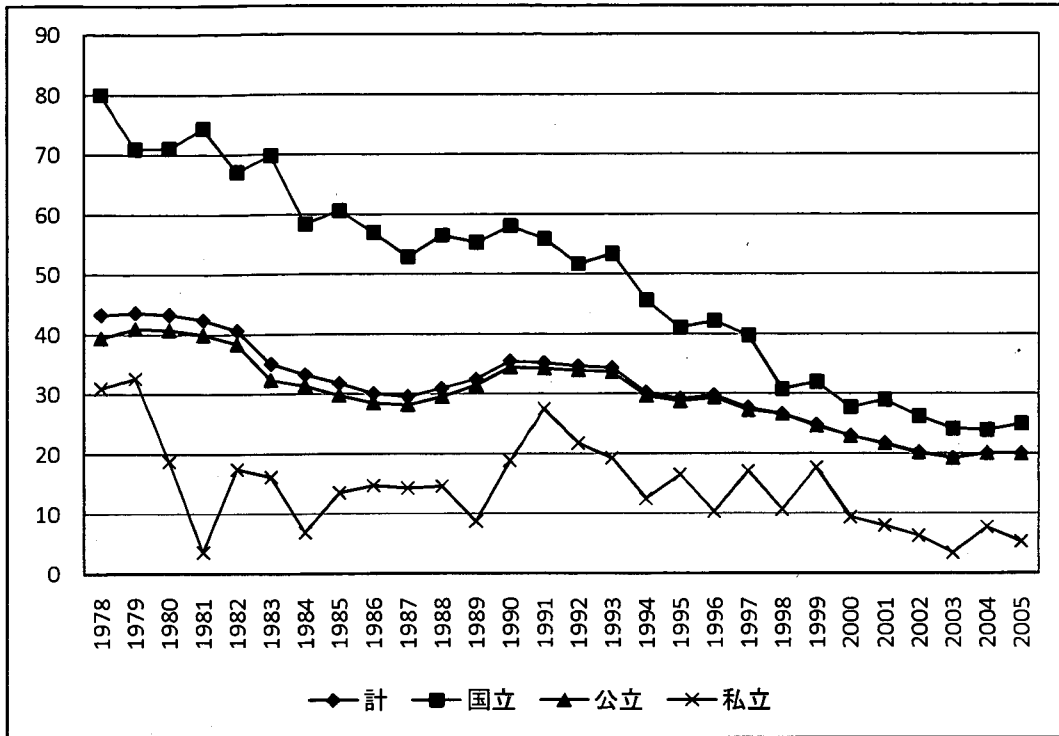


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図1 養護学校高等部の就職率の推移



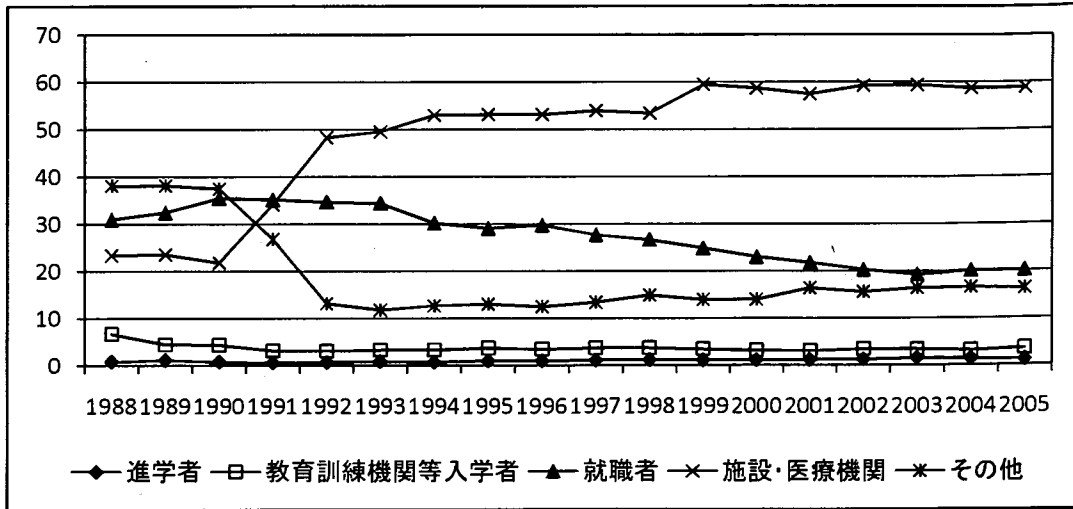
注: 男女計の全国平均を指す。

注: 就職は一般就労を指す。

