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**Impact of Labour Regulation on Unemployment:
A Case Study of France, Germany, UK and USA**

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Abstract

This paper examines the state of labour protection in four countries (UK, USA, France and Germany) during 1970-2006. It supports the contention of the legal-origin theory that UK and USA (common law countries) intervene less in the labour market and grant less protection to labourers. It also supports the proposition that the problem of unemployment is more acute in the civil law countries (France and Germany). But it finds no direct relationship between various aspects of labour regulation and unemployment rate. Hence, we conclude that the explanation of more acute unemployment problem in France and Germany should be sought elsewhere.

Keywords: law and economics; labour law; legal origin theory; unemployment rate; long-term unemployment; youth unemployment.

JEL Codes: K31, J08, J50, J60, J83

I. Introduction

The works of La Porta, Lopez-de-Silanes, Shleifer and Vishny (henceforth, 'LLSV', 1997, 1998) and the subsequent works by them and their followers (see La Porta et al., 1999, 2000; 2006, 2008; Djankov et al., 2003; Glaeser and Shleifer, 2002, 2003; Beck et al., 2003a, 2003b; Botero et al., 2004) strongly supported the idea that law matters for a proper capitalist development. This idea can be traced back to the writings of famous German social scientist, Max Weber. Comparing the experience of industrialising countries of Western Europe with other countries Weber concluded that a rational legal system is a precondition for the emergence of capitalism. North (1990) had a similar viewpoint. He argued that rich nations have managed to form proper institutions that protect property rights and enforcement contracts while poor countries lack these institutions and so fail to develop. Some legal scholars call it 'endowment perspective' of law because it treats legal system as an endowment which determines the path of development 'without itself being subject to change' (for details see Milhaupt and Pistor, 2008, pp.18-22).

La Porta and his collaborators set in motion a series of systematic analysis of the relationships between legal and economic variables. Legal variables ('leximetric' data) are by and large binary variables (0, 1) used to quantify the quality of various types of law that exist in different countries to protect the interests of various stakeholders such as shareholders, creditors and labourers. The countries are classified according to their 'legal origin': English common law and civil law are two broad categories. The civil law systems are further sub-divided into those of French, German and Scandinavian origin. Through various cross-section regression studies of these 'leximetric' data, it is argued that English

common law systems are more market-friendly; they provide higher level of shareholder and creditor protection to promote financial development. It is also pointed out that the civil law countries interfere more in the labour market which exerts a negative impact on employment and productivity.

A similar viewpoint can be found in IMF (2003). The IMF called for the deregulation of European labour markets and argued that reforms intended to bring European labour laws into lines with those of the US would cut unemployment by over a third. The OECD has maintained the view that the deregulatory approach of its 1994 Jobs Strategy (OECD, 1994) retains ‘plausibility’ (OECD, 2004: 165). The World Bank’s *Doing Business Report* stated that ‘laws created to protect workers often hurt them’ and that ‘more flexible labour regulations boost job creation’ (World Bank, 2008: 19).

In this perspective, we shall study labour law and its unemployment consequence on the basis of a new dataset available from the source of Centre for Business Research, CBR (University of Cambridge, UK) for four OECD countries (UK, USA, France and Germany) over a long time span 1970-2006.¹ In the next section we shall discuss the changing pattern of the various aspects of labour regulation in these countries over the whole period (1970-2006) for which the CBR data are available. In Section 3 we shall discuss the short-term and long-term relationship between various aspects of labour regulation and unemployment through dynamic panel data modelling. Section 4 provides the summary and conclusion.

¹ CBR data over a long time span, 1970-2006 are available for five countries: four OECD countries covered in this paper and India.

2. Labour Protection in Four OECD Countries

The CBR index for labour regulation contains 40 basic variables, which are aggregated into five areas: alternative employment contracts (AC), regulation of working time (RT), regulation of dismissal (RD), employee representation (ER) and industrial action (IA).

(a) **Alternative Employment Contracts (AC):** It measures the cost of using alternatives to the 'standard' employment contract. One important variable is whether fixed-term contracts are allowed only for work of limited duration. The maximum score is one (1); it is given if the law imposes a substantive constraint on the conclusion of a fixed-term contract, by, for example, allowing temporary hiring only for jobs which are temporary by nature, training, seasonal work, replacement of workers on maternity or sick leave, or other specified reasons.

(b) **Regulation of Working Time (RT):** It measures regulation of working time covering among other things, duration of the normal working week, annual leave entitlements, public holiday entitlements, overtime premium.

(c) **Regulation of Dismissal (RD):** It covers among other things legally mandated notice period, legally mandated redundancy compensation, minimum qualifying period of service for normal case of unjust dismissal.

(d) Employee Representation (ER): It measures the protection of the right to form trade unions, which covers among other things the right to collective bargaining and codetermination of board membership.

(e) Industrial Action (IA): It measures the strength of protections for industrial action, covering matters such as unofficial industrial action ('wildcat' strikes), political industrial action, lockouts etc.

In Table 1, we have presented the quinquennial average labour protection indices: the aggregate series, ALLAB and its five constituent sub-categories such as alternative employment contracts (AC), regulation of working time (RT), regulation of dismissal (RD), employee representation (ER) and industrial action (IA) for the four countries under study (the indices are simple averages of all the relevant variables - the range of values varying between 0 and 1). Through simple averaging, we have also calculated the quinquennial average labour protection of the common law group (UK and USA) and the civil law group (France and Germany). All these are plotted in a number of diagrams (Figures 1 to 12). These show that France protects the interest of their labour more than any other countries studied here. France was followed by Germany, UK and USA. The aggregate labour protection index of France showed a tendency to rise while that of Germany and USA was stagnant. In UK the change of regime had its repercussion on labour protection: in the 1980s and the early 1990s labour protection index shows a decline under the successive Conservative governments and a subsequent increase under the Labour government.

In most of the sub-periods (constituting the period under study, 1970-2006), France provided the maximum labour protection in all the sub-categories, excepting one. Labour law relating to employee representation (ER) is only one area where Germany led and France followed. In Britain, the Conservative government targeted three sub-categories where less and less protection was granted to labour: regulation of working time (RT), employee representation (ER) and industrial action (IA). However, in the sphere of employment contract (EC), the opposite trend can be observed, while the regulation of dismissal (RD) was kept intact. The US government targeted only one aspect of labour protection (while keeping all other aspects unchanged at very low levels) - this is the regulation of dismissal (RD) which experienced a number of improvements during 1980-1994.

From the foregoing analysis of labour regulation, it is clear that in the sphere of labour protection the LLSV legal-origin story holds some water. Undoubtedly, UK and USA (common law countries) intervene less in the labour market and grant less protection to labourers from their employers.

3. Does Protection of Labour Create Unemployment Problem?

In this section, we shall examine the following two related propositions:

- A. The problem of unemployment is more acute in the civil law countries (France and Germany).
- B. This unemployment problem has a direct connection with labour regulation.

To examine the propositions we have considered three unemployment variables:

1. Rate of unemployment as percentage of civilian labour force (TU).
2. Long-term unemployment (more than one year) as percentage of total unemployment, LU;
3. Youth unemployment as percentage of total labour force in the age group 15-24, YU.

The data on long-term unemployment, LU and total unemployment, TU are collected from OECD iLibrary. The period of coverage is 1970-2006. Youth unemployment data are collected from the World Development Indicators of World Bank; these data are available for a shorter period, 1980-2006.

The periodic (mostly quinquennial) averages of the various indicators of unemployment are plotted in Figures 13 to 15. These show that total unemployment rate (TU) rose steadily in France and Germany while in the case of UK and USA it showed a declining trend since the early 1980s. As regards the long-term unemployment rate (LU), it increased at a slow but steady rate in USA while it showed a steady decline in the UK. For the two civil-law countries, it showed no clear pattern: a rise in the 1980s and the subsequent ups and downs. The rate of youth unemployment, however, showed a steady decline in the UK and USA while it exhibited a steady rising trend in France and Germany.

