Does Stricter Employment Protection Legislation Promote Self-employment?

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Abstract

Using recently developed indicators of the strictness of employment protection legislation in OECD countries, the paper examines the issue of whether strict employment protection legislation may promote self-employment by encouraging employers to contract-out work to self-employed workers. Contrary to the results of previous studies, the paper finds little evidence for a positive relationship between self-employment and the strictness of EPL. While the raw data suggest that a positive relationship may indeed exist, once suitable control variables are introduced into the analysis, it appears that if anything, the opposite may be true: i.e. stricter employment protection legislation may actually reduce self-employment.

JEL Codes: J21, J23

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1. Introduction

In recent years, there has been a great deal of interest from academics and policy makers in the effects of employment protection legislation (EPL) on labour market performance. Empirical research into the effects of EPL has focussed chiefly on its role in accounting for cross-national variations in the rate and structure of unemployment (see for example, Bertola, 1990, Gregg and Manning, 1997, and Nickell, 1997).[1] More recent work has examined the effects of EPL on patterns of worker and job flows (Schettkat, 1997; and Boeri, 1999). A final strand of research has attempted to analyse the impact of EPL on the structure of employment. Within this vein, a recent study by the OECD (OECD, 1999) reports evidence of a positive and statistically significant relationship between summary measures of the strictness of employment protection legislation and the share of self-employment in OECD member states.[2] The explanation for this result, which echoes findings from previous studies by OECD (1992) and Grubb and Wells (1993), is that employers may attempt to circumvent the effects of regulations on their ability to hire and fire employees by contracting-out work to self-employed contractors. This finding, if correct, suggests that employers may be able to use self-employment as a means of undermining the intended effects of employment protection legislation. It would also lend support to the view that a significant proportion of reported self-employment may be 'false', in the sense that the workers concerned are essentially employees, but are employed on self-employment contracts in order to economise on employers' non-wage labour costs.[3] The rate of self-employment has

[1] For a recent theoretical analysis of the effects of employment protection regulations see Pissarides (2001).

[2] The study by the OECD contains a detailed summary of previous work on the effects of EPL on labour market performance.

[3] Pfieffer (1999) documents the prevalence of this phenomenon in Germany. A number of OECD countries have recently introduced measures designed to control the incidence of such 'false' self-employment. See OECD (2000) for a detailed summary.

recently been increasing in a number of OECD countries (OECD, 2000). At the same time, there has been a resurgence of interest within government policy-making circles in issues relating to entrepreneurship.[4] In the light of this, it is important to ask whether the increases in self-employment that have been observed may simply reflect the response of employers to an increasing burden of labour market regulation – and hence are merely indicative of an increase in the incidence of 'false' self-employment - or whether they reflect a genuine resurgence of entrepreneurial activity in the countries concerned. The present paper attempts to shed some light on this issue by re-examining the evidence on the relationship between the incidence of self-employment in OECD countries and the strictness of EPL.

The analysis reported in the paper is conducted in two strands. In the first, we examine the relationship between EPL and the rate of non-agricultural self-employment in the OECD using panel data on an index of the overall strictness of employment protection legislation recently compiled by Blanchard and Wolfers (2000). The data used in this analysis covers 13 OECD countries for seven five-year periods from the mid-1960s to the mid-1990s. In the second strand, we use data compiled by the OECD that provides a breakdown of the incidence of EPL into measures of its constituent components - namely, regulations relating to the protection of regular employment; to the protection of temporary employment; and regulations governing collective dismissals. This analysis follows the findings of OECD (1999), which indicate that the incidence of self-employment is positively related to the strictness of regulations relating to the protection of regular employment, rather than to regulations relating to temporary employment or collective dismissals. The figures compiled by the OECD cover a slightly broader range of countries than is used in the first part of the analysis, but only two time periods: the late 1980s and the mid-1990s.

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[4] See, for example, OECD (1998) and Commission of the European Communities (1999).

In brief, the results from the two strands of the analysis suggest that the findings of previous studies concerning the relationship between the strictness of employment protection legislation and the rate of self-employment are non-robust. While the raw data do indeed suggest the existence of a positive relationship between EPL and the rate of self-employment, this evidence disappears once controls are introduced for other potential influences on the rate of self-employment; in particular, once allowance is made for the presence of country-specific fixed effects. On the basis of the present analysis, we therefore conclude that there is only very limited evidence to support the hypothesis that stricter employment protection legislation promotes self-employment.