注: 『学校基本調査』より作成した。

図2 養護学校の高等部の学生の進路状況

養護学校



知的障害養護学校

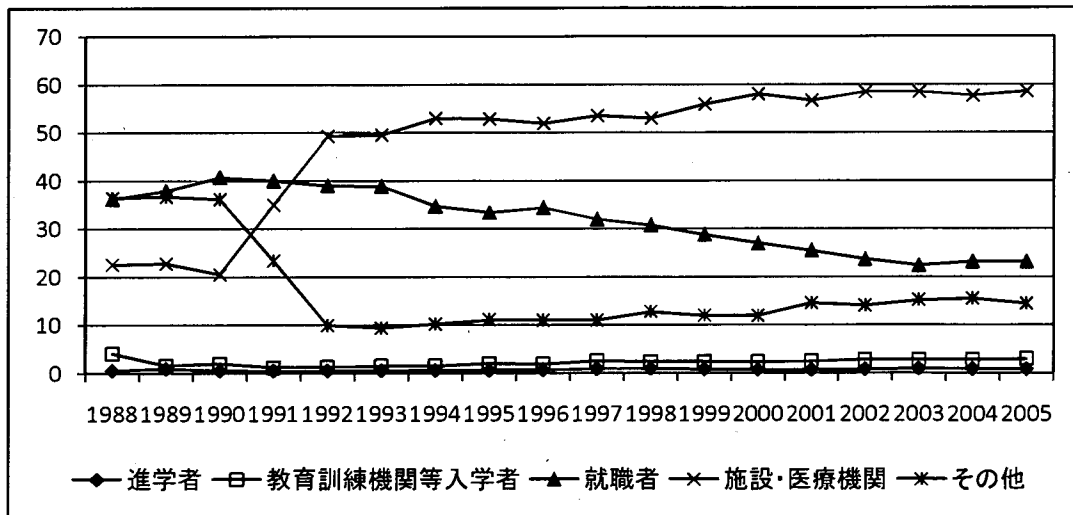
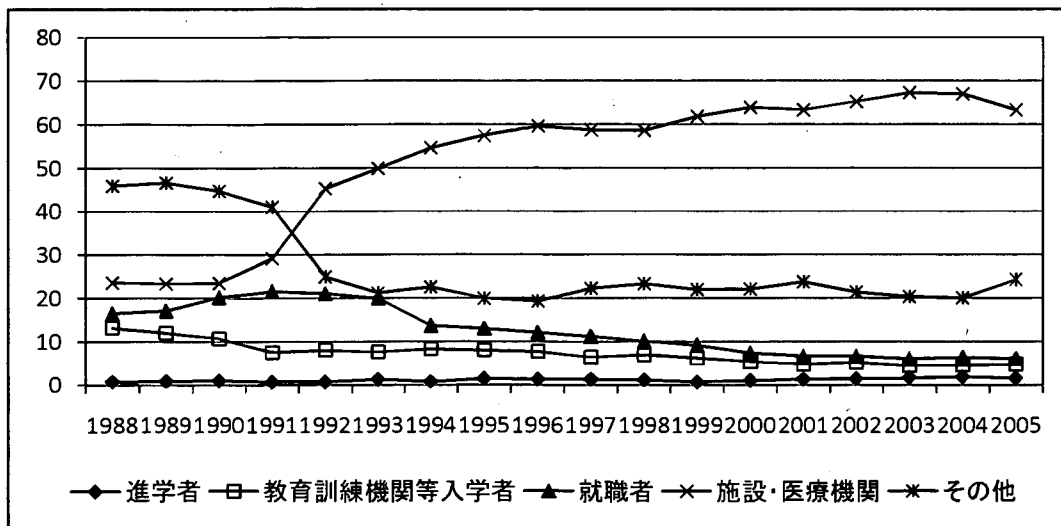
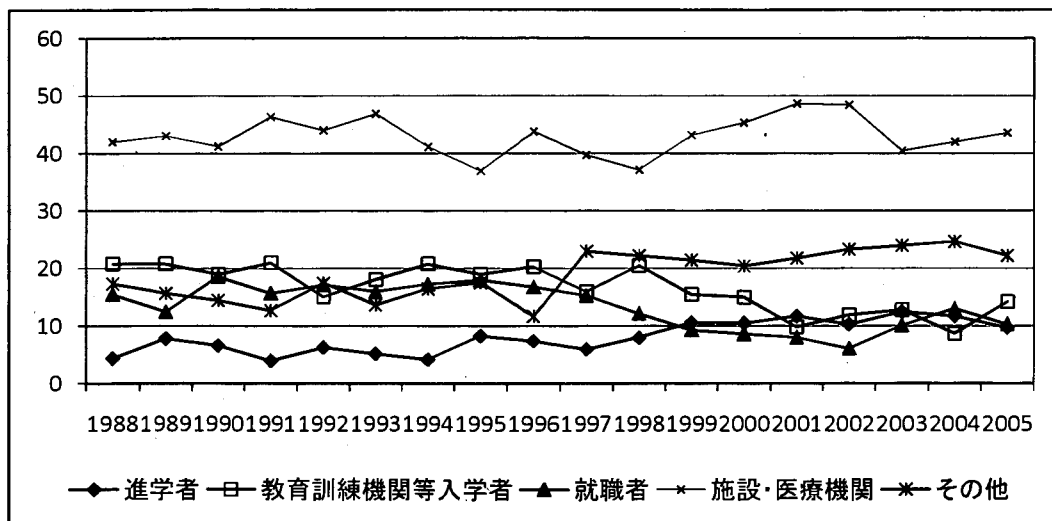


図2 養護学校の高等部の学生の進路状況(つづき)