To examine the proposition that the problem of unemployment is more acute in the civil law countries (France and Germany) at a more rigorous level, we have considered a panel dataset of annual observations for each country. We use the dummy variable for common law origin countries (COM) and fit the following regression with a time-trend:

$$(1) \quad Y = a + b.COM + c.t$$

where Y = the unemployment rate (LU, TU or YU), COM is the dummy variable = 1 for common law countries (UK, USA) and zero for other countries (France and Germany) and t is the time-trend.

The estimates are presented in Table 2. These show that the common-law countries tend to have significantly low long-term and youth unemployment rates (LU and YU). For the total unemployment rate, we have the similar observation although it does not survive the test of significance.

Now the crucial question is how far the higher unemployment in the civil-law group is due to increasing protection of the interest of labour. We shall seek an answer to this question on the basis of panel causality tests; more specifically we shall examine the causal relationship between various components of labour regulation index and different indicators of unemployment.

To control for the level of economic activity of a country we shall consider real GDP in purchasing power parity constant dollars, deflated by population, PPPCY. From the World Development Indicators of World Bank we get the data on PPPCY for the period 1975-2006. So our period of analysis is 1975-2006 for TU and LU and 1980-2006 for YU.

Tests of Panel Unit Roots and Causality

To ascertain the stationarity property of the series (whether a temporary shock has a permanent effect) we have used a battery of panel unit root tests based on alternative assumptions. These tests do not provide a unique answer to the question of mean stationarity or trend stationarity of the series. However, there is a unanimous verdict that all the series are first-difference stationary – they are I (1) variables – integrated of order one.

Next, consider the tests of causality. To understand whether the direction of causality is from labour protection (Z) to unemployment (X) or the opposite or both (mutual causation) we shall use panel VAR (Vector-Autoregressive) Granger causality test. To ascertain whether Z causes X, we fit a regression where X the alternative rates of unemployment (taken one at a time) is a function of its past values and past values of Y (GDP per capita, PPPCY in natural log) and Z (various labour protection indexes taken one at a time):

$$(2) \quad X_{it} = \alpha + \sum_{j=1}^p \lambda_j X_{i,t-j} + \sum_{k=1}^q \psi_k Y_{i,t-k} + \sum_{l=1}^r \pi_l Z_{i,t-l} + \varepsilon_{it}$$

Fitting the above equation one has to test whether the coefficients of the lags of Z are jointly significant (different from zero) through the Wald-test statistic. The null hypothesis is $\pi_1 = \pi_2 = \dots = \pi_k = 0$. If the Wald test statistic calculated on the basis of this null hypothesis is very high (higher than a critical value), we can say that Z causes X (rejecting the null hypothesis of no causality).

Similarly to test whether X causes Z we fit a regression where Z is a function of its past values and the past values of X and Y and test the joint significance of the coefficients of the lags of X.

For the choice of lag (how many years past are to be included in our causality test) we have considered a number of criteria such as sequential modified LR test statistic (LRM), Final prediction error (FPE), Akaike information criterion(AIC), Schwarz information criterion (SC), Hannan-Quinn information criterion (HQ). Different criteria often choose different lag lengths and we have considered the maximum lag length. In view of possible integration of the series (as observed in the panel unit root tests), we have added one extra lag (as suggested by Toda and Yamamoto, 1995).

Our analysis shows that there is no causal relationship between aggregate labour law index or any of its five components and total or long-term unemployment. However, there is a causal influence of the aggregate labour protection on youth unemployment rate. Excepting one component (which is regulation of working time, RT) all the components of the aggregate labour law index show this causal influence.

This calls for further investigation regarding the nature of the influence exerted by labour protection on youth unemployment. We shall use alternative dynamic panel data models.

Estimates of Short run and Long-run Relationships

In our causality test we have assumed that an identical relationship prevails in each country; this assumption is reflected in our symbols for the estimated parameters, λ_j , ψ_k and π_i (there is no subscript i , which takes into account the fact that the parameters may differ from country to country). Now we shall use the subscript i to start with the assumption that the parameters can differ from country to country.

For a large time dimension of panel data (as we have here), Pesaran and Smith (1995) showed that the traditional procedures for estimation of pooled models, such as the fixed effects, instrumental variables, and generalized method of moments (GMM) ‘can produce inconsistent, and potentially very misleading estimates of the average values of the parameters in dynamic panel data models unless the slope coefficients are in fact identical (Pesaran and Shin, 1999, p.622). Therefore, to ascertain the nature of the relationships between labour regulation and youth unemployment we shall use the Pesaran-Shin dynamic panel data analysis.

We start with a postulate of long-run relationship involving X (the youth unemployment rate, YU), Y (per capita GDP, $PPPCY$ in natural log) and Z (labour protection index):

$$(3) \quad X_{it} = \psi_i Y_{it} + \pi_i Z_{it} + \eta_{it}$$

where i ($=1,2,3,4$) represents countries, t ($=1,2,\dots T$) represents periods (years), ψ_i and π_i are the long-run parameters and η_{it} is the error term.

We are interested to know whether there exist long-term and short-term effects of Z (labour protection) along with Y (per capita GDP measuring economic activities) on X (youth unemployment rate) and whether there exists a stable adjustment path from the short-term relationship (if any) to the long-run relationship.

Following Pesaran and Shin (1999), our panel data analysis is based on the following error correction representation:

$$(4) \quad \Delta X_{it} = \theta_i(\eta_{it-1}) + \sum_{j=1}^{p-1} \lambda_{ij} \Delta X_{i,t-j} + \sum_{k=0}^{q-1} \psi_{ik} \Delta Y_{i,t-k} + \sum_{l=0}^{r-1} \pi_{il} \Delta Z_{i,t-l} + \mu + \phi_{it}$$

where Δ is the difference operator, θ_i is the group-specific error-correcting speed of adjustment term, λ_{ij} , ψ_{ik} and π_{il} are the coefficients of the lagged variables, μ is the common fixed effect and ϕ_{it} is the disturbances term. The existence of a meaningful long-run relationship with a stable adjustment dynamics requires $\theta_i < 0$.

Under this general structure, we can have three alternative models. On one extreme, we can have dynamic fixed effect estimators (DFE) where intercepts are allowed to vary across the groups and all other parameters and error variances are constrained to be the same. At the other extreme, one can estimate separate equations for each group and calculate the mean of the estimates to get a glimpse of the over-all picture. This is called mean group estimator

(MG). Pesaran and Smith (1995) showed that MG gives consistent estimates of the averages of parameters. The intermediate alternative is pooled mean group (PMG) estimator, suggested by Pesaran and Shin (1999). It allows intercepts, short-run coefficients and error variances to differ freely across the groups but the long run coefficients are constrained to be the same; that means, $\psi_i = \psi$ and $\pi_i = \pi$ for all i while θ_i may differ from group to group.

Using the STATA ado developed by Blackburne and Frank (2007) we have estimated all the three alternative models, MG, PMG and DFE. Based on Lag Exclusion Wald Test for each variable separately we have determined the lag structure (p, q, r).²

In none of the three models, we find a significant short-term relationship between aggregate labour protection, ALLAB or its various components and youth unemployment rate (Table 4). In many cases we find significant negative long-term relationships but without a stable adjustment path from short-term no relationship. There is also no significant direct relationship. Thus our observed causal relationship between youth unemployment and labour regulation does not withstand our further scrutiny through dynamic panel data analysis. At best we can conclude that there is no meaningful relationship between youth unemployment and various aspects of labour regulation.

² We have considered a uniform lag-structure for all the countries, as the STATA ado used here does not have this option. It is theoretically possible to consider different lag structures for different countries on the basis of some information criteria.

