表1: 記述統計

変数	N	T	Mean	(S.D.)	Min	Max
大学等進学率（対高卒）[1]						
4年制大学（%）	652	68-90	17.35	(4.50)	8.59	28.92
4年制大学＋短期大学（%）	652	68-90	27.38	(7.00)	13.67	44.97
全課程（%）	1,108	57-90	23.93	(7.78)	9.27	45.32
大学等進学率（対中卒）[2]						
4年制大学（%）	652	68-90	14.36	(4.92)	4.87	28.89
4年制大学＋短期大学（%）	652	68-90	22.70	(7.76)	7.63	41.47
全課程（%）	1,063	59-90	18.15	(9.19)	3.65	41.69
高校入試制度						
入試科目数	1,108	57-90	6.92	(2.22)	0	10
総合試験の実施ダミー（1 = yes）	1,108	57-90	0.010	(0.099)	0	1
面接の実施ダミー（1 = yes）	1,108	57-90	0.053	(0.225)	0	1

注：Nはサンプルサイズ、Tは推定に用いたサンプル期間を示す。
1)「大学等進学率（対高卒）」は、各都道府県における当該年度の大学等進学者数を、前年の高等学校卒業者数で除したものとして定義される。
2)「大学等進学率（対中卒）」は、各都道府県における当該年度の大学等進学者数を、3年前の中学校卒業者数で除したものとして定義される。

表2: 公立高校入試制度と進学率（ベンチマーク）

被説明変数：進学率		RE			FE			N	T	R^2
		Coef.	(S.E.)		Coef.	(S.E.)				
4大	入試科目数	0.0315	(0.3445)		-0.0258	(0.3357)		652	68-90	0.7805
（対高卒）	総合試験の実施	4.2416	(4.4950)		3.2659	(4.2017)				
	面接の実施	3.9512	(1.7790)	*	3.9164	(1.8300)	*			
4大＋短大	入試科目数	0.3158	(0.3466)		0.2493	(0.3312)		652	68-90	0.8682
（対高卒）	総合試験の実施	7.5271	(3.7920)	*	6.5217	(3.1262)	*			
	面接の実施	1.9727	(1.5821)		1.9754	(1.6279)				
全課程	入試科目数	1.7691	(0.3900)	**	1.7388	(0.3719)	**	1,108	57-90	0.9030
（対高卒）	総合試験の実施	17.5623	(4.1518)	**	16.9014	(3.8789)	**			
	面接の実施	3.4539	(2.6077)		3.4846	(2.5227)				
4大	入試科目数	0.9638	(0.5410)	*	0.9066	(0.5114)	+	652	68-90	0.8589
（対中卒）	総合試験の実施	13.8380	(6.4870)	*	12.8054	(6.4353)	*			
	面接の実施	6.8844	(2.1359)	**	6.9396	(2.1536)	**			
4大＋短大	入試科目数	1.3152	(0.5347)	*	1.2499	(0.4994)	*	652	68-90	0.9098
（対中卒）	総合試験の実施	17.6956	(5.5248)	**	16.6723	(5.1768)	**			
	面接の実施	5.1317	(1.8231)	**	5.2171	(1.8061)	**			
全課程	入試科目数	1.3826	(0.4420)	**	1.3566	(0.4147)	**	1,063	59-90	0.9596
（対中卒）	総合試験の実施	20.9213	(5.6047)	**	20.3802	(5.5149)	**			
	面接の実施	6.1383	(2.1954)	**	6.2035	(2.1497)	**			

注：**, *, + はそれぞれ1%, 5%, 10%水準で当該変数が有意であることを示す。カッコ内は不均一分散および系列相関に対して頑健な標準誤差を示す。被説明変数にはロジスティック変換を適用している。すべての推定モデルは定数項および年度ダミーを含む。Nはサンプルサイズ、Tは推定に用いたサンプル期間を示す。