肢体不自由養護学校



病弱養護学校



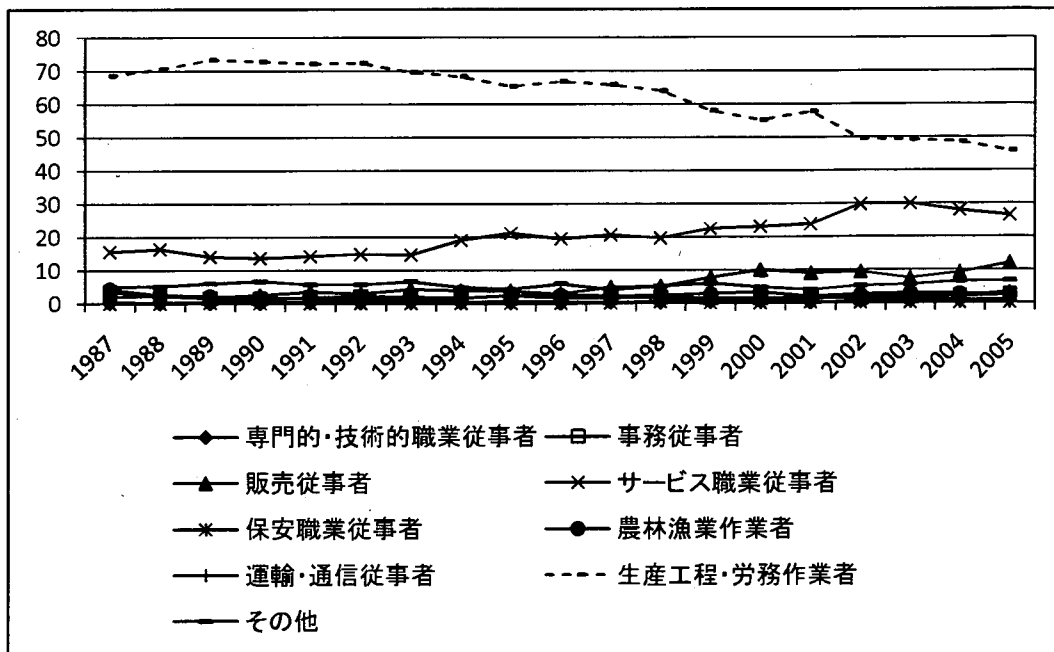
注:『特殊教育資料』『特別支援教育資料』より作成した。

注:就職者の就職先は一般就労を指す。

注:施設・医療機関の施設は社会福祉施設を指す。授産施設などでの福祉的就労が含まれる。

図3 就業先の変遷

養護学校



知的障害養護学校

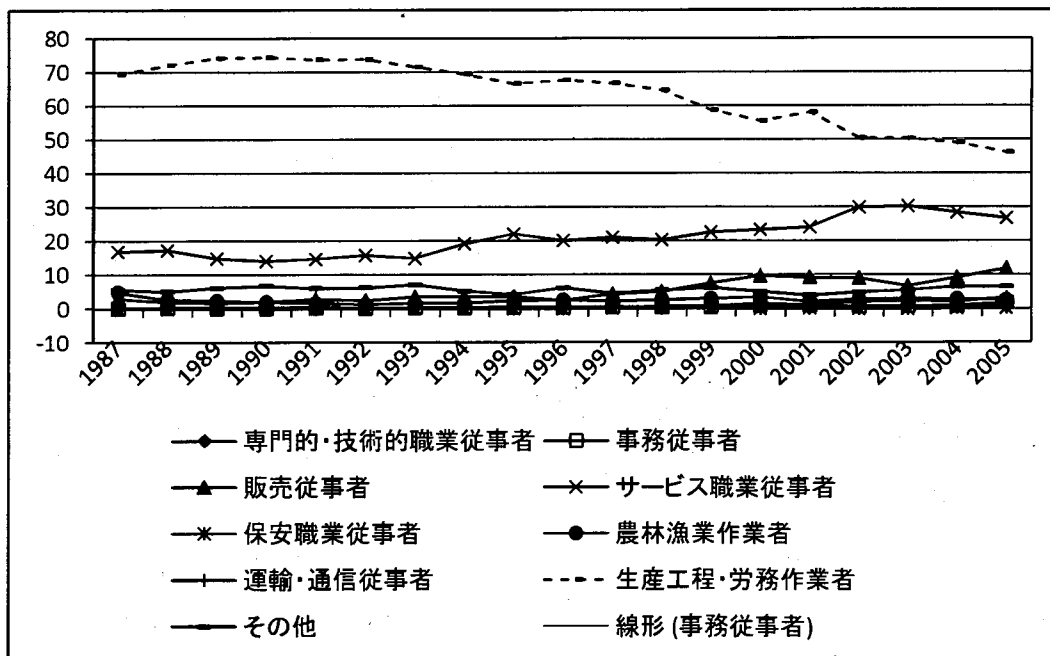
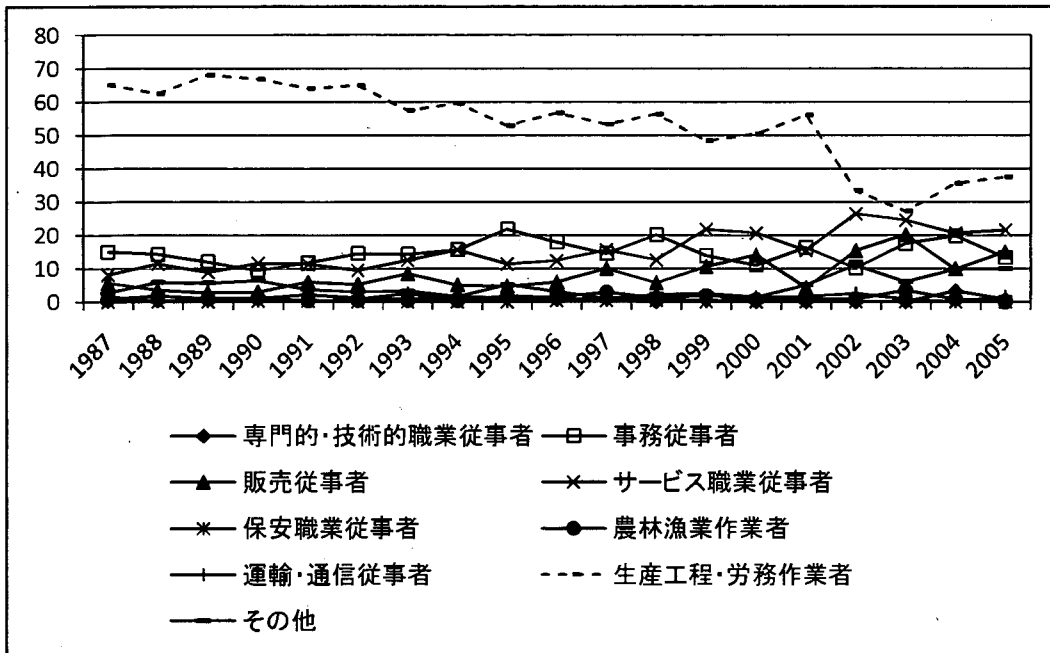
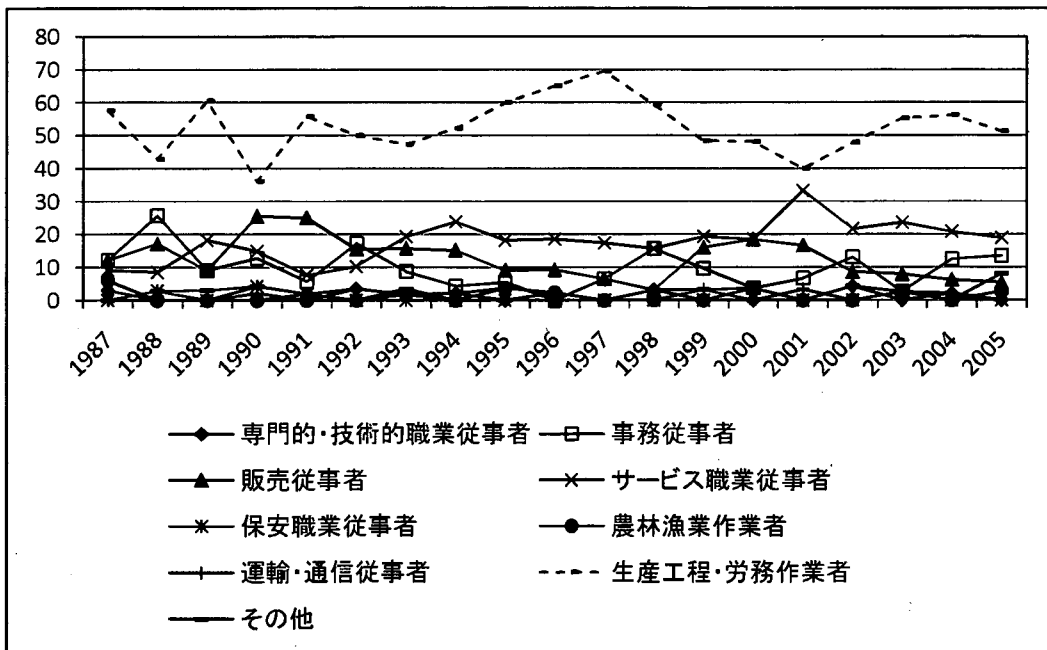