4. Summary and Conclusion

This paper examines various aspects of labour law and its unemployment consequence for four OECD countries (UK, USA, France and Germany) over a long time span 1970-2006. It supports the contention of the legal-origin theory that UK and USA (common law countries) intervene less in the labour market and grant less protection to their labourers. It also supports the proposition that the problem of unemployment is more acute in the civil law countries (France and Germany). But our Panel Granger Causality test finds no causal relationship between total or long-term unemployment and aggregate labour protection or its various components. Our study, however, finds a causal relationship between labour protection and youth unemployment.

For further investigation we have fitted alternative dynamic panel data models. In none of the models, we find a short-term relationship and a stable adjustment path leading to a long-term relationship (positive or negative) between aggregate labour protection, ALLAB or its various components and youth unemployment. Hence, we conclude that the explanation of more acute unemployment problem in France and Germany should be sought elsewhere, not in their more protective labour law. This requires a separate study beyond the scope of the present paper.

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Table 1. Labour Protection in Four OECD Countries, 1970-2006

(Period Averages)

Period	France	Germany	UK	USA	Common Law	Civil Law
Aggregate Labour Protection (ALLAB)						
1970-74	0.54	0.54	0.31	0.11	0.21	0.54
1975-79	0.64	0.56	0.41	0.11	0.26	0.60
1980-84	0.72	0.56	0.26	0.11	0.19	0.64
1985-89	0.75	0.56	0.23	0.12	0.17	0.66
1990-94	0.78	0.56	0.22	0.15	0.19	0.67
1995-99	0.78	0.56	0.25	0.15	0.20	0.67
2000-06	0.78	0.59	0.36	0.15	0.25	0.69
Alternative Employment Contracts (AC)						
1970-74	0.43	0.70	0.08	0.25	0.16	0.56
1975-79	0.44	0.72	0.13	0.25	0.19	0.58
1980-84	0.73	0.72	0.13	0.25	0.19	0.73
1985-89	0.82	0.75	0.18	0.25	0.21	0.78
1990-94	0.93	0.75	0.20	0.25	0.23	0.84
1995-99	0.93	0.72	0.32	0.25	0.29	0.83
2000-06	0.93	0.77	0.52	0.25	0.38	0.85
Regulation of Working Time (RT)						
1970-74	0.71	0.56	0.37	0.17	0.27	0.64
1975-79	0.71	0.56	0.37	0.17	0.27	0.64
1980-84	0.73	0.56	0.00	0.17	0.09	0.65
1985-89	0.75	0.56	0.00	0.17	0.09	0.66
1990-94	0.75	0.58	0.00	0.17	0.09	0.66
1995-99	0.75	0.60	0.07	0.17	0.12	0.68
2000-06	0.76	0.60	0.18	0.17	0.18	0.68

Table 1 (contd.)

(Period Averages)

Period	France	Germany	UK	USA	Common Law	Civil Law
Regulation of Dismissal (RD)						
1970-74	0.36	0.42	0.20	0.00	0.10	0.39
1975-79	0.78	0.43	0.42	0.00	0.21	0.61
1980-84	0.78	0.43	0.41	0.00	0.21	0.61
1985-89	0.76	0.43	0.39	0.03	0.21	0.59
1990-94	0.75	0.43	0.41	0.17	0.29	0.59
1995-99	0.75	0.44	0.42	0.17	0.29	0.60
2000-06	0.75	0.52	0.43	0.17	0.30	0.63
Employee Representation (ER)						
1970-74	0.38	0.65	0.41	0.04	0.22	0.51
1975-79	0.38	0.68	0.56	0.04	0.30	0.53
1980-84	0.49	0.69	0.21	0.04	0.13	0.59
1985-89	0.60	0.69	0.18	0.04	0.11	0.65
1990-94	0.61	0.69	0.14	0.04	0.09	0.65
1995-99	0.61	0.69	0.14	0.04	0.09	0.65
2000-06	0.61	0.69	0.29	0.04	0.17	0.65
Industrial Action (IA)						
1970-74	0.81	0.43	0.46	0.11	0.29	0.62
1975-79	0.81	0.45	0.56	0.11	0.34	0.63
1980-84	0.82	0.46	0.44	0.11	0.28	0.64
1985-89	0.83	0.42	0.33	0.11	0.22	0.63
1990-94	0.83	0.41	0.29	0.11	0.20	0.62
1995-99	0.83	0.41	0.22	0.11	0.17	0.62
2000-06	0.83	0.41	0.33	0.11	0.22	0.62

Source: Calculated from CBR (University of Cambridge) data available in

See (<http://www.cbr.cam.ac.uk/research/programme2/project2-20.htm>).

Table 2. Unemployment Problems in the Common Law vis-à-vis the Civil Law

Countries since the 1970s: Dummy Variable Analysis¹

Series & Period of Analysis	Intercept (a)	Dummy for Common Law Countries (COM)	Time Trend (t)	R-Square
Rate of unemployment as percentage of civilian labour force (TU), 1970-2006	4.678*	-.451	0.117*	0.233
Long-term unemployment (more than one year) as percentage of total unemployment, LU, 1970-2006	32.429*	-22.432*	0.407*	0.526
Youth unemployment as percentage of total labour force in the age group 15-24, YU, 1980-2006	22.16*	-4.579*	-0.184*	0.212

* Significant at 1 per cent level (based on robust standard errors).

1 The following regression equation has been fitted through OLS:

$$Y = a + b.COM + d.t$$

where Y is the alternative rates of unemployment (alternatively TU, LU and YU are used), COM is the dummy variable = 1 for common law countries (UK, USA) and zero for other countries (France and Germany), , t is the time trend.

Table 3

Relationships among Shareholder/Creditor Protection, Financial Development Indicators and Real GDP per capita for the Panel of Four OECD Countries, 1970-2005/6: Panel VAR Granger Causality Tests

Dependent Variable ¹ : Unemployment Rates (Chosen Lag)	Excluded Variable ¹	Chi-Square	Dependent Variable ¹ : Legal Index (Chosen Lag)	Excluded Variable ¹	Chi-Square
Labour Protection and Unemployment Relationship, 1970-2006					
1. TU					
(3)			ALLAB (3)		
	ALLAB	5.496553		TU	1.052167
	LPPPCY	12.79039*		LPPPCY	1.502513
(3)			AC(3)		
	AC	1.646706		TU	0.648205
	LPPPCY	19.14172*		LPPPCY	1.207264
(3)			RT(3)		
	RT	6.155376		TU	1.526474

	LPPPCY	12.47433*		LPPPCY	1.904135
(3)			RD(3)		
	RD	2.116034		TU	5.024368
	LPPPCY	17.41519*		LPPPCY	3.238427
(3)			ER(3)		
	ER	4.570485		TU	0.392825
	LPPPCY	13.15655*		LPPPCY	0.590824
(3)			IA(3)		
	IA	5.986007		TU	3.770924
	LPPPCY	15.78583		LPPPCY	4.807193
2. LU					
(3)			ALLAB(3)		
	ALLAB	4.163131		LU	0.739685
	LPPPCY	41.71841*		LPPPCY	0.340534
(3)			AC(3)		
	AC	2.541290		LU	1.090495
	LPPPCY	43.54637*		LPPPCY	0.966725
(3)			RT(3)		
	RT	3.109167		LU	1.753197
	LPPPCY	42.73955*		LPPPCY	0.423113
(3)			RD(3)		
	RD	1.959890		LU	2.137263
	LPPPCY	43.29744*		LPPPCY	0.439976
(3)			ER(3)		
	ER	4.872341		LU	0.178116
	LPPPCY	42.49070*		LPPPCY	1.583125

(3)			IA(3)		
	IA	4.232264		LU	1.079272
	LPPPCY	44.54007*		LPPPCY	2.572257
3. YU²					
(3)			ALLAB(3)		
	ALLAB	17.42836*		YU	3.337184
	LPPPCY	13.86859*		LPPPCY	0.213086
(3)			AC(3)		
	AC	15.54773*		YU	4.244843
	LPPPCY	15.91625*		LPPPCY	0.452868
(3)			RT(3)		
	RT	4.849581		YU	0.184572
	LPPPCY	12.11379*		LPPPCY	0.536805
(3)			RD(3)		
	RD	8.874716*		YU	2.791170
	LPPPCY	12.04907*		LPPPCY	2.244738
(3)			ER(3)		
	ER	11.93928*		YU	0.310233
	LPPPCY	16.88912*		LPPPCY	0.713262
(3)			IA(3)		
	IA	10.49854*		YU	1.041089
	LPPPCY	11.36673*		LPPPCY	3.416997

* Null hypothesis of no causality is rejected at 5 % level.