被説明変数: 進学率		RE Coef.	RE (S.E.)		FE Coef.	FE (S.E.)		N	T	R^2
4大	入試科目数	-0.0485	(0.4743)		-0.1428	(0.4594)		442	68-90	0.7525
（対高卒）	総合試験の実施	-----			-----					
	面接の実施	5.8923	(2.2911)	*	5.7277	(2.4412)	*			
4大＋短大	入試科目数	-0.1028	(0.4919)		-0.2150	(0.4764)		442	68-90	0.8438
（対高卒）	総合試験の実施	-----			-----					
	面接の実施	2.1816	(2.1332)		2.0724	(2.2698)				
全課程	入試科目数	2.4633	(0.5981)	**	2.4030	(0.5980)	**	748	57-90	0.8815
（対高卒）	総合試験の実施	21.3246	(8.7212)	*	20.2691	(8.5476)	*			
	面接の実施	3.3347	(3.3084)		3.2930	(3.1899)				
4大	入試科目数	0.4646	(0.7273)		0.3636	(0.6507)		442	68-90	0.8605
（対中卒）	総合試験の実施	-----			-----					
	面接の実施	6.9193	(2.4794)	**	6.8561	(2.6155)	**			
4大＋短大	入試科目数	0.4515	(0.6984)		0.3430	(0.6143)		442	68-90	0.9125
（対中卒）	総合試験の実施	-----			-----					
	面接の実施	3.3298	(2.0153)	+	3.3238	(2.0964)				
全課程	入試科目数	1.7205	(0.6258)	**	1.6693	(0.5899)	**	718	59-90	0.9603
（対中卒）	総合試験の実施	40.5725	(9.0001)	**	39.7064	(8.9621)	**			
	面接の実施	4.9215	(2.5931)	+	4.9546	(2.5253)	+			

注: **, *, ＋ はそれぞれ1%, 5%, 10%水準で当該変数が有意であることを示す。カッコ内は不均一分散および系列相関に対して頑健な標準誤差を示す。被説明変数にはロジスティック変換を適用している。すべての推定モデルは定数項および年度ダミーを含む。Nはサンプルサイズ、Tは推定に用いたサンプル期間を示す。総合試験については、サンプル期間中に実施県が存在しない場合省略している。総合選抜制度は山梨・京都・兵庫・岡山・広島・徳島・長崎・大分・宮崎、学校群制度は東京・千葉・愛知・岐阜・三重・福井で実施。

表4: 公立高校入試制度と進学率（サンプル期間別）

| 被説明変数: 進学率		RE Coef.	RE (S.E.)		FE Coef.	FE (S.E.)		N	T	R^2
4大	入試科目数 (57-67)	-----			-----			652	68-90	0.7807
（対高卒）	入試科目数 (68-74)	0.1274	(0.3723)		0.0672	(0.3586)				
	入試科目数 (76-90)	-0.2511	(0.5131)		-0.3197	(0.4671)				
	総合試験の実施	3.5923	(4.8544)		2.5178	(4.3017)				
	面接の実施	3.9516	(1.7897)	*	3.9146	(1.8378)	*			
4大＋短大	入試科目数 (57-67)	-----			-----			652	68-90	0.8683
（対高卒）	入試科目数 (68-74)	0.2083	(0.3652)		0.1386	(0.3395)				
	入試科目数 (76-90)	0.6840	(0.5460)		0.5995	(0.4851)				
	総合試験の実施	8.5514	(4.0312)	*	7.4127	(3.3529)	*			
	面接の実施	1.9751	(1.5864)		1.9776	(1.6240)				
全課程	入試科目数 (57-67)	1.4207	(0.6991)	*	1.4062	(0.6894)	*	1,108	57-90	0.9032
（対高卒）	入試科目数 (68-74)	1.6124	(0.4260)	**	1.5642	(0.3854)	**			
	入試科目数 (76-90)	2.6773	(0.6843)	**	2.6464	(0.6130)	**			
	総合試験の実施	17.2155	(4.3910)	**	16.5154	(3.9056)	**			
	面接の実施	3.5462	(2.6300)		3.5811	(2.5269)				
4大	入試科目数 (57-67)	-----			-----			652	68-90	0.8592
（対中卒）	入試科目数 (68-74)	1.1968	(0.6140)	*	1.1348	(0.5535)	*			
	入試科目数 (76-90)	0.2482	(0.7310)		0.1850	(0.7580)				
	総合試験の実施	12.0891	(7.0089)	*	10.9691	(6.7226)				
	面接の実施	6.8751	(2.1480)	**	6.9351	(2.1639)	**			
4大＋短大	入試科目数 (57-67)	-----			-----			652	68-90	0.9098
（対中卒）	入試科目数 (68-74)	1.3580	(0.6094)	*	1.2887	(0.5389)	*			
	入試科目数 (76-90)	1.2043	(0.7283)	+	1.1271	(0.7378)				
	総合試験の実施	17.4895	(5.7059)	**	16.3598	(5.2993)	**			
	面接の実施	5.1234	(1.8333)	**	5.2163	(1.8082)	**			
全課程	入試科目数 (57-67)	-0.6082	(0.7588)		-0.6223	(0.7684)		1,063	59-90	0.9599
（対中卒）	入試科目数 (68-74)	1.8676	(0.5249)	**	1.8321	(0.4632)	**			
	入試科目数 (76-90)	2.2508	(0.7372)	**	2.2269	(0.7918)	**			
	総合試験の実施	16.8195	(4.5185)	**	16.2703	(4.4041)	**			
	面接の実施	6.2426	(2.2049)	**	6.3127	(2.1502)	**			