図3 就業先の変遷(つづき)

肢体不自由養護学校



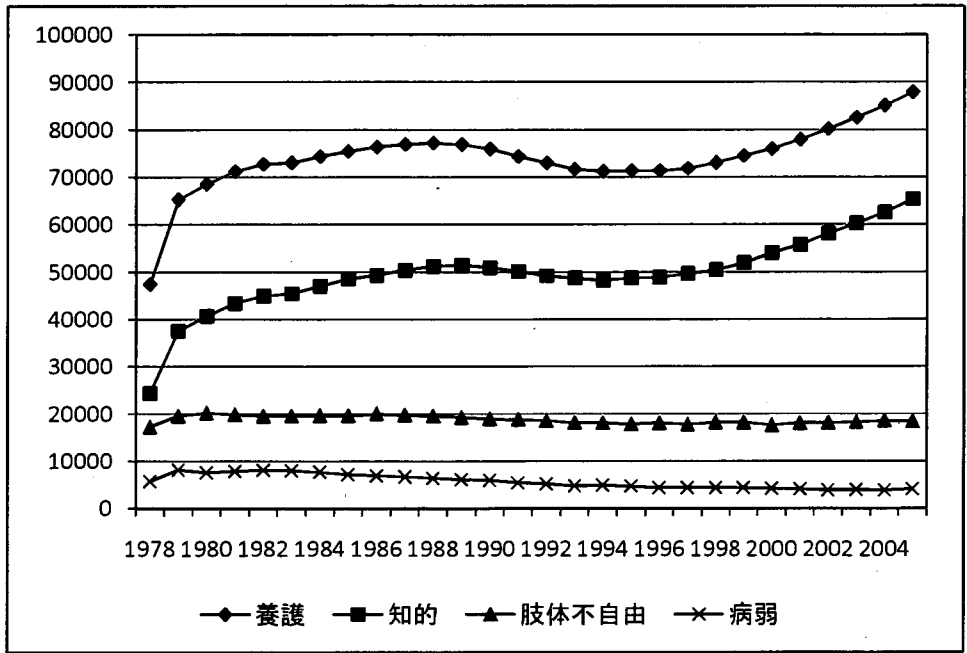
病弱養護学校



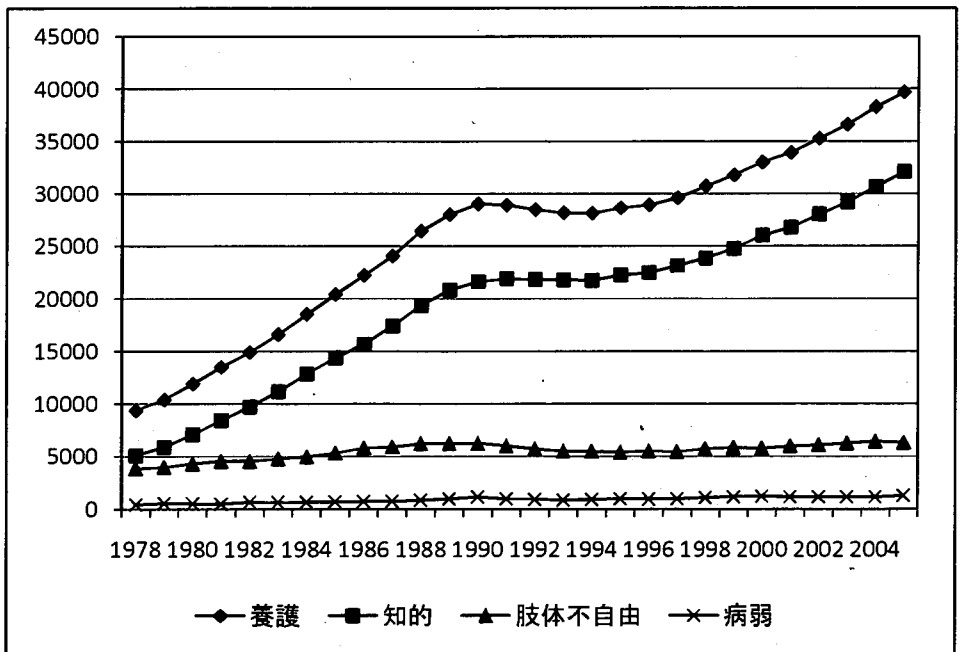
注:『特殊教育資料』『特別支援教育資料』より作成した。
注:それぞれの高等部(本科)就職者の就職先の割合を表している。