1 ALLAB is Aggregate Labour Protection;

AC is Alternative Employment Contracts;

RT is Regulation of Working Time;

RD is Regulation of Dismissal;

ER is Employee Representation;

IA is Industrial Action;

TU is the rate of unemployment as percentage of civilian labour force;

LU is long-term unemployment (more than one year) as percentage of total unemployment;

YU is youth unemployment as percentage of total labor force in the age group 15-24.

2 The period of analysis is 1980-2006.

Table 4**Short-run and Long-run Relationships between Youth Unemployment Rate and Labour Protection Index, 1980-2006: Alternative Dynamic Panel Models**

Models → & Regressors ¹ ↓	PMG Model	MG Model	DFE Model
1. Aggregate Labour Protection Index(Z)-Youth Unemployment (X) Relationship			
Long-term Relationship			
Y (LPPCY)	-5.343	14.809	-18.438
Z (ALLLAB)	-23.623**	-153.978	47.092
Short-term Relationship			
θ	0.094	0.094	-0.133*
ΔX_{t-1}	-0.113	-0.221***	0.06
ΔY_t	-65.753***	-60.059***	-54.572***
ΔY_{t-1}	-57.141***	-59.397**	-32.046**
ΔZ_t	-5.685	-13.374	0.064
μ	-3.526	27.019	25.859*
Chosen Model ²			DFE
2.Labour Protection Index relating to Alternative Employment Contracts-(Z)-Youth Unemployment(X)			
Long-term Relationship			
Y (LPPCY)	-296.32	-6.618	-20.082
Z (AC)	305.696	33.225	28.994

Short-term Relationship			
θ	-0.008	-0.065	-0.125*
ΔX_{t-1}	0.004	0.025	0.046
ΔY_t	-62.501***	-54.454***	-55.115***
ΔY_{t-1}	-51.008**	-47.284	-33.037***
ΔZ_t	-3.222	-7.744	0.787
μ	23.927	2.767	27.124
Chosen Model ²			DFE
3.Labour Protection Index relating to Regulation of Working Time (Z)-Youth Unemployment(X) Relationship			
Long-term Relationship			
Y (LPPPCY)	-5.055	-10.931**	-10.605
Z (RT)	-16.373***	-79.292	6.412
Short-term Relationship			
θ	0.118	0.173	-0.153**
ΔX_{t-1}	-0.129	-0.219***	0.082
ΔY_t	-68.314***	-74.309***	-53.806***
ΔY_{t-1}	-56.896***	-57.317***	-31.027**
ΔZ_t	-4.289	6.371	-4.694
μ	-4.213	16.48	20.015
Chosen Model ²			DFE
4.Labour Protection Index relating to Regulation of Dismissal (Z)-Youth Unemployment(X) Relationship			
Long-term Relationship			

Y (LPPPCY)	-426.149	137.911	-13.029
Z (RD)	2754.312	-1271.509	17.374
Short-term Relationship			
θ	-0.003	0.081	-0.141**
ΔX_{t-1}	-0.091	-0.216***	0.072
ΔY_t	-59.994***	-65.371***	-55.375***
ΔY_{t-1}	-57.202**	-62.941**	-31.415**
ΔZ_t	27.959	24.68	5.476
μ	6.835	23.85	21.392*
Chosen Model ²			DFE
5.Labour Protection Index relating to Employee Representation (Z)- Youth Unemployment(X) Relationship			
Long-term Relationship			
Y (LPPPCY)	-10.699***	-18.138**	-10.014
Z (ER)	-16.119*	-195.589	5.983
Short-term Relationship			
θ	0.053	0.099	-0.165**
ΔX_{t-1}	-0.093	-0.176	0.094
ΔY_t	-63.345***	-67.834***	-53.421***
ΔY_{t-1}	-56.69***	-65.581**	-31.058**
ΔZ_t	-3.626*	-4.268*	-2.722
μ	-3.449	0.891	20.588*
Chosen Model ²	PMG		
6.Labour Protection Index relating to			

Industrial Action (Z)-Youth Unemployment(X) Relationship			
Long-term Relationship			
Y (LPPPCY)	-33.945	-20.421**	-8.632
Z (IA)	8.309	-1.299	-26.331
Short-term Relationship			
θ	0.008	0.071	-0.167***
ΔX_{t-1}	-0.052	-0.099	0.084
ΔY_t	-61.098***	-67.171***	-54.757***
ΔY_{t-1}	-51.397**	-55.494**	-30.262**
ΔZ_t	-11.722	-10.37	-4.851
μ	-0.547	-1.514	20.632*
Chosen Model ²			DFE

* Significant at 10 per cent level.

** Significant at 5 per cent level.

*** Significant at 1 per cent level.

1 The regressors are estimated from the following long-term relationship and its error correction form.

Long-run Relationship:

$$X_{it} = \psi_i Y_{it} + \pi_i Z_{it} + \eta_{it}$$

where i ($=1,2,3,4$) represents countries, t ($=1,2,\dots T$) represents periods (years), ψ_i and π_i are the long-run parameters and η_{it} is the error term.

It's Error Correction Form:

$$(3) \quad \Delta X_{it} = \theta_i(\eta_{it-1}) + \sum_{j=1}^{p-1} \lambda_{ij} \Delta X_{i,t-j} + \sum_{k=0}^{q-1} \psi_{ik} \Delta Y_{i,t-k} + \sum_{l=0}^{r-1} \pi_{il} \Delta Z_{i,t-l} + \mu_i + \phi_{it}$$

where Δ is the difference operator, θ_i is the group-specific error-correcting speed of adjustment term, λ_{ij} , ψ_{ik} and π_{il} are the coefficients of the lagged variables, μ_i is the country fixed effect and ϕ_{it} is the disturbances term. The existence of a meaningful long-run relationship with a stable adjustment dynamics requires $\theta_i < 0$.

