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## Financing structural change, venture capital, and unemployment: What is the role of investor protection?

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Bayerische Julius-Maximilians-Universität Würzburg

Wirtschaftswissenschaftliche Fakultät

**Financing Structural Change,  
Venture Capital, and Unemployment:  
What is the Role of  
Investor Protection?**

**Rainer Fehn**

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**Financing Structural Change, Venture Capital, and Unemployment:  
What is the Role of Investor Protection?**

*Rainer Fehn\**

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**Abstract**

This paper analyzes the real effects of differences in structures on financial markets, especially concerning quasi-equilibrium unemployment. It argues that a vibrant venture capital market is an important prerequisite for financing structural change and thus for keeping unemployment low in the ongoing transition to the “new economy”. It furthermore points out the crucial importance of extensive investor protection in this respect. A thriving venture capital market is therefore at odds with the corporatist politicoeconomic equilibrium in continental European countries involving extensive protection of insiders on labor as well as on financial markets.

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## I. Introduction

The real effects of differences in institutional setups on financial markets are nowadays an important research topic. It was already Schumpeter (1911), though, who suggested that a well-functioning system of financial intermediation should spur economic growth. While somewhat neglected for a long time, the last decade has given rise not only to important theoretical progress in this area, but there exists also by now a sizable body of empirical evidence that the structure of financial markets can help to explain differences in growth of productivity and GDP across countries.<sup>1</sup> The optimal structure of financial markets seems to depend crucially on the stage of economic development of the country concerned. A predominance of bank financing is possibly superior in earlier stages of economic development, whereas a greater reliance on stock markets and on venture capital might be preferable in highly developed countries concerning economic growth.

However, a closely related question has been largely neglected up to now, namely whether the vastly different labor-market performances across OECD countries, and in particular between continental Europe and the US over the last twenty years, might also be related to institutional differences on financial markets. It is commonly argued that differences in institutions on labor markets are the main driving force in this respect. However, while labor market institutions are certainly an important explanatory factor, they can hardly account for the whole story. An important caveat concerning the sole reliance on institutional differences on labor markets arises from the fact that the US has been superior in producing job growth across the whole wage spectrum especially in the 1990s, i.e., not only low-paid jobs but also high-paid jobs are created on a much larger scale than in just about every continental European country. Greater downward real-wage flexibility at the lower end of the productivity range of workers along with the often cited working poor phenomenon in the US are of little help in explaining the rapidly growing demand for qualified workers in the US during the last decade.<sup>2</sup>

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<sup>1</sup> Recent contributions are Levine and Zervos (1998), Rajan, and Zingales (1998), Beck, Levine, and Loayza (1999), Carlin and Mayer (1999), and Wurgler (2000); an overview provides Tsuru (2000).

<sup>2</sup> See, e.g., Mc Kinsey (1994), Acemoglu (1999), and Solow (2000).

This assessment has among other things led to the resurrection of explanations based on differences in aggregate demand policies. Yet, considering that the US did not experience any sustained increase in inflation along with the tremendous expansion of employment over the last twenty years, there would not only have to exist a permanent trade-off between inflation and unemployment, but such a long-run Phillips curve would essentially have to be completely flat. Such a claim appears to be farfetched, in particular in light of the fact that demand-based explanations are also difficult to square with other empirical facts. First, it is striking that the capital labor ratio has risen much more in continental Europe than in the US since the mid 1970s although higher real interest rates in continental Europe than in the US, a crucial factor in demand-based explanations, should lead to exactly the opposite result. Second, depressed goods demand should hurt both, labor and capital, but profits as well as the capital share have risen substantially in Europe during the last two decades (Caballero and Hammour, 1998).

Hence, it seems appropriate to take a closer look at institutional differences between continental Europe and the US which do at least not directly pertain to the much-discussed labor-market rigidities and which might be conducive to non low-wage employment growth. Financial market structures are an important and hitherto largely neglected such area. A closer look at the effects on job growth of the vastly different institutional structures on financial markets in the US and continental Europe seems all the more warranted as the establishment of new firms figures centrally in US employment growth, and furthermore as the leading success stories in the US of non low-wage job growth are the information- and bio-technology sectors, both of which are closely connected to the vibrant venture capital market in the US. Companies such as Apple, Compaq, Digital Equipment Corporation, Intel, Microsoft, and Sun Microsystems were all backed by venture capital. Furthermore, venture-backed firms in the US empirically not only create jobs at a much faster rate than Fortune 500 firms, which in the first half of 1990s actually decreased staffing levels on average, but they also outperform other high-growth companies in terms of employment growth.<sup>3</sup> Essentially the same assessment holds for Europe, where venture-backed companies raised employment levels

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<sup>3</sup> See Jeng and Wells (1998), and Gompers and Lerner (1999a, 137).

on average by 15% per annum in the time period 1991-1995, whereas the average annual employment growth among the top 500 European companies in the same time period was only 2% (European Venture Capital Association, 1996).

Countries are supposed to specialize according to their institutional comparative advantage<sup>4</sup>, and a well-functioning venture capital market might have given the US an institutional comparative advantage in implementing more quickly structural change and in moving precisely into those sectors which have turned out to be facilitating employment growth in recent years. Differences in financial market structures between continental Europe and the US and in fact essentially all Anglo-Saxon countries are still vast, although they appear to be diminishing somewhat in recent years. Anglo-Saxon capital markets tend to be stock market based, with relatively clear-cut accounting rules, with disperse ownership of the many large public firms, with institutional investors such as large pension funds playing an important role, with managers' policies being tightly aligned with shareholders' interests through their income depending greatly on stock market performance and by the threat of hostile takeovers, and last but not least with there being a vibrant venture capital market which allows a high degree of entrepreneurial activity in particular concerning the founding of new firms.

In contrast, continental European capital markets tend to be still, though to a decreasing degree, dominated by large banks, which entertain close relationships with large firms not least via extensive cross shareholdings. Corporate governance largely rests with these banks via proxy voting, blockholding of shares and ownership concentration is widespread, but management has nonetheless a lot more room for discretionary maneuver, inter alia due to opaque accounting rules, and management is not expected to maximize merely shareholder value. Stakeholder interests matter, as is exemplified by the German codetermination law, and finally the size and importance of the venture capital market is still small by Anglo-Saxon standards.<sup>5</sup>

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<sup>4</sup> See Hall and Soskice (1999); Schertler (1999) shows theoretically how cross-country differences in venture capital markets affect the pattern of specialization.

<sup>5</sup> See Edwards and Fischer (1994), Roe (1999), and Coffee (1999).

This paper tries to deal with the question whether these idiosyncracies in institutional structures on financial markets, in particular concerning the venture capital market, contribute to explaining the superior employment performance over the last about two decades not only of the US but also of most other Anglo-Saxon countries compared to continental Europe (Garibaldi and Mauro, 1999). In doing so, the paper proceeds in three steps. Section II establishes links between financial market structures and unemployment. Section III discusses the institutional determinants of a thriving venture capital market. Section IV discusses why the notion of corporatism which is widely embraced in continental Europe is at odds with a vibrant venture capital market. Section V presents some concluding remarks.

## **II. Does Financial Market Structure Affect Unemployment?**

### **1. Relating Investor Protection and External Funding on the Microlevel**

The key question in corporate finance is rather simple: Why do external investors ever get their money back and are not completely ripped off on a routine basis by corporate insiders, i.e., managers or entrepreneurs and possibly also workers? While there are undoubtedly many answers to this question, a string of recent papers by La Porta et al.<sup>6</sup> has shown that the solution to this puzzle is centrally related to the level of effective legal protection which external investors are granted in different countries. To formally analyze this issue, La Porta et al. (1999b) have recently developed a simple, intuitively appealing micromodel, which serves as a convenient starting point for the broader question how financial market structure affects real activity and unemployment. They consider a setup where an entrepreneur owns cash flow rights  $\alpha$  of the firm. He wants to undertake an investment  $I$ , which yields a return once invested of  $RI$ . The entrepreneur wants to raise external funds to finance the investment. However, external investors are reluctant to provide money since they know that the entrepreneur has ex post the opportunity to divert the fraction  $s$  of the profits directly to himself, so that only the

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<sup>6</sup> See La Porta et al. (1997), (1998), (1999a), and (1999b).

remainder  $(1-s)RI$  is split according to legal cash flow rights. The better is the legal protection of external investors as measured by  $k$ , the costlier it is for the entrepreneur to engage in such illicit diversion, though. It is particularly convenient to assume a standard quadratic cost of theft function  $c(k,s)=0.5ks^2$ . Entrepreneurs are simply assumed to maximize their return on the investment which consists of legal cash flow rights plus diverted profits minus the costs of stealing:

$$U_E = \alpha(1-s)RI + sRI - 0.5ks^2RI . \quad (1)$$

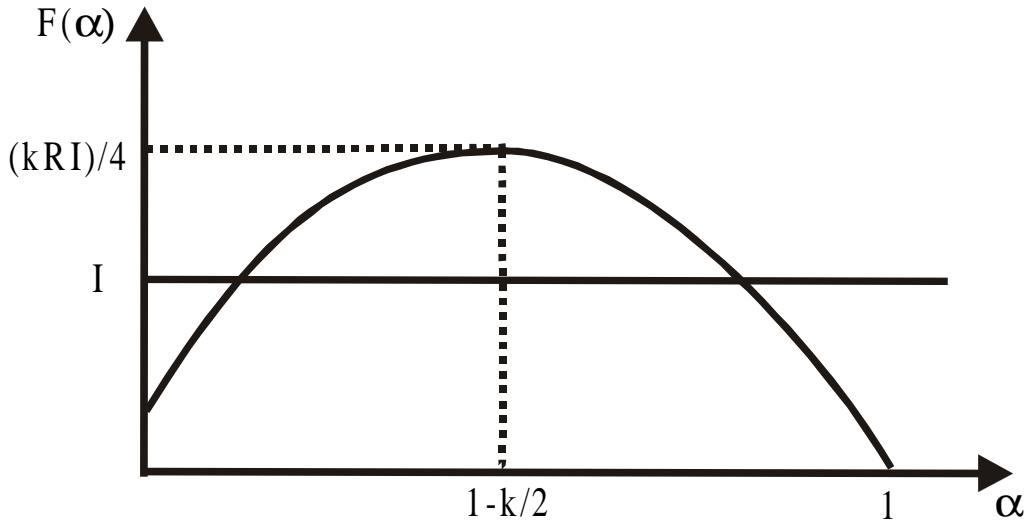
Assuming a normalized rate of return of zero, the amount of external funds  $F(\alpha)$ , which the entrepreneur can raise, depends on what external investors expect to get back on their investment after appropriation has taken place:

$$F(\alpha) = (1-\alpha)(1-s^*)RI = (1-\alpha)\left(1 - \frac{1-\alpha}{k}\right)RI , \quad (2)$$

where  $s^* = (1-\alpha)/k$  denotes the optimal amount of stealing from the point of view of the entrepreneur for the assumed quadratic cost of theft function. Figure 1 presents the hump-shaped form of the function  $F(\alpha)$ . A higher stake of the entrepreneur in the firm as denoted by  $\alpha$  exerts two opposing effects on the amount of external funds  $F(\alpha)$  that the entrepreneur can raise. The direct effect is to reduce the amount of profits that is left for the external investor, making him more reluctant to provide funds. However, the indirect positive effect comes via a reduction in the optimal amount of stealing for the entrepreneur, which makes it more attractive for the external investor to give money to the firm. The maximum amount of funds that the entrepreneur can raise in this simple setup is equal to  $(kRI)/4$ , which is clearly increasing in the level of legal protection of investors  $k$ . Hence, the better external investor are protected by law and its enforcement against ex-post appropriation by entrepreneurs, the greater is ceteris paribus the amount of funds that they are willing to provide and the greater is also the feasible set of projects that can be financed externally.



**Figure 1: Availability of Funds to Entrepreneur**



Source: La Porta et al. (1999b, 15).

## **2. A Macromodel Linking Financial Market Imperfections and Unemployment**

In order to discuss the relationship between financial market structure and unemployment, this microlevel approach must be transformed into a macroeconomic analysis which also incorporates labor-market imperfections. Standard models of the labor market for determining employment growth and in particular the quasi-equilibrium unemployment rate, do usually not, at least not explicitly, take into account financial market imperfections. This is the case in the workhorse NAIRU model or in flow models of the labor market where the Beveridge curve plays a central role, which relates unemployment to vacancies.

However, once one abandons the notion of perfect financial markets, both standard models already open up an important indirect channel via which the structure of financial markets might affect the quasi-equilibrium unemployment rate (Geroski, Gregg, and Van Reenen, 1997). Empirical evidence suggests that in particular young and small firms are liquidity constrained in their investment decisions, so that financial market structures which are conducive to channelling funds to young and small firms can be expected to

boost the founding and growth rates of new firms (Gilchrist and Himmelberg, 1995). This enhances competition on goods markets thus reducing mark-ups by firms on costs and shifting the labor demand schedule of firms outwards. For given wage-setting behavior, a reduction in the quasi-equilibrium unemployment rate results. Furthermore, wage-setting itself might be moderated by such a financial market structure because wage restraint is rewarded with a greater increase in employment due to more new firms being founded in response. Finally, a larger relative stream of new firms entering markets each period facilitates structural change thus shifting the Beveridge curve inwards and reducing quasi-equilibrium unemployment also in the flow model of the labor market.

Barriers to the entry of new firms are of course not only due to financial market imperfections. A recent study by Nicoletti, Scarpetta and Boylaud (1999) shows that barriers to entrepreneurship based on the criteria administrative burdens on startups, regulatory and administrative opacity, and barriers to competition are substantially larger in continental European countries compared to Anglo-Saxon countries. This is the case even though this study abstracts from differences in financial market structures. Yet, already the following two stylized facts indicate that differences in financial market structures might matter in this context. First, continental European countries rely to a much larger degree on debt financing of firms than Anglo-Saxon countries where equity and venture capital financing is more common. Second, especially venture capital financing is more suitable for new firms due to their general lack of collateral. Taking these differences in financial market structures into account can only lead to further tilting the balance concerning entry of new firms in favor of Anglo-Saxon countries.

Hence, the decision whether or not to establish a new production unit must be at the center of any comprehensive model of the determination of quasi-equilibrium unemployment which integrates both, labor and financial market imperfections. This is precisely the gist of a macromodel which Caballero and Hammour (1999) have recently proposed, namely that financial market imperfections exacerbate quasi-equilibrium unemployment which is caused by labor market rigidities. The model is based on the idea that employment is only possible if entrepreneurs, workers, and financiers are all willing

to enter into joint production units and that contractual relationships between entrepreneurs and workers as well as between entrepreneurs and financiers are all but perfect. In particular, both relationships usually require some relationship-specific investment and are therefore open to the well-known hold-up problem, i.e., workers as well as management may wield the power to at least partially appropriate capital ex post, assuming that capital undergoes the greatest transformation and becomes most relationship-specific once invested.

In other words, if capital is not only largely sunk after being invested, but if fully state-contingent contracts are also either not enforceable or too complex, and if the legal environment does not put great emphasis on protecting capital from ex-post appropriation by workers and management, rational financiers will already ex ante erect a high threshold value for the profitability of projects they are asked to finance. This is the case because financiers know that entrepreneurs and workers will ex post try to renegotiate payments to production factors to their detriment. For that part of the capital which is sunk and not collateralized, financiers will ex post only receive a fraction of the accruing rents which the project produces. The size of the payments hinges on the ex post relative bargaining power of production factors and, of course, on the size of the rents, but not on the ex-ante opportunity costs of capital.

Total employment depends on the aggregate number of production units that are operational, which in turn hinges on the rates at which new production units are created and at which old ones are destroyed, as well as on the capital labor ratio in each production unit. Let us for the moment assume a fixed capital-labor ratio which is evidently more appropriate in the short run than in the long run. Both types of investment, creation of new units and continuation of old units, face a profitability and a financial constraint. The profitability constraint simply states that the expected discounted value of all future profits must be positive. The more rigid labor markets are and the higher therefore wage costs are, the less likely it is that the profitability constraint for creating a new production unit or for continuing an old unit is satisfied. If the profitability constraint is not satisfied for an envisaged new unit, less creation investment

takes place and less new firms enter the market. If it is no longer satisfied for an old unit, privately efficient or “Schumpeterian” destruction of this very unit takes place. Whether this destruction is also socially efficient depends crucially on the ability of the economy to create new units and to thus reallocate the released production factors into new firms. Badly functioning labor and financial markets are important factors that can make privately efficient destruction of firms socially inefficient because they reduce the mobility of labor and they raise the contractual difficulties in founding new firms. This raises the probability that the workers who are released from the destroyed unit are not reallocated to working in a new firm but rather remain trapped in unemployment.<sup>7</sup>

The financial constraint for creating new production units states that the total amount of external financing must not exceed the ex-post, i.e., after the capital is sunk, feasible claim of the external financier on the net present value of total profits. The higher the productivity of a new unit is, the more likely it is that the financing and not the profitability constraint is binding in creating new production units. Refinancing an old production unit in times of crisis, when the entrepreneur himself lacks the liquidity to inject additional funds into the distressed unit, displays the important feature of a wedge between the option values to the entrepreneur and to the financier of refinancing the distressed firm. This is the case because once the additional funds are committed to the distressed unit and in case the firm recovers, the sunk cost problem once again enables the entrepreneur to renegotiate payments to the external financier down according to the ex-post terms of trade between the entrepreneur and the financier. This inability of the financier to capture the full set of rents that is associated with refinancing a distressed unit is the basic rationale for why liquidations take place although they are not only socially but also privately inefficient. Hence, the greater contractual difficulties are, i.e., the less protective the legal environment is of financiers, and the more indebted firms already are, the more likely it is that such inefficient liquidations occur. Overall it is clear that the more severe financial constraints are, the less creation and the more destruction of in fact profitable units takes place.

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<sup>7</sup> Active labor market policies are supposed to prevent such a lock-in effect in unemployment. However, their empirical success in doing so is at best mixed; see, e.g., Calmfors and Skedinger (1995).

Concerning the level of quasi-equilibrium unemployment, the model has the following implications. For quasi-equilibrium unemployment to occur, it is a necessary condition that the labor market is imperfect and that workers dispose over the market power to appropriate part of the rents which are created in production units. Obvious factors contributing to such labor-market rigidities are e.g. high firing costs, strong unions, and generous unemployment benefits. This rent component in wages, which is due to contracting impediments in the labor market, upsets the free-entry condition for new firms. It reduces the expected profitability of committing capital to new production units below the return required by capital markets. This disequilibrium situation is resolved by an increase in quasi-equilibrium unemployment, which is induced by a lower creation rate of new firms. The rise in quasi-equilibrium unemployment and the decrease in hiring lead to higher unemployment duration, thus lowering the opportunity costs of labor. This offsets rent appropriation by workers, and restores the rate of return required by the capital market for capital to enter into new joint production units or refinancing distressed firms. It is important to note that at this rate of quasi-equilibrium unemployment actual wages inclusive of the rent component can fall below the wage in the efficient market clearing reference situation. This possibility arises due to three factors: Creation incentives as well as the opportunity costs of labor are lower, and inefficient units can survive longer thus inducing a kind of sclerosis and reducing productivity growth. The last effect occurs because inefficient destruction lowers the opportunity costs of labor thus reducing the pressure on inefficient firms to close down.