図4 障害種別でみた生徒数の変遷

合計



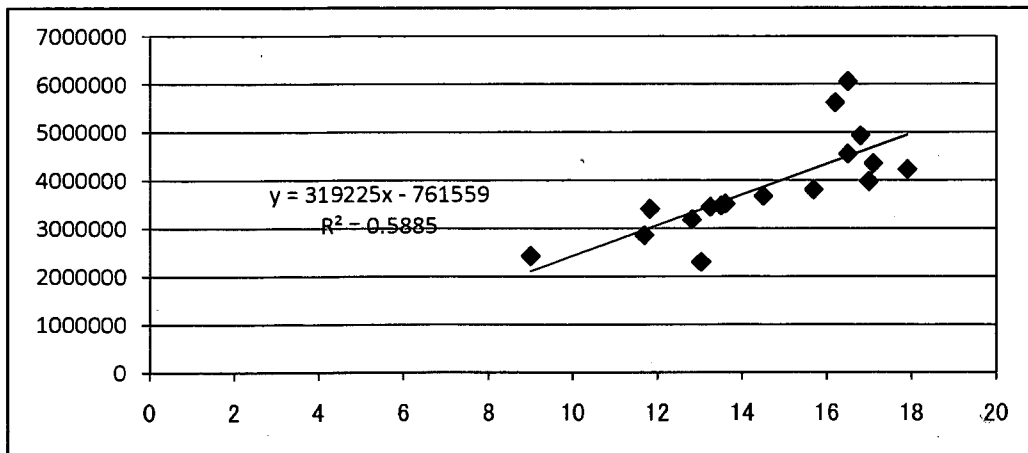
高等部



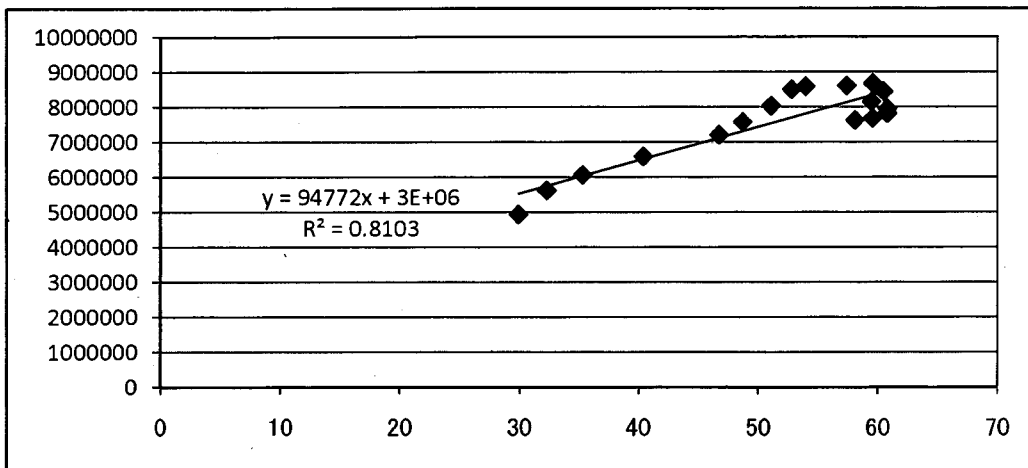
注:『学校基本調査』より作成した。

図5 重度在籍者率と(公立)1人当たり特殊学校費

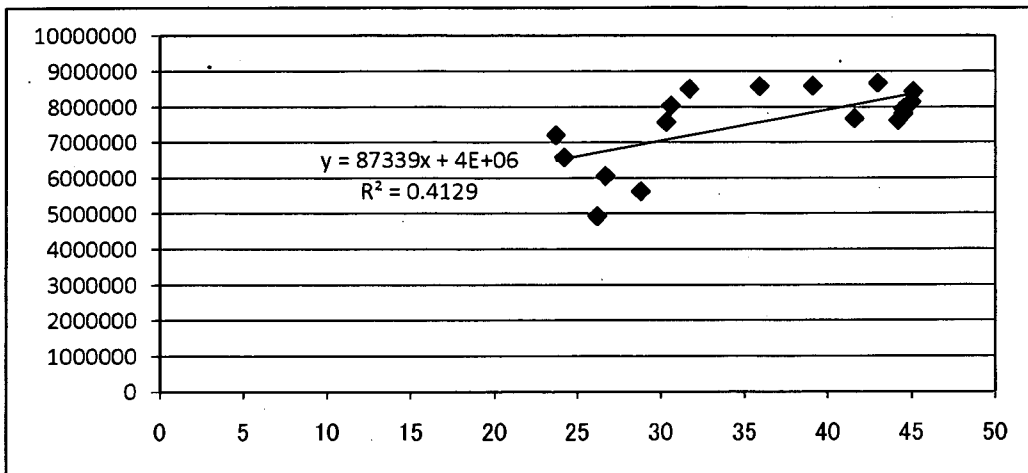
知的障害養護学校



肢体不自由養護学校



病弱養護学校



注:『特殊教育資料』『特別支援教育資料』より作成した。
注:1989年から2005年までの全国データによる。

表1 使用する変数

被説明変数	データ	出所	利用可能期間
就職率	都道府県別 公立 養護学校 高等部 就職率 男女計 (%)	学校基本調査	1975年～2005年
説明変数	データ	出所	利用可能期間
①産業構造の変化	産業分類別 従業者割合 都道府県別 第一次産業 従業者割合 (%) 都道府県別 第二次産業 従業者割合 (%) 都道府県別 第三次産業 従業者割合 (%) 都道府県別 新規学卒者有効求人倍率 新規学卒者人数(高校) / 新規学卒者数(高校)	『事業所・企業統計調査』	1975年～2005年
②景気動向・労働需要	新規学卒者人数(高校) / 新規学卒者数(高校)	『新規学卒者の労働市場』	1975年～2005年
③障害の種類の変化	都道府県別 障害種別割合(知的障害・肢体不自由・病弱) (知的障害養護学校高等部在籍者数 / 養護学校高等部在籍者数) × 100 (%) (肢体不自由障害養護学校高等部在籍者数 / 養護学校高等部在籍者数) × 100 (%) (病弱養護学校高等部在籍者数 / 養護学校高等部在籍者数) × 100 (%)	『特殊教育資料』 『特別支援教育資料』	1978年～2005年
④障害の重度化・重複化	盲・聾・養護学校生徒数(公立)1人当たりの特殊学校費 特殊学校費 / 盲・聾・養護学校生徒数(公立) (円)	『地方財政統計年報』 『都道府県決算状況調』 『学校基本調査』	1975年～2005年
⑤制度・行政へのフリーライド	人口1人当たりの社会福祉費 社会福祉費 / 人口総数 (円)	『地方財政統計年報』 『都道府県決算状況調』 『国勢調査報告』 『推計人口』	1975年～2005年
⑥職業訓練	財政力指数 15歳以上人口1人当たりの職業訓練費 職業訓練費 / 15歳以上人口 (円)	『地方財政統計年報』 『都道府県決算状況調』 『地方財政統計年報』 『都道府県決算状況調』 『国勢調査報告』 『推計人口』	1975年～2005年
⑦アファーマティブアクション	18歳未満 療育手帳・療養手帳交付数 18歳未満 身体障害者手帳交付数	『社会福祉行政業務報告』 『社会福祉行政業務報告』	1984年～2005年 1975年～2005年