2 An appropriate model is chosen on the basis of a series of Hausman tests.

Figure 1
Labour Protection in
Four OECD Countries, 1970-2006

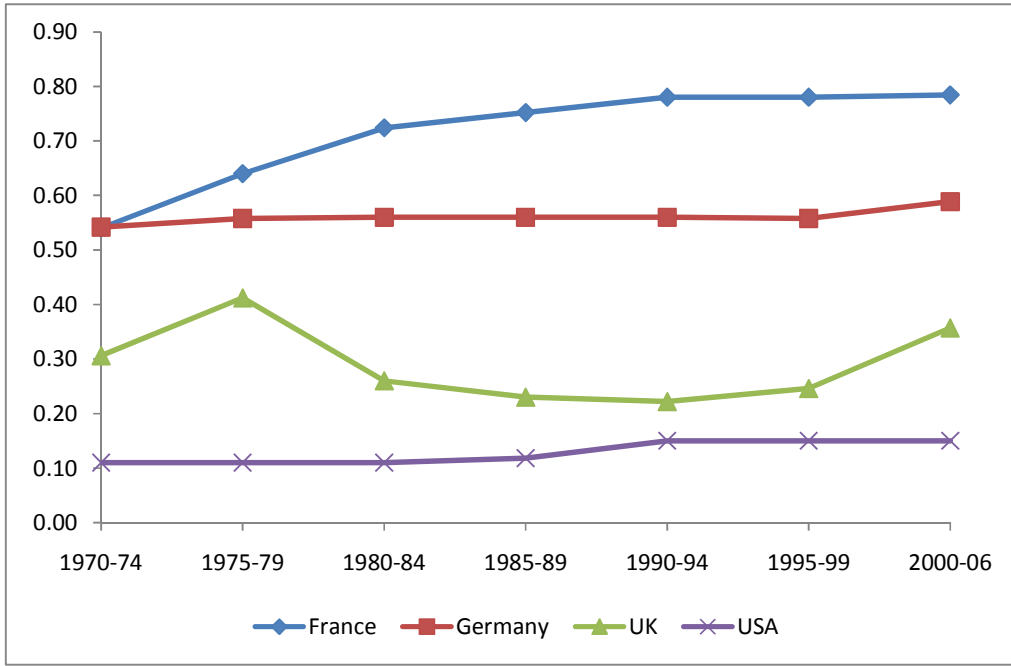


Figure 2
Common Law vs. Civil Law:
Labour Protection, 1970-2006

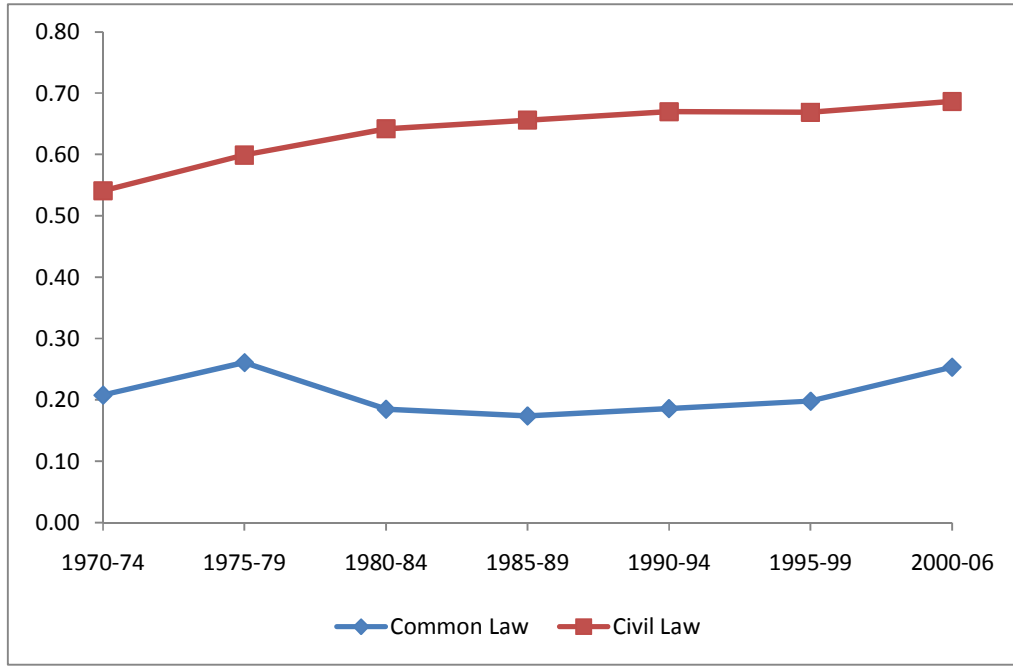


Figure 3
Labour Protection relating to Employment Contract in
Four OECD Countries, 1970-2006

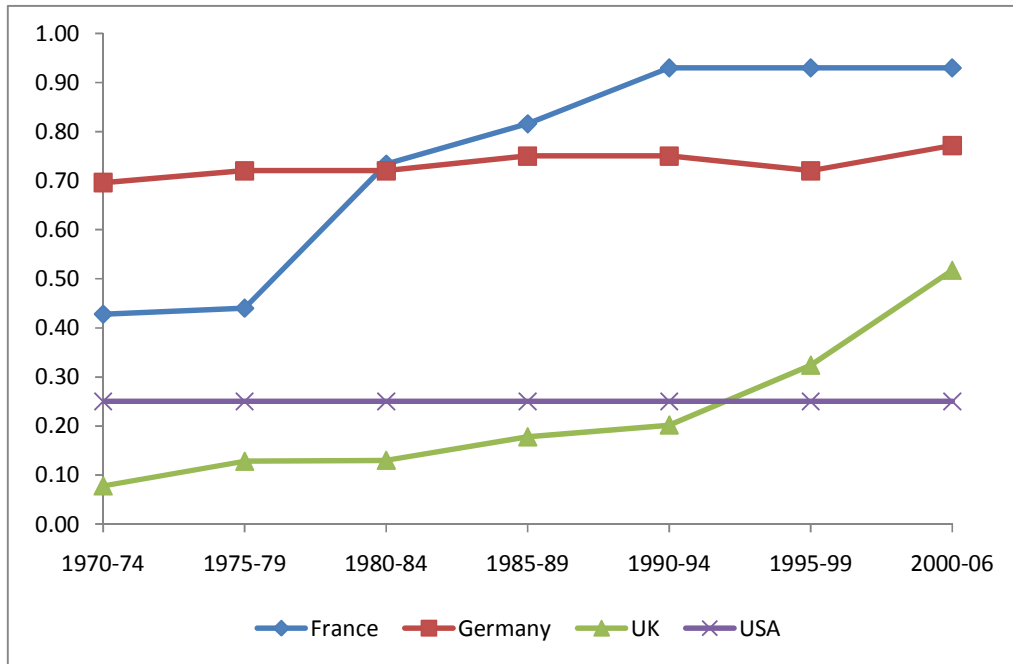


Figure 4
Common Law vs. Civil Law:
Labour Protection Relating to Employment Contract, 1970-2006

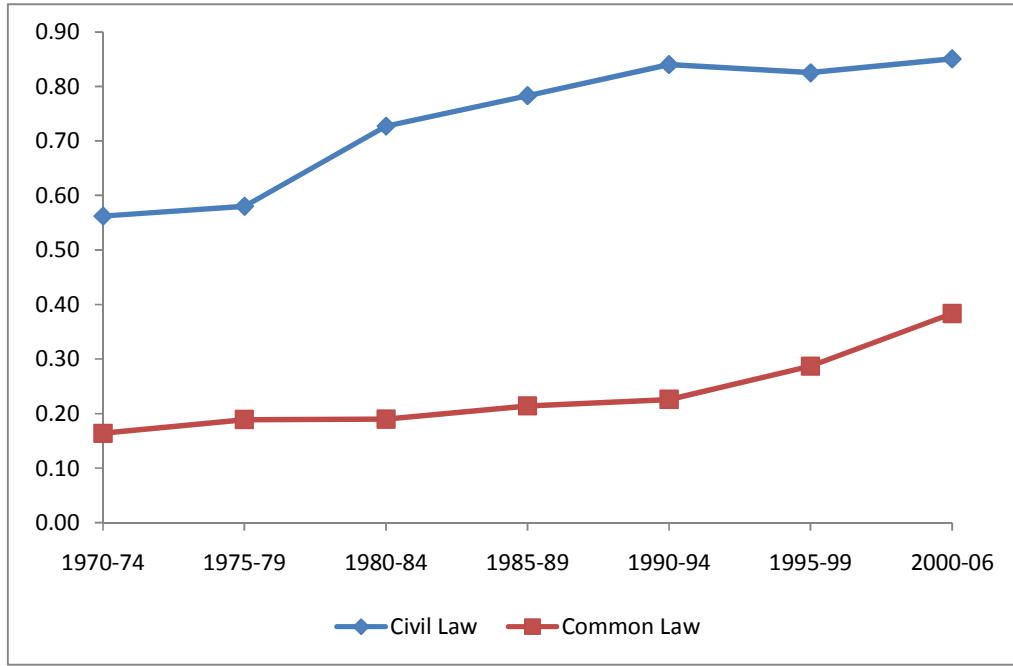


Figure 5
Labour Protection Relating to Regulation of Working Time in
Four OECD Countries, 1970-2006