Extending the time horizon of the analysis into the longer run, a high potential of workers to ex post appropriate capital leads to even worse effects on the quasi-equilibrium rate of unemployment.<sup>8</sup> The capital-labor ratio is of course not fixed in the longer run. Rather, capital as the appropriated factor can over time adjust the production technology in such a way that the appropriation potential of labor is mitigated. Capital can achieve this by raising drastically the capital-labor ratio of production thus reducing its dependency on the appropriating factor labor and its ex-post appropriation potential. Hence, in countries

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<sup>8</sup> See Caballero and Hammour (1998), and Berthold, Fehn, and Thode (1999).

with high insider power on labor markets such as in continental Europe there is a further rationale for firms, besides rising real wages and rising costs of labor relative to capital, to massively raise the capital-labor ratio of production. This unemployment created by a rising capital-labor ratio accumulates with the one that is already created by insufficient creation and excessive destruction due to productivity and financing constraints.<sup>9</sup>

If only the capital market is imperfect, though, there is no quasi-equilibrium unemployment. This is the case because the lower degree of creation and the higher rate of inefficient or spurious destruction of firms due to financial market imperfections, are fully and immediately absorbed by a falling compensation of labor under perfect labor markets. However, in case of imperfect labor markets and rent sharing of workers, financial constraints further aggravate quasi-equilibrium unemployment. The reduction in the steady-state demand for labor, that an imperfect capital market gives rise to via less creation and more spurious destruction, is not fully and immediately absorbed by lower real wages if workers possess the ex-post bargaining power to appropriate part of the arising quasi rents. Hence, concerning the level of quasi-equilibrium unemployment, capital-market constraints compound with labor-market rigidities.

The degree to which the legal environment protects financiers from ex-post appropriation by workers and management therefore not only has an important influence on the ability of an economy to create new units, but also to avoid excessive and wasteful destruction of in fact profitable firms. This latter effect is in particular problematic as it not only directly increases the quasi-equilibrium rate of unemployment but also because it lowers productivity growth due to sclerosis effects. In sum, the presented macromodel has straightforward implications for the effects of financial market imperfections on quasi-equilibrium unemployment. The less the institutional and legal setup on financial markets protects financiers against ex-post appropriation by entrepreneurs, the higher will be the quasi-equilibrium rate of unemployment for any given level of labor-market

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<sup>9</sup> This fits with recent empirical evidence showing that the level of employment protection, which raises the appropriation potential of insiders on the labor market vis-à-vis firms, is an important factor in explaining cross-country differences in employment growth over the last two decades; see Garibaldi and Mauro (1999).

imperfections. The basic rationale for this result is the greater reluctance of investors to provide funds to finance creation or continuation investments.

### **3. The Degree of Investor Protection Across Countries**

Investigating the effective level of legal protection of external investors and its effects on real economic activity has been a thriving research topic in the corporate governance literature in recent years.<sup>10</sup> The results show that the level of effective legal protection varies substantially across highly developed OECD countries, and that the legal heritage of countries seems to matter considerably. It turns out to be convenient to put countries into four groups: Anglo-Saxon countries with a common law tradition in contrast to, German, French, and Scandinavian law countries, which all have civil law traditions. This grouping is supposed to mean that the countries belonging to one of the four legal groups have common roots concerning legislation and its enforcement on financial markets. These commonalities might be due to colonial ties or simply due to copying of regulations as did essentially a number of East-Asian countries with German law. It is furthermore important to distinguish between shareholder rights and creditor rights because very different types of legal protection apply in the two categories, and because the level of effective legal protection accorded to the two kinds of investors varies considerably within many countries.

The following tables 1a and b show the results of the in-depth analysis of these issues by La Porta et al. It turns out that the Anglo-Saxon countries protect in particular shareholders substantially better than all other countries. This conforms with the well-known facts that not only the capitalization of the stock market and of the venture capital market relative to GDP, but also that the number of firms relative to the population and the number of initial public offerings relative to the population are by far the largest among Anglo-Saxon countries. A much stronger protection of minority shareholders and of shareholder interests in general in the common law Anglo-Saxon countries also

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<sup>10</sup> See La Porta et al. (1997), (1998), (1999a), (1999b), Carlin and Mayer (1999), and Wurgler (2000).

squares well with the more dispersed ownership structure of public firms compared to all countries with a civil law tradition and with a higher valuation of firms relative to their fundamentals as measured by Tobin's Q. Countries influenced by the French civil law tradition provide in general the least effective legal protection to investors, be they shareholders or creditors. German and Scandinavian law countries are somewhat in between. Comparing therefore Anglo-Saxon with French and Scandinavian law countries, it can be expected that the institutional setup on financial markets works in favor of a superior employment performance of Anglo-Saxon countries.

A more intriguing case are the German law countries in comparison to the Anglo-Saxon countries. While they give far less effective legal protection to shareholders, they accord the same overall average legal protection to creditors, and they actually give compared to all large OECD common law countries a better effective legal protection to creditors except for the UK. This fits again nicely with the well-known facts that banks play a large role in countries with a German law tradition on capital markets and that firms in these countries are to a relatively large degree debt financed. It should also after all not be forgotten that the German group consists of countries which had a substantially better unemployment record than the Anglo-Saxon countries until the early 1980s. It is therefore puzzling in which way the structure on financial markets can contribute to explaining why the unemployment performance of German law countries relative to Anglo-Saxon countries has so drastically deteriorated over the last roughly twenty years.



**Table 1a: Legal Origins and External Capital Markets – Summary Presentation**

	Domestic Firms/Pop	IPOs/Pop	Debt/GNP	Non-Debt External Capital/GNP	Shareholder Rights <sup>1</sup>	Creditor Rights <sup>2</sup>	Tobin's Q
English-Law Mean	61.66	3.01	0.75	0.62	4.3	2.4	1.2552
OECD Mean <sup>3</sup>	43.20	2.29	0.78	0.50	4.5	1.8	1.2812
Non-OECD Mean <sup>4</sup>	98.59	4.21	0.63	0.87	4.0	3.7	1.2032
French-Law Mean <sup>5</sup>	12.71	0.29	0.63	0.19	2.0	1.2	1.1518
German-Law Mean <sup>6</sup>	17.30	0.15	0.97	0.37	2.2	2.4	1.1536
Scandinavian-Law Mean <sup>7</sup>	27.27	2.14	0.57	0.30	3.0	2.0	1.1202

1. Shareholder rights: An index aggregating shareholder rights. The index is formed by adding 1 when:
1. the country allows shareholders to mail their proxy vote;
  2. shareholders are not required to deposit their shares prior to the General Shareholders' Meeting;
  3. cumulative voting is allowed;
  4. an oppressed minorities mechanism is in place; or
  5. when the minimum percentage of share capital that entitles a shareholder to call for an extraordinary shareholders' meeting is less than or equal to 10 per cent. The index ranges from 0 to 5.
2. Creditor rights: An index aggregating creditor rights. The index is formed by adding 1 when:
1. the country imposes restrictions, such as creditors' consent or minimum dividends, to file for reorganization;
  2. secured creditors are able to gain possession of their security once the reorganization petition has been approved (no automatic stay);
  3. the debtor does not retain the administration of its property pending the resolution of the reorganization;
  4. secured creditors are ranked first in the distribution of proceeds that result from the disposition of assets of a bankrupt firm. The index ranges from 0 to 4.
3. English-Law OECD countries: Australia, Canada, Ireland, New Zealand, UK, and US.
4. English-Law Non-OECD countries: Hong Kong, Israel, and Singapore.
5. French-Law countries: Belgium, France, Greece, Italy, Mexico, Netherlands, Portugal, and Spain.
6. German-Law countries: Austria, Germany, Japan, South Korea, and Switzerland.
7. Scandinavian-Law countries: Denmark, Finland, Norway, and Sweden.

Sources: La Porta et al. (1997), (1998), (1999b), and own calculations.

**Table 1b: Legal Origins of Countries and External Capital Markets**

Country	Domestic Firms/Pop	IPOs/Pop	Debt/GNP	Non-Debt External Capital/GNP	Shareholder Rights	Creditor Rights	Tobin's Q
<b>English-Law OECD</b>							
Australia	63.55	-	0.76	0.49	4	1	1.2345
Canada	40.86	4.93	0.72	0.39	5	1	1.1510
Ireland	20.00	0.75	0.38	0.27	4	1	1.2862
New Zealand	69.00	0.66	0.90	0.28	4	3	1.1949
UK	35.68	2.01	1.13	1.00	5	4	1.4257
US	30.11	3.11	0.81	0.58	5	1	1.3950
<b>Mean</b>	<b>43.20</b>	<b>2.29</b>	<b>0.78</b>	<b>0.50</b>	<b>4.5</b>	<b>1.8</b>	<b>1.2812</b>
<b>English-Law Non-OECD</b>							
Hong Kong	88.16	5.16	-	1.18	5	4	1.0424
Israel	127.60	1.80	0.66	0.25	3	4	1.1672
Singapore	80.00	5.67	0.60	1.18	4	3	1.4001
<b>Mean</b>	<b>98.59</b>	<b>4.21</b>	<b>0.63</b>	<b>0.87</b>	<b>4.0</b>	<b>3.7</b>	<b>1.2032</b>
<b>French-Law</b>							
Belgium	15.50	0.30	0.38	0.17	0	2	1.1021
France	8.05	0.17	0.96	0.23	3	0	1.0904
Greece	21.60	0.30	0.23	0.07	2	1	1.4218
Italy	3.91	0.31	0.55	0.08	1	2	1.0156
Mexico	2.28	0.03	0.47	0.22	1	0	1.3365
Netherlands	21.13	0.66	1.08	0.52	2	2	1.2213
Portugal	19.50	0.50	0.64	0.08	3	1	0.9577
Spain	9.71	0.07	0.75	0.17	4	2	1.0691
<b>Mean</b>	<b>11.81</b>	<b>0.28</b>	<b>0.58</b>	<b>0.18</b>	<b>2.2</b>	<b>1.2</b>	<b>1.1445</b>
<b>German-Law</b>							
Austria	13.87	0.25	0.79	0.06	2	3	1.1088
Germany	5.14	0.08	1.12	0.13	1	3	1.2359
Japan	17.78	0.26	1.22	0.62	4	2	1.3020
South Korea	15.88	0.02	0.74	0.44	2	3	1.0663
Switzerland	33.85	-	-	0.62	2	1	1.0550
<b>Mean</b>	<b>17.30</b>	<b>0.15</b>	<b>0.97</b>	<b>0.37</b>	<b>2.2</b>	<b>2.4</b>	<b>1.1536</b>
<b>Scandin.-Law</b>							
Denmark	50.40	1.80	0.34	0.21	2	3	1.1671
Finland	13.00	0.60	0.75	0.25	3	1	1.0812
Norway	33.00	4.50	0.64	0.22	4	2	1.1450
Sweden	12.66	1.66	0.55	0.51	3	2	1.0875
<b>Mean</b>	<b>27.27</b>	<b>2.14</b>	<b>0.57</b>	<b>0.30</b>	<b>3.0</b>	<b>2.0</b>	<b>1.1202</b>

Sources: La Porta et al. (1997), (1998), (1999b), and own calculations.