表2 基本統計量

変数	標本数	平均	標準偏差	最小	最大
就職率(男女計)	1316	32.50	13.86	0	77.80
第一次産業従事者割合	1316	0.69	0.53	0.02	2.40
第二次産業従事者割合	1316	32.36	6.47	13.62	46.68
新規学卒者有効求人倍率	1316	1.63	0.97	0.16	10.21
知的障害割合	1316	68.45	19.67	0	93.72
肢体不自由割合	1316	26.67	18.84	0	100
盲・聾・養護学校生徒数(公立)1人当たりの特殊学校	1316	6388534	2516163	2105967	16500000
人口1人当たりの社会福祉費	1316	6694.60	3296.66	1370.64	25447.02
財力指数	1316	0.47	0.22	0.20	1.64
15歳以上人口1人当たりの職業訓練費	1316	1094.78	633.60	294.16	5421.40
身体障害者手帳交付数(18歳未満)	1316	2481.11	3462.60	413	23758
療育手帳交付数(18歳未満)	1034	2230.56	2134.31	398	21711

表3 推定結果(1978年～2005年)

推定期間 1978年～2005年	最小二乗法				固定効果モデル				変量効果モデル			
	係数	t値	P値		係数	t値	P値		係数	t値	P値	
被説明変数: 就職率(男女計)												
第一次産業従事者割合	1.5194	1.87	0.062 c		8.2247	4.09	0.000 a		5.4625	3.63	0.000 a	
第二次産業従事者割合	0.6205	8.55	0.000 a		1.9506	12.91	0.000 a		1.4655	11.85	0.000 a	
新規学卒者有効求人倍率	5.7507	10.13	0.000 a		4.4253	7.70	0.000 a		4.6886	8.38	0.000 a	
知的障害割合	0.2155	4.20	0.000 a		0.1369	2.35	0.019 b		0.1274	2.24	0.025 b	
肢体不自由割合	0.1439	2.75	0.006 a		0.0836	1.44	0.149		0.0776	1.37	0.171	
盲・聾・養護学校生徒数(公立)1人当たりの特殊学校費	0.0000	-10.35	0.000 a		0.0000	-3.66	0.000 a		0.0000	-5.60	0.000 a	
人口1人当たりの社会福祉費	-0.0005	-3.68	0.000 a		0.0002	0.97	0.330		-0.0001	-0.46	0.645	
財政力指数	-29.7198	-9.02	0.000 a		-33.6342	-5.58	0.000 a		-30.0061	-6.10	0.000 a	
15歳以上人口1人当たりの職業訓練費	0.0017	3.07	0.002 a		0.0005	1.02	0.308		0.0008	1.55	0.120	
身体障害者手帳交付数(18歳未満)	0.0004	2.19	0.028 a		0.0014	3.06	0.002 a		0.0013	4.08	0.000 a	
定数項	10.4798	1.77	0.077 c		-39.5021	-4.54	0.000 a		-19.1015	-2.41	0.016 b	
標本数	1316				1316				1316			
修正済みR2	0.3582											
R2 within					0.4304				0.4258			
R2 between					0.1853				0.2057			
R2 overall					0.2709				0.3110			
F検定					F(46, 1259)=14.72							
Breusch-Pagan Lagrangian multiplier検定					Prob>F=0.0000				chi2(1)=1299.36			
Hausman検定									Prob>chi2=0.0000			
									chi2(6)=38.51			
									Prob>chi2=0.0000			

注: aは1%有意水準、bは5%有意水準、cは10%有意水準。

注: F検定より、最小二乗法と固定効果モデルでは、固定効果モデルが採択される。

注: Breusch-Pagan Lagrangian multiplier検定より、最小二乗法と変量効果モデルでは、変量効果モデルが採択される。

注: Hausman検定より、固定効果モデルと変量効果モデルでは、固定効果モデルが採択される。

表4 推定結果(1984年~2005年)

推定期間	最小二乗法				固定効果モデル				変量効果モデル			
	係数	t値	P値		係数	t値	P値		係数	t値	P値	
被説明変数: 就職率(男女計)												
第一次産業従事者割合	0.9441	1.03	0.303		7.3295	3.32	0.001 a		5.3022	3.18	0.001 a	
第二次産業従事者割合	0.6780	9.09	0.000 a		2.0478	13.00	0.000 a		1.5311	12.13	0.000 a	
新規学卒者有効求人倍率	6.1888	11.36	0.000 a		4.7808	9.56	0.000 a		5.0592	10.31	0.000 a	
知的障害割合	0.2481	3.96	0.000 a		0.1778	2.69	0.007 a		0.1825	2.80	0.005 a	
肢体不自由割合	0.1683	2.39	0.017 b		0.1057	1.45	0.147		0.1334	1.86	0.063	
盲・聾・養護学校生徒数(公立)1人当たりの特殊学校費	0.0000	-7.09	0.000 a		0.0000	-0.93	0.354		0.0000	-2.42	0.016 b	
人口1人当たりの社会福祉費	-0.0004	-3.05	0.002 a		0.0001	0.59	0.553		-0.0001	-0.61	0.540	
財政力指数	-29.6064	-8.70	0.000 a		-29.5378	-5.08	0.000 a		-24.5653	-4.99	0.000 a	
15歳以上人口1人当たりの職業訓練費	0.0017	3.18	0.002 a		-0.0001	-0.29	0.768		0.0003	0.56	0.574	
身体障害者手帳交付数(18歳未満)	0.0004	2.16	0.031 b		0.0002	0.38	0.705		0.0009	2.71	0.007 a	
定数項	-0.4706	-0.07	0.947		-48.6712	-5.59	0.000 a		-33.4561	-4.04	0.000 a	
標本数	1034				1034				1034			
修正済みR2	0.3675											
R2 within					0.4466				0.4406			
R2 between					0.2096				0.2535			
R2 overall					0.2531				0.3168			
F検定												
Breusch-Pagan Lagrangian multiplier検定												
Hausman検定												

注: aは1%有意水準、bは5%有意水準、cは10%有意水準。

注: F検定より、最小二乗法と固定効果モデルでは、固定効果モデルが採択される。

注: Breusch-Pagan Lagrangian multiplier検定より、最小二乗法と変量効果モデルでは、変量効果モデルが採択される。

注: Hausman検定より、固定効果モデルと変量効果モデルでは、固定効果モデルが採択される。

表5 推定結果(1984年～2005年、療育手帳交付数を含む)

