Social Protection and the Formation of Skills: A Reinterpretation of the Welfare State

Margarita Estevez-Abe
Department of Government
Harvard University

Torben Iversen
Department of Government
Harvard University

David Soskice
Wissenschaftszentrum Berlin

Original version prepared for presentation at the 95th American Political Association Meeting at the Atlanta Hilton and the Marriott Marquis, September 2-5, 1999. We wish to thank Robert Fannion for excellent research assistance, and Paul Pierson and the participants at the European Political Economy Workshop at the Center for European Studies, November 5-6, 1999 for many helpful comments. Torben Iversen gratefully acknowledges financial support from the Hoover Institution while working in this paper.

Abstract: This paper outlines a new approach to the study of the welfare state. Contrary to the emphasis on "decommmodification" in the current literature, we argue that important dimensions of the welfare state – employment protection, unemployment protection, and wage protection – are designed to make workers more willing to invest in firm- and industry-specific skills that *increase* their dependence on particular employers and their vulnerability to market fluctuations. Workers will only make such risky investments when they have some insurance that their job or income is secure. Otherwise, they will invest in general, and therefore portable, skills. In turn, because the skill composition of the work force constrains the set of product market strategies that firms can pursue successfully, employers will support social protection that facilitates the set of skills they need to be competitive in particular international product markets. We show that our argument is consistent with observed clusters of social protection and skill profiles among OECD countries, and that these clusters are associated with very different distributional outcomes and patterns of gender-specific labor market segmentation.

1. Introduction

Social protection does not always mean "politics against markets." In this paper we argue, as did Polanyi (1944), that social protection rescues the market from itself by preventing market failures. More specifically, we contend that social protection aids the market by helping economic actors overcome market failures in skill formation. We show, in this chapter, that different types of social protection are complementary to different skill equilibria.[1]

The market failure problem in the provision of skills is generally attributed to employers' reluctance to invest in transferable skills. Here we pay more attention to workers' reluctance to invest in specific skills. Young people are less likely to invest in specific skills if the risk of loss of employment opportunities that require those specific skills is high. Employers who rely on specific skills to compete effectively in international markets therefore need to institutionalize some sort of guarantee to insure workers against potential risks. Without implicit agreements for long-term employment and real wage stability, there specific skills will be under-supplied. Employers' promises are not, however, sufficiently credible by themselves. This is why social protection as governmental policy becomes critical.

The upshot of this paper is that the shape of social protection has bearings on national competitive advantage in international markets and choice of product market strategies. Relative abundance in certain skills in a given country constitutes a comparative advantage for firms in that country. But relative abundance in, for instance, a highly flexible multi-skilled workforce does not simply

come by as an accumulative result of individual firms' decisions. Firms' product market choices are constrained by the availability of necessary skills. Availability of specific skills, in turn, requires appropriate forms and levels of social protection.[2] Institutional differences that safeguard returns on specific skills explain why workers and employers invest more in specific skills. The absence of such institutions, in countries such as the US and UK, gives workers a strong incentive to invest in transferable skills. In such an environment, it then also makes more economic sense for firms to pursue product market strategies that use these transferable skills intensely.

We refer to the set of product market strategies, employee skill trajectories, and social, economic, and political institutions that support them, as *welfare production regimes*. A primary objective of this paper is therefore to identify the main varieties of welfare production regimes and their consequences for distribution and economic outcomes. In the rapidly growing "varieties of capitalism" literature, production regimes are conceptualized as institutional complementarities that reinforce one another and particular ways of producing and competing in international markets (cf. Hollingsworth and Boyer 1997; Kitschelt, Lange, Marks and Stephens 1999; Hall and Soskice this volume). We contend that the welfare state can also be understood as a complement in national production systems. Our chapter thus is part of the new efforts to understand the link between models of capitalism and welfare states (Swenson 1997, forthcoming; Mares 1998; Scharpf and Schmidt 2000; Estevez-Abe 1999a; Huber and Stephens forthcoming).

The model of micro-level links between skills and social protection we develop in this chapter has important policy implications. First, our model predicts what types of political alliance are likely to emerge in support of a particular type of social protection. For example, in economies where companies engage in product market strategies that require a combination of firm- and industry-specific skills, and where a large number of workers invest in such skills, a strong alliance between skilled workers and their employers in favor of social protection advantageous to them is likely to emerge -- even if this means reducing job opportunities for low-skilled workers. By contrast, where business has no common interest in the promotion of specific skills, it will have no interest in defending any of the three components of social protection (cf. Mares this volume). Second, we show that different systems of social protection have deeper ramifications for inequality than commonly assumed. Some skill equilibria -- sustained by different systems of social protection -- produce more inequalities based on the academic background of workers, while others produce more inequalities based on gender.

That said, it should be emphasized here that our model *is not* intended to explain the origin of specific social policies. Although our model helps understand intra-class differences in policy preferences, we do not claim to make a historical argument about origins.[3] The path-breaking work by Mares (1998) and Swenson (1997, forthcoming) show the potential insights that can be gained from studying questions about origins from a political economy perspective of the sort we advocate here. But this is not a study of origins.

The paper is divided into four sections. Section 2 outlines the basic argument. Section 3 ties the welfare-skill links to broader issues of income inequality across different groups of citizens. Section 4 provides empirical support for our argument. The final section concludes.

2. Product Market Strategies, Skill Types and the Welfare State

We explore the logical links between product market strategies and their welfare implications in two steps. First, we identify three types of skills and argue that different product market strategies are facilitated by a work force with particular skill profiles. Second, we then spell out how different types of social protection influence the propensity of individuals to invest in particular skills, which, in turn, determines the skill profile of an economy.

2.1. *Skills and Product Market Strategies*

This paper distinguishes three types of skills associated with different product market strategies: (i) firm-specific skills; (ii) industry-specific skills; and (iii) general skills.[4] These skills differ significantly in terms of their asset-specificity (i.e., portability). Firm-specific skills are acquired though on-the-job training, and are least portable. They are valuable to the employer who carried out the training but not to other employers. Industry-specific skills are acquired through apprenticeship and vocational schools. These skills, especially when authoritatively certified, are

recognized by any employer within a specific trade. General skills, recognized by all employers, carry a value that is independent on the type of firm or industry. Of course, any actual production system will involve all three types of skills to some degree. Nonetheless, we can characterize distinctive product market strategies based upon the "skill profile" they require.

A Fordist mass production of standardized goods does not require highly trained workforce. Production work is broken into narrow range of standardized tasks that only require semi-skilled workers. Traditional US manufacturing industries such as automobile and other consumer durables fall into this category. There is, however, a variant of mass production called diversified mass production (DMP). The DMP strategy, in contrast, aims at producing a varied range of products in large volumes. Japanese auto-makers and domestic electronic appliances industry are good examples. This production strategy depends on workers capable of performing a wide-range of tasks to enable frequent product changes in the line (Koike 1981). Workers are also expected to solve problems that emerge in the production line themselves to minimize downtime (Shibata 1999). The tasks these workers perform involve high levels of knowledge about their company products and machineries in use, and hence are highly firm-specific.

There are product market strategies that do not mass produce. One strategy is a high quality product niche market strategy. It requires a highly trained workforce with industry-specific craft skills. The prototype of this production strategy does not involve any scale merit, and the process tends to involve highly craft-intensive workshops. Custom-made clothing, jewelry and fine porcelain may be examples of such production. Another strategy is a hybrid. It pursues high

quality product lines, but takes the production out of small scale craft shops in order to increase the volume of production. Streeck (1992) calls this diversified quality production. This production strategy requires firm-specific skills in addition to high levels of craft skills. Germany is a prototype of this type of production.

All the above strategies require firm-specifc and industry-specific skills to varying degrees. It is important, however, to note that relative abundance of high levels of general skills (i.e. university and post-graduate qualifications) brings a comparative advantages in radical product innovation. Let us take the example of the US to illustrate this point. For example, start-up software companies in the US take advantage of a highly flexible labor market with university educated people combining excellent general skills with valuable knowledge about the industry acquired from switching from one job to another. Another example would be American financial institutions, which have taken advantage of abundant supply of math Ph.D. to develop new products such as derivatives. Complex systems development (for e-commerce, for example), biotechnology, segments of the telecommunications industry, and advanced consulting services are other examples that fall into this class of industries.

2.2. *The Welfare-Skill Formation Nexus*

We make three following assumptions about workers' economic behavior:

(i) People calculate overall return to their educational/training investment before deciding to commit themselves. (The investment cost of further training and education can be conceptualized in terms of wages foregone during the period of training and education, in addition to any tuition or training fees incurred.)

(ii) People choose to invest in those skills that generate higher expected returns, provided that the riskiness of the investments are identical.

(iii) Ceteris paribus, people refrain from investing in skills that have more uncertain future returns (i.e., people are risk averse).

From these assumptions, it follows that a rational worker must consider three factors in making skill investment decisions: (i) the initial cost of acquiring the skills as, for instance, when a worker receives a reduced wage during the period of training; (ii) the future wage premium of specific skills; and (iii) the risks of losing the current job and the associated wage premium.

The core skills required by an industry are critical for this analysis because they vary in the degree to which they expose workers to the risk of future income losses. Highly portable skills are less risky than highly specific skills because in the former case the market value of the skill is not tied to a particular firm or industry. Faced with future job insecurity, a rational worker will not invest his/her time and money in skills that have no remunerative value outside the firm or industry. In

other words, in the absence of institutional interventions into workers' payoff structure, general rather than asset-specific skill acquisition represents the utility-maximizing strategy.

Let us now examine what types of institutions are necessary in order to protect investments in asset-specific skills. We can distinguish three different types of protection, which might be called, *employment protection, unemployment protection and wage protection*. *Employment protection* refers to institutionalized employment security. The higher the employment protection, the less likely that a worker will be laid-off even during economic downturns. *Unemployment protection* means protection from income reduction due to unemployment, and can thus reduce the uncertainty over the wage level throughout one's career. *Wage protection*, finally, is an institutional mechanism that protect wage levels from market fluctuations. In this section, we first contrast the significance of *employment protection* and *unemployment protection* for firm-specific and industry-specific skills. We will discuss wage protection in a separate section, because it is generally not considered to be part of the welfare system.

Firm-specific skills are, *ex hypothesi*, worthless outside that specific firm, and they therefore require a high level of *employment protection* in order to convince workers to invest in such skills (Aoki 1988). Since workers will only be paid the value of their non-firm-specific skills in the external market, the greater their investment in specific skills the greater the discrepancy between current wages and the wages they could fetch in the external market. In order to invest heavily in firm-specific skills, workers therefore need assurances that they can remain in the company for a long enough period to reap the returns on such investments (see Lazear and Freeman 1996;

Osterman 1987; Schettkat 1993). If not, the expenditures of training must be commensurably lower, and/or the premium on future wages higher. In either case, the cost of training for the firm goes up, and it will offer less training.

Because rational workers weigh higher expected income later in their career against the risks of losing their current job, the only way to encourage workers to carry a substantial part of the costs of firm-specific training is to increase job security and/or reduce the insecurity of job loss. Hence we can interpret institutionalized life-time employment, or subsidies to keep redundant workers within the firm as safeguarding mechanisms for firm-specific skill investment.

It should be noted here that this argument appears to conflict with Becker's (1964) famous proposition that companies will pay fully for company-specific skills, since they need to pay only marginally above the market wage for the employee's marketable skills in order to retain the employee, and can thus appropriate the full return on the investment.

Becker's argument, however, makes two critical assumptions that are not generally satisfied. The first is that the acquisition of company-specific skills does not reduce the maximum present value of the employee's marketable skills, either marketable skills which the employee currently possesses or marketable skills in which the employee will invest in at some future point. This assumption is reasonable where relatively minor specific-skills are concerned -- for example, the understanding of specific office routines. It is implausible where the company-specific skills constitute a major part of the employee's skill portfolio. There are three broad reasons for this.