The plan of the paper is as follows. Section 2 discusses the summary measure of the strictness of EPL that is compiled by Blanchard and Wolfers (2000) and examines the relationship between this measure and the rate of non-agricultural self-employment in 13 OECD countries. Section 3 performs a similar analysis using the figures compiled by OECD (1999) on the constituent components of EPL. Finally, Section 4 concludes the paper.

2. Measures of the Strictness of Employment Protection Legislation

A number of studies have been carried out that have attempted to construct comparative measures of the strictness of employment protection legislation across different countries (Emerson, 1988; Bertola, 1990; Lazear, 1990; Grubb and Wells 1993, OECD 1999). The study by Blanchard and Wolfers (2000) builds on the work carried out by OECD (1999) and Lazear (1990) to construct a summary indicator of the strictness of employment protection legislation that covers a number of OECD countries over the period from 1960 through to the mid-1990s. The indicator is scaled to lie between a minimum value of 0

(corresponding to very weak employment protection) and a maximum of 6 (corresponding to very strict protection).[5]

Table I shows values of the indicator of the strictness of employment protection for three selected periods for the 13 OECD countries for which we have corresponding time-series data on the rate of non-agricultural self-employment. In summary, the data indicate that the overall strictness of EPL tends to be highest in Spain and Italy, and weakest in the USA, Canada and the United Kingdom, with Australia and Ireland not far behind. In a number of countries, but most notably in Sweden, there is evidence of a relaxation of the strictness of EPL during the 1990s. The main exception to this trend is France, for which there is an increase in the indicator of the overall strictness of EPL between the late 1980s and the mid-1990s, due to the imposition of tighter restrictions on the maximum cumulative duration of fixed term contracts and tighter limits on the scope of the activities of Temporary Work Agencies (TWAs).[6]

Table II shows corresponding data from OECD (1999) that provides information on the constituent components of employment protection legislation. The Table shows indicators of measures relating to the protection of regular workers from the threat of dismissal, the regulation of collective dismissals, and the regulation of temporary employment contracts. The indicators are scaled to lie between 0 and 6 in the same way as the Blanchard and

[5] See the Appendix to Blanchard and Wolfers (2000) for details of the construction of the indicator of the strictness of EPL. The Appendix is available at http://web.mit.edu/blanchar/www/articles.html

[6] See OECD (1999)

Wolfers indicator of the overall strictness of EPL (which itself is based on the OECD measure).[7]

The picture that emerges from these figures is similar to that in Table I, though it covers a slightly broader range of countries, but only two time periods: the late 1980s and the mid-1990s. The figures show that Belgium and Germany joined Sweden in implementing a noticeably more lenient employment protection regime during the 1990s. In each case, this manifested itself principally in the form of a relaxation of regulations relating to the hiring of temporary workers, including regulations governing the use of fixed term contracts and the activities of TWAs. A detailed analysis of the figures, including comparisons with indicators of the strictness of EPL compiled by other studies, is presented in OECD (1999).

[7] Note that information on the strictness of regulations governing collective dismissals is only available for the mid-1990s. To maintain consistency with the figures for the late 1980s, therefore, the figures for the overall indicator of the strictness of EPL exclude information on the severity of regulations relating to collective dismissals.

3. Analysis of the Relationship Between Self-employment and the Strictness of EPL

The present study is motivated by the results of previous analyses by OECD (1992), Grubb and Wells (1993) and in particular, OECD (1999), which report evidence of a positive relationship between the strictness of employment protection legislation and the incidence of self-employment in OECD countries. The explanation put forward for this finding is that employers may use self-employed contractors as a means of circumventing the restrictions that EPL imposes on their ability to hire and fire employees. If correct, this finding implies that employers may be able to significantly undermine the intended effects of job security legislation by substituting self-employed contractors for waged workers, or by placing members of the workforce on self-employment contracts. The latter, in turn, may imply that a significant proportion of observed self-employment may be 'false', in the sense that the mantle of self-employment is used to cloak what is essentially an employment contract. The implications for the conduct of employment policy and, in particular, for the efficacy of policies designed to promote or facilitate self-employment, suggest that this is a topic worthy of further investigation.