#### **4. Financial Market Imperfections and Relative Changes in Unemployment**

A crucial step in resolving this puzzle consists in recognizing that the economic environment has fundamentally changed over the last twenty years. Not only have the German law countries essentially finished the catch-up process after the war by the end of the 1970s, but all highly developed countries have entered into another phase of radical structural change, which can in a stylized form be described as moving away from the industrial sector toward the service sector and toward the information-technology sector. This is nowadays often called the transition to the “new economy”. In particular the manufacturing of largely standardized industrial goods, where fixed capital investment and economies of scale play a large role, is rapidly becoming an outdated mode of production in highly developed countries. It furthermore appears that the economic environment in general has become more volatile meaning that the frequency and size of shocks hitting firms each period has risen. The key question in this context is of course which financial market structure is more suitable for financing such a process of radical structural change and for coping with such rising volatilities.

Their relatively sophisticated protection of creditors gives German law countries a comparative institutional advantage in debt financing which is reflected in close and long-lasting bank-firm relationships. Such an institutional setup appears to be advantageous mainly in stable times where countries are moving along a more or less already known technological trajectory and where the aggregate level of investment into fixed capital is crucial for the overall performance of the economy. Past profits are then a relatively good indicator for future success so that the information problem which firms should receive financing is less difficult to disentangle. Furthermore, fixed capital can very well serve as collateral, making debt-financing also advantageous from this perspective. Investment into fixed capital can in principle lower unemployment by raising the marginal productivity of labor if growth of real wage costs lags behind. It is therefore not very surprising that German law countries such as Germany itself or Japan, which appear to have an edge in protecting creditors and where there are strong ties between banks and large firms, display comparatively high rates of fixed capital investment. Their

relatively high rates of employment growth in the first half of the post-war period also fit into this picture (Carlin and Mayer, 1999).

However, while such a financial market structure might have been appropriate in the first half of the post-war period, it is hardly suitable for the current period of rapid structural change, where especially the correlation between past profits and future investment opportunities is much lower. A key problem in financing structural change nowadays appears to be how to get free cash flows out of large established firms with few profitable investment projects into the hands of new, liquidity-constrained entrepreneurs with promising ideas for investment projects in the fledgling sectors, where employment growth mainly takes place. A relatively strong bargaining position of shareholders vis-à-vis management as is the case in the Anglo-Saxon countries helps in this respect because it forces management in the established large public firms to pay out a larger fraction of such free cash flows, which can then be channelled back into investment projects according to capital market profitability criteria.<sup>11</sup>

Fixed capital investment of in particular large, established firms is not a promising route for achieving employment growth in highly developed OECD countries nowadays. First, a large part of this kind of investment takes place in the industrial sector where at best only very limited employment growth or, more likely, a further decline in employment can be expected due to the aforementioned patterns of structural change. This process of structural change is enhanced by the forces of globalization which give the newly emerging economies an advantage in imitative investments and in manufacturing largely standardized industrial products. Second, this type of investment takes place in already existing firms, where entrenched insiders particularly in the highly regulated continental European labor markets are in a good position to convert a rising marginal productivity of labor into wage increases for themselves rather than into employment gains (Lindbeck, 1996). Fixed capital investment was an important component of employment growth in the catch-up phase after the war when radical innovations by the leading industrial nations could basically be mimicked and when insiders on the labor market were not as

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<sup>11</sup> See Hubbard (1998), Hellwig (2000), and Wurgler (2000).

well entrenched yet. But the more a country moves to the frontier of economic development, the less simple investment into fixed capital suffices for achieving employment growth. This fits well with the observation that countries such as Germany and Japan seem to have profited from their institutional setup on the capital market during the first half of the post-war period, but that this has become more doubtful during the last decade.

Key aspects for achieving employment growth in highly developed countries and thus in later stages of economic development appear to be the ability to finance structural change by funding R&D, by orchestrating radical product innovations, and by establishing new firms. This is in particular true if employment growth is not to take place only in the form of low-paid service sector jobs. The type of investment rather than its pure level makes a difference for the effects on employment. It is in fact sometimes argued that continental European countries such as Germany suffer from an “innovation crisis” as well as from a severe lack of newly created firms, and that these two phenomena lie at the heart of the unemployment problem.<sup>12</sup>

Incremental or process innovations in industries where the main technological breakthroughs essentially occurred either at the end of last century or during the first half of this century are hardly avenues for achieving major employment gains anymore. Expanding employment in the production of largely standardized industrial products is close to infeasible which is at least partially due to globalization and rapidly advancing labor-saving technological progress in this area. Rather, employment growth largely takes place in the service sector or in the production of new and niche products which are often technologically advanced. A particularly important source of employment growth in the 1990s have also been investments into information technology. However, similar to the service sector, investments into information technology largely produce intangible assets which are rarely accepted as collateral so that countries which have trouble in adequately financing such high-risk ventures by means of equity or venture capital have an inherent disadvantage in obtaining employment growth in the thriving service and information-

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<sup>12</sup> See Audretsch (1995), Becker and Hellmann (1999), and Carlin and Mayer (1999).

technology sectors compared to the Anglo-Saxon countries.<sup>13</sup> Empirical evidence indeed indicates that the use of debt financing depends positively on asset tangibility.<sup>14</sup> Furthermore, a large stream of new firms entering the product market each period facilitates structural change and in particular the transition to those sectors, so that countries which provide an institutional environment which is conducive to the creation of new firms should have less problems in managing the transition to a more service- and information-technology-based economy without a massive rise in unemployment.

Having pointed out that R&D, product innovations, and new firms are likely to be major determinants of an economy's success in terms of achieving employment growth nowadays, it is important to realize that these are all high-risk activities where problems of asymmetric information loom large and where the project itself usually does not constitute viable collateral.<sup>15</sup> Furthermore, the failure rate among such projects will generally be high while the few successful ones are likely to produce large profits for a considerable time span. R&D, product innovations, and new firms are therefore dependent on a particular financial market structure. First, the institutional structure on the financial market must be well-prepared to handle problems of asymmetric information. Second, it must be able to provide funding to highly risky projects without receiving much in the way of collateral. Third, as it is highly uncertain which projects will be successful, it must be able to sort out and provide financing to a very large number of projects, and there must also be the possibility to abandon projects quickly once their failure becomes apparent. Fourth, the capital market must provide a suitable environment for financiers to convert successful projects into cash for themselves, e.g. by going public. It must help to prevent workers and management from breaching the ex-ante agreed upon terms of trade by reducing ex post payments to financiers even though a project has in fact been successful.

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<sup>13</sup> See Schertler (1999); Hellwig (2000) points out that German banks collect an average of about 80% of their claims on collateralized loans in bankruptcy so that bankruptcy is not an unmitigated disaster for them, thus also reducing their incentive to engage in close monitoring which supposedly is a virtue of bank-dominated financial markets.

<sup>14</sup> See Gompers and Lerner (1999a, 143); Hall (1999) presents empirical evidence based on stock market valuations in the US that the aggregate importance of intangible assets has risen considerably.

<sup>15</sup> See Guiso (1997), Brown (1997), Harhoff (1997), and Weigand and Audretsch (1999).

These conditions are arguably more likely to be fulfilled on an Anglo-Saxon type stock-market based financial market with in particular a thriving venture-capital market and with an elaborate effective legal protection of shareholders and venture capitalists than on German law financial markets.<sup>16</sup> In particular, venture capitalists participate fully in the profits of successful projects so that they are more willing than creditors to finance highly risky projects. In addition, venture capitalists are especially able to reduce the problem of asymmetric information due to their active engagement in the process of actually carrying out the project and due their expertise in monitoring firms in the sector concerned. Furthermore, the number of projects that are initially financed is larger when there is a well-developed venture capital market. Recent empirical studies show that there is indeed a positive relationship between innovation activity and founding new firms on the one hand and a well-developed market for venture capital on the other hand.<sup>17</sup> Hence, a high effective legal protection of shareholders and a thriving venture capital market might have become more important than in the first half of the post-war period for achieving a high level of employment growth.

Bank-based capital markets with a good effective protection of creditors but not of shareholders and an underdeveloped venture capital market, which display a bias toward debt financing, are in addition negatively affected by the general increase in the volatility of the economic environment which appears to have come about with globalization.<sup>18</sup> A more volatile economic environment with greater and more frequent shocks increases the general probability of firms going bankrupt, thus making potential creditors more reluctant to provide debt-financing because a more risky economic environment affects them asymmetrically. While payments to creditors are limited to interest plus principal in good states of the world, they may lose all their money in bad states. Financing of projects and as a consequence also labor demand is therefore reduced by a more volatile economic environment in countries where debt financing is predominant.<sup>19</sup>

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<sup>16</sup> See Black and Gilson (1998), Hellmann and Puri (1999), La Porta et al. (1999a), Tsuru (2000), and Wurgler (2000).

<sup>17</sup> See OECD (1996), Kortum and Lerner (1998), and Hellmann and Puri (1999).