First, the greater the proportion of company-specific skills, the less likely is the employee to use preexisting marketable skills; since most skills are maintained by use, refreshment and updating, the employee's marketable skills will deteriorate. Second, after full-time education, a large proportion of marketable skills are acquired by most employees at low cost during their employment by doing different jobs (often within the same company) and being taught, for example, the different software packages which each job requires. If a company, however, invests heavily in an employee's company-specific skills, the company is likely to want the employee to focus on using those skills, hence not to move around. Third, the greater the importance of company-specific skills across a sector in general, the less valuable will marketable skills be to employees in that sector. Workers will therefore only work for firm-specific skill companies if they know the chances of job-loss are very low, and this in turn presupposes high employment protection.

A second critical assumption which Becker makes is that company-specific skills confer no "hold-up" power on employees. If they do, as is often the case, then the ability of companies to appropriate the full return no longer holds, and then companies will seek credible guarantees from its workforce. This typically involves cooperative arrangements with unions, such as works councils, which in turn is made possible because employees have made investments in company-specific assets. In order to encourage employees to make these investments, employees require some measure of credible protection.

For industry-specific skills, employment protection per se matters less. If skills are truly specific only to the industry, not the firm, workers can in principle move between firms without loss of income. Instead, what becomes important for workers' incentives to invest in industry-specific skills is the protection of "skilled wages," regardless of employment status. Unemployment protection achieves this in part by securing earning-related benefits and also by helping to keep the skilled wages high even when the supply of skills exceeds the demand for those skills. In part, generous unemployment protection is also important in so far as it allows workers to turn down job offers outside their previous industry or occupation. If compelled to accept a job offer outside the worker's core competencies, either because of low benefits or a strict requirement to accept almost any job offer, this undermines the worker's incentives to invest in industry-specific skills.

A high replacement ratio, especially when the unemployment benefits are earnings-related, rewards the worker for his/her specific skill investment even when the worker is out of work. A high replacement ratio also eliminates the downward pressure on specific skilled wages, as unemployed skilled workers do not have to take job offers at discounted wages. Benefit duration and the administration of requirements to accept a “suitable job” further reinforces this mechanism. A longer benefit duration permits the unemployed industry-specific skill holders enough time to find another job that matches their skills, especially if they are permitted to turn down jobs that are outside their core competencies. This ensures that their re-employment will generate the same skilled wages as before, simultaneously reducing downward pressures on the skilled wages. In short, these two components of *unemployment protection* -- a high replacement

ratio and “secure” benefits -- guarantee return on skill investment sufficient to compensate for economic fluctuations.

For firms pursuing product market strategies which depend heavily on firm- and industry-specific skills, promise of employment and unemployment security can thus provide a cost-effective path to improving the firms’ competitive position in international markets (cf. Ohashi and Tachibanaki 1998; Koike 1994). Contrary to conventional neo-classical theory, which sees efforts to increase protection against job loss as an interference with the efficient operation of labor markets, measures to reduce future uncertainty over employment status — hence uncertainty over future wage premiums — can significantly improve firms’ cost effectiveness (Schettkat 1993). And the more successful these firms are, the greater their demand for specific skills. We are in a specific skills equilibrium.

If there is little protection build into either the employment or the unemployment system, the best insurance against labor market risks for the worker is to invest in general, or portable, skills that are highly valued in the external labor market. If general skills are what firms need for pursuing their product market strategies successfully, low employment protection can thus give these firms a competitive edge. Indeed, if most firms are pursuing general skills strategies, then higher protection will undermine workers incentives to invest in these skills, *without* significantly increasing their appropriation of specific skills (because there is little demand for such skills). In this general skills equilibrium the neo-classical efficiency argument for little protection is more valid.[5]

The predictions of the argument are summarized in Figure 4.1, which identifies the four main welfare production regimes and gives an empirical example of each (discussed below). The empirical details will be discussed in Section 4.

[Figure 4.1 about here]

2.3. *Wage Bargaining Institutions and Wage Protection*

The previous section argued that the greater the uncertainty attached to employment in the use of particular skills the greater the incentive to invest in general skills which permit mobility. The proper calculation relates to the uncertainty of income, namely employment multiplied by earnings. If there is uncertainty in the earnings from particular skills, this is as much of a disincentive to sink investments in those skills as uncertainty in employment.

We suggest that some wage determination systems provide what we call *wage protection. Wage protection* reinforces the effects of *employment* and *unemployment protection* by reducing the risk that the wage levels for specific skills might drop radically in the future. In other words, *wage protection* makes it possible for workers to calculate viable life-long earnings if they were to invest in specific skills. This possibility is arguably as important as employment and unemployment protection in making sunk investments in human capital. In the absence of a credible life-time earnings, any major investment in specific skills is unlikely to result. Thus the wage determination system should be seen by political economists – not just in macroeconomic

terms but – as a critical linking institution between the welfare state and the production regime. Just as the nature of employment and unemployment protection is contingent on the type of skill investments, so too is wage protection.

At a rough first cut, then, it is necessary to provide wage protection in order to induce front-end investments in company or industry specific skills. The natural interpretation of a wage protection system is where wage determination provides a broadly stable proportionate distribution of earnings across different occupations. This is the result when there is a high degree of coordination in a system of wage determination. Thus institutionally we would expect to find coordinated wage bargaining systems in economies in which specific skills are important, and non-coordinated systems where they are not. And in terms of outcomes we would expect to find stable distributions of earnings across occupations in the first, but not necessarily the second case.

There is one complication to the above which is worth noting. A distinction can be made between wage protection for the employed and for the unemployed: For the employed wage protection means simply that wages do not fall out of line with wages in other occupations. For the unemployed, a natural definition of wage protection is that there is some guarantee that the wage at which the unemployed person is rehired is the same as wage at which he or she was previously employed. (The unemployment benefit, it will be remembered, is part of unemployment protection.)

As far as the three cases of industry-specific, industry- and company-specific and general skills are concerned, employed wage protection and unemployed wage protection are the same. In the first two cases, they are both high; in the third case they are both low. But in the case of company-specific skills employed wage protection is high but unemployed wage protection is low. This mirrors the (very) high employment and low unemployment protection in the Japanese case. And it can be explained in the same way: if an employee has a "lifetime" employment and employed wage protection guarantee, at least so long as he works effectively, this constitutes an effective incentive for the potentially responsible employee to invest appropriately in company-specific skills. Low unemployment and unemployed wage protection serve as a disincentive to leave the company or to work in such a way as might lead to dismissal.

The association between skills and wage bargaining has implications for the distribution of earnings. Wage bargaining systems have consequences for the wage structure for three associated reasons. First, as implied by our argument, intra-occupational compression of wages serves as a complement to employment and unemployment protection because it help insure against a big drop in income if a workers loses her job. Secondly, to the extent that collective bargaining systems are designed to prevent poaching, they limit the ability of individual firms to pay wages that are significantly above the negotiated rate. The third reason has to do with the effect of collective bargaining arrangements on the relative bargaining power of different income groups. Collective bargaining at the industry or higher levels bring diverse income groups into a collective decision-making process, and this afford low income groups with opportunities to influence the distribution of wages that they lack in more fragmented systems.

3. Self-reinforcing Inequalities and Political Preferences

So far the discussion has focused on the efficiency aspects of social protection. In this section we extend the core argument to unravel two sets of previously neglected logics by which welfare production regimes perpetuate inequalities. First, we point out that general skill systems are more likely to create a "poverty trap." Second, we cast light upon the gender inequality consequences of different product market strategies. Finally, we discuss how these distributive implications of different welfare state regimes are reproduced and perpetuated through distinct patterns of political support for social protection.

3.1. *Distribution, Poverty Traps and Product Market Strategies*

Our argument has far-reaching implications for equality and labor market stratification, some of which are poorly understood in the existing welfare state literature. Product market strategies that rely on high levels of industry-specific and firm-specific skills are likely to create more egalitarian societies than product market strategies based on general skills. They therefore help us understand large and persistent cross-national differences in the distribution of wages and incomes. The existing literature can only account for these differences in so far as they are caused by redistributive state policies. This is far too narrow of an approach. We contend that most inequalities result from particular welfare production regimes (i.e. combinations of product market strategies, skill profiles and the political-institutional framework that supports them).

The basic logic of our argument is straightforward. We argue that different skill systems and accompanying training systems have important economic implications for those who are academically weak and strong respectively. For the bottom one third, or so, of the academic ability distribution, a highly developed vocational training system offers the best opportunities for students to acquire skills that are valued by employers. When entry into vocational training is competitive, these students have an incentive to be as good as they can academically in order to get into the best training programs with the most promising career prospects (Soskice 1994). Therefore, countries with well-developed (and competitive) vocational training systems provide stable economic future even to those students who are not academically strong. General education systems, in contrast, offer these students relatively few opportunities for improving their labor market value outside of the school system. As a result, there are fewer incentives for them to work hard inside the school system.

In firm-specific skill training systems, employers develop strong stakes in overseeing the quality of potential employees (i.e. trainees) and developing clear job entry patterns.[6] Since employers are committed to make significant initial human capital investment in new job entrants, they will be interested in monitoring the quality of the pool of the new school leavers. As a result, they are likely to establish a working relationship with various schools for systematic hiring of new school leavers. Since employers in a firm-specific skill system carry out initial job training, new school graduates have a chance of building careers as skilled workers. This gives young school goers a strong incentive to work hard in school. The “from-school-to-work”transition is likely to be more institutionalized (Dore and Sako 1989).

Similarly, in the case of industry-specific skills where employers are involved, employers take an interest in ensuring the quality of vocational training and the certification of skills (Finegold and Soskice 1988). In these systems, education-work transition is also relatively institutionalized (Ni Cheallaigh 1995; Blossfeld 1987).

In general skill regimes, in contrast, the "from-school-to-work" transition is less institutionalized (see Allmendinger 1989). Hiring is more flexible. Employers hire new job entrants with different educational backgrounds. Promotion and opportunities for further skill training are themselves contingent upon the job performance of the worker. There is not so much initial human capital investment by employers as there is in firm-specific skill systems. Because of the absence of a clear vocational track, systems based on general skills therefore tends to disadvantage those who are not academically inclined. Regardless of the presence or absence of vocational schools and apprenticeship programs, for employers who emphasize general skills a certificate from a vocational school does not add much value to the worker. Potential workers therefore have to demonstrate their competence in terms of general scholarly achievement, and getting a tertiary degree becomes an essential component. Because there is a hierarchy of post-secondary schools, if the student thinks there is a possibility of making it into the tertiary educational system, he or she has a strong incentive to work hard. For those who are not academically inclined, by contrast, the system produces the unintended consequence of undermining the incentive to work hard in school. In the absence of a specialized vocational track, unless a student believes that he or she can make the cut into college, there is not much gained by being a good student.

In short, in general skill systems, since the completion of elementary and secondary school does not qualify them for secure jobs — a vocational certificate that lead to secure jobs — academically weak students face lower returns from their educational investment. Since the opportunity for vocational training — both on-the-job and off-the-job — for these students will remain low, it creates an impoverished labor pool. In contrast, at the top end of the ability distribution, a general education system offers the largest returns to those with advanced graduate and post-graduate degrees. These returns tend to more modest in specific skills systems because a large number of companies depend more on industry-specific and firm-specific skills than professional degrees or broad academic qualifications. General skill systems, therefore, reward those students who are academically talented in terms of labor market entry. Distribution of academic aptitude thus translates into distribution of skills, and consequently to a very skewed distribution of earnings. As a consequence, academically weak students in general skill regimes are worse-off than their counterparts elsewhere: they are more likely to be trapped in low-paid unskilled jobs.