注: **, *, ＋ はそれぞれ1%, 5%, 10%水準で当該変数が有意であることを示す。カッコ内は不均一分散および系列相関に対して頑健な標準誤差を示す。被説明変数にはロジスティック変換を適用している。すべての推定モデルは定数項および年度ダミーを含む。Nはサンプルサイズ、Tは推定に用いたサンプル期間を示す。

表5: 公立高校入試制度と進学率（Arellano-Bond推定）

被説明変数：進学率		Arellano-Bond					AR Test	
		Coef.	(S.E.)		N	T	AR(1)	AR(2)
全課程	進学率（t - 1）	0.6924	(0.0774)	**	595	60-72	-5.29 **	0.94
（対高卒）	入試科目数	0.7077	(0.3246)	*				
	総合試験の実施	6.7745	(3.5638)	+				
	面接の実施	0.1541	(2.1815)					
全課程	進学率（t - 1）	0.5942	(0.1008)	**	595	60-72	-5.32 **	1.90 +
（対中卒）	入試科目数	0.6343	(0.3398)	+				
	総合試験の実施	6.6675	(3.2645)	*				
	面接の実施	-1.0240	(2.1433)					

注：**, *, + はそれぞれ1%, 5%, 10%水準で当該変数が有意であることを示す。カッコ内は不均一分散および系列相関に対して頑健な標準誤差を示す。被説明変数にはロジスティック変換を適用している。すべての推定モデルは定数項および年度ダミーを含む。Nはサンプルサイズ、Tは推定に用いたサンプル期間を示す。AR Testは、誤差項の自己相関に関するArellano-Bond統計量。

表6: 公立高校入試制度と進学率（将来の制度変更）

被説明変数：進学率		RE		FE				
		Coef.	(S.E.)	Coef.	(S.E.)	N	T	R^2
全課程	入試科目数（t + 2）	-0.5004	(0.3972)	-0.4043	(0.4098)	790	63-88	0.8920
（対高卒）	総合試験の実施（t + 2）	0.8974	(4.2484)	-0.0787	(3.0529)			
	面接の実施（t + 2）	1.9447	(2.0046)	1.9320	(2.0399)			
全課程	入試科目数（t + 2）	-0.0207	(0.4270)	0.0434	(0.4284)	790	63-88	0.9570
（対中卒）	総合試験の実施（t + 2）	6.2435	(4.6365)	5.5773	(3.8052)			
	面接の実施（t + 2）	4.6469	(1.7877) **	4.6882	(1.8336) *			

注：**, *, + はそれぞれ1%, 5%, 10%水準で当該変数が有意であることを示す。カッコ内は不均一分散および系列相関に対して頑健な標準誤差を示す。被説明変数にはロジスティック変換を適用している。すべての推定モデルは定数項および年度ダミーを含む。Nはサンプルサイズ、Tは推定に用いたサンプル期間を示す。入試制度に関しては2期のリード変数を導入している。