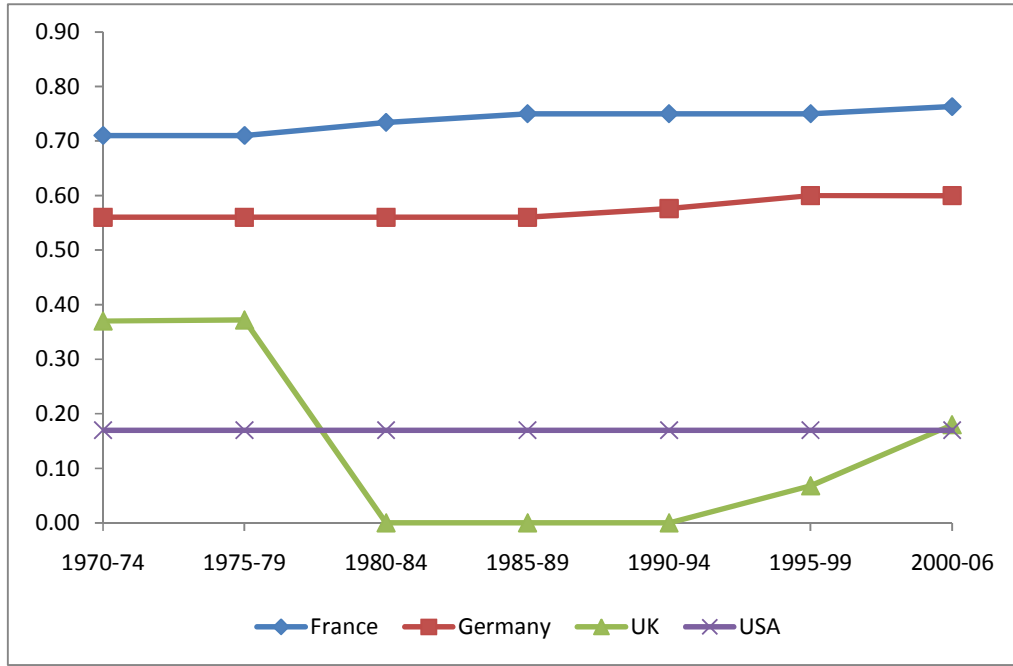


Figure 6
Common Law vs. Civil Law:
Labour Protection Relating to Regulation of Working Time, 1970-2006

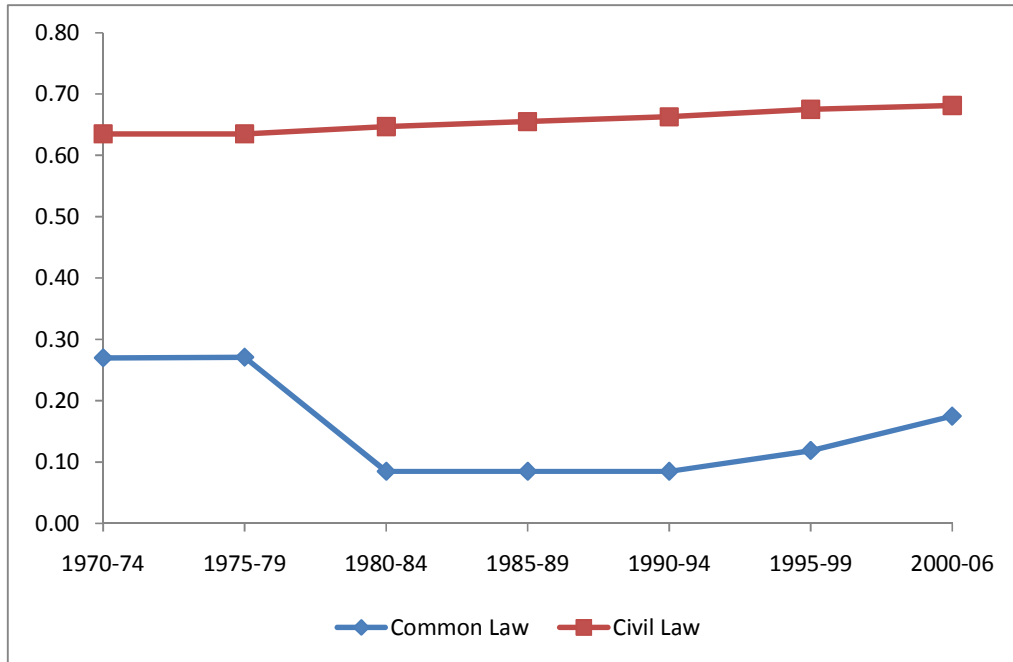


Figure 7
Labour Protection Relating to Regulation of Dismissal in
Four OECD Countries, 1970-2006

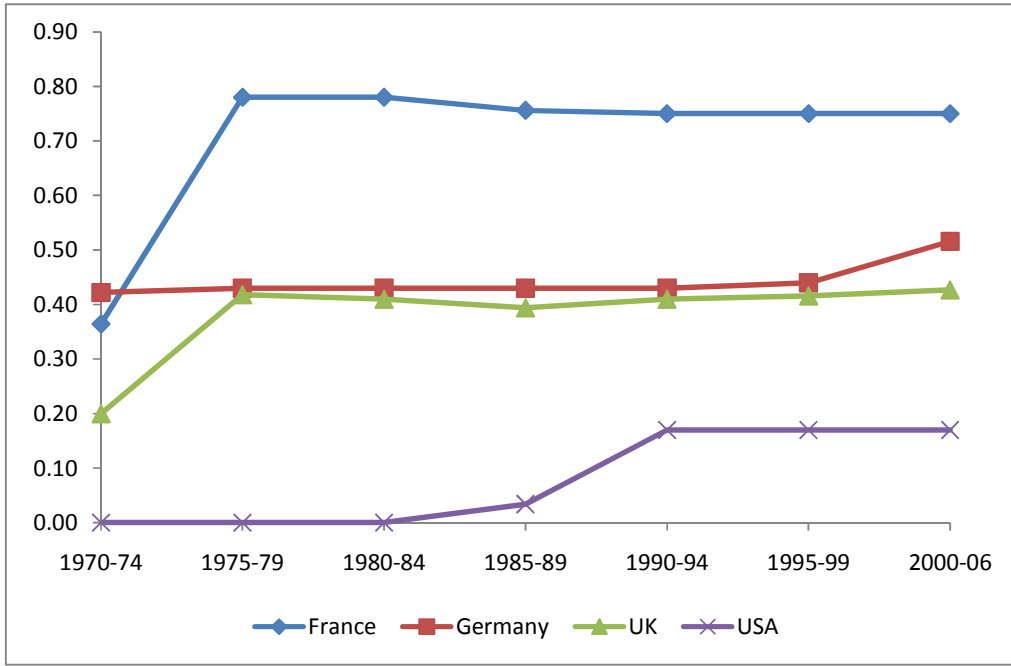


Figure 8
Common Law vs. Civil Law:
Labour Protection Relating to Regulation of Dismissal, 1970-2006