3.2. *Gender Equality and Skill Types*

Compared to men, women face an additional set of issues when making skill investment choices (see Estevez-Abe 1999b). In addition to the probability of layoff, women have to take into consideration the likelihood of career interruption due to their role as mothers (see Daly 1994; Rubery, Fagan and Maier 1996). For a woman to invest in specific skills, she has to be assured

that potential career interruptions will not: (i) lead to dismissal; or (ii) reduce her wage level in the long run. A high probability of dismissal reduces the incentives to acquire firm-specific skills. A high probability of reduction in wages after becoming a mother — because of time off due to child birth and rearing — reduces the incentives to invest in either firm-specific or industry-specific skills.

For women, therefore, employment protection necessarily involves two factors in addition to the employment and unemployment protection discussed earlier. These two factors are: (i) protection against dismissal, such as maternity, parental and family leave policies; and (ii) income maintenance during leaves and guarantees of reinstatement to the same job at the same wage level upon return to work.

As for industry-specific skill investments, leave programs and generous income maintenance during the leave function in the same way as unemployment protection for male skilled workers. A higher wage replacement ratio thus encourages specific skill investment. Firm-specific and industry-specific skills again require slightly different institutional guarantees. While income maintenance during leave is sufficient for industry-specific skills, firm-specific skill investment by women faces another issue. In firm-specific skill regimes, reinstatement to the original job after the leave means that women fall behind their male cohort in skill formation and promotion. This means that despite generous income replacement during the leave, time off due to child birth and rearing reduces women's overall earnings. The very fact that the child rearing years for women coincide with the critical early years of employment compounds the problem. Therefore, for

women to invest in firm-specific skills, affordable childcare is more important than a family leave policy.

In short, compared to men, it takes more institutional support to encourage women to make specific skill investments. This means that employers' incentives differ significantly from the earlier descriptions of employment and unemployment protection. From the employers' perspective, it costs more to provide incentives for women to invest in specific skills than it does for men (Spence 1973). Not only do additional income maintenance and childcare create a greater financial burden, but they come with the organizational cost of hiring replacement workers during regular workers' material and training leaves. And not only is it expensive to hire highly skilled workers as replacement workers, but it is also very difficult to seek those skills in the external labor market--especially in the case of firm-specific skills.

Given these additional financial and organizational costs, employers are unlikely to support family leave or childcare programs except under two circumstances: (i) when someone other than the employer covers the program expenses; or (ii) when there is an acute shortage of men willing to invest in the skills they need.

From a women's perspective, this means that it does not pay to invest in skills for which there is an abundant supply of males. Even if a woman invests to acquire a specific skill, as far as there is an abundant supply of male skilled workers, her skill investment will not be protected to the same degree as men's. Given this situation, women are more likely than men to invest in general skills.

Furthermore, even women who are willing to invest in skill training will rationally choose trades and professions where there are few men. Hence a vicious cycle of occupational segregation of women arises. In countries where there is an established vocational training system, women's enrollment choices will reflect women's tendency to avoid "male jobs."

In short, product market strategies that rely on firm-specific and industry-specific skills are more gender segregating than product market strategies based on general skills. As we argued, general skills provide more flexibility without penalizing career interruptions, precisely because they do not require any external guarantee and reinforcement. We can thus predict that economies with a large presence of companies with specific skill strategies demonstrate high occupational gender segregation, while general skill systems are more gender neutral.

3.3. *Employers, Core Workers and Median Voters*

The argument presented so far explains the complementarity between different combinations of welfare programs and product market strategies, and their distributional implications. From this, it follows that rational employers who pursue distinctive product market strategies can benefit from welfare programs and policies that favor their production strategy. Complementary welfare programs and policies reduce employers' cost of providing adequate rewards to persuade workers to invest in the skill required for specific product market strategies. We can assume, as in the case of workers, that employers are rational and that they are aware of the incentive structure affecting

workers' skill investment decisions. In other words, a rational employer who is interested in specific skills, will support policies that ensure an adequate return for workers who make investments in those skills. Given such benefits, employers are likely to develop preferences for the "right" sets of programs and policies (Mares 1998; this volume; Swenson 1998; Estevez-Abe 1999a). Similarly, rational workers who have made investments in specific skills will prefer welfare programs and policies that reward and protect these investments in the future (Iversen and Soskice 2000).

One of the most salient divisions in employers' preferences over types of social protection is *firm size* (Mares 1998) Small firms are more severely affected by restrictions on their ability to hire and fire because they do not have the same organizational capacity to adapt to the business cycle as do large firms. Moreover, small firms with limited R&D capacity typically depend more on industry technologies and skills than do large firms, which are often in a position to develop proprietary technologies based on their own R&D effort. Depending on their particular product market strategy, and hence skill needs, large firms are therefore more likely to favor high employment protection than small firms, who tend to view such protection as an unnecessary financial burden and excessive restriction on their manpower flexibility. For small firms a much more important resource in developing a healthy supply of workers with the appropriate industry-specific skills is generous and publicly financed unemployment benefits. This allows small firms to "park" some their skilled workers in the unemployment benefit system during downturns, without undermining the incentives of workers to invest in relevant skills.

Particular welfare programs and policies also have advocates among workers. Workers who have invested in asset-specific skills have vested interests in retaining institutions that protect the value of these assets. Such support will tend to be much lower among workers with heavy investments in general skills since these workers share equally in the costs of social provision, yet are less likely to benefit from social protection. The presumed negative relationship between income and support for social protection, as implied by a standard Meltzer-Richard median voter model (Meltzer and Richards 1981), is thus mediated by the asset-specificity of workers' skill investments (Iversen and Soskice 2000). Consequently, the greater the significance of a specific skill system in the overall national employment structure, the greater the number of workers who possess the "key skills," and the more likely it is that the median voter would be someone with an interest in supporting generous social protection. Because the interests of these workers would be well-aligned with most employers, there would be a formidable political coalition in favor of retaining and strengthening existing institutions.[7]

We can find empirical examples of such cases in northern Europe and Japan. For instance, employers and unions in Germany and the Nordic countries collaborate in setting industry-specific skilled wages, and unions intervene to maintain earnings of skilled workers by means of combining welfare benefits and wages. In so far as industry-specific skills are core skills in a particular economy, not only are the key private unions likely to protect favorable institutions in place but the proportion of the skilled workers in the overall voting population is likely to be significant. Those not possessing the core skills would be shot out of the most attractive jobs, and

in many specific-skills countries this has meant a secondary position for women in the labor market.

In Japan, where a large number of employers rely on firm-specific skills, employers advocate wage subsidies during economic downturns in order to avoid layoffs. Japanese unions, composed by protected core workers from large corporations, support these policies. In Germany, where large manufacturers rely on a combination of firm-specific and industry-specific, we also observe that large German employers and unions are interested in minimizing layoffs. Like Japan, Germany provides wage subsidies from the unemployment insurance in order to reduce layoffs. The Mittelstand sector of small firms complain about the costs of these protections, and advocate deregulation of hiring and firing rules, but they have not been able to impose their preferences on the German political economy (Thelen and Kume 1999).

In contrast to firm-specific and industry-specific skills, general skills do not require any institutional guarantee. Indeed, employment and unemployment protection undermines the incentives of workers to invest in general skills. Employers pursuing product market strategies based on general skills thus have no incentive to support either the employment or unemployment protection we discussed above. Because the median voter tends to have a good general education and understands that expanding benefits and job security can have adverse effects on competitiveness, such opposition is likely to also carry the day in electoral politics. We might therefore expect that countries where the dominant product market strategy is based on general

skills will have meager employment protection and unemployment benefits. The US and UK provide good examples here.

4. Comparative patterns

Our argument implies a tight coupling between employment protection, unemployment protection, and skill formation. The dominant mode of firm structure, as well as circumstances in the historical development of different welfare production regimes, have led some countries to emphasize *employment protection* over *unemployment protection*, or vise versa. As we noted in the theoretical discussion, political opposition to strong *employment protection* legislation will be greater in countries with a high proportion of small firms.

The predictions of our model are summarized in Figure 4.1 above. When *neither* employment *nor* unemployment protection is high, workers have a strong incentive to protect themselves against labor market insecurities by investing heavily in highly portable skills. Since workers are reluctant to take on specific skills in this scenario -- or at least unlikely to share much of the cost of training such skills -- firms have an incentive to use technologies that rely least on specific skills. This, in turn, increases demand for general skills, and availability of general skill jobs makes general education more attractive for workers, thus creating a self-reinforcing dynamic. In this case we expect skill profiles to be heavily tilted toward general and broad occupational skills, with a weak or absent vocational training system.

When employment and unemployment protection is both high, on the other hand, workers will find it more attractive to invest in firm- and industry-specific skills. In turn, this makes it more cost-efficient for firms to engage in production that require large inputs of labor with specific skills. As firms specialize in this type of production, the job market for general skills shrinks. Note here that a standard trade argument supports the idea of self-reinforcing dynamics in both types of systems: institutional comparative advantage makes an intensive use of relatively more abundant skills an efficient production strategy.

Yet, not all countries necessarily conform to these two ideal types. Where companies can offer very high levels of job protection and a large and attractive internal labor market, firm-specific skill formation can flourish in the absence of strong unemployment protection (represented by the southeast corner of Figure 4.1). If career opportunities are extensive within the firm, and if firms credible commits to job security, the external labor market will be small and workers will have an incentive to take advantage of internal career opportunities by investing in company-specific skills. This, essentially, is the Japanese situation (see Aoki 1988; Koike 1981). In most other cases, firms neither have the size nor the resources and institutional capacity to credibly commit to life-time employment. It is for this reason that we would *ordinarily* expect the development of firm-specific skills to be coupled with generous protection against unemployment.

On the flip side of the Japanese system, we find welfare production regimes with extensive unemployment protection, but low or only modest employment protection. Especially in economies dominated by small firms, with small internal labor markets and little organizational

capacity to adapt to business cycles, employment protection is a costly and unattractive option for employers. Denmark is an archetypical example of an economy with a small-firm industrial structure. Yet, generous unemployment protection for skilled workers is still a requisite for workers to invest in industry-specific skills in these cases, much the same way as employment protection is a requisite for investment in firm-specific skills. In effect, unemployment protection increases employment security *within the industry*, as opposed to security within a particular firm. At a high level of abstraction, therefore, the *industry* in a country with high unemployment and low employment protection becomes functionally equivalent to the *firm* in a country with low unemployment and high employment protection.

4.1. *Measuring Protection*

There are no direct measures of job security, such as the risk of non-voluntary dismissals, that can be used consistently across national cases.[8] However, a series of indirect measures pertaining to legal and quasi-legal rules governing individual hiring and firing have been developed by the OECD to gauge the strictness of employment protection legislation (EPL). The composite EPL index is based on provisions in the legal code as well as in collective bargaining agreements, hereunder what constitutes just cause for dismissals, required length of advance notice, mandated severance pay, compensation for unfair dismissals, the rights of employee representatives to be informed about dismissals and other employment matters, and the rights of workers to challenge dismissals in the courts. The OECD constructed this index to reflect as accurately as possible the

costs to employers of dismissing workers, and this is directly relevant to our argument since such costs can be seen as a measure of employer commitment to retain the workers they hire.

The composite EPL index is constructed for both regular and temporary employment, but our argument is only relevant for the former since neither employers nor employees have much of an incentive to invest in firm specific skills when employment is time-limited. The regular employment EPL index is calculated for two periods, the late 1980s and the late 1990s, but since it is nearly perfectly correlated between the two periods (r=.99) we have simply used an average (shown first column of Table 4.1). The index is based on the regulation of individual contracts and does not incorporate measures for protection against collective dismissals. In OECD's latest update of the index (OECD 1999) a separate index was created to reflect the regulation of collective dismissals, which shown in the second column of Table 4.1.