The analysis of the present paper is conducted in two strands. In the first, we use panel data on thirteen OECD countries for the period from the mid-1960s to the mid-1990s.[8] Blanchard and Wolfers calculate their index of the strictness of EPL for a sequence of five-year intervals.[9] In Figure I, we plot the values of this index against the corresponding five-

[8] The countries are those listed in Table I. Note that we have three missing observations - data on the rate of non-agricultural self-employment in Finland is only available from 1970-4, while for the Netherlands it is only available from 1975-9. Hence, the maximum number of observations for this analysis is 88.

[9] The final observation covers just three years, 1995-7.

year average values of the rate of non-agricultural self-employment in our thirteen countries.[10] The picture is consistent with the notion of a positive relationship between the strictness of EPL and the incidence of self-employment, and this is supported by the results of a simple OLS regression, reported in the first column of Table III. However, the evidence of a positive relationship between EPL and the rate of self-employment quickly disappears when we allow for the presence of country-specific fixed effects, as shown in the second column of the Table. Similar results emerge from a random effects specification, and from models with the log of the self-employment rate as the dependent variable.[11]

Does the introduction of other potential explanatory variables for the rate of self-employment alter the findings? To investigate this, we introduce into the analysis a set of explanatory variables that have been found in other studies to have a significant effect on cross-national variations in the rate of self-employment. These are: the level of GDP per capita; the rate of female labour force participation; the average rate of income tax; payroll taxes; and the unemployment benefit replacement ratio. The first of these variables has been found by Acs, Audretsch and Evans (1994) to have a significant negative effect on the rate of non-agricultural self-employment in the OECD. The explanation for this, following the analysis of Lucas (1978), is that a rise in the level of GDP per capita is associated with a decline in the returns to self-employment relative to those from waged employment. Acs et al. also find that the rate of self-employment is positively related to the rate of unemployment

[10] We exclude the agricultural sector, as self-employment in this sector is likely to be heavily influenced by historically and culturally determined traditions of family-based ownership.

[11] Hausman test results indicate that the fixed effects specification is superior to the random effects one. These results are available from the author, on request.

and the rate of female labour force participation, though the former appears significant only in a bivariate context.[12]

A number of studies find evidence of a link between income tax rates and the rate of self-employment (e.g. Blau, 1987; Robson, 1998; Parker and Robson, 2000; Bruce, 2000; Schuetze, 2000). Robson and Wren (1999) show that it is important to distinguish between the effects of changes in the marginal rate of income tax and changes in the average rate of tax. Using data for 15 OECD countries, they find that the former have a negative effect on the rate of self-employment while the latter have a positive effect. Unfortunately, for this study we do not have data for the marginal rate of income tax and so only the average rate of income tax is included.

We measure the rate of payroll tax using the average rate of employers' social security contributions. This is included as a control variable in the regressions on the grounds that in the absence of perfect tax shifting, a high rate of employers' social security contributions may motivate employers to use self-employed contractors as a means of reducing the cost of labour. In support of this hypothesis, OECD (1992) reports a correlation of 0.7 between the rate of employers' social security contributions and the rate of self-employment in a cross-section of OECD countries.

Finally, the benefit replacement ratio is included on the grounds that a high ratio of benefits to earnings may discourage the unemployed from setting up in business. Moreover, as self-employed workers often do not enjoy the same entitlement to benefits as those in waged employment, a high replacement ratio may also deter some workers from leaving paid-

[12] A positive relationship between self-employment and the rate of unemployment is also reported in the cross-country study carried out by Staber and Bogenhold (1993). However, Blanchflower (2000) reports a negative relationship between self-employment and unemployment for most of the countries in his data sample.

employment for self-employment for fear of losing their access to benefits. Both Staber and Bogenhold (1993) and Parker and Robson (2000) report evidence of a negative relationship between the replacement ratio and the rate of self-employment in the OECD.