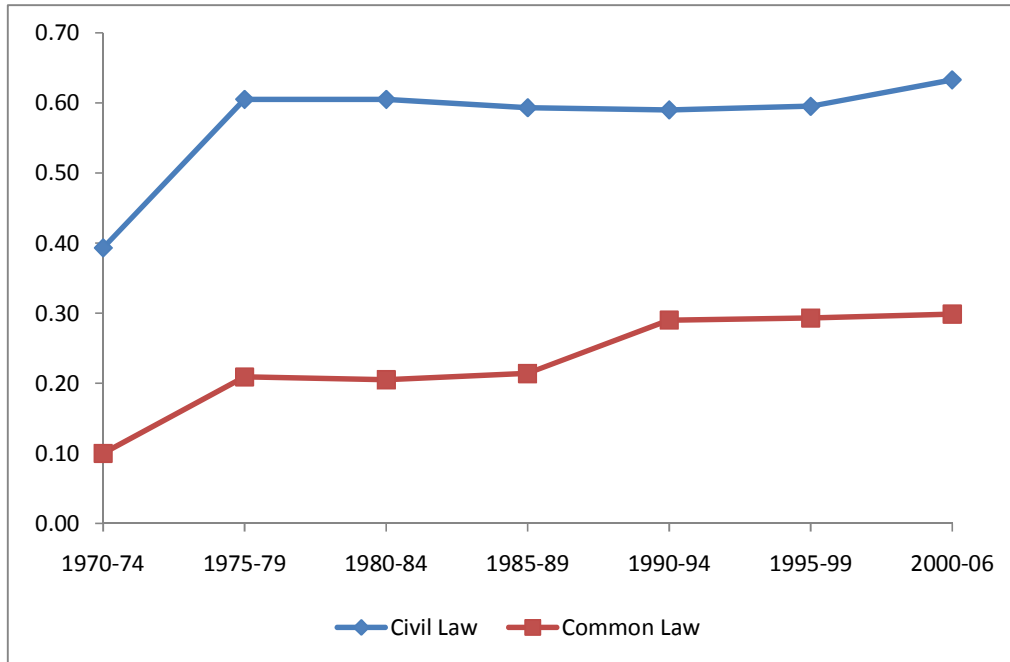


Figure 9
Labour Protection Relating to Employee Representation in
Four OECD Countries, 1970-2006

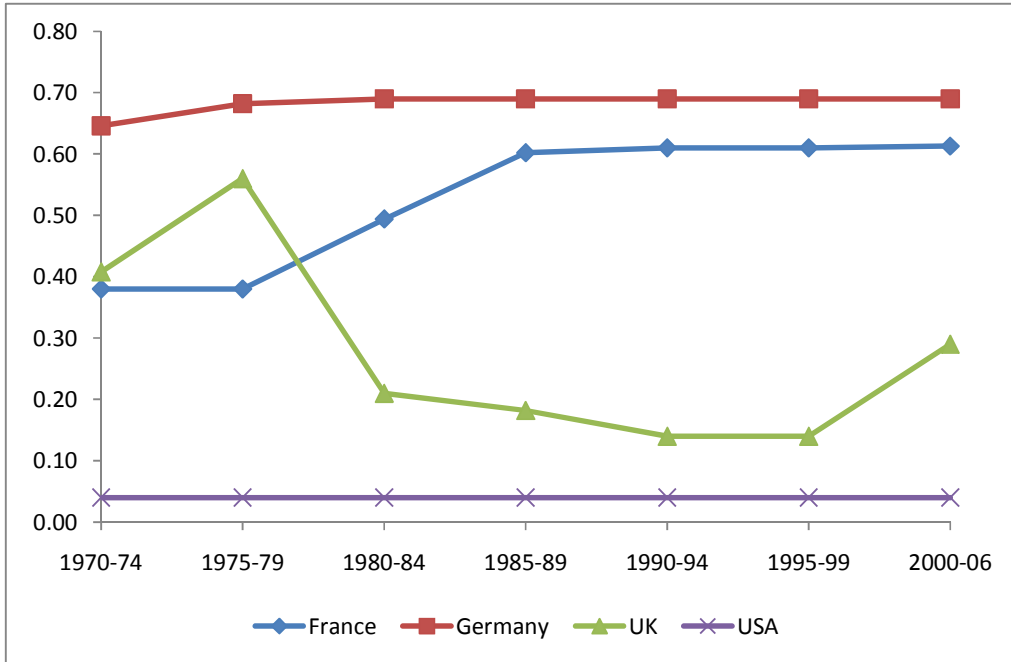


Figure 10
Common Law vs. Civil Law:
Labour Protection Relating to Employee Representation, 1970-2006

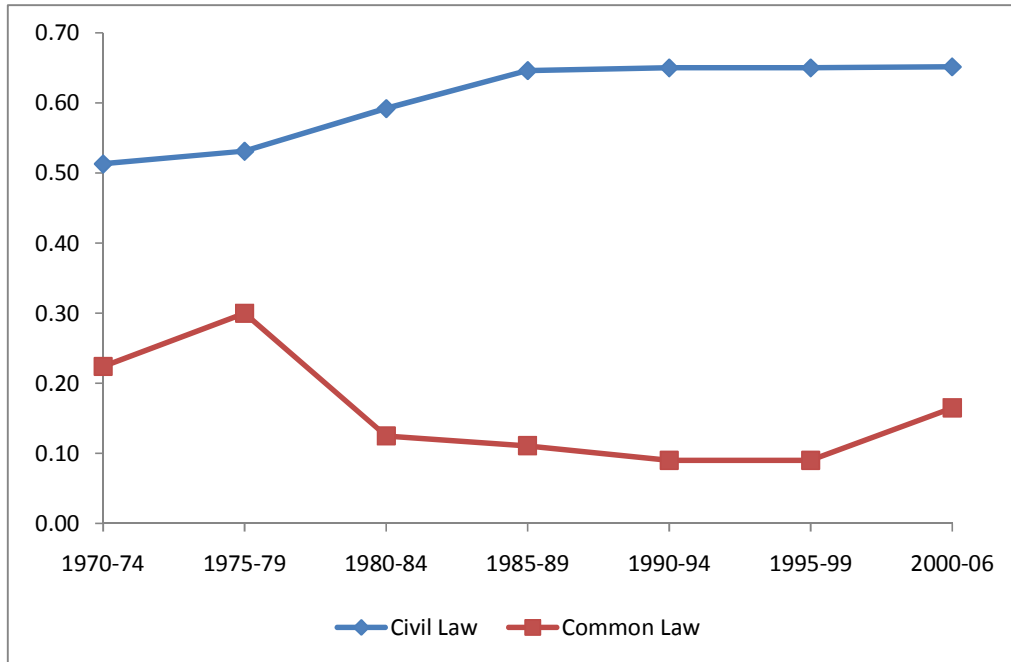


Figure 11
Labour Protection Relating to Industrial Action in
Four OECD Countries, 1970-2006

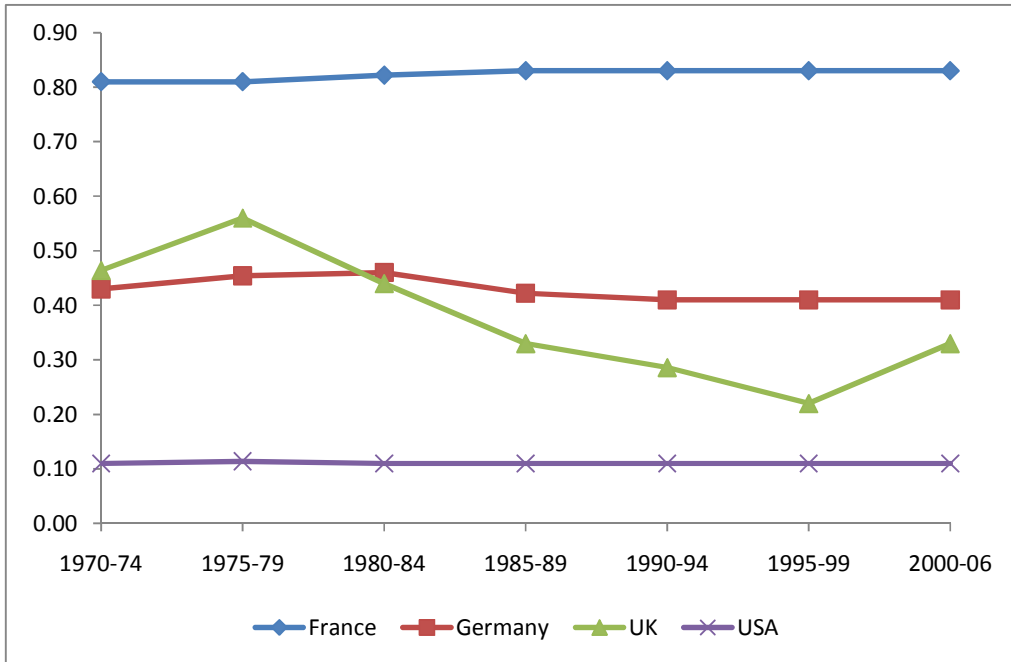


Figure 12
Common Law vs. Civil Law:
Labour Protection Relating to Industrial Action, 1970-2006