[Table 4.1 about here]

Neither of the OECD measures fully take into account the employment protection that is built into the firm governance structure or into the workings of the industrial relations system. As the OECD acknowledges, "non-legislated employment protection tends to be more difficult to measure and may therefore be under-weighted" (OECD 1999, p. 51). Japan illustrates the problem because companies in Japan offer greater protection against dismissals for their skilled workers than the EPL index would suggest (See OECD 1994, 79-80). Indeed, dismissals and layoffs are extremely rare in Japan compared to other countries (OECD 1997, table 5.12).[9]

Instead, large Japanese firms engage in special workforce loan practices with their suppliers, called "Shukko", which enable them to retain workers during recessions. In other countries, and to some extent also in Japan, firms have to consult with works councils or other employee representative bodies before making decisions about layoffs, and often industry unions are in a strong position to oppose collective layoffs. This is only partly reflected in the EPL index since it considers only the need for firms to *notify* works councils or unions about impending dismissals -- not the power of unions or works councils to prevent or modify the implementation of decisions to dismiss.

We have captured these “private” employment protection arrangements in column 3 of Table 4.1 by a simple index that measures the strength of institutions and practices at the firm level that increases the job security of especially skilled workers in a company. The measure is based on three criteria: i) the presence of employee-elected bodies with a significant role in company manpower decisions; ii) the existence of strong external unions with some monitoring and sanctioning capacity (especially through arbitration); and iii) the systematic use of employee sharing practices between parent companies and subsidiaries or across companies. Where at least two of these conditions are met to a considerable degree, we assigned a score of 3; where all three are largely absent, we assigned a score of 1. Intermediary cases were assigned a score of 2. With the exception of Japan the index of company-based protection is consistent with the rank-ordering implied by the composite index.

The final column combines the OECD and company-based measures in a composite index that captures both the legal and more informal aspects of employment protection. The index is a weighted average with the following weights: 5/9, 2/9, and 2/9. The first two weights are adopted unchanged from OECD's own weighing scheme (OECD 1999, 118), and reflect the fact that collective dismissal rules tend to build on individual dismissal rules, which are already part of the EPL index. Since the influence of employee representative bodies over firm-level manpower decisions is also partly captured by the EPL index, we assigned the same (low) weight to the company protection indicator. We feel that the resulting index of employment protection is about as accurate as possible, and although some would quibble with the assignment of weights the relative numbers are not very sensitive to changes in these weights.

Looking at the ranking of countries, it is not surprising to find the Anglo-Saxon countries at the low end, and Japan and many of the continental European countries at the high end of protection. Belgium, Denmark, and Switzerland are in the lower half of the table, most likely because these countries have relatively large small-firm sectors, but in terms of actual numbers the break in the employment protection index is between this group of countries and the Anglo Saxon countries.

The measurement of unemployment protection is more straightforward, although there are some non-trivial issues concerning the *administration* of unemployment benefit systems. The most obvious indicator, and the most commonly used, is unemployment replacement rates; i.e., the portion of a worker's previous wage that is replaced by unemployment benefits (see column 1 of Table 4.2). We are here considering a "typical" worker, defined as a 40 year old industrial

production worker, "averaged" across several different family types (single, married to working spouse, and married to non-working spouse), and we are looking at *net* replacement rates where cross-national differences in tax systems and non-income subsidies for unemployed have been adjusted for (such as rent support). Given that taxation of unemployment benefits varies considerably across countries, gross replacement rates (for which much more detailed data exist) can be quite misleading.

[Table 4.2 about here]

As in the case of employment protection, the Anglo Saxon countries again score at the bottom. But note that the three continental European countries falling in the lower half of the employment protection index – Belgium, Denmark, and Switzerland – now figure at or near the top of the table. On the other hand, two countries – Italy and Japan – have very low replacement rates compared to their position on the employment protection indicators. The pattern is broadly similar, though not identical, when we look instead at the actual amount of money the government spends on unemployment benefits (as a share of GDP), compared to the number of unemployed people (as a share of the population). As before, the three countries in northern Europe with relatively low employment protection are among the five countries with the most generous unemployment benefit systems.

Table 4.2 also includes a more qualitative measure of the administration of unemployment benefits: the restrictiveness of the definition of a "suitable job." All national unemployment

systems stipulate that in order to receive benefits a person cannot refuse a "suitable" job, but what constitutes a "suitable job" varies significantly from one system to another. In principle, such variation is important for our purposes. For example, if a skilled worker is required to take any available job, regardless of whether it is commensurable with the worker's skills, high unemployment benefits are of limited value from the perspective of reducing the riskiness of specific skills investments. In practice it is difficult to get any precise comparable figures for this variable. We therefore pieced together only a very simple three-tiered classification based on a variety of national and international sources. Though basically reinforcing the pattern revealed by the other two indicators, it does affect the rank-order position of some countries slightly.

As in the case of employment protection, we combined the various indicators into an index of unemployment protection (see column 4). With the possible exception of Italy, this index gives a good sense of cross-national differences in the extent of unemployment protection. The number for Italy probably underestimates the extent of protection because of quasi-public insurance schemes that do not show up in the official statistics. Thus, about a third of (mainly large companies) covered by Casa Integrazione have replacement rates between 70 and 80 percent, and there are normally good unemployment benefit schemes for artisans (i.e., craftsmen) administered at the regional level by associations representing small firms, in cooperation with regional governments.[10]

4.2. *Measuring skill profiles*

Workers skills are difficult to measure because they are not directly observable. However, we can rely on a number of indirect measures. The first is median enterprise tenure rates -- the median number of years workers have been with their current employer (based on national labor force surveys). These numbers contain relevant information about the firm-specificity of skills because firms and individuals investing heavily in such skills become increasingly dependent upon one another for their future welfare. The greater the investment, the higher the opportunity costs of severing the relationship, and the lower the incentive for either party to do so. Indeed, short tenure rates may not only be an indicator of the *absence* of firm-specific skills, but a positive measure of *presence* of general skills. The reason is that general skills are developed in part by accumulating job experience from many different firms.

The drawback of using tenure rates to measure firm specific skills is that they may also in part reflect the costs of dismissing workers as a result of employment protection. However, if higher tenure rates were unrelated to the extent of firm-specific skills, then the association between employment protection and tenure rates would be weak at best since most job switching is known to be voluntary. But, in fact, the cross-national association between the two variables is rather high (r=0.75), and where data are available tenure rates are strongly negatively related to quit rates. From this it seems clear that at least part of the effect of employment protection on tenure rates must go through the effect of the former on the stock of firm-specific skills. This interpretation is supported by considerable evidence showing tenure rates across industries *within* countries to be closely associated with the skill intensity of these industries (OECD 1993, 141-5).

Used as a measure of firm-specific skills (column 1 in Table 4.3), tenure rates suggest that the stock of such skills is low in the Anglo Saxon countries compared to Japan and most of the continental European countries where workers stay with their firms for significantly longer periods of time. The exceptions are Denmark, the Netherlands, and Switzerland where firm tenure rates also tend to be quite short.

[Table 4.3 about here]

The pattern of training suggested by tenure rates is reflected in the character of vocational training systems (column 2 and 3). Whereas such systems are weak or absent in the Anglo Saxon countries and Ireland, in all the others vocational training is widespread and highly institutionalized. The share of an age cohort that goes through a vocational training in the former varies between 3 and 11 percent (counting short-term post-secondary degrees, such as the American junior college system), and there is little involvement of companies in the training system. In the remaining countries, the percentage of an age cohort going through a vocational training is generally between a quarter and one half of an age cohort. The figure for Japan is only 16 percent, but much training in this country goes on in large companies and is not recorded in the data.

The main difference among the countries with strong vocational training systems is in the emphasis on company as opposed to industry-level training. Whereas in Japan, and to a lesser extent in France and Italy, the emphasis is on company training, the remainder have some

combination of on-the-job training and school-based training, with heavy involvement of employer organizations and unions. Formally, the systems can be divided into apprenticeship systems of the German type, vocational school systems of the Swedish type, or mixtures between the two, but all combine theoretical, industry-specific, and direct workplace training (column 3). The weight between the three is difficult to gauge, but Belgium, the Netherlands and the Scandinavian countries (less so Sweden) tend to place more emphasis on school-based training (i.e., provision of non-firm-specific skills) than do Austria or Germany.

An additional indicator of skill profiles is the share of young people with post-compulsory education (column 4). Unlike tenure rates, there is no indication on this measure that Anglo Saxon countries are less skill intensive than continental European countries (no comparable data are available for Japan). As in any advanced economy, a high average standard of living in the Anglo Saxon countries depends on heavy investment in human capital. Indeed, there is some indication that countries with only a modest stock of firm-specific skills compensate by investing more heavily in higher education. For example, there is a negative relationship between tenure rates and university degrees. The US can here be highlighted as an archetypical case of a country with a weak company and vocational training system, but a very advanced higher education system. Indeed, a college education in this country is widely considered the only effective insurance against an otherwise highly volatile and uncertain labor market.

The figures for upper-secondary education hide more subtle differences in the *content* of this education. In the Anglo-Saxon countries university educations tend to be very general, and even

engineering and business schools provide very broad training that is not linked to particular industries or trades. By contrast, in Japan and most continental European countries, many university degrees are more specialized and there tend to be close linkages between engineering and trade schools to private industry. Combined with the other two indicators, this paints a fairly clear picture of the skill profile in different countries, summarized in column (5) of Table 4.3. Needless to say, all training systems produce a whole range of skills, but each system can be roughly characterized according to its emphasis on firm, industry, occupational, or general skills.

4.3. *Putting the Pieces Together*

Figure 4.2 plots the 18 OECD countries on the employment and unemployment protection indexes. Countries are distributed along a primary axis, corresponding to the southwest-northeast diagonal in Figure 4.2, with some countries further divided along a secondary axis, corresponding to the northwest-southeast diagonal in Figure 4.2. The main axis separates countries into two distinct welfare-production regimes: one combining weak employment and unemployment protection with a general skills profile, represented by the Anglo-Saxon countries and Ireland; and one combining high protection on at least one of the two social protection dimensions with firm- and/or industry-specific skills, represented by the continental European countries and Japan. The secondary axis divides the latter group into one with greater emphasis on employment protection and the creation of firm-specific skills, exemplified primarily by Japan and Italy,[11] and one with

greater emphasis on unemployment protection and the production of industry-specific skills, exemplified by Denmark, Netherlands, and Switzerland.

[Figure 4.2 about here]

The data on skills presented in Table 4.3 have been summarized in the form of averages for each cluster of countries (only tenure rates are relevant for the division along the secondary axis). The high protection countries are also those with the most developed vocational training systems, and tenure rates decline with employment protection. Clearly, the empirical patterns we observe corresponds rather closely to our main theoretical thesis, namely that skill formation are closely linked to social protection.

The coupling of social protection and skill systems helps us understand the product market strategies of companies and the creation of comparative advantages in the global economy. Thus, where there is a large pool of workers with advanced and highly portable skills, and where social protection is low, companies enjoy considerable flexibility in attracting new workers, laying off old ones, or starting new production lines. This flexibility allows for high responsiveness to new business opportunities, and facilitates the use of rapid product innovation strategies. In economies with a combination of firm- and industry-specific skills, such strategies are hampered by the difficulty of quickly adapting skills to new types of production, and by restrictions in the ability of firms to hire and fire workers. On the other hand, these welfare-production regimes advantage companies that seek to develop deep competencies within established technologies, and

to continuously upgrade and diversify existing product lines ("diversified quality production" in the terminology of Streeck, 1991).