In keeping with the previous analysis, the additional explanatory variables are entered in the form of five-year averages. The results are reported in the third column of Table III. They show significant positive effects on the rate of non-agricultural self-employment from the rate of unemployment and the payroll tax rate and a significant negative effect from the average rate of income tax. None of the other additional explanatory variables is statistically significant. Most importantly for the current analysis, the results show that the addition of these extra variables fails to restore the initial finding of a positive relationship between the strictness of EPL and the rate of non-agricultural self-employment.[13] Instead, they suggest that an increase in the strictness of employment protection legislation may, if anything, lead to a reduction in the rate of self-employment, other things equal. An explanation for this may be that workers are deterred from entering self-employment through fear that strict regulations on hiring and firing may prevent them from making a speedy return to waged-employment in the event of business failure. Alternatively, it may be that tighter job security regulations discourage entry into self-employment by those who themselves expect to become employers. Finally, it may be that the co-existence of a high level of employment protection legislation and a low rate of self-employment in certain countries is symptomatic of a general aversion to employment instability amongst members of the country's workforce. Individuals who are risk averse may be unwilling to enter self-employment and more inclined to support the introduction of government measures to restrict the flexibility of employment contracts.

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[13] Missing observations on some of the additional explanatory variables mean that the sample size in this regression is reduced to 68. In particular, we have no observations for Ireland or Norway, as the payroll tax data is unavailable for these countries.

The Relationship Between Self-employment and the Individual Components of EPL

In this second strand of the analysis, we use the data from OECD (1999) - as reported in Table II – on the constituent components of EPL. Specifically, we examine the effects on self-employment of regulations relating to regular employment contracts and regulations governing the use of temporary employment. Compared with the previous analysis using the Blanchard and Wolfers summary measure of the overall strictness of EPL, we have data on a slightly larger range of countries – including Austria, Belgium, Denmark, Germany, Greece, and Portugal, but excluding Japan – but only two time periods: the late 1980s and the mid-1990s.

As a first step, we again perform a simple fixed effects regression of the relationship between the overall indicator of the strictness of EPL and the rate of non-agricultural self-employment using the new data set.[14] The results are reported in the first column of Table IV and indicate strongly the presence of a negative, rather than a positive, relationship between the strictness of EPL and the rate of self-employment. The results reported in the second column of Table IV indicate that, in particular, it is the presence of strict regulations on the use of temporary employment contracts that is associated with a reduction in the rate of self-employment.

In the third and fourth columns of the Table, we investigate the effects of introducing additional explanatory variables into the analysis. The third column introduces the full set of explanatory variables used in the earlier analysis of the Blanchard and Wolfers measure of EPL. The results are quite poor in the sense that none of the additional explanatory variables

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[14] A qualitatively similar result is obtained with a random effects specification. However, the result of a Hausman test indicates that the random effects specification is decisively rejected in favour of fixed effects.

attains statistical significance. Further analysis indicates that this may be due to the presence of multicollinearity amongst the explanatory variables.[15] As a result of this, in the final column, we report the results of a fixed effects regression in which the log of real GDP per capita is included as the sole additional explanatory variable. The picture remains the same: we find no evidence of a positive relationship between the strictness of EPL in a country and the rate of self-employment. If anything, the opposite seems to be true: i.e. stricter employment protection legislation reduces the incidence of self-employment.

Comparison with the Results of Previous Studies

How can we reconcile these results with those of previous studies, which as we have seen, have found evidence of a positive relationship between the strictness of EPL and the incidence of self-employment in OECD countries? In particular, how can we reconcile the results with those from OECD (1999), which used a data sample very similar to that used in the second part of our analysis? The answer seems to lie with the definition of the dependent variable that is used. The analysis reported in OECD (1999) is based on a definition of the dependent variable that includes the agricultural sector. The specific variable used is the share of self-employment in total employment. Table V shows the results when we repeat the second part of our analysis above, using this definition of the dependent variable instead of the rate of non-agricultural self-employment. The evidence for a positive relationship between the strictness of EPL and self-employment is restored, though it is specifically the strictness of regulations governing regular employment contracts that seems to matter.