推定期間	最小二乗法				固定効果モデル				変量効果モデル			
	係数	t値	P値		係数	t値	P値		係数	t値	P値	
1984年～2005年												
被説明変数: 就職率(男女計)												
第一次産業従事者割合	0.9282	1.01	0.311		7.3745	3.34	0.001 a		5.1738	3.08	0.002 a	
第二次産業従事者割合	0.6819	9.15	0.000 a		2.0354	12.81	0.000 a		1.5113	11.62	0.000 a	
新規学卒者有効求人倍率	5.8792	10.44	0.000 a		4.7713	9.53	0.000 a		5.0163	10.18	0.000 a	
知的障害割合	0.2477	3.96	0.000 a		0.1794	2.71	0.007 a		0.1846	2.83	0.005 a	
肢体不自由割合	0.1576	2.23	0.026 b		0.1046	1.44	0.151		0.1334	1.86	0.062 c	
盲・聾・養護学校生徒数(公立)1人当たりの特殊学校費	0.0000	-7.09	0.000 a		0.0000	-1.03	0.302		0.0000	-2.49	0.013 b	
人口1人当たりの社会福祉費	-0.0005	-3.17	0.002 a		0.0001	0.61	0.543		-0.0001	-0.62	0.534	
財政力指数	-28.2965	-8.19	0.000 a		-30.3848	-5.08	0.000 a		-24.7199	-5.01	0.000 a	
15歳以上人口1人当たりの職業訓練費	0.0015	2.89	0.004 a		-0.0001	-0.32	0.748		0.0002	0.51	0.610	
身体障害者手帳交付数(18歳未満)	0.0008	3.02	0.003 a		0.0002	0.30	0.767		0.0010	2.83	0.005 a	
療育手帳交付数(18歳未満)	-0.0007	-2.12	0.034 b		-0.0002	-0.61	0.543		-0.0003	-0.85	0.398	
定数項	0.5415	0.08	0.939		-47.1474	-5.20	0.000 a		-32.1846	-3.80	0.000 a	
標本数	1034				1034				1034			
修正済みR2	0.3696											
R2 within					0.4468				0.4403			
R2 between					0.2022				0.2571			
R2 overall					0.2451				0.3201			
F検定					F(46, 976)=17.90							
					Prob>F=0.0000							
Breusch-Pagan Lagrangian multiplier検定									chi2(1)=1488.45			
									Prob>chi2=0.0000			
Hausman検定									chi2(6)=38.55			
									Prob>chi2=0.0000			

注: aは1%有意水準, bは5%有意水準, cは10%有意水準。
 注: F検定より、最小二乗法と固定効果モデルでは、固定効果モデルが採択される。
 注: Breusch-Pagan Lagrangian multiplier検定より、最小二乗法と変量効果モデルでは、変量効果モデルが採択される。
 注: Hausman検定より、固定効果モデルと変量効果モデルでは、固定効果モデルが採択される。

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Employment Protection Legislation and Incentives under
Wage Rigidity

by
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JAPAN

*Employment Protection Legislation and Incentives
under Wage Rigidity**

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Department of Social Systems and Management

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JEL Classification Numbers: J41, K31

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Employment Protection Legislation and Incentives under Wage Rigidity

Abstract

We consider the effects of employment protection legislation (EPL) on the incentives of workers and the labor market with search friction under the condition of wage rigidity. We deal with two types of EPL: severance pay and procedural inconvenience. The former is merely a transfer from a firm to the fired employee while the latter yields a social wasteful transaction cost. The difference between the two is crucial to the workers' incentives because severance pay is an earning for shirking employees. Although EPL appears to negatively affect the workers' incentives, EPL, especially procedural inconvenience, has positive effects on incentives. A sweeping relaxation in the provisions of EPL or a very stringent EPL discourages employees from working hard.

JEL Classification Numbers: J41, K31

Key words: Employment protection legislation, Incentives, Commitment, Severance pay, Procedural inconvenience, and Wage rigidity.

1. Introduction

Employment protection legislation (EPL) is often held responsible for negatively affecting the workers' incentives. According to the efficiency wage theory, the threat of dismissal and the gap in the earnings between the employed and the unemployed encourage workers to work hard. If shirking workers are unlikely to be fired due to provisions of the EPL, the EPL will negatively affect the incentives of the workers. This is a *disincentive effect* of the EPL. In fact, Ichino and Riphahn (2005) report that there is a negative effect on the incentives of workers covered by the EPL and that absenteeism is more likely among workers that are protected by EPL in Italy; the disincentive effect of EPL is an influential story.

On the other hand, the EPL also has a positive effect, denoted as a *commitment effect*. Even though an employee might work hard in uncertain situations, his/her performance or the state of affairs of his/her firm may be too poor to maintain the employer-employee relationship during downturns in the economy. Because a firm's decision on the dismissal of an employee tends to be based on *ex post* optimization, an excessive number of employees are likely to be fired from the *ex ante* viewpoint. In this situation, if the EPL deters a firm from firing employees, it plays a significant role as a commitment device for job security.¹

The EPL has another positive effect on the employee. When the wage received by an employee is inflexible and higher than the reservation wage in the outside labor market, as mentioned in the efficiency wage model, there is a greater probability of a firm firing the employee. If an employee is fired when his/her productivity is lower than that justified by his/her wage, the dismissal may be inefficient because the dismissal should be from the viewpoint of efficiency, only when his/her productivity is lower than the reservation wage in the outside labor market. Since an excessive number of workers are fired under wage rigidity without EPL, the presence of EPL may have a positive impact.

¹ The similarity of this with the hold-up problem lies in the fact that the employees do not get higher wages even if they make an effort to do so. As espoused by the incomplete contract theory, institutions play the role of commitment devices under contractual incompleteness. There are numerous studies on commitment devices, such as the financial debt theory of Aghion and Bolton (1992) and Dewatripont and Tirole (1994); the company split-up model of Cremer (1995); the delegation of authority of Aghion and Tirole (1997); the privatization model of Dewatripont and Maskin (1995), Schmidt (1997), and Qian and Xu (1998). Some studies show that unions work as commitment devices: Booth and Chatterji (1998) show that unions' bargaining power enhances skill formation and improves social welfare; Eguchi (2002) also points out the significance of unions as commitment devices for job security.

EPL has a negative disincentive effect and a positive commitment effect; therefore, it should be designed appropriately by considering the impact it will have on the incentives of workers. The goal of this paper is to consider the effects of the EPL on the incentives of workers and the labor markets with search friction. We can analyze the effects of EPL on wage, market tightness, likelihood of dismissal, unemployment rate, and welfare.