There is considerable case-oriented research to support these propositions (see especially Porter 1990; Soskice 1999; and Hollingsworth and Boyer 1997), and they can be bolstered by quantitative evidence constructed by Thomas Cusack from US Patent Office data. Broken into 30 technology classes, Cusack counted the number of references to scientific articles for patents in each technology class and country, and then divided this number by the world number of scientific citations per technology class.[12] The idea is that the number of scientific citations, as opposed to citations to previous patents and non-scientific sources, is a good proxy for extent to which national firms are engaged in radical innovation strategies. The results are shown in the first column of Table 4.4, with countries ranked by the average ratio of scientific citations for patents secured by national firms. As it turns out, the Anglo Saxon countries and Ireland all have ratios that are significantly higher than in the specific skills countries of continental Europe and Japan. Precisely as we would expect.

[Table 4.4 about here]

At the low-tech end of product markets, we have to rely on a different type of data to detect cross-national differences. In column (2) of Table 4.4 we used the proportion of the working age population employed in private social and personal services as a proxy. As argued by Esping-Andersen (1990, ch. 8) and Iversen and Wren (1998), firms that rely heavily on low-skilled and

low-paid labor for profitability tend to be concentrated in these industries. Although we only have data for a subset of countries, the numbers display a rather clear cross national pattern. Producers of standardized and low productivity services thrive in general skills countries such as Australia and United States because they can hire from a large pool of unskilled workers who are afforded much job protection and whose wages are held down by low unemployment protection. By contrast, firms trying to compete in this space in specific skills countries such as Germany and Sweden are inhibited by higher labor costs and lower flexibility in hiring and firing. These differences have magnified during the 1980s and 1990s, and Britain is now closer to the mean for the general skills countries.

In an open international trading system, differences in product market strategies will tend to be perpetuated, which in turn feed back into organized support for existing social protection regimes. Contrary to the popular notion of a "race to the bottom" in social policies, differences across countries persist and are even attenuated through open trade. Correspondingly, from the 1970s to the 1980s and 1990s, unemployment benefits remained stable or rose in most continental European countries, but they were cut in Ireland and all the Anglo-Saxon countries with the exception of Australia.[13] Moreover, whereas labor markets have become even more deregulated in the latter countries, employment protection has remained high in the former. Although some countries have seen a notable relaxation in the protection of temporary employment, there is no reduction in the level of protection for regular employment (OECD 1999). This evidence, and the theoretical explanation we provide for it, seriously challenge the notion, popular in much of the economic literature, that social protection is simply inefficient forms of labor market "rigidities."

Social protection can provide important competitive advantages. By the same token we question the prevalent approach in the sociological and political science literature, which understands social protection solely in terms of its redistributive effects.

4.4. *Implications for Labor Market Stratification*

That said, we are not implying that welfare production regimes are irrelevant for distributive outcomes. To the contrary, our argument has important implications for equality and labor market stratification, and it helps account for the political divisions over the welfare state. Partly these effects are direct consequences of particular product market strategies and their associated skill profiles; partly they reflect the effects of the collective wage bargaining system that is itself an important component of the wage protection system.

With respect to wage protection, the most important issue is what we have previously referred to as wage protection for the unemployed. Such protection implies that workers with similar skills are paid the same amount across firms and industries, and in practice this is accomplished through collective wage bargaining at the industry level or at higher levels. It is striking, though not surprising, that all countries with a strong emphasis on industry-specific skills have developed effective wage coordination at the industry level. Conversely, general skills countries, and countries with a strong emphasis on firm-specific skills (Japan in particular), lack such coordination.

Very extensive evidence has now been accumulated that demonstrates the importance of the structure of the wage bargaining system for the wage structure (see especially Rowthorn 1993; Wallerstein 1999; and Reuda and Pontusson 2000), but we believe the skill system is equally important. Figure 4.3, which uses the incidence of vocational training as the indicator for skill system, clearly shows the empirical association between skills and earnings equality, and there is a good reason. Because specific skills systems generate high demand for workers with good vocational training, young people who are not academically inclined have career opportunities that are largely missing in general skills systems. Whereas a large proportion of early school leavers in the former acquire valuable skills through the vocational training system, in the latter most early school leavers end up as low-paid unskilled workers for most or all of their working lives.

[Figure 4.3 about here]

In combination, the wage bargaining system – i.e., whether it is industry coordinated or not – and the skill system -- i.e., whether it is specific skills or general skills biased -- provides a powerful explanation of earnings inequality as we have illustrated in Table 4.5. The table shows figures for earnings and income inequality for each combination of bargaining and skill system. The big drop in earnings equality occurs as we move from specific skills systems with industry coordinated bargaining to general skills systems where industry coordinated wage bargaining is lacking. By themselves this pair of dichotomous variables account for nearly 70 percent of the cross-national

variance in income inequality.[14] Yet, despite their importance for explaining inequality, neither variable is accorded much attention in the established welfare state literature, notwithstanding the focus on distribution in this literature. In our theoretical framework, on the other hand, they are integral parts of the story, even though we have focused on micro mechanisms that emphasize the importance of efficiency.

[Table 4.5 about here]

The hypothesized relationship between product market strategies, skill composition, and equality points to another, and quite different, source of evidence: academic test scores. Because specific skills systems create strong incentives among young school goers to do as well as they can in school in order to get the best vocational training spots, whereas those at the bottom of the academic ability distribution in general skills systems have few such incentives, we should expect the number of early school leavers who fail internationally standardized tests to be higher in general skills countries than in specific skills countries.

Although the data are limited in coverage, this is in fact what we observe (see Figure 4.4). Whereas the percentage failing the test varies between 15 and 22 percent in the Anglo-Saxon countries, it is only between 8 and 14 in the countries emphasizing more specific skills for which we have data. Although these differences could be due to the overall quality of the educational system, it is not that case that the Anglo Saxon countries spend less money on primary education, and there is no systematic difference in average scores. This points to the importance of

incentives outside the school system, which vary systematically according to the dominant product market strategies of firms and their associated demand for particular skills.

[Figure 4.4 about here]

But general skills systems are not necessarily bad for all types of inequality. They perform better in terms of gender equality at work (Estevez-Abe 1999b). When we compare degrees of occupational segregation, specific-skills systems fare worse than general skills systems. Specific skills systems segregate women into "female occupations" such as low-rank clerical and service jobs. Table 4.6 shows the occupational breakdown of women employed in manufacturing sector expressed in terms of percentage of women over total workforce within the same category. While the data are not conclusive, it nonetheless shows that countries (see Germany and Sweden in the Table 4.6) that adopt high quality product market strategies--thus dependent on high industry-specific skills--employ women for production jobs to a lesser degree. The US, the archetypical general skills system, shows significantly higher ratios of women in technical and managerial positions when compared to specific skills systems. Our findings support Esping-Andersen's argument about the US employment system being more gender-equal than that found in Germany and Sweden (Esping-Andersen 1999). Our explanation, however, differs from his.

[Table 4.6 about here]

5. Conclusion

Protection of employment and income is widely seen in the welfare state literature as reducing workers' dependence on the market and employers ("decommodification" in Esping-Andersen's terminology). In turn, this is argued to reflect a particular balance of power between labor and capital. We reject both theses. Although strong unions and left governments undoubtedly affect distributive outcomes, we have argued that employment and income protection can be seen as efforts to *increase* workers' dependence on particular employers, as well their exposure to labor market risks. Moreover, social protection often stems from the strength rather than the weakness of employers.

The key to our argument is the link between social protection and the level and composition of skills. In a modern economy, skills are essential for firms to compete in international markets, and depending on the particular product market strategy of firms, they rely on a workforce with a certain combination of firm-specific, industry-specific and general skills. To be cost-effective firms need workers who are willing to make personal investments in these skills. And if firms want to be competitive in product markets that require an abundance of specific skills, workers must be willing to acquire these skills at the cost of increasing their dependence on a particular employer or group of employers. Because investment in specific skills increases workers' exposure to risks, only by insuring against such risks can firms satisfy their need for specific skills.

The particular combination of employment protection and unemployment protection determines the profile of skills that is likely to emerge in an economy. Thus employment protection increases the propensity of workers to invest in firm-specific skills, whereas unemployment protection

facilitates investment in industry-specific skills. The absence of both gives people strong incentives to invest in general skills. These predictions are borne out by the comparative data, which show that most countries combine either low protection with general skills, or high protection with specific skills.

Two factors contribute to the distinctiveness and resilience of particular welfare production regimes. The first is that such regimes tend to be reinforced by institutions – collective wage bargaining systems, business organizations, employee representation, and financial systems -- that facilitate the credible commitment of actors to particular strategies, such as wage restraint and long-term employment, that are necessary to sustain cooperation in the provision of specific skills. The second is that those workers and employers who are being most advantaged by these institutional complementaries also tend to be in strong political positions, both in terms of economic clout and cheer numbers. For example, the more a welfare production system emphasizes the creation of specific skills, the more likely it is that the median voter will be someone with considerable investments in specific skills, and the more likely it is that employers' interest organizations will be dominated by firms pursuing specific skills strategies. Both will contribute to perpetuating institutions and policies that advantage firms and workers with heavy investments in specific skills.

Our argument has broader implications for our understanding of the welfare state that reach well beyond the immediate effects of employment and income protection. In particular, earnings dispersion, by far the most important determinant of the overall distribution of income, is closely

related to particular skill systems as well as the wage bargaining institutions that tend to go with these systems. Similarly, the combination of particular product market strategies and skills have distinct effects on the career opportunities of particular groups, especially women. Thus, our theory implies that gender-based segmentation of the labor market varies systematically across welfare production systems.

Clearly, what we have done in this paper is to outline a broad research agenda for the study of the welfare state rather than testing a specific set of hypotheses that follows from it. Much work needs to be done, for example, in testing whether public opinion, voting behavior, and the preferences of employers conform to the predictions of the theory. Another big task is to rewrite social history to take into account the preferences of employers, and the attempt by firms to engage in particular product market strategies. This new emphasis on firms differs from the earlier focus on the role of welfare capitalists--particularly in case studies of the American social policy--in its explicit effort to highlight links between skills, product markets and different welfare systems. Some work has already been undertaken (cf. Estevez-Abe 1999a; Mares 1998; Swenson 1997, forthcoming), but there are ample opportunities to expand on their pioneering research. Finally, much work remains to be done to explore the implications of our argument for labor market stratification. We have indicated the empirical relationship between skill profiles, wage bargaining systems, and labor market stratification (including women's position in the labor market), most of the empirical work is still to be done.

Notes

1. For a discussion of complementarity, see the introduction to this volume.

2. We are not arguing that social protection is the sole institution that makes a particular skill formation possible. Other institutions are also necessary: for instance, in the case of industry skills, strong employer associations are needed to develop agreed vocational training standards; and in order for the social protection institutions to function effectively strong employee representative organisations are required. Furthermore, different product market strategies require access to different kinds of finance: the longer-term the commitments companies have to make, the longer-term the finance has to be. Thus a range of complementary institutions need to be in place.

3. There is a significant amount of work that evaluates the role of business in shaping welfare policies, although authors disagrees in terms of the actual business influence of economic interests (cf. Skocpol and Ikenberry 1983; Skocpol and Amenta 1985; Quadagno 1984; Martin 1995; Pierson 1995, 1996; Hacker and Pierson 2000; Mares 1998; Estevez-Abe 1999b).

4. Our framework builds upon Gary Becker's distinction between general and specific skills (1964, ch. 3). In Becker's definition, firm-specific training increases productivity only in the firm where training takes place. General training, in contrast, raises productivity equally in all firms. In an analogous manner, industry-specific training can be defined as training that raises productivity in all firms in the industry, but not in other industries. Firm-, industry-, and general skills are skills acquired through firm-specific, industry-specific, and general training.