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[15] Regressing the explanatory variables on one another, leads to R^2 values mostly in the range 0.5 – 0.7. The highest value, 0.72, is obtained when EPL is regressed on the additional explanatory variables. The coefficients in this regression equation suggest that the strictness of employment protection legislation is most closely related to the rate of payroll tax and the log of per capita GDP.

We suggested earlier that there are likely to be particular factors that influence the incidence of self-employment in the agricultural sector. In particular, there seems little reason to suppose that the high rates of self-employment that are traditionally observed in this sector can be substantially explained by the effects of employment protection legislation. We would therefore suggest that it is the regression results reported in Tables III and IV that are most likely to reflect the true relationship between the strictness of EPL and the rate of self-employment in OECD economies. At the very least, the results of this study suggest that the evidence for a positive relationship between the strictness of EPL and the incidence of self-employment rests on rather flimsy empirical foundations.[16]

[16] One possible explanation for our inability to find robust evidence of a positive relationship between the strictness of EPL and the incidence of self-employment may be the existence of measurement error in the dependent variable. The OECD data on self-employment that are used in this study are drawn from the results of national labour force surveys. In these surveys the classification of a worker as self-employed or an employee is based on the respondent's own perception of their employment status. As is noted in the text, firms may respond to an increase in the strictness of EPL by moving some of their workers from employment contracts to self-employed contractor status. However, the worker – particularly if he or she continues to provide labour services solely to their previous employer – may be unaware of the change in their status. Note, however, that the existence of this kind of 'false' self-employment cannot explain the discrepancy between the results of this study and those of previous analyses as these too use OECD data in the construction of the dependent variable.

4. Conclusions

Analysis reported in OECD (1999) and other studies finds evidence of a positive relationship between the strictness of employment protection legislation and the incidence of self-employment in OECD member states. In particular, in OECD (1999) it is found that increases in the strictness of regulations relating to regular employment contracts appear to lead to an increase in the share of self-employment in total employment. These findings suggest that employers may use self-employed labour as a means of circumventing the restrictions imposed on their ability to hire and fire employees.

In this study, we have undertaken a further investigation of the relationship between the strictness of employment protection legislation and the incidence of self-employment in the OECD. Using a panel data set for 13 OECD countries covering the period from the mid-1960s to the mid-1990s, we have found that the evidence for a positive relationship between EPL and self-employment disappears when allowance is made for the presence of country-specific fixed effects.[17] Subsequently, we have shown that the findings concerning the relationship between the individual components of EPL and the incidence of self-employment are sensitive to whether or not the agricultural sector is included in the definition of the dependent variable.

On the basis of this analysis, we conclude that the findings of a positive relationship between EPL and self-employment reported in previous studies are non-robust. Contrary to the suggestion of these studies, there appears to be only very limited evidence to support the notion that stricter employment protection legislation promotes self-employment. As in

[17] These fixed effects may capture differences between countries in the measurement of self-employment, in particular the treatment of owner-managers of incorporated businesses (see the Appendix to OECD, 1992, for a detailed discussion of measurement issues). Alternatively, they may reflect differences between countries in the latent capacity for entrepreneurship (Blanchflower, Oswald and Stutzer, 2001).

previous studies of this issue, the relatively small sample sizes of the available data temper the conclusions that may be drawn from the analysis and should be borne in mind when interpreting the results. Nonetheless, it seems unlikely on the basis of the findings we have reported that attempts by employers to circumvent the restrictions that EPL imposes on their ability to hire and fire labour can account for the increases in self-employment that have recently been experienced in a number of OECD countries.

Table I. The Blanchard and Wolfers Index of the Strictness of Employment Protection Legislation (Selected Values)

Country	*1965-9*	*1985-9*	*1995-7*
Australia	1	1	1
Canada	0.6	0.6	0.6
Finland	2.4	2.4	2.1
France	1.02	2.6	3.1
Ireland	0.25	1	1.1
Italy	4	4	3.4
Japan	2.8	2.8	2.8
Netherlands	2.7	2.7	2.4
Norway	3.1	3.1	2.7
Spain	4	3.8	3.1
Sweden	0	3.6	2.4
United Kingdom	0.33	0.7	0.7
USA	0.2	0.2	0.2

Source: Appendix to Blanchard and Wolfers (2000), available at http://web.mit.edu/blanchar/www/articles.html