図1: 公立高校入試科目数の変遷
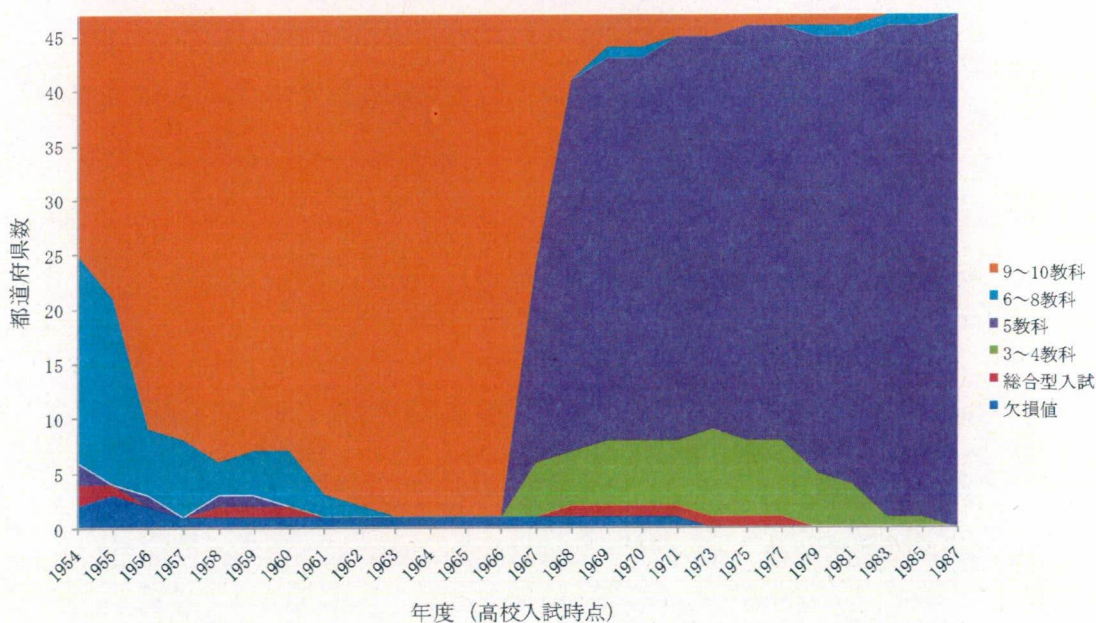
注：入試科目数は必修、選択科目の合計。選択科目に関しては、実際に選択される科目数を集計している。総合型入試は、科目による分類ができない試験形態であり、総合問題、一般知能試験等である。

付表1: 公立高校試験科目数の変遷

都道府県	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	73	75	77	79	81	83	85	87
北海道	9	9	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
青森県	9	9	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	3	3	3	5	5	5	5	5
岩手県	9	8	8	8	8	8	8	9	9	10	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
宮城県	9	-9	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
秋田県	9	9	9	9	9	9	9	9	9	9	9	9	9	9	3	3	3	3	3	3	3	3	3	5	5	5
山形県	9	9	9	9	9	8	9	9	9	9	9	9	9	9	3	3	3	3	3	3	3	3	3	3	5	5
福島県	9	9	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
茨城県	8	8	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
栃木県	8	8	8	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
群馬県	9	9	9	9	9	9	9	8	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
埼玉県	8	9	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
千葉県	8	9	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
東京都	8	8	9	9	9	9	9	9	9	9	9	9	9	9	3	3	3	3	3	3	3	3	3	5	5	5
神奈川県	8	8	8	8	0	0	0	0	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
新潟県	9	9	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
富山県	9	9	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
石川県	9	8	9	9	9	9	8	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
福井県	5	6	5	6	5	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
山梨県	8	9	9	9	9	9	9	9	9	9	9	9	9	4	4	4	3	3	3	3	3	3	5	5	5	5
長野県	8	8	9	9	9	8	9	9	9	9	9	9	9	4	4	4	4	4	4	5	5	5	5	5	5	5
岐阜県	9	9	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
静岡県	8	8	9	9	9	9	9	9	9	9	9	9	9	9	6	6	5	5	5	5	5	5	5	5	5	5
愛知県	9	9	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	3	3	3	3	3	3	3	5
三重県	9	10	10	10	10	10	10	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
滋賀県	5	6	6	6	6	5	6	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
京都府	8	8	9	9	9	9	9	9	9	9	10	10	10	10	9	9	9	9	9	9	9	9	9	9	5	5
大阪府	0	0	9	8	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
兵庫県	9	9	9	9	9	9	9	9	9	9	9	9	9	9	0	0	0	0	0	0	0	7	7	7	7	5
奈良県	8	9	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
和歌山県	8	8	9	9	9	9	8	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
鳥取県	9	9	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
島根県	8	9	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
岡山県	9	9	9	9	9	9	9	9	9	9	9	9	9	9	5	3	3	3	3	3	3	5	5	5	5	5
広島県	8	8	8	8	8	8	8	8	8	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5
山口県	9	9	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
徳島県	9	9	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
香川県	0	9	9	9	10	10	10	10	10	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
愛媛県	8	8	8	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
高知県	-9	-9	-9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
福岡県	8	8	9	9	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5
佐賀県	9	9	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
長崎県	9	9	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
熊本県	9	9	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
大分県	9	9	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
宮崎県	8	8	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
鹿児島県	8	8	9	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
沖縄県	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	5	5	5	5	5	5	5	5	5	5	5	5