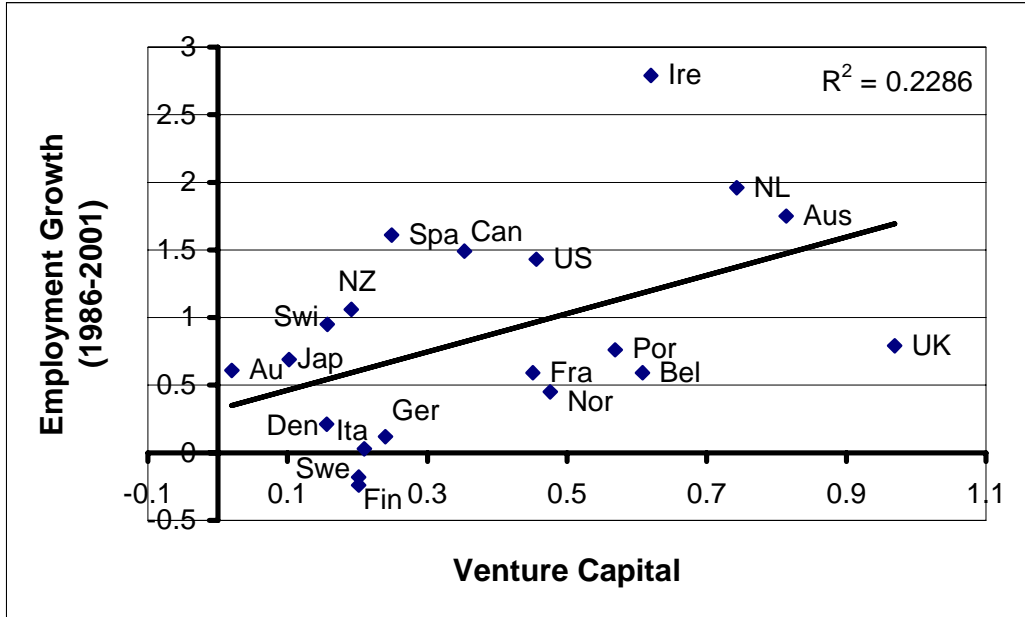
<sup>18</sup> See Aizenman and Powell (1997), Calvo and Mendoza (1997), Rodrik (1997), and Fehn (2000).

<sup>19</sup> Recent empirical evidence for Germany confirms that there exists indeed a negative relationship between employment and the debt-asset ratio of firms; see Funke, Maurer, and Strulik (1999).

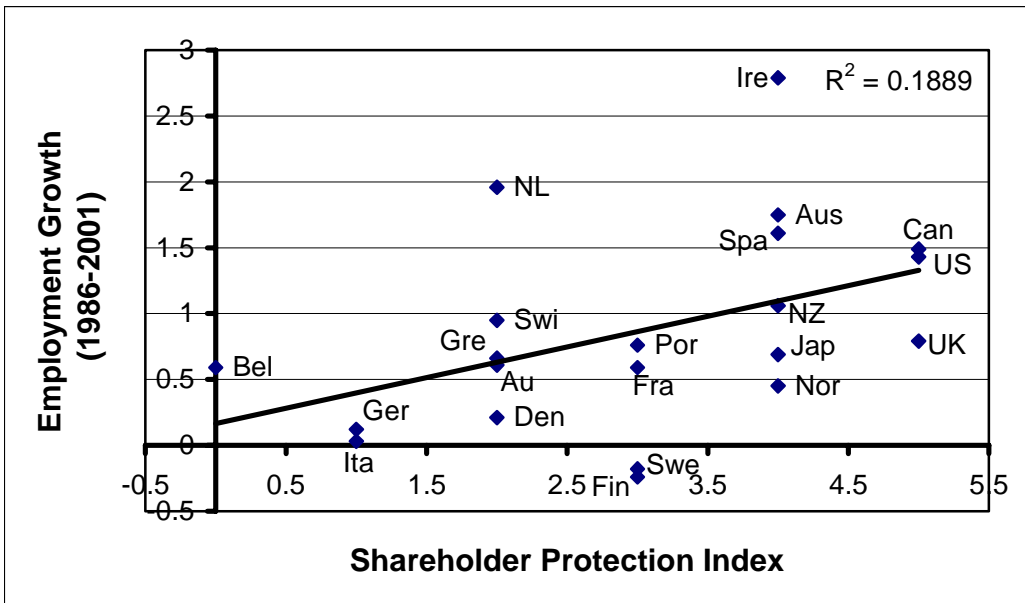
In sum, the described important changes in the economic environment have caused countries with an institutional comparative advantage in debt financing via banks, which is among other things due to a better relative legal protection of creditors than of shareholders, to fall behind in comparison to countries with an institutional comparative advantage in equity and venture capital financing. Coping with radical structural change and rising volatilities without producing mass unemployment is therefore difficult in continental Europe. This is the case not only due to far more regulated and rigid labor markets, but also because the financial market structure is either generally inferior compared to Anglo-Saxon countries, as is the case in the French and Scandinavian countries, or because the financial market structure is based on close bank-firm relationships and debt-financing like in the German law countries, which is better suited for a more predictable economic environment where fixed capital investment, expansion of already existing firms, economies of scale, and incremental innovations prevail. It should in any case be no longer surprising that especially those OECD-countries with a thriving venture capital market and good shareholder protection have had an edge in terms of achieving employment growth during the last roughly two decades (figures 2a and b), since a well-developed venture capital market and sophisticated shareholder protection are crucial prerequisites for R&D, radical product innovations, and the founding of new firms, which are in turn indispensable for creating employment growth in times of radical structural change.



**Figure 2a: Employment Growth and Venture Capital**



**Figure 2b: Employment Growth and Shareholder Protection**



Note: Employment growth is average value in % for 1986 through 2001; values for 1999, 2000, and 2001 are OECD estimates and projections. Venture capital is mean in per mil of GDP between 1986 and 1995.

Data sources: Jeng and Wells (1998), La Porta et al. (1998), and OECD.

### **III. What Are the Determinants of Venture Capital Funding?**

#### **1. Some Important Facts Concerning Venture Capital Markets**

If a well-functioning venture capital market is indeed important for keeping unemployment low in the current phase of rapid structural change, the question immediately arises why are there such persistent differences in venture capital markets across countries. There can be little doubt that these persistent differences do indeed exist, with the Anglo-Saxon countries and among them especially the US and the UK having the by far most developed venture capital markets. Apart from pure size relative to GDP, venture capital markets in the US and the UK are also better able to finance early-stage and high-tech investments which are crucial for achieving significant positive effects of venture capital on real activity and employment growth. Table 2 gives an overview over venture capital markets across major OECD countries which supports this assessment. Concerning in particular Germany, though, the caveat is in order that the German venture capital market has experienced considerable growth rates in the second half of the 1990s in the wake of the establishment of the “Neuer Markt”, which can be seen as an attempt to emulate the success of NASDAQ in providing young firms with a less cumbersome avenue for going public (Coffee, 1999).

**Table 2: Country Comparison of Venture Capital Markets**

Countries	Venture Capital Investments as per mil of average GDP			Early Stage Investments as per mil of average GDP			Private Equity New Funds Raised as per mil of average GDP		
	1986	1995	Mean	1986	1995	Mean	1986	1995	Mean
Australia	NA	1.336	0.814	NA	0.526	0.207	NA	1.672	0.790
Austria	0.014	0.007	0.020	0.014	0.002	0.012	0.011	0.009	0.019
Belgium	1.207	0.628	0.608	0.417	0.038	0.148	2.133	0.946	0.864
Canada	0.206	0.855	0.353	0.082	0.376	0.144	0.483	2.349	0.896
Denmark	0.201	0.132	0.156	0.041	0.031	0.043	0.288	0.253	0.302
Finland	NA	0.358	0.202	NA	0.096	0.071	NA	0.641	0.312
France	0.194	0.336	0.451	0.032	0.027	0.053	0.168	0.799	0.937
Germany	0.031	0.375	0.240	0.007	0.063	0.032	0.036	0.148	0.290
Ireland	0.425	0.557	0.620	0.194	0.026	0.121	0.864	0.360	1.315
Italy	0.021	0.295	0.210	0.011	0.071	0.033	0.204	0.419	0.316
Japan	NA	0.216	0.102	NA	0.047	0.018	NA	0.400	0.240
Netherlands	0.532	1.433	0.743	0.127	0.304	0.119	1.080	1.025	0.717
N. Zealand	NA	0.517	0.191	NA	0.062	0.027	NA	0.231	0.422
Norway	NA	1.337	0.476	NA	0.061	0.055	NA	0.520	0.369
Portugal	0.004	0.990	0.569	0.004	0.087	0.086	0.036	NA	0.924
Spain	0.087	0.425	0.249	0.037	0.056	0.070	0.000	0.450	0.337
Sweden	0.313	0.158	0.202	0.034	0.043	0.027	0.592	3.101	1.056
Switzerland	0.068	0.105	0.157	0.050	0.004	0.034	0.033	0.240	0.263
UK	0.793	1.033	0.969	0.194	0.042	0.136	0.955	2.761	2.581
US	0.556	0.638	0.456	0.058	0.191	0.075	1.539	4.960	2.405

Early stage investments include only seed and start-up investments; private equity new funds is defined as committed, but not yet paid capital to private equity funds, i.e., includes money raised for all stages of investment.

Source: Jeng and Wells (1998).