Table II. OECD Summary Indicators of the Strictness of Employment Protection Legislation

	Overall EPL Strictness		Regular Employment		Temporary Employment		Collective Dismissals[a]
	Late 1980s	Mid 1990s[b]	Late 1980s	Mid 1990s[b]	Late 1980s	Mid 1990s[b]	Mid 1990s[b]
Australia	0.9	0.9	1.0	1.0	0.9	0.9	2.6
Austria	2.2	2.2	2.6	2.6	1.8	1.8	3.3
Belgium	3.1	2.1	1.5	1.5	4.6	2.8	4.1
Canada	0.6	0.6	0.9	0.9	0.3	0.3	3.4
Denmark	2.1	1.2	1.6	1.6	2.6	0.9	3.1
Finland	2.3	2.0	2.7	2.1	1.9	1.9	2.4
France	2.7	3.0	2.3	2.3	3.1	3.6	2.1
Germany	3.2	2.5	2.7	2.8	3.8	2.3	3.1
Greece	3.6	3.6	2.5	2.4	4.8	4.8	3.3
Ireland	0.9	0.9	1.6	1.6	0.3	0.3	2.1
Italy	4.1	3.3	2.8	2.8	5.4	3.8	4.1
Netherlands	2.7	2.1	3.1	3.1	2.4	1.2	2.8
Norway	3.0	2.6	2.4	2.4	3.5	2.8	2.8
Portugal	4.1	3.7	4.8	4.3	3.4	3.0	3.6
Spain	3.7	3.8	3.9	2.6	3.5	3.5	3.1
Sweden	3.5	2.2	2.8	2.8	4.1	1.6	4.5
UK	0.5	0.5	0.8	0.8	0.3	0.3	2.9
USA	0.2	0.2	0.2	0.2	0.3	0.3	2.9

Source: OECD (1999), Table 2.5.

Notes:

[a] Information on the strictness of regulations governing collective dismissals is only available for the mid 1990s. For consistency, this information is therefore omitted from the calculations for the figures for the overall strictness of EPL for this period. An alternative summary indicator of the strictness of EPL in the late 1990s, that includes information on the strictness of regulations relating to collective dismissals, is reported in OECD (1999).

[b] OECD (1999) refers to this period as the 'Late 1990s', but as the data relate to the years 1995-7, the term 'Mid 1990s' seems more appropriate.

Table III. The Relationship Between Self-employment and the Strictness of Employment Protection Legislation (Blanchard and Wolfers Index)

The dependent variable is the rate of non-agricultural self-employment

	OLS	Fixed Effects	Fixed Effects
Blanchard & Wolfers EPL Index	1.622	- 0.471	- 0.744
	(5.28)	(1.21)	(1.61)
ln [GDP per capita]			- 1.729
			(1.08)
Unemployment rate			0.214
			(2.27)
Female participation rate			0.027
			(0.89)
Income tax rate			- 0.228
			(3.30)
Payroll tax rate			0.195
			(2.46)
Benefit replacement ratio			0.023
			(0.43)
R^2	0.24	0.88	0.95
F-test of significance of fixed effects		32.9 [p = 0.00]	8.5 [p = 0.00]
No. of observations.	88	88	68

Notes:
1. t-ratios in parentheses.
2. Intercept terms included but not reported.

See text and Data Appendix for variable definitions and data sources.

Table IV. The Relationship Between Self-employment and the OECD Indicators of the Strictness of Employment Protection Legislation

The dependent variable is the rate of non-agricultural self-employment

	(1)	*(2)*	*(3)*	*(4)*
Overall EPL	- 1.125			
	(3.07)			
Regular Employment EPL		- 0.694	- 0.736	- 0.322
		(1.05)	(0.73)	(0.46)
Temporary Employment EPL		- 0.496	- 0.398	- 0.368
		(2.18)	(1.16)	(1.52)
ln [GDP per capita]			- 0.242	2.430
			(0.04)	(1.34)
Unemployment rate			- 0.036	
			(0.32)	
Female participation rate			0.053	
			(0.39)	
Income tax rate			- 0.124	
			(0.92)	
Payroll tax rate			0.024	
			(0.27)	
Benefit replacement ratio			- 0.022	
			(0.61)	
R^2	0.36	0.29	0.48	0.37
F-test of significance of fixed effects	106.7 [p = 0.00]	81.0 [p = 0.00]	19.7 [p = 0.00]	29.3 [p = 0.00]

Fixed effects estimation; t-ratios in parentheses.