In this paper, EPL is categorized into severance pay (SP) and procedural inconvenience (PI). Although both these increase the cost of firing for a firm, SP is merely the transfer of money from a firm to a fired employee, while PI, for example, providing sufficient advance notice or negotiations with a union, leads to dead weight loss. This causes a significant difference in the incentives for workers because SP is an earning for a shirking employee and may cause further damage to the incentives of workers in contrast to the PI that does not accrue as an earning for a fired employee. Therefore, PI is less likely to have a negative effect on the incentives of workers than SP. Therefore, although PI generates dead weight loss, this is a merit of PI from the viewpoint of workers' incentives.

In this study, we use the efficiency wage model coupled with the orthodox matching technology of Mortensen and Pissarides. A numerical illustration is implemented to analyze the effects of EPL. According to our numerical illustration, [1] an increase in SP has a negative effect on the incentives of employees, and thus increases the cost of retaining a match. This induces firms to exit the market, resulting in reduced market tightness. As a result, workers are unlikely to find a new job after they are fired and will remain in the labor market for a long time. Therefore, the unemployment rate tends to increase with an increase in SP. However, there are times when the unemployment rate decreases with an increase in SP at the middle range of SP depending on the level of PI. [2] PI does not have a big impact when the amount of SP is small or large. In contrast, when SP is in the middle range, PI intensifies the commitment effect and encourages workers to work hard. A firm can provide credible job security to an employee by PI and lower wages in exchange for high job security; thus, reducing the cost to retain a match. PI boosts the market tightness and reduces the unemployment rate. However, if PI is very severe, it has a negative effect on the economy.

The numerical illustration shows that a sweeping relaxation in the provisions of EPL as well as a very severe EPL discourages employees from working hard. Therefore, EPL should be designed appropriately. In addition, PI plays a more crucial role than SP in encouraging firms to enter the market, reducing the unemployment rate,

and improving social welfare. However, PI appears to be less beneficial than SP because SP is a lump-sum transfer while PI generates a wasteful cost. However, PI is more effective than SP from the viewpoint of incentives of workers. This result is consistent with those in studies that accept the positive effect of firing tax, such as Ljungqvist and Sargent (1998) (2007), Rogerson and Schindler (2002), Pissarides (2001), and Blanchard and Tirole (2008).

We can mention some studies on the effect of EPL on the incentives of workers. Rocheteau (2001) focuses on incentives and the bargaining power of employees and shows that wage is inflexibly posted by a firm, akin to the efficiency wage model, when the bargaining power of employees is weak. In our model, following Rocheteau (2001), a wage is posted by a firm subject to incentive and participation conditions.

Fella (2000) considers the difference between SP and PI using the efficiency wage model of Shapiro and Stiglitz (1984). The existence of firing cost including SP inhibits firms from firing employees during downturns, but causes firms to hesitate from hiring employees during prosperous times. In the model, a firm can offer wages depending on the state of business, and it can lower wages in exchange for SP. Hence, the effect of reducing the employment level during prosperous times is alleviated by SP. If the firing cost is mainly composed of SP, welfare improves with an increase in SP.

Although the result of Fella (2000) is important and relevant to our study, the model in our study is different. In the model used by Fella (2000), there are two crucial assumptions: (1) wage is determined depending on the state of a firm and (2) the monitoring technology is the force driving workers' incentives. If shirking employees are caught, they are fired without SP. The monitoring technology bypasses the negative effect of SP on the incentives of workers. In contrast, in our model, wage is *ex post* inflexible and is not dependent on the state of a firm. Additionally, any monitoring technology is not available for firms. In our model, firms must pay SP even to shirking employees whenever they are fired; thus PI is better than SP which tends to negatively affect incentives of workers.

Punishment schemes for shirking employees are critical with regard to an incentive problem. In other words, it is crucial to determine whether shirking employees are eligible for SP. Hence, dismissals are categorized into two cases: the first is the case of redundancy in which firms fire workers due to bad financial health, and the second is where disciplinary action is taken in which workers are fired for poor performance or unprofessional conduct. If the court can distinguish between the two kinds of dismissals, the fired workers can receive SP in the case of redundancy; however, they do not receive anything in case disciplinary action has been taken against them. SP is unlikely

to negatively affect incentives of employees since SP is not an earning for shirking employees.

On the other hand, it is realistic to believe that a situation may arise in which the court is unable to distinguish between the cases of redundancy and disciplinary action. Galdon-Sanchez and Guell (2003) pay much attention to this situation to consider a moral problem faced by the firms. In their model, firms insist that workers have been fired for disciplinary reasons even if the opposite holds. Hence, the dismissed workers do not receive SP. On the contrary, in this paper, we also consider the situation in which the courts make no distinction between the redundancy case and the disciplinary case but focus on the moral issues faced by workers. Firms have to pay SP to all dismissed employees, including shirking employees.

In this paper, although the effects of EPL are considered under a situation of wage rigidity, the issue regarding the quantum of wage that is flexible has been controversial. The differences in the views on macroeconomic policy often stem from differing views on the extent to which wage adjustment is done flexibly. We consider the case in which wage is decided flexibly during formation of employment contracts but is inflexible *ex post*. As Pissarides (2007) indicates, the wage of a new match relevant to the external wage of outsiders is comparatively flexible and the continuous wage of an existing match is comparatively inflexible, thereby making the setting of the model consistent with the real world.

We realize that wage is not always completely inflexible. However, there are studies that make this assumption reasonable to consider. Bewley (1999) conducted interviews with over 200 business persons including firm managers, lawyers, and consultants; Campbell and Kamlani (1997) conducted investigations on firm managers. These studies suggest that wages are inflexible for various reasons. Furthermore, according to behavioral science, there are some psychological factors that deter firm managers from decreasing wages. A well-known psychological effect—the money illusion—makes wage declines less preferable. Kahneman, Knetsch, and Thaler (1986) and Agell and Benmarker (2007) report that workers tend to prefer constant nominal wages with inflation, over nominal wage decline without inflation, even if both result in identical amounts of real wages. In addition to these studies, there are experimental studies such as Fehr and Falk (1999) that consider wages to be inflexible in the case of excessive labor supply and involuntary unemployment. The experimental studies show that firm managers have a difficulty in wage adjustment.

The relationship between wage rigidity and the matching model has been a much discussed issue in recent times. Shimer (2005) indicates that the