As the corporate finance literature has recognized the importance of venture capital markets for real activity and the persistence of these puzzling cross-country differences, it has in recent years devoted considerable efforts into theoretically and empirically investigating the determinants of venture capital funding across countries. A number of intriguing insights emerge from this fledgling literature. Following the American understanding, venture capital is here defined to be investments by specialized venture

capital organizations (venture capital funds) in high-growth, high-risk, often high-technology firms that need capital to finance their start-up, product development, or growth and must, by the nature of their business, obtain this capital largely in the form of equity rather than debt. Hence, buyout financing that enables managers of mature firms to acquire control from current owners is excluded although this is precisely what so called venture capitalists often do in Europe.<sup>20</sup>

Venture capitalists specifically serve as financial intermediaries in markets where lenders and borrowers find it costly to get together, e.g., due to severe moral hazard and adverse selection problems, or due to high costs of information gathering. Bank credits are in these cases not the optimal solution. First, such firms usually lack the necessary collateral for debt financing. Second, debt financing excessively restricts the use of incoming cash flows already in the early stages of the firms' lifecycles to fulfilling interest payment obligations, thus being undesirable for such firms from a cash management perspective. Third, especially in Germany and Japan banks are typically large and provide a range of services, so that they lack the specialization and focus to handle small start-ups. In contrast, venture capital financing, which usually takes place in stages, is attractive especially for start-ups because the equity financing structure gives them great leeway in their repayment schedule. In addition, by focusing on start-ups, venture capitalists acquire expertise and economies of scale in locating and financing potentially successful start-ups.

Albeit venture capital financing is an important way to circumvent liquidity constraints, it is crucial to recognize that venture capitalists do not only give money to their portfolio companies. Rather, three other aspects are also central to understanding the venture capital industry.<sup>21</sup> First, venture capitalists provide management assistance to the portfolio company similar to consulting firms. This is possible because the typical venture capital fund is a limited partnership run by general partners who are experienced at moving companies up the development path. It can therefore help through common

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<sup>20</sup> See Black and Gilson (1998), Jeng and Wells (1998), and Becker and Hellmann (1999).

<sup>21</sup> See Black and Gilson (1998), and Repullo and Suarez (1999).

problems of high-technology firms when they move from prototype development to production, marketing, and distribution. In addition, the venture capital fund's knowledge and experience with prior startup firms in this industry enables it to help its portfolio companies in locating experienced personnel.

Second, venture capitalists engage in intensive monitoring of the performance of their portfolio firms (Keuschnigg, 1998). They not only have a large incentive to do so due to their equity ownership, but also in contrast to universal banks the expertise concerning sector-specific knowledge, and the power to act in case things go wrong due to the typically substantial levers of control which portfolio companies have to cede to their venture capitalists. A particularly important lever of control stems from the typical contractual arrangement that capital is only provided in stages by the venture capitalist allowing him to withdraw financing at intermediate stages. This serves to prevent the entrepreneur/management from diverting some of the firm's profits to himself rather than to the financiers of the firm at large. These control rights are typically disproportionately large compared to the size of the financial commitment by venture capitalists. An important element in this is the standard procedure that venture capitalists only provide funds in stages and that they usually receive convertible debt or convertible preferred stock that carries the same voting rights as if it had already been converted into common stock. Finally, the venture capitalists often also get a disproportionate representation on the board sometimes even up to an absolute majority or veto power over important operating decisions by the portfolio company.

Third and often neglected, venture capitalists provide their portfolio companies with reputational capital, i.e., similar to other financial intermediaries such as investment banks they give credibility to their portfolio companies with third parties whose contributions are often crucial to the success of the young firm. Potential and actual personnel, suppliers, and customers are all more willing to engage in contractual relationships with a firm if a well-known venture capitalist backs it with money and advice as well as with control activities. It is in this respect important to keep in mind that the venture capitalist is in possible contrast to a start-up firm a repeat player who

needs to maintain a good reputation in the venture capital market in order to attract future engagements. The reputational capital role of the venture capitalist is underlined by the fact that venture-capital-backed initial public offerings (IPO) do empirically not exhibit the long-run underperformance that is reported for IPOs in general. This reputational effect is of course especially important for early-stage companies with little reputation of their own. Thus, by the time the portfolio company begins to succeed and to build up a reputation of its own, the value of the venture capitalist to the portfolio company starts to decline and at a certain critical threshold level the money can be more profitably invested in other early-stage investments (Kaplan and Strömberg, 2000). All three points taken together, management assistance, monitoring, and reputational capital, suggest that venture capital is actually a variant of relationship-based financing, but as will be shown, one which can only flourish in an institutional environment where there exists a well-functioning arm's length financial system. Hence, it is in fact a shrewdly-designed hybrid system (Tsuru, 2000).

## **2. Institutional Driving Forces of Venture Capital Markets**

In order to explain the large cross-country differences in the vitality of venture capital markets, it is important to analyze the institutional driving forces of venture capital markets. These institutional factors can be distinguished according to whether they affect the supply and the demand for venture capital. Jeng and Wells (1998) have in a thorough panel data analysis, detected that mainly three institutional factors make a difference in explaining the development of venture capital markets across countries and over time: Private pension funds, labor market rigidities, and IPOs.<sup>22</sup>

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<sup>22</sup> These empirical results are grosso modo corroborated by Black and Gilson (1998), and Gompers and Lerner (1999b). Other potentially important institutional factor are capital gains tax rates and codetermination laws. However, it is difficult to make cross-country comparisons of effective marginal tax rates and Jeng and Wells (1998) did not dispose over the necessary data for capital gains tax rates for all their countries and time periods to include them in their panel-data analysis. Extensive codetermination regulations are a predominantly German phenomenon but with potentially important negative repercussions on the development of the venture capital market as they reduce the attractiveness of IPOs.

A first and most conspicuous factor in the growth of the venture capital industry especially in the US are private pension funds. Private pension funds are by far the largest supplier of venture capital in the US. They supply almost half of all the funds of venture capitalists (Black and Gilson, 1998). This is not by coincidence. Rather, raising money from pension funds provides a number of advantages to venture capitalists. They can thereby quickly raise large amounts of money solely by approaching a few large funds. In addition, they can in this way restrict the time they need to spend on keeping their financiers informed. Furthermore, due to the peculiar nature of their liabilities pension funds can afford to have a relatively long time horizon and they have large funds to invest, so that they are well suited for committing part of their money to highly risky projects, but with a high expected return on average. Yet, it needs to be recognized that the large-scale financing of venture capitalists by pension funds has essentially only been possible in the US since the 1979 amendment to the “prudent man” rule governing pension fund investment. Prior to 1979, the Employee Retirement Income Security Act (ERISA) barred pension funds from investing substantial amounts of money into venture capital or other high-risk asset classes. The Department of Labor’s clarification of the rule in 1979 explicitly allowed pension managers to also invest in high-risk assets, including venture capital (Kortum and Lerner, 1998). Hence, it should not be surprising that the significance of pension funds for explaining the growth of the venture capital industry is much greater in the within countries specification of Jeng and Wells (1998), which attempts to explain changes over time within countries, than in the between specification, which aims at making sense of cross-country differences.

This positive effect of private pension funds on the venture capital industry clearly comes from the supply side. However, this is precisely the reason why it is necessary to note a caveat against overemphasizing the role of pension funds in explaining cross-country differences in the growth of the venture capital industry (Black and Gilson, 1998). It seems more appropriate to explain major cross-country differences by demand-side factors considering that money is the ultimate fungible commodity. If there were a sufficiently large profitable opportunity set for venture-backed firms and thus demand for venture capital, e.g., in countries like Germany and Japan, funds should be available from

other sources and if necessary also other countries. The latter seems hardly necessary in countries like Germany and Japan, though, considering that they have a much higher savings rate than say the US. Nonetheless, it is striking that the start of the venture capital boom in the US coincides with the change in legislation concerning the investment rules for pension funds, so that this supply side factor is not to be neglected.

Labor market rigidities are a second important explanatory factor in the panel data analysis of Jeng and Wells (1998), which comes from the demand side for venture capital, though. In particular strict employment protection legislation such as is prevalent in most continental European countries hampers the growth of the venture capital industry because it makes hiring workers more risky, thus depriving venture-backed firms of the flexibility to lay off workers quickly and at little cost at a later stage. Furthermore, rigid labor markets typically lead to higher labor costs which makes it less attractive to start a new business in the first place. Finally and probably most importantly, leaving a possibly permanent job with sizable seniority rights in a large corporation in order to start one's own business is a much riskier and possibly irreversible decision in a highly regulated labor market with much smaller relative flows in particular out of unemployment. If the new venture is not as successful as expected or even fails, it might be very difficult for the would-be entrepreneur to reacquire a position as an employee with similar pay, status, and job security as before. Hence, a highly regulated labor market can indeed be expected to deter would-be entrepreneurs from risking to try to start their own business (Becker and Hellmann, 1999).

It is kind of obvious that all these labor market effects matter more for early-stage venture-backed investments than for later stage ones due to the higher risk of bankruptcy in the former case. This is also reflected in the empirical results. Labor market rigidities only exert a statistically significant negative effect on the growth of the venture capital industry in the cross-country specification if the dependent variable is restricted to early-stage investments. However, a caveat is again in order. Employment protection legislation such as severance payments typically builds over time and are thus less burdensome for start-up firms. Moreover, unpaid severance obligations are of little



significance in case of bankruptcy. They only expand the pool of unsecured claims on the remaining assets of the firms. Hence, it is probably the last above-mentioned effect which counts most: Highly regulated labor markets with large seniority components concerning salaries and job security especially in large firms act as a deterrent against becoming an entrepreneur thus reducing the demand for early-stage venture capital.

The third empirically important institutional factor in the panel analysis of Jeng and Wells (1998) are IPOs. IPOs turn out to be the main driving force for the venture capital industry across countries. IPOs are the only institutional factor, which is statistically significant in both specifications, across countries and over time. IPOs can be expected to positively influence both, the supply and the demand for venture capital. The positive effect of IPOs is stronger for later-stage than for early-stage venture-backed investments. Once again, the main risk faced by investors in general and venture capitalists in particular is not getting their money back. Thus, a viable exit mechanism is key to the development of a thriving venture capital industry from the point of view of the supply side and it should come as little surprise that countries which lack such a viable exit route lag behind in terms of the size of their venture capital industry.