Number of observations = 36

Intercept terms not reported.

Table V. Regressions on OECD Indicators of the Strictness of EPL with the Share of Self-employment in Total Employment as the Dependent Variable

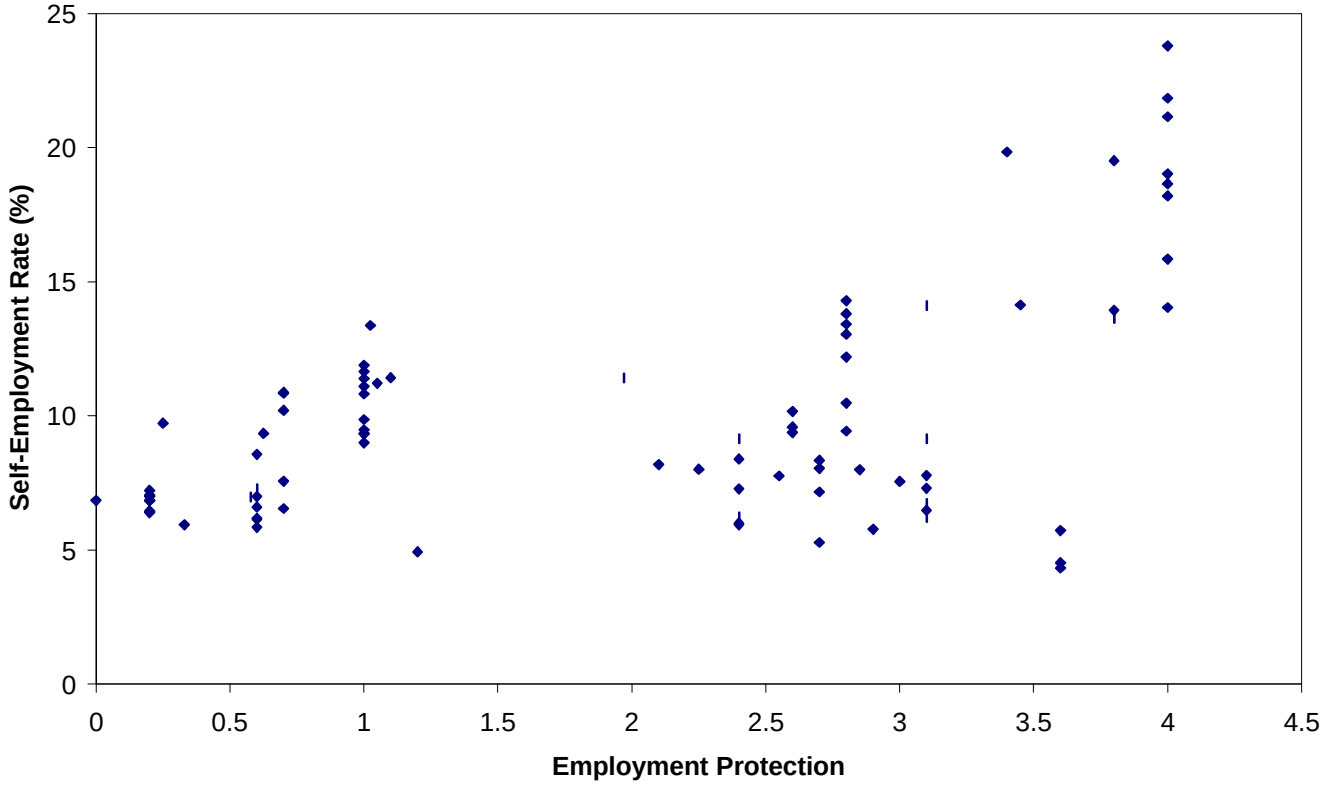
	(1)	*(2)*	*(3)*	*(4)*
Overall EPL	0.961			
	(1.14)			
Regular Employment EPL		3.966	2.547	2.798
		(3.64)	(1.79)	(2.96)
Temporary Employment EPL		0.021	- 0.569	- 0.380
		(0.06)	(1.19)	(1.16)
ln [GDP per capita]			- 8.360	- 7.644
			(1.09)	(3.11)
Unemployment rate			- 0.027	
			(0.17)	
Female participation rate			0.014	
			(0.07)	
Income tax rate			- 0.005	
			(0.02)	
Payroll tax rate			- 0.003	
			(0.03)	
Benefit replacement ratio			- 0.042	
			(0.83)	
R^2	0.07	0.47	0.72	0.69
F-test of significance of fixed effects	82.3 [p = 0.00]	126.1 [p = 0.00]	38.7 [p = 0.00]	68.2 [p = 0.00]