注: 1971年以降は隔年で調査を実施。

区分	値
総合型入試	0
3〜4教科	3
5教科	5
6〜8教科	7
9〜10教科	9
欠損値	-9

被説明変数：高校進学率		RE Coef.	(S.E.)		FE Coef.	(S.E.)		N	T	R^2
高校進学率	入試科目数	2.3422	(0.8593)	**	2.3230	(0.8173)	**	1,063	59-90	0.9702
	総合試験の実施	29.3438	(7.2371)	**	28.6185	(7.2206)	**			
	面接の実施	3.3676	(3.2213)		3.6037	(3.2763)				
高校進学率	入試科目数	1.7798	(0.8313)	*	1.9811	(0.7661)	*	882	63-90	0.9713
（都道府県変数）	総合試験の実施	22.4419	(9.8823)	*	22.3645	(9.0795)	*			
	面接の実施	2.4308	(3.1582)		2.1951	(3.2146)				

注：**，*，＋ はそれぞれ1%，5%，10%水準で当該変数が有意であることを示す。カッコ内は不均一分散および系列相関に対して頑健な標準誤差を示す。被説明変数にはロジスティック変換を適用している。すべての推定モデルは定数項および年度ダミーを含む。Nはサンプルサイズ、Tは推定に用いたサンプル期間を示す。

付表3：公立高校入試制度と進学率（都道府県レベルの説明変数）

被説明変数：進学率		RE Coef.	(S.E.)		FE Coef.	(S.E.)		N	T	R^2
4大	入試科目数	-0.1468	(0.3565)		-0.0190	(0.3324)		652	68-90	0.8163
（対高卒）	総合試験の実施	2.1549	(4.7786)		0.6176	(3.6496)				
	面接の実施	1.7662	(1.6376)		1.7324	(1.5958)				
4大＋短大	入試科目数	0.2080	(0.3664)		0.2888	(0.3283)		652	68-90	0.8867
（対高卒）	総合試験の実施	5.5924	(4.2670)		3.9221	(2.7474)				
	面接の実施	-0.0485	(1.5957)		-0.0379	(1.5635)				
全課程	入試科目数	0.6932	(0.3736)	+	0.7405	(0.3487)	*	882	63-90	0.8875
（対高卒）	総合試験の実施	8.4249	(3.8619)	*	7.7174	(3.1001)	*			
	面接の実施	1.3389	(1.9411)		1.2077	(1.9021)				
4大	入試科目数	0.2013	(0.4916)		0.3685	(0.4548)		652	68-90	0.8938
（対中卒）	総合試験の実施	8.4940	(6.2305)		7.0809	(5.2820)				
	面接の実施	4.5213	(1.9101)	*	4.5715	(1.8409)	*			
4大＋短大	入試科目数	0.6067	(0.4823)		0.7284	(0.4303)	+	652	68-90	0.9320
（対中卒）	総合試験の実施	12.4004	(5.3596)	*	10.9298	(4.0364)	**			
	面接の実施	2.9178	(1.7574)	+	3.0368	(1.6780)	+			
全課程	入試科目数	0.7886	(0.4244)	+	0.8352	(0.3998)	*	882	63-90	0.9534
（対中卒）	総合試験の実施	10.7885	(4.2294)	*	10.2813	(3.6287)	**			
	面接の実施	4.7230	(1.8099)	**	4.6707	(1.7920)	**			