However, an exit mechanism is also essential to the entrepreneur, i.e., to the demand for venture capital for two reasons (Black and Gilson, 1998). First, it provides a financial incentive for equity-compensated managers to increase effort because they know with greater certainty in such a case that higher efforts on their part will eventually be financially rewarded. Second, it gives the managers a call option on control of the firm because venture capitalists relinquish control at the time of the IPO. It is important to understand that this is a crucial factor in the implicit agreement between the venture capitalist and the entrepreneur. Entrepreneurs want to retain control over their firm. However, they cannot demand that they be allowed to maintain control at the time when they seek venture financing because they often have not even run a start-up company before. Venture capitalists therefore rationally insist on being ceded ultimate control rights to protect themselves against the risk that the entrepreneur blunders in running the

venture or extracts private benefits from the firm instead of maximizing its value to all investors.

The situation is beginning to change, though, once the start-up firm has succeeded and the entrepreneur has proven his management skills and has provided some evidence that he can be trusted in dealing with other people's money. The positive management and reputation effects that the venture capitalist provides for the firm start to diminish at this point so that it becomes more and more likely that the value of the firm is actually maximized by returning control. Yet, regaining control is mainly possible for the entrepreneur via an IPO, whereas the alternative route of selling the whole company normally entails the complete loss of control for the entrepreneur.

An IPO is in any case only available to the portfolio company when it is indeed successful because only then will a highly reputable investment bank underwrite the IPO, thus putting its own capital and reputation into the offering. A central role of an investment bank in an IPO is to act as an information intermediary who puts his reputation at stake on behalf of the portfolio company, thus signalling to the stock market at large that buying shares of this company is likely to be a profitable investment. Hence, the investment bank plays a partially similar role to the venture capitalist, only at a later stage of the lifecycle of the firm.

It might be objected, though, that the venture capitalist cannot credibly commit ex ante to returning control and to accepting the IPO contingent on a concept as nebulous as success. However, this objection turns out to be wrong. The venture capitalist does not have an incentive to breach the implicit agreement and prevent the entrepreneur from exercising his call option on an IPO in case he is successful and has found a prestigious investment bank as underwriter of the IPO. To see this, it is important to recall once again that the venture capitalist is a repeat player who does not want to acquire a reputation as preventing successful portfolio firms from going public. Rather, the opposite is true, having a track record of many successful IPOs will help the venture capitalist to stay in business, expand, and to obtain highly promising portfolio firms in the future. Hence, this

credibility argument in an infinite horizon game is crucial for the viability of the standard implicit contract between entrepreneurs in portfolio firms and venture capitalists.

It is in this respect important to keep in mind that venture capitalists typically specialize in dealing with geographically close portfolio companies, which is reflected in the heavy geographical concentration of the venture capital industry in the US in the northeast and in northern California (table 3). This not only facilitates monitoring on the part of the venture capitalist, but it also fosters the emergence of a reputation market, where a valid claim that a venture capitalist does not live up to this implicit contractual agreement would quickly thwart his future chances of becoming lead investor in the most attractive start-up companies.<sup>23</sup> In sum, the availability of an IPO appears to be central for a thriving venture capital market and the actual number of IPOs is likely to understate this crucial link because it is also the mere possibility of an IPO which prods venture-backed start-ups. However, IPOs require an active stock market with large-scale trading, so that bank-centered financial markets with great banking activity but relatively small stock markets such as in Germany or Japan are not conducive to the growth of the venture capital market.

**Table 3: Venture Capital Fundraising in the US by Region in 1999 (\$ Bil.)**

Northeast	Northern California	Mid-Atlantic	Southern California	Midwest	South-/Northwest	Rocky Mountain	Southeast
16.62	16.22	4.95	3.03	2.60	1.49	1.13	0.82

Source: National Venture Capital Association

#### **IV. Why Is Venture Capital at Odds with Corporatism?**

Despite its beneficial on employment growth, the venture capital market is still far less developed in continental European countries than in Anglo-Saxon countries. This might be related to different principles guiding economic policy making. While Anglo-Saxon

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<sup>23</sup> See Black and Gilson (1998), Becker and Hellmann (1999), and Gompers and Lerner (1999b).

countries are by and large dominated by a view that puts great faith in the functioning of unfettered markets, the so-called corporatist approach to economic policy is much more prevalent in continental Europe. Corporatism is in some way an attempt to find a middle ground between market capitalism and socialism by means of a consensus-oriented policy. Corporatism aims at achieving macroeconomic progress in terms of high GDP and employment growth and of low inflation on the basis of explicit, often tripartite agreements involving unions, employers federations, and the government.<sup>24</sup> These agreements tend to take place on a centralized level. Relatively centralized wage agreements or pattern bargaining are almost a defining feature of corporatist countries. Corporatists typically distrust the beneficial effects of strong competition on labor and capital markets in terms of achieving these macroeconomic goals. In particular, wage competition on the labor market is regarded to be harmful in terms of efficiency and politically unacceptable for its impact on income distribution.<sup>25</sup>

The previous section showed that a fully fledged market for IPOs is a key prerequisite for a thriving venture capital market. Undertaking an IPO is more attractive for the entrepreneur in an institutional environment which is highly protective of shareholders, so that potential bidders for shares are willing to pay a higher price per share, and where the private benefits of controlling a company are relatively small.<sup>26</sup> Both of these conditions are fulfilled to a larger extent in Anglo-Saxon countries than in corporatist continental European countries. As we have already seen, shareholders are better protected by law and its effective enforcement in Anglo-Saxon countries than in continental Europe. Furthermore, stakeholder interests matter more in continental Europe than in Anglo-Saxon countries. A prominent example is the German codetermination law which gives German workers in public firms a direct say in routine policy decisions in firms, thus interfering directly with the common prerogative of shareholders and managers as their agents and making it less attractive for firms to go public.<sup>27</sup>

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<sup>24</sup> The corporatist idea is currently experiencing some kind of renaissance in continental Europe in general and in Germany in particular as the corporatist Dutch model is seen to be more palatable than the US model.

<sup>25</sup> See Berthold and Hank (1999), and Roe (1999).

<sup>26</sup> See Bebchuk (1999), and Coffee (1999).

<sup>27</sup> See Roe (1999), and Coffee (1999).

The private benefits of controlling a company are also considerably larger in corporatist continental European countries. First, the private benefits of control are negatively related to the level of shareholder protection, because greater shareholder protection makes it more difficult for an entrepreneur to divert funds from the company to himself. Second, high levels of private benefits of control lead to less publicly traded companies and to a higher concentration of ownership in those firms which are publicly traded. This is precisely what can be observed when comparing continental European countries to Anglo-Saxon countries. Hence, it is more than difficult to replicate the success in a number of Anglo-Saxon countries in terms of creating a venture capital market in a bank-centered financial market where creditors are much better protected than shareholders. In line with this argument, the average age of a firm undertaking an IPO in continental Europe is empirically much higher than in Anglo-Saxon countries (Coffee, 1999).

The key question which arises is to identify the underlying politicoeconomic causes for these persistent differences in financial market structures in general and in shareholder protection in particular. It is striking that Anglo-Saxon countries not only feature more pronounced shareholder protection and more vibrant stock and venture capital markets, but that they also tend to have less regulated labor markets, where market forces are given greater leeway. Labeling managers/entrepreneurs and employed workers as insiders on financial and labor markets respectively, insider protection on both, financial and labor markets, is much less prevalent in Anglo-Saxon countries compared to its omnipresence in continental European countries. Albeit this cross-market, cross-country relationship has received little attention in the literature so far, it appears to be potentially important in explaining persistent differences in institutions in these markets and in unemployment performances across countries. This is in particular the case because a higher level of shareholder protection is conducive to IPOs, which are again a prerequisite for a vibrant venture capital market, which has in turn in recent years become an important factor driving employment growth.

The three main groups interested in the level of shareholder protection on financial markets and in the level of employment protection on labor markets are workers, entrepreneurs, and investors.<sup>28</sup> It is assumed that workers prefer higher employment protection and *ceteris paribus* also higher shareholder protection. The latter preference might appear strange on first glance but appears nonetheless justified. First, the more stocks workers own themselves, the more they benefit *ceteris paribus* from a higher level of shareholder protection in the whole constituency. Second, in a longer-run perspective higher shareholder protection facilitates the acquisition of new risk bearing capital thus enhancing in general the earnings potential and job security of incumbent workers. It is furthermore assumed that entrepreneurs dislike both shareholder and employment protection, and that shareholders like shareholder protection and dislike employment protection. Hence, investors and entrepreneurs have the same preferences concerning employment protection legislation, but they have opposing preferences on investor protection because low investor protection allows entrepreneurs to partially appropriate investors *ex post*. In contrast, workers prefer higher employment protection and possibly also higher shareholder protection. Hence, they have the same preferences on shareholder protection as investors in general but stand alone on the issue of firing costs.

It is for simplicity assumed that for any legislation to pass, it needs to be approved by at least two out of these three interest groups. This could in principle be the result of both, direct democracy or representative democracy. In the latter case, interest groups push delegates to vote according to their preferences.<sup>29</sup> The result of the democratic decision process depends crucially on the voting and bargaining procedure. Two types of politicoeconomic equilibria arise from this setup. If neither bargaining between interest groups nor binding precommitments concerning their voting behavior nor joint voting on both issues at the same time are possible, the solution is obtained immediately. Both issues will then be put on the table sequentially and such an atomistic society with little

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<sup>28</sup> See Pagano and Volpin (1999), and Fehn and Meier (2000).

<sup>29</sup> Under direct democracy there could be a problem if workers on their own represent an absolute majority and do therefore not need the support of any one of the other two interest groups. The representative democracy case with interest groups pushing political parties to vote in their interest therefore fits better. This is in particular the case because, albeit workers are usually more numerous, their per capita financial wealth is smaller compared to the other two interest groups, so that their per capita ability to sway parties according to their preferences by donating money is also lower.

coherence will always choose this type of institutional setup which is favored by two out of these three interest groups. There will be maximum investor protection because this is the solution preferred by investors and workers, while employment protection will be minimal because investors and entrepreneurs want firing costs to be as small as possible. This outcome and the underlying assumption about the type of society tend to reflect the more fragmented Anglo-Saxon countries and in particular the US.

