the beginning we observed that both equilibria of the static analysis proved to be characterized by local stability with possibly important attraction basins.

Applying this analysis in order to compare long-run economic and institutional evolutions proved to be fruitful as it allowed to uncover a certain number of various characteristics concerning the labor relations, the educational system and the financial system that may at first sight be unconnected. In fact, we were able to show that the relations as they have evolved over the last fifty years proved to be

incoherent in the UK, not allowing to develop a human capital intensive manufacturing approach. In Germany, on the other hand, the institutional framework allow to fully exploit the existing incentives on the labor market by providing long time horizons for management through stable financial relations with strong control elements.

Will these evolutions constitute an equilibrium situation or may the trend reverse at one point ? To judge from the most recent evolutions, the German economy seemed to have run into important problems, not only related to the reunification but also to a slow sectoral adjustment to new industrial opportunities provided in the IT and biotechnology sector. Indeed, our analysis showed that even though adaptation within the existing sectoral specialization seemed easily possible, there are considerable barriers to exit out of existing sectors into new and more promising ones. Whether or not these obstacles can be overcome in the next couple of years through moderate opening of the labor market and/or the financial market is not clear for the moment, but there are some signs that the German industry starts to find a new equilibrium in much the same way as before (i.e. relying on long-term labor and financial relations with strong accumulation of specific factors) in these new sectors (see Casper, 1999).

In the UK, the end of the eighties have definitely pushed the economy away from the high performance equilibrium we described in our theoretical considerations. Does this preclude any alternative way to high growth ? In fact, when looking to the USA, one seems to detect quite similar evolutions on the financial and labor market with an undeniable success in the nineties. It seems therefore that a coherent configuration may lay in the point O of figure 2.2 in such a way that high-powered incentives on the labor market are combined with the regular satisfaction of short-term objectives. In this case, a strong wage dispersion creates increased returns to schooling (for the most highly educated employees) and sufficient funding on the financial market combined with strict success control allows the flexible allocation of funds to promising industrial projects.

In this respect, the UK may have fund a new coherent framework, much closer to the US one than the German one. Despite this convergence, the macroeconomic performance remained disappointing in the nineties, with only slightly higher growth rates than in continental Europe and employment growth that barely outstrips that of its competitors on the other side of the channel. That notwithstanding, increasing structural reforms may help to improve on these points and to eliminate the last points of incoherence in order to create the necessary conditions for promoting high and sustained growth in the UK as well.

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8. *Appendix: Tables and Figures*