5. Since the general skills are portable, there is no "risk" associated with separation from current employer. See Gary Becker (1964). This does not mean that high turnover in countries with

more general skills does not produce negative welfare consequences from the economy-wide efficiency perspective. For an interesting elaboration on this issue, see Chang and Wang (1995).

6. It is worth noting that monitoring the quality of the general education system becomes important where a lot of human capital investment takes place beyond the general education system, because poor general education increases the cost of training workers in industry-specific and firm-specific skills.

7. For detailed empirical support for this hypothesis see Iversen and Soskice (2000) who uses comparative public opinion data to show the effects of skill type on social policy preferences among mass publics.

8. See OECD (1997, p. 147) for a discussion of these measurement problems

9. These data are not fully comparable across countries, but the figure for Japan is order of magnitudes smaller than in any other country for which data is available.

10. We thank Michele Salvati for providing this information.

11. Although the position of Italy is probably exaggerated by the failure to account for semi-public unemployment insurance arrangements, as noted above.

12. The data is coded into references to previous patents and "others", where many of the latter are references to scientific articles. To get a good estimate for the number of scientific articles in the "other" category, the proportion of scientific references to other references was calculated for a random sample (6000) the for each country and technology class. These factors were then used to correct the overall data set so as to get a better measure of scientific citations.

13. Based on gross unemployment replacement rates published in OECD's *Database on Unemployment Benefit Entitlements and Replacement Rates* (undated).

14. The estimated regression equation is :

Income equality = 0.23 + 0.048 x Specific skills + 0.055 x Industry coordination , where R^2 = 0.69

Bibliography

Allmendinger, Jutta. 1989. "Educational Systems and Labor Market Outcomes," *European Sociological Review* 5 (3): 231-250.

Aoki, Masahiko.1988. *Information, Incentives and Bargaining in the Japanese Economy*. Cambridge: Cambridge University Press.

Becker, Gary.1964. *Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education*. Chicago: The University of Chicago Press and the National Bureau of Economic Research.

Blossfeld Hans-Peter and Karl Ulrich Mayer. 1988. "Labor Market Segmentation in the Federal Republic of Germany: An Empirical Study of Segmentation Theories From a Life Course Perspective." *European Sociological Review* 4 (2): 123-123-140.

Chang, Chun and Yijian Wang. 1995. "A Framework for Understanding Differences in Labor Turnover and Human Capital Investment." *Journal of Economic Behavior and Organization*, 28 (1): 91-105.

Daly, Mary. 1994. "A Matter of Dependency? The Gender Dimension of British Income-Maintenance Provision," *Sociology* 28 (3): 779-97.

Dore, Ronald and Mari Sako. 1989. *How the Japanese Learn to Work*. London: Routledge.

Dore, Ronald. 1986. *Flexible Rigidities*. Stanford: Stanford University Press.

Esping-Andersen, 1985. *Politics Against Markets*. Princeton: Princeton University Press.

Esping-Andersen, Gösta. 1990. *The Three Worlds of Welfare Capitalism*. Princeton: Princeton University Press

Esping-Andersen, Gösta. 1999. *Social Foundations of Postindustrial Economies*. Oxford:Oxford University Press.

Estevez-Abe, Margarita. 1999a. "Welfare and Capitalism in Contemporary Japan." Unpublished Ph. D. Dissertation, Harvard University.

Estevez-Abe, Margarita. 1999b. "Comparative Political Economy of Female Labor Force Participation." Paper presented at the 95th American Political Science Association Meeting in Atlanta.

European Commission. *Unemployment in Europe*. [Various years].

Finegold, David and David Soskice. 1988. "The Failure of Training in Britain: Analysis and Prescription." *Oxford Review of Economic Policy* 4 (Autumn).

Garrett, Geoffrey. 1998. *Partisan Politics in the Global Economy*. Cambridge: Cambridge University Press.

Hacker, Jacob and Pierson, Paul. 2000. "Business Power and Social Policy: Employers and the Formation of the American Welfare State." Paper presented at the 2000 Annual Meeting of the American Political Science Association, Marriott Wardman Park, August 31-September 3, 2000.

Hollingsworth, J. Rogers and Robert Boyer, eds. 1997. *Contemporary Capitalism: The Embeddedness of Institutions*. Cambridge: Cambridge University Press.

Huber, Evelyn, Charles Ragin and John Stephens. 1993. "Social Democracy, Christian Democracy, Constitutional Structure and the Welfare State." *American Journal of Sociology* 99, (3): 711-49.

Huber, Evelyne, Charles Ragin, and John D. Stephens. 1997. *Comparative Welfare States Data Set*. Northwestern University and University of North Carolina.

Huber, Evelyne and John D. Stephens. 2001. *Development and Crisis of the Welfare State : Parties and Policies in Global Markets*. Chicago: University of Chicago Press.

Income Data Services. 1996. *Industrial Relations and Collective Bargaining*. London: Institute of Personnel and Development.

Iversen, Torben. 1999. *Contested Economic Institutions: The Politics of Macroeconomics and Wage Bargaining in Advanced Democracies*. Cambridge: Cambridge University Press.

Iversen, Torben and David Soskice. 2000. "An Asset Theory of Social Policy Preferences." Paper presented at the 2000 Annual Meeting of the American Political Science Association, Marriott Wardman Park, August 31-September 3, 2000.

Iversen, Torben and Anne Wren. 1998. "Equality, Employment, and Budgetary Restraint: The Trilemma of the Service Economy" *World Politics*, 50 (July), 507-46.

Kitschelt, Herbert, Peter Lange, Gary Marks, and John Stephens, eds. 1999. *Continuity and Change in Contemporary Capitalism*. Cambridge: Cambridge University Press.

Koike, Kazuo. 1981. *Nihon no Jukuren: Sugureta Jinzai Keisei Shisutemu* (Skills in Japan: An Effective Human Capital Formation System). Tokyo: Yuhikaku.

Koike, Kazuo. 1994. "Learning and Incentive systems in Japanese Industry." In Masahiko Aoki and Ronald Dore, eds., *The Japanese Firm*. Oxford: Oxford University Press. Pp. 41-65.

Korpi, Walter. 1989. "Power, Politics, and State Autonomy in the Development of Social Citizenship -- Social Rights During Sickness in 18 OECD Countries Since 1930." *American Sociological Review* 54 (3): 309-328.

Lazear, Edward and Richard Freeman. 1996. "Relational Investing: The Workers' Perspective." *NBER Working Paper* 5346.

Mares, Isabela, 1998. "Negotiated Risks: Employers' Role in Social Policy Development. Unpublished Ph. D. Dissertation, Harvard University.

Martin, Cathie J. 1995. "Nature or Nurture? Sources of Firm Preference for National Health Reform." *American Political Science Review* 89 (4): 898-913.

Meltzer, Allan H. and Scott. F. Richards. 1981. "A Rational Theory of the Size of Government." *Journal of Political Economy* 89 (5): 914-27.

Milgrom, Paul and John Roberts. 1992. *Economics, Organization and Management*. Englewood Cliffs: Prentice Hall.

Mosely, Hugh and Thomas Kruppe. 1992. "Employment Protection and Labor Force Adjustment. A Comparative Evaluation." WZB Discussion Paper FSI92-9.

Ni Cheallaigh, Martina. 1995. *Apprenticeship in the EU Member States: A Comparison*. Berlin, European Center for the Development of Vocational Training.

OECD, *National Accounts, Part II: Detailed Tables.* Paris: OECD [various years].

OECD. 1997. “Economic Performance and the Structure of Collective Bargaining.” In OECD, *Employment Outlook*. Paris: OECD.

OECD. 1993. *OECD Employment Outlook.* Paris: OECD.

OECD. 1994. *OECD Employment Outlook.* Paris: OECD.

OECD. 1999. *OECD Employment Outlook.* Paris: OECD.

Ohashi, Isao and Toshiaki Tachibanaki, eds. 1998. *Internal Labor Markets, Incentives and Employment*. New York: St. Martin Press.

Osterman, Peter. 1987. "Choice of employment systems in internal labour markets," *Industrial Relations*, 26(1): 46-67.

Pierson, Paul. 1995. “Fragmented Welfare States: Federal Institutions and the Development of Social Policy.” *Governance* 8 (4): 449-478.

Pierson, Paul. 1996. "The New Politics of the Welfare State." *World Politics* 48 (2): 143-79.

Polanyi, Karl. 1944. *The Great Transformation*. New York: Rinehart & Co.

Porter, Michael E. 1990. *The Competitive Advantage of Nations*. New York: Free Press.

Quadagno, Jill S. 1984. "Welfare Capitalism and the Social Security Act of 1935." *American Sociological Review* 49 (5): 632-47.

Rodrik, Dani. 1997. *Has Globalization Gone Too Far*? Washington DC: Institute for International Economics.

Rowthorn, Robert. 1992. "Corporatism and Labour Market Performance." In Jukka Pekkarinen, Matti Pohjola, and Bob Rowthorn, eds., *Social Corporatism: A superior Economic System?* Oxford: Clarendon Press. Pp. 44-81.

Rubery, Jill, Colette Fagan and Friederike Maier. 1996. "Occupational Segregation, Discrimination and Equal Opportunity." In Gunther Schmid, Jacqueline O'Reilly, and Klaus Schomann, eds., *International Handbook of Labour Market Policy and Evaluation*. Cheltenham, UK; Brookfield, US: Edward Elgar. Pp. 431-461.

Rueda, David and Jonas Pontusson. 2000. "Wage Inequality and Varieties of Capitalism." *World*

Politics 52 (3): 350-383.

Fritz W. Scharpf and Vivien A. Schmidt (eds). 2000. *Welfare and Work in the Open Economy : Diverse Response to Common Challenges in Twelve Countries Vol 2*. Oxford: Oxford University Press.

Schettkat, Ronald. 1993. "Compensating Differentials? Wage Differentials and Employment Stability in the US and German Economies." *Journal of Economic Issues*. 27 (1): 153-170.

Shibata, Hiromichi. 1999. "Comparison of American and Japanese Work Practices: Skill Formation, Communications and Conflict Resolution." *Industrial Relations* 38 (2): 192-214.

Shapiro, Carl and Joseph E. Stiglitz. 1984. "Equilibrium Unemployment as a Worker Discipline Device." *American Economic Review* 74 (June): 433-444.

Siebert, Horst. 1997. Labor Market Rigidities: At the Root of Unemployment in Europe. *Journal of Economic Perspectives* 11 (3): 37-54.

Skocpol, Theda and John Ikenberry. 1983. "The Political Formation of the American Welfare State in Historical and Comparative Perspective." *Comparative Social Research* 6: 87-148.

Skocpol, Theda and Edwin Amenta. 1985. "Did Capitalists Shape Social Security?" *American*

Sociological Review 50 (4): 572-575.

Soskice, David. 1994. "Reconciling Markets and Institutions: The German Apprenticeship System." In Lisa M. Lynch, ed., *Training and the Private Sector: International Comparisons*. Chicago, IL: University of Chicago Press and NBER. Pp. 25-60.

Soskice, David. 1999. "Divergent Production Regimes: Coordinated and Uncoordinated Market Economies in the 1980s and 1990s." In Herbert Kitschelt, Peter Lange, Gary Marks, and John D. Stepehens, eds., *Continuity and Change in Contemporary Capitalism*. Cambridge: Cambridge University Press. Pp. 101-34.

Spence, Michael. 1973. "Job Market Signaling," *Quarterly Journal of Economics*, 87 (3): 355-374.