Fixed effects estimation; t-ratios in parentheses.

Number of observations = 36

Intercept terms not reported.

Figure I. The Relationship Between the Rate of Non-agricultural Self-employment and the Blanchard and Wolfers Index of EPL



Sources: see text and Data Appendix

Data Appendix

First Data Set

As indicated in the text, in the part of the analysis we use average data on 13 countries for seven time periods: 1965-69, 1970-4, 1975-9, 1980-4, 1985-9, 1990-4, and 1995-7. The countries included in the sample are: Australia, Canada, Finland, France, Ireland, Italy, Japan, Norway, Spain, Sweden, United Kingdom, and USA.

Blanchard and Wolfers EPL Index

See the Appendix to Blanchard and Wolfers (2000) for details of the construction of the index. The Appendix and data are available from Olivier Blanchard's home page, http://web.mit.edu/blanchar/www/articles.html

Rate of Non-agricultural Self-employment

Non-agricultural self-employment as a percentage of total civilian non-agricultural employment (employees plus self-employed) plus unemployment. Source *OECD Labour Force Statistics*.

Real GDP per Capita

GDP per capita in US dollars at 1990 prices and exchange rates. Source: *OECD National Accounts*.

Unemployment Rate

Unemployed as a percentage of the labour force. Source: *OECD Labour Force Statistics*.

Female Labour Force Participation Rate

Total female labour force as a percentage of the female population aged 15-64. Source: *OECD Labour Force Statistics*.

Average Rate of Income Tax

Income tax payments plus employees' social security contributions as a percentage of wages and salaries plus the operating surplus of unincorporated enterprises plus property income. Sources: tables of the income and outlay accounts of households and unincorporated enterprises in *OECD National Accounts Statistics* and *UN National Accounts Statistics*.

Payroll Tax Rate

Employers' contributions to social security as a percentage of wages and salaries. Sources: income and outlay accounts of households and unincorporated enterprises in *OECD National Accounts Statistics* and *UN National Accounts Statistics*.

Replacement Ratio

Overall average of gross replacement ratios for three types of families (single person, married person with dependent spouse, married person with spouse in work) and two earnings levels (average earnings and 66.7 per cent average earnings. Source: *OECD Database of Benefit Entitlements and Gross Replacement Rates*. Data kindly supplied by John Evans of the OECD.

Second Data Set

Except where stated, the data are six-year averages for the years 1985-90 and 1992-7. The 18 countries included in the sample are: Austria, Belgium, France, Germany, Ireland, Netherlands, United Kingdom, Greece, Italy, Portugal, Spain, Denmark, Finland, Norway, Sweden, Canada, USA, and Australia. For the most part, the variable definitions and data sources are the same as those for the first data set. The exceptions are listed below.

OECD Summary Indicators of the Strictness of EPL

Source: OECD (1999), which contains a detailed discussion of the construction of the indicators and the data sources from which they are compiled.

Average Rate of Income Tax

Average rate of income tax (%) for single person with no children, earning the average production worker's wage. The data are averages of observations for 1985, 1987, 1989, and 1994-6, respectively. Calculated from data provided by John Evans of the OECD.

Payroll Tax Rate

Ratio of employers' social security contributions to earnings of average production worker (%). The data are averages of observations for 1985, 1987, 1989, and 1994-6, respectively. Calculated from data provided by John Evans of the OECD.

Share of Self-employment in Total Employment

Calculated from data kindly supplied by Paula Adams of the OECD.

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