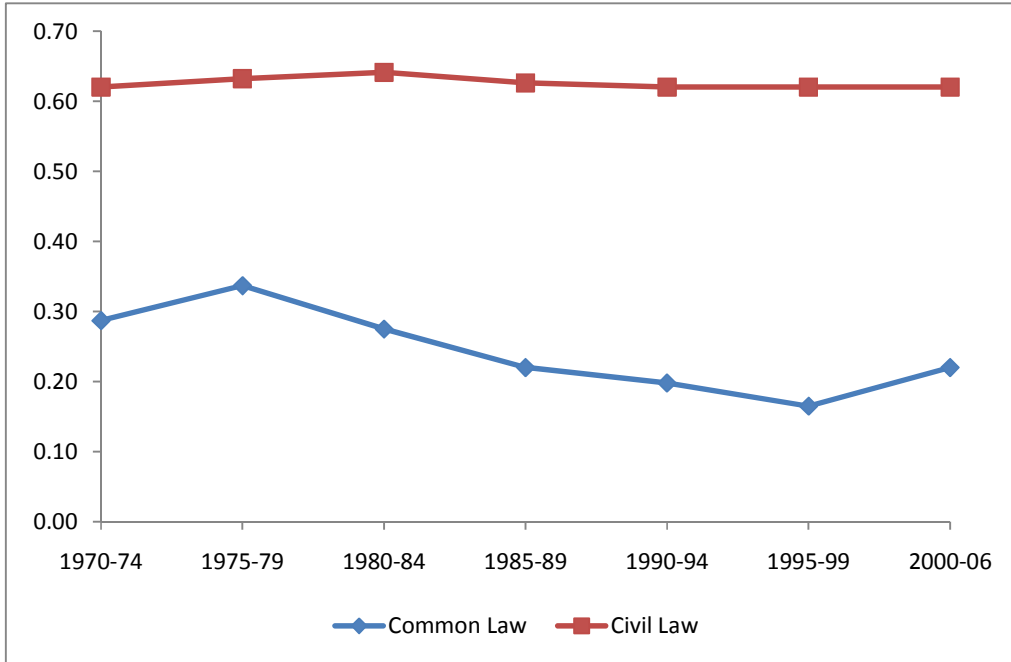


Figure 13
Rate of Unemployment as Percentage of Civilian Labour Force in
Four OECD Countries, 1970-2006

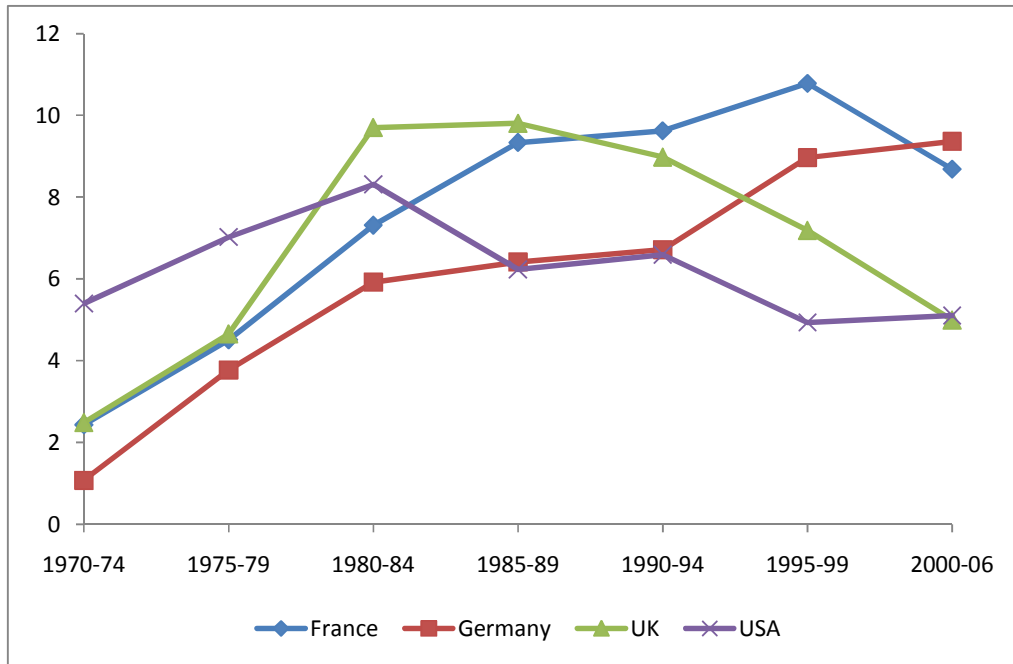


Figure 14

Long-term Unemployment as Percentage of Total Unemployment in
Four OECD Countries, 1970-2006

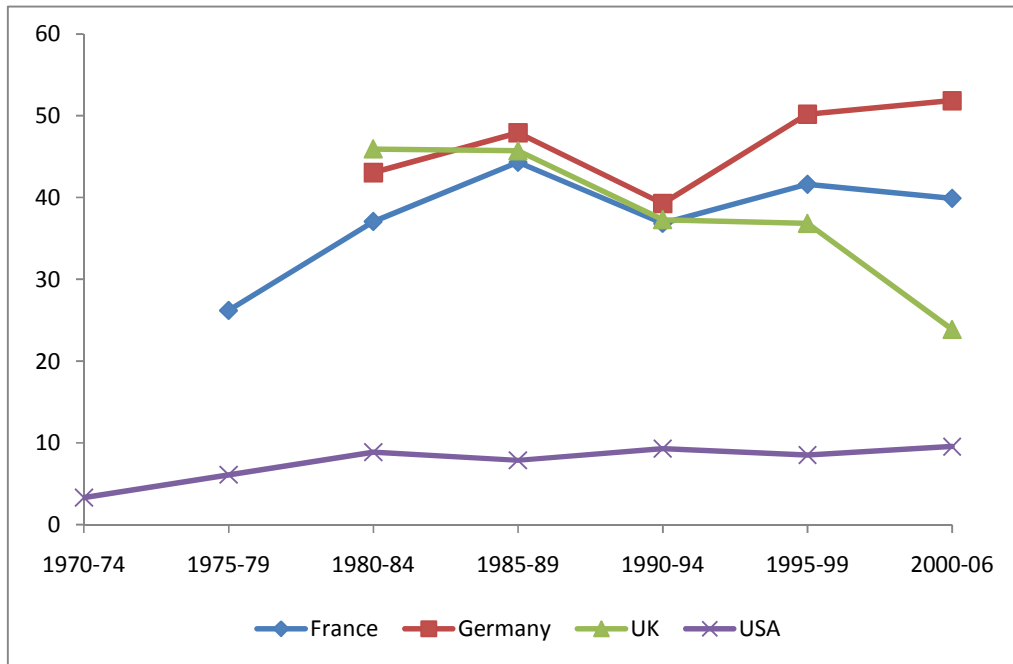


Figure 15

Youth unemployment as Percentage of Total Labor Force Aged 15-24 in

Four OECD Countries, 1980-2006