Stephens, John, Evelyn Huber, and Leonard Ray. 1999. "The Welfare State in Hard Times." In Herbert Kitschelt, Peter Lange, Gary Marks, and John Stephens, eds., *Continuity and Change in Contemporary Capitalism*. Cambridge: Cambridge University Press. Pp. 164-93.

Streeck, Wolfgang. 1991. "On the Institutional Conditions of Diversified Quality Production." In Egon Matzner and Wolfgang Streeck, eds., *Beyond Keynesianism*. Aldershot: Edward Elgar.

Streeck, Wolfgang. 1992. *Social Institutions and Economic Performance: Studies of Industrial*

Relations in Advanced Capitalist Economies. London: Sage Publications.

Swenson, Peter. 1997. "Arranged Alliance: Business Interests in the New Deal." *Politics and Society* 25 (1): 66-116.

Swenson, Peter. Forthcoming. *The Political Economy of Labor Market Governance and Social Reform in Sweden and the United States*. Cambridge: Cambridge University Press.

Thelen, Kathleen and Ikuo Kume. 1999. "The Effects of Globalization on Labor Revisited: Lessons from Germany and Japan." *Politics and Society* 27 (4): 477-505.

UNESCO. 1999. *UNESCO Statistical Yearbook*. New York: UNESCO.

Wallerstein, Michael. 1999. Wage-Setting Institutions and Pay Inequality in Advanced Industrial Societies, *American Journal of Political Science* 43 (3): 649-680.

Williamson, Oliver. 1985. *The Economic Institutions of Capitalism*. New York: Basic Books.

Tables and figures

Table 4.1. Employment protection in 18 OECD countries.

	(1) Employment protection legislation (EPL)[a]	(2) Collective dismissals protection[b]	(3) Company-based protection[c]	(4) Index of employment protection[d]
Sweden	2.8	4.5	3	0.94
Germany	2.8	3.1	3	0.86
Austria	2.6	3.3	3	0.84
Italy	2.8	4.1	2	0.81
Netherlands	3.1	2.8	2	0.80
Japan	2.7	1.5	3	0.76
Norway	2.4	2.8	2	0.66
Finland	2.4	2.4	2	0.64
France	2.3	2.1	2	0.61
Belgium	1.5	4.1	2	0.56
Denmark	1.6	3.1	2	0.53
Switzerland	1.2	3.9	2	0.49
Ireland	1.6	2.1	1	0.36
Canada	0.9	3.4	1	0.30
New Zealand	1.7	0.4	1	0.29
Australia	1.0	2.6	1	0.27
United Kingdom	0.8	2.9	1	0.25
United States	0.2	2.9	1	0.14

[a] Index of the "restrictiveness" of individual hiring and firing rules contained in legislation and collective agreements (high numbers mean more restrictive regimes). Source: *OECD Employment Outlook* (1999). Weight: 5/9.

[b] Index of the "restrictiveness" of collective dismissal rules contained in legislation and collective agreements (high numbers mean more restrictive regimes). Source: *OECD Employment Outlook* (1999). Weight: 2/9.

[c] Measure of company-level employment protection based on three criteria: i) the presence of employee-elected bodies with a significant role in company manpower decisions; ii) the existence of strong external unions with some monitoring and sanctioning capacity (especially through arbitration); and iii) the systematic use of employee sharing practices between parent companies and subsidiaries or across companies. Where at least two of these conditions are met to a considerable degree, we assigned a score of 3; where all three are largely absent, we assigned a score of 1. Intermediary cases were assigned a score of 2. The French case has been assigned a score of 2 even though company-level protection is weak. The reason is that the Inspectorat du Travail can and does intervene to prevent redundancies, and this is not captured by OECD's legal measure of employment protection. See Berton et al. (1991) for a description of the French system. *Sources*: Income Data Services, *Industrial Relations and Collective Bargaining*. London, Institute of Personnel and Development, 1996; *OECD Employment Outlook* (1998), 142-52; David Soskice (1999). Weight: 2/9.

[d] Weighted average of columns (1)-(2) after each indicator has been standardized to vary between 0 and 1.

Table 4.2. Unemployment protection in 18 OECD countries.

	(1) Net unemployment replacement rates[a]	(2) Generosity of benefits[b]	(3) Definition of "suitable" job[c]	(4) Index of unemployment protection[d]
Denmark	60	76	3	0.91
Netherlands	58	74	3	0.89
Switzerland	(40)	94	2	0.86
Belgium	57	99	2	0.82
Austria	43	78	3	0.81
Germany	43	66	3	0.77
Norway	40	40	3	0.64
Sweden	30	52	3	0.63
France	48	44	2	0.54
Finland	45	20	2	0.43
Ireland	(38)	59	1	0.37
Japan	10	48	2	0.33
Canada	32	49	2	0.30
New Zealand	31	44	1	0.27
Australia	32	30	1	0.22
Italy	5	18	2	0.18
United Kingdom	23	15	1	0.11
United States	14	26	1	0.10

[a] Net unemployment replacement rates for a 40 year old representative worker. *Source*: Restricted OECD data reported in Esping-Andersen (1999), Table 2.2., p. 22. Net figures for Ireland and Switzerland are missing and have instead been estimated by taking gross replacement rates for these countries as proportions of average gross replacement rates and then multiplying these

proportions by average net replacement rates. *Source*: OECD, *Database on Unemployment Benefit Entitlements and Replacement Rates* (undated).

[b] The share of GDP paid in unemployment benefits as a percent of the share of unemployed in the total population. Average for the period 1973-89. *Sources*: Huber, Ragin, Stephens (1997); OECD Economic Outlook (Paris: OECD, various years), OECD, *Labour Force Statistics* (Paris: OECD, various years).

[c] Index that measures the restrictiveness of the definition of a "suitable job" in the administration of benefits to unemployed. 1: Any job qualifies as a suitable job; 2: Skilled unemployed are given some discretion in rejecting jobs they deem unsuitable to their skills, but choice is restricted in time and/or to certain job categories; 3: Skilled unemployed exercise wide discretion in accepting or rejecting jobs on the grounds of the suitability of the job to their skills. *Sources*: OECD, "Unemployment Benefit Rules and Labour Market Policy." *Employment Outlook,* 1991, 199-231; European Commission, *Unemployment in Europe* (various years); and national sources.

[d] Average of column (1)-(3) after each indicator has been standardized to vary between 0 and 1.

Table 4.3. Skill profiles in 18 OECD countries.

	(1) Median length of tenure[a]	(2) Vocational training share[b]	(3) Vocational training system[c]	(4) Upper-secondary/ university education[d]	(5) Skill profile[e]
Austria	6.9	22	Dual apprenticeship	71 6	Firm/industry/ occupational
Germany	10.7	34	Dual apprenticeship	81 13	Firm/industry/ occupational
Sweden	7.8	36	Vocational colleges	74 13	Firm/industry/ occupational
Norway	(6.5)	37	Vocational colleges	82 16	Industry/ occupational
Belgium	8.4	53	Mixed	53 11	Industry/ occupational
Japan	8.3	16	Company-based	n.a. n.a.	Firm/ occupational
Finland	7.8	32	Vocational colleges	67 12	Industry/ occupational
Italy	8.9	35	Company-based	38 8	Firm/ occupational
France	7.7	28	Company-based	60 10	Firm/ occupational
Ireland	5.3	6	Weak	50 11	Occupational/ general
Netherlands	5.5	43	Mixed	62 22	Industry/ occupational
Switzerland	6.0	23	Dual apprenticeship	80 10	Industry/ occupational
Denmark	4.4	31	Mixed	66 15	Industry/ occupational
Canada	5.9	5	Weak	76 17	Occupational/ general

Australia	3.4	9	Weak	57 15	Occupational/ general
New Zealand	n.a.	7	Weak	60 11	Occupational/ general
United Kingdom	5.0	11	Weak	76 13	Occupational/ general
United States	4.2	3	Weak	86 26	Occupational/ general

[a] The median length of enterprise tenure in years, 1995 (Norwegian figure refers to 1991). *Sources*: OECD *Employment Outlook*, 1997, Table 5.5. For Norway: *OECD Employment Outlook*, 1993, table 4.1.

[b] The share of an age cohort in either secondary or post-secondary (ISCED5) vocational training. *Source*: UNESCO (1999).

[c] The character of the vocational training system according to whether most of the training occurs at the company level (as in Japan), through a dual apprenticeship system (as in Germany), through vocational colleges (as in Sweden), or through some mixture of the latter two (as in the Netherlands). Where vocational training is weak, we have not distinguished between the type of system. *Sources*: Streeck (1992); Finegold and Soskice (1988); Soskice (1999).

[d] First entry is the percentage of 25-34 years old with an upper-secondary education; the second entry is the percentage of 25-34 years old with a university degree (1996 figures). Data is not available for Japan. *Source*: *OECD Education Database*. Paris: OECD, 1999.

[e] Average of column (1)-(4) after each indicator has been standardized to vary between 0 and 1.

Table 4.4. Scientific citation rates and low wage service employment in 18 OECD countries.

	(1) Scientific citation ratio[a]	(2) Private service employment[b]
Ireland	1.514	-
United States	1.310	23
New Zealand	1.267	-
Canada	1.032	20
United Kingdom	0.837	16
Australia	0.804	26
Sweden	0.757	14
Netherlands	0.754	14
Norway	0.690	17
Switzerland	0.639	-
France	0.601	11
Belgium	0.598	13
Germany	0.592	14
Japan	0.586	-
Austria	0.575	-
Finland	0.552	11
Denmark	0.536	11
Italy	0.491	9

[a] The average number of scientific citations per patent by national firms in each of 30 technology classes as a proportion of the average number of citations in each class for the entire world.

Source: United States Patent Office Data.

[b] The number of people employed in wholesale, retail trade, restaurants and hotels, and in community, social and personal services, 1982-91 as a percentage of the working age population.

Source: *OECD International Sectoral Data Base*, Paris: OECD, 1996.

Table 4.5. Skills, the bargaining system, and equality[a]

		Wage bargaining system	
		Industry coordinated	Not industry coordinated
Skills system	Biased towards specific skills	.49 (.34) (N=9)[b]	.34 (.28) (N=3)[c]
	Biased towards general skills		.29 (.23) (N=6)[d]

[a] Numbers are D9/D1 earnings ratios based on gross earnings (including all employer contributions for pensions, social security etc.) of a worker at the bottom decile of the earnings distribution relative to the worker at the top decile. Figures are averages for the period 1977-1993. Numbers in parentheses are D9/D1 income ratios based on disposable income of a person at the bottom decile of the earnings distribution relative to a person at the top decile. Most figures are from the early 1990s, with a few from the 1980s.

[b] Austria, Belgium, Denmark, Finland, Germany, Netherlands, Norway, Sweden, Switzerland

[c] France, Italy, Japan

[d] Australia, Canada, Ireland, New Zealand, UK, US

Sources: Skills: see Table 4; bargaining system: see Iversen (1999, ch. 3); inequality measures: see *OECD Employment Outlook* (1991, 1996); Gottschalk and Smeeding (2000), Figure 2.

Table 4.6. Share of women by occupation in manufacturing (percent)[a)]

	(1) Professional, technical & related workers	(2) Administra-tive and managerial workers	(3) Clerical and related workers	(4) Sales workers	(5) Service workers	(6) Production and related workers
US (1989)	22	26	70	33	30	30
Japan (1988)	10	7	58	11	40	39 [b]
Germany (1986)	15	11	59	52	67	21
Netherlands (1993)	14	0	55	32	45	12
Sweden (1989)	15		57	25	72	24
Australia (1987)	8	18	20	43	76	31

[a] Percentages represent the ratio of women over the total of men and women employed within each occupational category in manufacturing.