8.1. Theoretical considerations

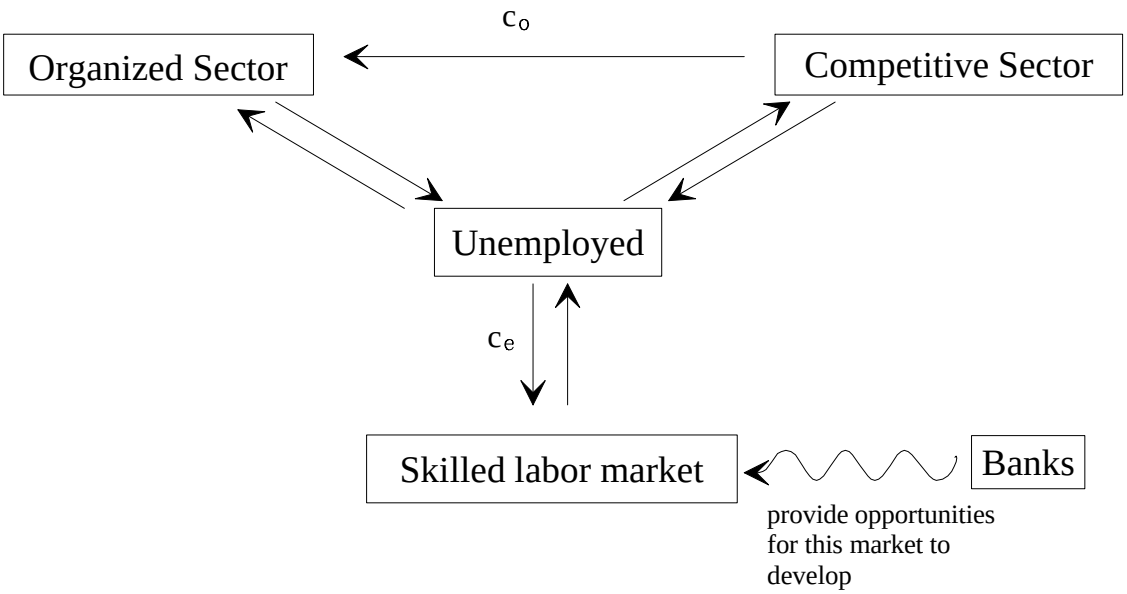


Figure 2.1: Labor Market Worker Flows

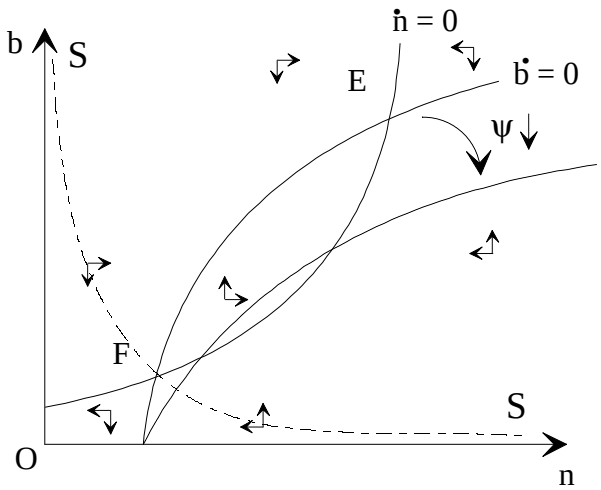


Figure 2.2: Institutional complementarities and coevolution

8.2. Macroeconomic Performance

	GDP growth per capita		Labor Productivity growth		Unemployment		Net investment to GDP ratio	
Years	**FRG**	**UK**	**FRG**	**UK**	**FRG**	**UK**	**FRG**	**UK**
1960-65	3.5%	2.5%	4.2%	2.4%	0.5%	2.5%	16.1%	9.5%
1965-70	3.6%	2.0%	4.4%	2.8%	0.8%	2.9%	13.8%	10.3%
1970-75	1.7%	2.0%	2.7%	2.0%	1.4%	3.8%	12.7%	9.7%
1975-80	3.4%	1.6%	3.0%	1.7%	4.1%	6.1%	9.8%	7.1%
1980-85	1.4%	1.6%	1.9%	2.4%	5.5%	11.2%	8.0%	4.5%
1985-87	1.9%	3.0%	1.2%	2.0%	6.8%	10.7%	7.0%	5.2%

Table 3.1 Macroeconomic performance in Germany and the UK

	1950	1960	1973	1987	1992	1998
Germany	34	52	73	91	100	106
UK	58	57	68	81	79	82

Table 3.2 Productivity levels (GDP per man-hour relative to USA)

		1950	1960	1970	1980	1990	1998
Germany	GDP per person employed	33.6	63.0	79.0	87.1	73.1	68.2
	GDP per hour worked	28.5	57.9	77.6	94.8	87.5	86.5
UK	GDP per person employed	42.3	49.9	51.6	49.0	56.5	49.5
	GDP per hour worked	40.3	45.9	50.9	52.6	63.2	57.0

Table 3.3: Manufacturing productivity levels (relative to USA)