注：**，*，＋ はそれぞれ1%，5%，10%水準で当該変数が有意であることを示す。カッコ内は不均一分散および系列相関に対して頑健な標準誤差を示す。被説明変数にはロジスティック変換を適用している。すべての推定モデルは定数項および年度ダミーを含む。都道府県レベルの説明変数は、18歳人口、新規有効求人倍率、一人当たり公教育費（高校）、国立高校比率（学校数）、私立高校比率（学校数）、一人当たり本務教員数（公立高校）。Nはサンプルサイズ、Tは推定に用いたサンプル期間を示す。

付表4: 公立高校入試制度と進学率 (教科数ダミー)

被説明変数: 進学率		RE Coef.	(S. E.)		FE Coef.	(S. E.)		N	T	R^2
4大 (対高卒)	教科数 < 5	0.6487	(1.5203)		0.6017	(1.5461)		652	68-90	0.7806
	教科数 ~ 5	(Omitted Category)			(Omitted Category)					
	教科数 > 5	0.1279	(1.5320)		-0.2426	(1.4946)				
	総合試験の実施	4.2220	(4.1679)		3.3474	(3.8007)				
	面接の実施	3.8730	(1.7920)	*	3.8536	(1.8455)	*			
4大+短大 (対高卒)	教科数 < 5	0.0791	(1.5495)		0.0761	(1.5121)		652	68-90	0.8683
	教科数 ~ 5	(Omitted Category)			(Omitted Category)					
	教科数 > 5	1.8944	(1.5279)		1.5177	(1.4811)				
	総合試験の実施	6.7551	(3.3728)	*	5.9122	(2.6196)	*			
	面接の実施	1.8980	(1.6005)		1.9157	(1.6495)				
全課程 (対高卒)	教科数 < 5	-3.9307	(2.1395)	+	-3.9868	(2.0263)	*	1,108	57-90	0.9027
	教科数 ~ 5	(Omitted Category)			(Omitted Category)					
	教科数 > 5	5.6833	(1.6787)	**	5.4368	(1.5402)	**			
	総合試験の実施	8.3667	(3.4345)	*	7.7625	(3.1999)	*			
	面接の実施	3.3819	(2.6143)		3.4224	(2.5306)				
4大 (対中卒)	教科数 < 5	0.5377	(2.2465)		0.2762	(2.3235)		652	68-90	0.8587
	教科数 ~ 5	(Omitted Category)			(Omitted Category)					
	教科数 > 5	3.9473	(2.4293)		3.4229	(2.2608)				
	総合試験の実施	10.3781	(6.0098)	+	9.3000	(5.9991)				
	面接の実施	6.5975	(2.1657)	**	6.6964	(2.1854)	**			
4大+短大 (対中卒)	教科数 < 5	0.0253	(2.2994)		-0.1676	(2.3181)		652	68-90	0.9098
	教科数 ~ 5	(Omitted Category)			(Omitted Category)					
	教科数 > 5	6.0393	(2.3137)	**	5.5298	(2.1143)	**			
	総合試験の実施	13.2712	(4.9480)	**	12.2740	(4.6524)	**			
	面接の実施	4.8239	(1.8476)	**	4.9530	(1.8318)	**			
全課程 (対中卒)	教科数 < 5	-5.5727	(2.3316)	*	-5.7325	(2.3318)	*	1,063	59-90	0.9596
	教科数 ~ 5	(Omitted Category)			(Omitted Category)					
	教科数 > 5	3.3352	(1.9879)	+	3.0600	(1.8233)	+			
	総合試験の実施	13.0695	(4.9963)	**	12.5140	(4.8732)	*			
	面接の実施	6.2728	(2.2356)	**	6.3609	(2.1826)	**			