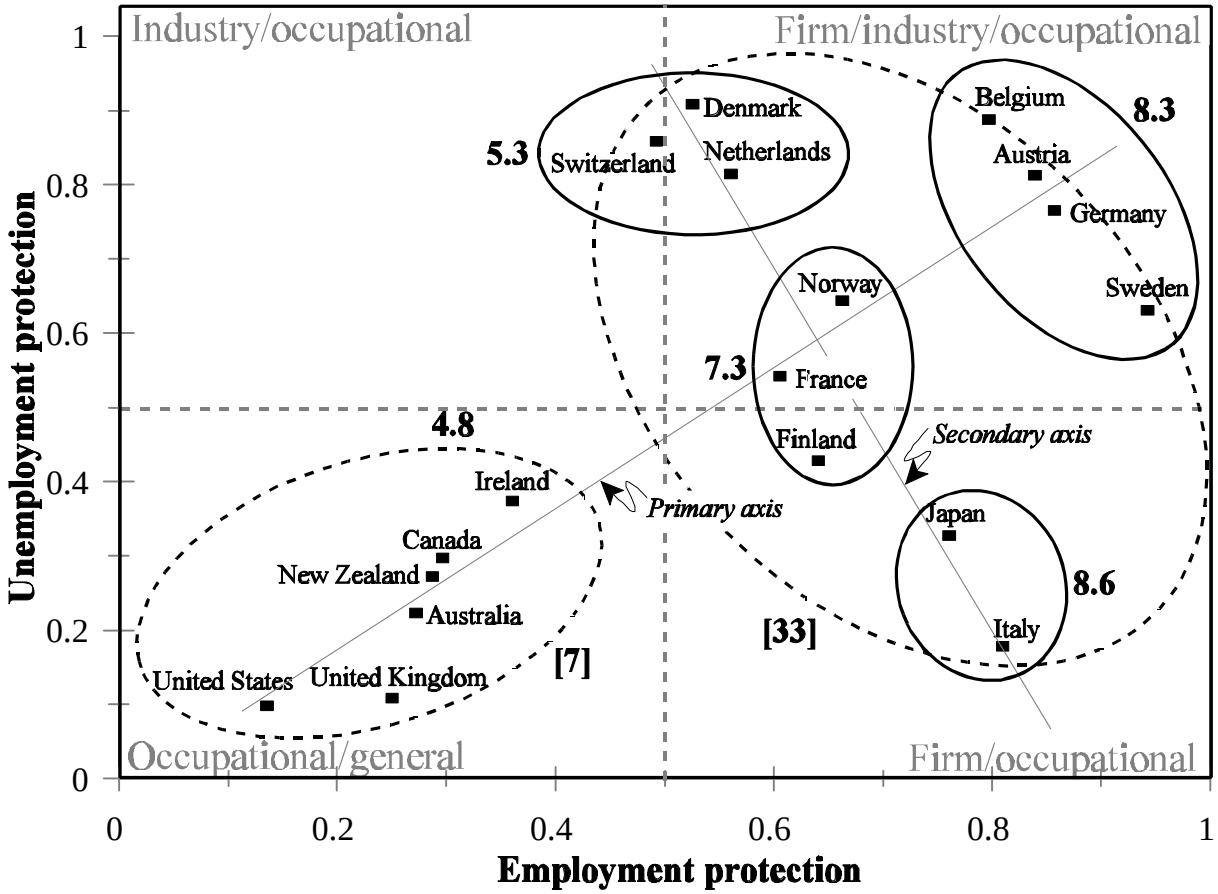
[b] The female ratio for occupational category (6) in Japan is exceptionally high due to a demographically shrinking pool of young male workers (Estevez-Abe 1999b).

Source: ILO, *Yearbook of Labour Statistics*, 1989-1990.

Figure 4.1. Social protection and predicted skill profiles.

		Employment protection	
		Low	High
Unemployment protection	High	Industry-specific skills Example: Denmark	Industry-specific, firm-specific skill mix Example: Germany
	Low	General skills Example: United States	Firm-specific skills Example: Japan

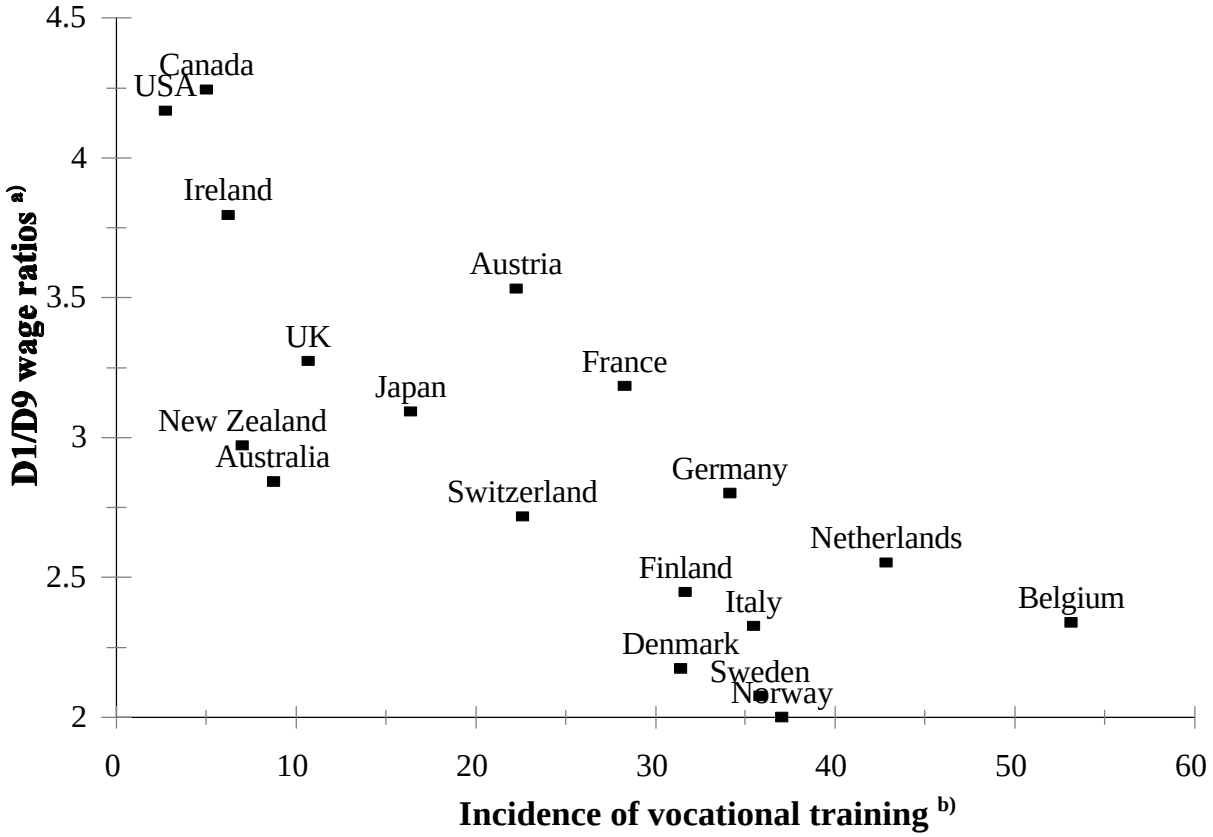
Figure 4.2. Social protection and skill profiles



Notes: Bolded numbers are mean tenure rates for the cluster of countries circled; bracketed numbers are the percentage of an age cohort going through a vocational training.

Sources: See Table 1, 2, and 3.

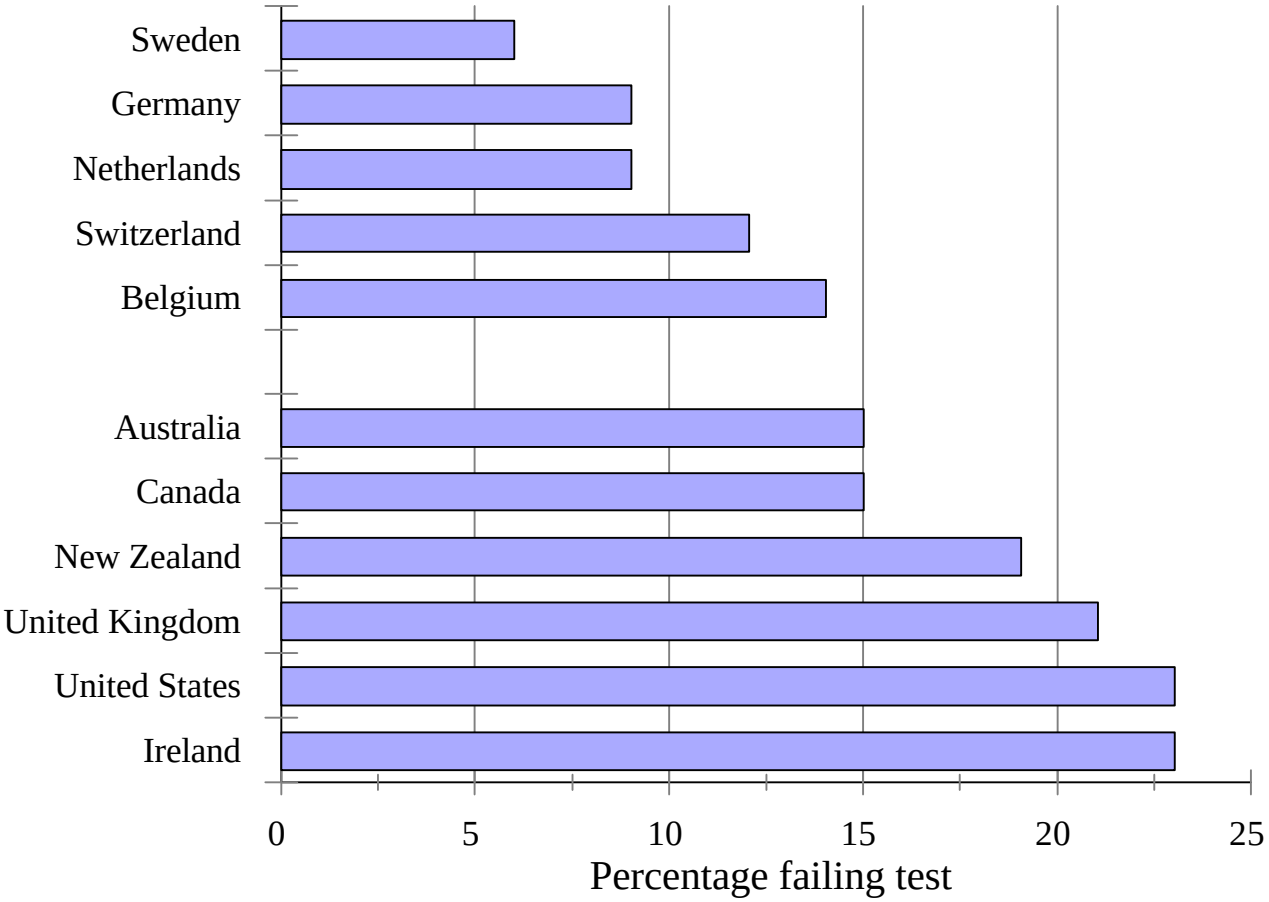
Figure 4.3. Vocational training and wage inequality



a) The share of an age cohort in either secondary or post-secondary (ISCED5) vocational training. *Source*: UNESCO (1999).

b) The earnings of worker in the top decile of the earnings distribution relative to a worker in the bottom decile of the earnings distribution. *Source*: OECD, *Electronic Data Base on Wage Dispersion*. Undated.

Figure 4.4. The failure of early school leavers to pass standardized tests in 11 OECD countries.



Notes: The numbers are the percentage of all early school leavers taking the test who get a failing score. Average across four test categories. The Belgian figure refers to Flanders only.

Source: OECD (199?)