8.3. The evolution of the labor market

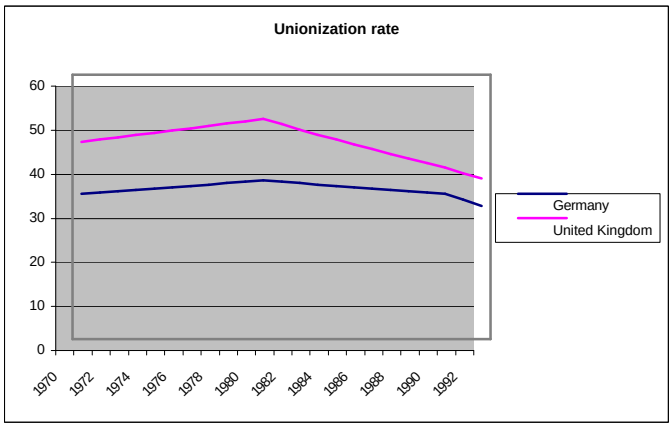


Figure 4.1.1 : Unionization rates 1970-1992

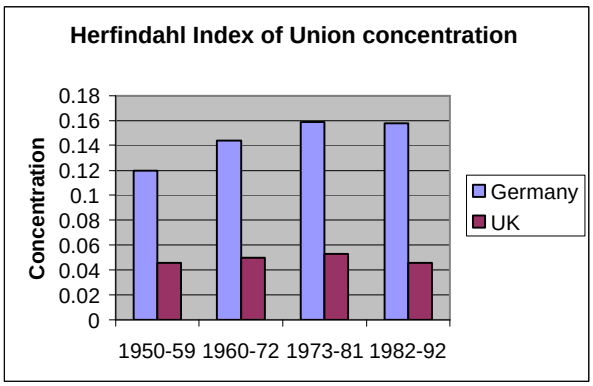
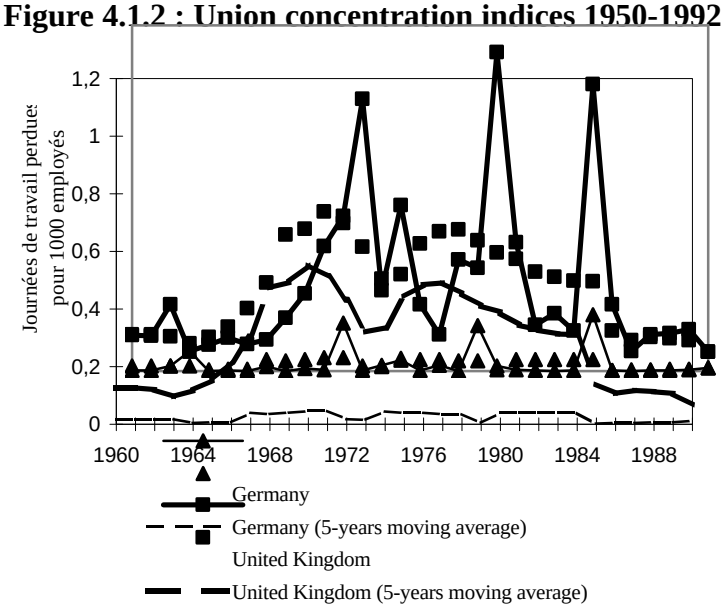


Figure 4.1.2 : Union concentration indices 1950-1992



Source: Huber, Ragin et Stephens, 1997

Figure 4.1.3 : Industrial conflicts in Germany and the UK, 1960-1990

8.4. The financial relation

	Financial assets to GDP ratio	Equity to GDP ratio	Financial assets to equity ratio
France	1.510	0.362	4.170
Germany	1.517	0.241	6.296
Japan	1.503	0.707	2.125
United Kingdom	2.587	1.309	1.849
USA	0.527	0.815	0.616

Source : Barth, Noelle, Rice, 1997, table 1

Table 5.1.1 : Importance of banks and stock markets

Assets hold by	Germany	USA	France	Japan	UK
Banks	10	0	23	18.9	4.3
Insurance companies	12	4.6	-	19.6	48.5
Pension funds		20.1	-	9.5	
Other		5.7	-		
Non-financial enterprises	42	14	21	25	10.1

Source: Prowse, 1995, p. 13; Allen and Gale, 2000, p. 92 for France

Table 5.1.2 : Ownership distribution

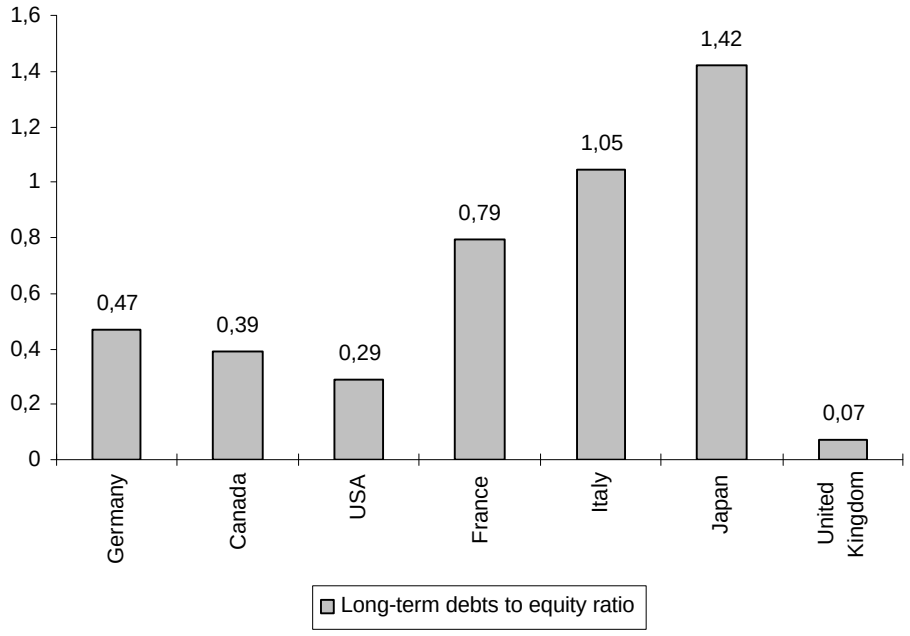


Figure 5.1.1: Long-term engagement by financial intermediaries, 1975-1995