An alternative scenario is a voting procedure where bargaining between parties and credible precommitments are possible and where there is therefore de facto a joint vote on both issues at the same time. The outcome of such a bargaining environment depends on which interest groups are most influential and are likely to align. There exist at least three arguments why the coalition between entrepreneurs and workers is especially likely to form. First, compared to entrepreneurs and workers, investors are a highly heterogeneous group of people with very diverse interests and with a large free rider problem. Similar to consumers, it is much more difficult for investors to organize and to sustain a powerful lobby than it is for entrepreneurs and workers since each investor usually has rather little at stake. Second and related, a significant part of investors usually consists of foreigners in highly developed countries and under the rapidly progressing globalization of capital markets. It is immediately evident, that the interests of such non-residents matter less in the political decision-making process. They hardly contribute to forming a powerful political lobby protecting investors' rights (Coffee, 1999). The third argument why investors are probably shunned as coalition partners is rooted in the well-known time-inconsistency or credibility problem.<sup>30</sup> The likely consequence of an ex-post dropout of one of the coalition partners is a return to the previous scenario with simple sequential decisions on both issues without any coalitions or political bargains involved. But it has already been shown that under such an atomistic setup high shareholder protection is going to be chosen which investors like of course. Hence, in an environment with bargaining at the outset investors can always gain by pretending to enter into a coalition and to agree on a compromise with either entrepreneurs or workers, only to later on renege on this agreement so that they will in fact attain their preferred solution.

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<sup>30</sup> See Barro and Gordon (1983), and Kydland and Prescott (1977).

However, rational entrepreneurs and workers anticipate that assurances of investors cannot be trusted and they therefore do not enter into a coalition with them in the first place.

In sum, in a bargaining environment with coalitions of interest groups being crucial for the institutional outcome, a situation that can be denoted as a corporatist setting, it can be expected that investors are kept out of coalitions and that entrepreneurs and workers are the decisive interest groups. Such an assessment also seems warranted by casual observation of what appears to be characteristic of corporatist continental European countries. It is quite evident that the outcome of such a bargain will involve little shareholder protection and substantial employment protection. Recalling that entrepreneurs dislike shareholder and employment protection, while workers have a strong desire for high employment protection but at most a weak preference for higher shareholder protection, a bargained compromise between workers and entrepreneurs will inevitably be distinct from the solution in fragmented societies. It will involve higher employment protection and less shareholder protection than in the atomistic society, where the institutional setup is decided upon in a sequential voting procedure. Hence, there are two distinct politicoeconomic equilibria. Fragmented Anglo-Saxon societies choose the preferred solution of investors with high shareholder and low employment protection, while corporatist continental European societies can be expected to end up in a compromise between entrepreneurs and workers, therefore setting employment protection higher and shareholder protection lower. As was already shown, however, both, higher firing costs and lower shareholder protection, hinder the development of the venture capital market, so that the outcome of the corporatist politicoeconomic equilibrium is in direct contradiction with a vibrant venture capital market.

Yet, it is important to recognize that corporatism on the labor and the capital market typically involves more instruments than just high employment and low shareholder protection. Firing costs are only one way of protecting insiders on the labor market against market forces such as adverse aggregate shocks or structural change. Further instruments which aim at essentially the same goal are unemployment insurance, welfare



benefits, active labor market policies, centralized wage bargaining, and minimum wages. Unemployment insurance guarantees insiders a certain level of income protection for a limited period of time if insiders are laid off despite of high firing costs. In fact, Buti et al. (1998) argue that firing costs and unemployment insurance can be regarded as substitutes in their very purpose of protecting insiders, but with unemployment insurance possibly interfering less with structural change. Welfare benefits of course step in once unemployment insurance runs out. Active labor market policies protect insiders against structural change in helping them to adjust their skills to the changing needs of the market. Actual active labor market policies are hardly ever designed to directly raise the competitiveness of outsiders vis-à-vis current insiders.<sup>31</sup> Centralized wage bargaining and minimum wages are both instruments to reduce wage differentiation at the lower end of the wage distribution thus protecting insiders against rapid and great wage reductions in case the forces of structural change work to their disadvantage. All five policy instruments are in addition to firing costs typical ingredients of corporatist arrangements on the labor market.

Similarly, low shareholder protection is just one way of favoring insiders on financial markets. Opaque accounting rules which give entrepreneurs/managers large leeway to manipulate stated profits are another way of shielding insiders on financial markets from interference by outsiders. Furthermore, entrepreneurs and managers want to be protected against competition by new firms and against takeovers by other firms which might lead to their dismissal, leading to entry barriers against new firms and anti-takeover legislation. The key prediction of this politicoeconomic approach, namely that there should be a positive correlation between these two sets of insider-protecting instruments on labor and financial markets across countries is in fact confirmed by cross-country data for the OECD countries (Fehn and Meier (2000)).

In a nutshell, the case can be made that preferential treatment of insiders on labor and financial markets in continental European countries are part of an encompassing corporatist deal to shut out competition on both markets. This comes at the expense of

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<sup>31</sup> See Calmfors and Skedinger (1995), and Saint-Paul (1998).

shareholders, of future potential entrepreneurs, and of the unemployed. This might partly explain why the strenuous attempts of continental European countries in general and of the EU in particular to emulate the US in terms of creating a vibrant venture capital have up to now been met at best with meager success. The basic reason suggested here is quite simple. Achieving a vibrant venture capital market necessitates disrupting the corporatist politicoeconomic equilibrium which typically involves high employment and low shareholder protection as key ingredients. A well-functioning venture capital market enhances competition on the product market and thereby indirectly also on the labor and financial market. Venture capital promotes the entry of new firms and is conducive to structural change, thus reducing quasi-rents and undermining the position of current insiders on labor and financial markets who are the dominant players in corporatist countries. However, the existence of sizable quasi-rents, which can be shared by both types of insiders, is an important prerequisite for the viability of corporatism (Tsuru, 2000). Venture capital is therefore at odds with corporatism, a notion that is still widely embraced in continental Europe.<sup>32</sup>

## **V. Concluding Remarks**

The primary lesson arising from the analysis is actually by no means novel, but has rather already been emphasized by Walter Eucken. Institutional structures on markets such as the labor market or the financial market should not be analyzed in isolation because they are highly interdependent. The corporatist, non-competitive institutional setup on continental European labor markets seems to be intricately linked to the prevailing

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<sup>32</sup> A further reason for the persistent cross-country differences in the institutional setups on financial markets appears to be path dependence. Efficiency, legal heritage, as well as rent-seeking considerations can lead to such path dependence of financial market structures. From a political economy perspective, the rent-seeking argument seems to be at the core also of path dependence. The efficiency argument does not carry great weight considering that continental European financial market structure with little shareholder protection and therefore also underdeveloped venture capital markets is a non-negligible factor in explaining persistently high unemployment in continental Europe. Furthermore, the legal tradition argument is also not fully convincing either, considering that laws can and have been changed even against traditions in other areas when this was regarded as politically beneficial by the legislature; see Roe (1999), and Bebchuk and Roe (1999).

structures on financial markets by politicoeconomic forces. Hence, it should from that perspective not be surprising that venture capital markets in continental Europe still lag behind their Anglo-Saxon counterparts despite of substantial government efforts on the national and EU level to catch up. A vibrant venture capital market, which makes future outcomes less predictable and undermines the position of insider on labor and financial markets, is simply at odds with the corporatist, consensus-oriented model which governments in continental Europe still cling to.

Unfunded pay-as-you-go pensions systems, highly regulated labor markets, and little shareholder protection are the primary institutional obstacles for venture capital markets to thrive. Continental Europe simply cannot have it both ways, maintaining on the one hand its cozy institutional framework on labor and financial markets which is mainly built on long-term relationships between insiders on both markets as well as between these insiders and governments, and importing on the other hand the innovative, competitive, and somewhat anarchic element which inevitably comes about with fully-fledged venture capital markets. Cross-country empirical evidence shows that it will in the long run have to be either one or the other. The longer mass unemployment in continental Europe persists the more likely it is that the heydays of corporatism at least in the above-defined form are over, due to the rising pressure to deregulate labor markets, to expand shareholder protection, and to develop fully fledged venture capital markets. This will require accepting greater income inequalities between people and larger income variability over time, both of which corporatism was traditionally aimed at suppressing.

If governments in continental Europe nonetheless want to play an active role in this development toward making more room for market forces via fostering venture capital markets, the analysis has pointed out three important levers. First, reforming current pay-as-you-go pension systems toward greater funding and allowing the arising pension funds to invest part of their assets in venture capital can be expected to spur venture capital markets in continental Europe. Second, rigid labor markets hinder the development of venture capital markets and are therefore also via this indirect channel harmful for employment growth. However, both funding the pension system as well as deregulating

the labor market and especially lowering firing costs are politically risky undertakings. Therefore, the third lever might be politically more appealing. Expanding shareholder protection and facilitating IPOs should be less controversial politically and might nonetheless also trigger a process which produces in the long run institutional frameworks on labor and financial markets which are characterized by more openness and less insider preference. It should in particular be possible to install two-tier systems, meaning that the rules of the game concerning especially shareholder protection are different for start-up firms compared to the old established firms. The “Neuer Markt” in Germany can in fact be viewed as such an attempt, which has been reasonably successful so far.

In sum, the ongoing changes in institutional structures on financial markets in continental Europe, which are among other things triggered off by the rapid globalization of financial markets, raise the pressure to abandon corporatist structures also on labor markets. Although painful in the short run, this development can be expected to raise employment growth in the longer run, assuming that the current era of rapid structural change and high volatilities is not temporary but rather persists. Hence, while globalization is often used as a political scapegoat, it might in fact be a blessing in disguise for continental Europe as it helps to overcome its institutional sclerosis on labor and financial markets, and thereby indirectly also on product markets.

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