注: **, *, + はそれぞれ1%, 5%, 10%水準で当該変数が有意であることを示す。カッコ内は不均一分散および系列相関に対して頑健な標準誤差を示す。被説明変数にはロジスティック変換を適用している。すべての推定モデルは定数項および年度ダミーを含む。教科数ダミーの基準は5教科。Nはサンプルサイズ、Tは推定に用いたサンプル期間を示す。

付表5: 公立高校入試制度と進学率 (男女別)

被説明変数: 進学率		RE Coef.	(S. E.)		FE Coef.	(S. E.)		N	T	R^2
4大 (男子) (対高卒)	入試科目数	0.2682	(0.4107)		0.1954	(0.4058)		652	68-90	0.7401
	総合試験の実施	5.5002	(5.8338)		4.3323	(5.7907)				
	面接の実施	2.9550	(2.0257)		2.9102	(2.0892)				
4大+短大 (男子) (対高卒)	入試科目数	0.2771	(0.4039)		0.2007	(0.3996)		652	68-90	0.7386
	総合試験の実施	5.6591	(5.5352)		4.4808	(5.5005)				
	面接の実施	2.5920	(2.0846)		2.5328	(2.1471)				
全課程 (男子) (対高卒)	入試科目数	0.9292	(0.3779)	*	0.9043	(0.3736)	*	1,108	57-90	0.8445
	総合試験の実施	13.3485	(5.5811)	*	12.7427	(5.5456)	*			
	面接の実施	5.5624	(2.1956)	*	5.5853	(2.1217)	**			
4大 (女子) (対高卒)	入試科目数	-0.3847	(0.4543)		-0.4430	(0.4390)		652	68-90	0.8493
	総合試験の実施	5.2077	(5.1894)		4.0194	(4.6902)				
	面接の実施	6.3553	(2.3276)	**	6.2810	(2.4181)	**			
4大+短大 (女子) (対高卒)	入試科目数	0.4340	(0.421)		0.3481	(0.4086)		652	68-90	0.9066
	総合試験の実施	11.2201	(4.4660)	*	9.9426	(3.7361)	**			
	面接の実施	1.1115	(1.8305)		1.1533	(1.8399)				
全課程 (女子) (対高卒)	入試科目数	2.6125	(0.5567)	**	2.5551	(0.5217)	**	1,108	57-90	0.8987
	総合試験の実施	18.8411	(6.5261)	**	17.6914	(5.9826)	**			
	面接の実施	0.6473	(3.7642)		0.6941	(3.6947)				

注: **, *, + はそれぞれ1%, 5%, 10%水準で当該変数が有意であることを示す。カッコ内は不均一分散および系列相関に対して頑健な標準誤差を示す。被説明変数にはロジスティック変換を適用している。すべての推定モデルは定数項および年度ダミーを含む。Nはサンプルサイズ、Tは推定に用いたサンプル期間を示す。

アメリカにおける障害年金の現状と日本への示唆

百瀬優

ymomose@kke.biglobe.ne.jp

はじめに

障害者に対する所得保障制度

役割 ①生存権保障、②リスクに対する保護、③自立の支援。

分類 ①労災制度、②年金制度、③手当制度、④公的扶助制度。

- とりわけ、障害年金が障害者の生活にとって大きな意義を有している。
- しかし、障害年金に対する研究は少ない。また、現存の年金改革案では、障害年金の取り扱いが議論されていない。

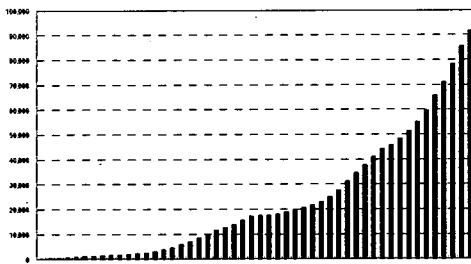⇒日本における障害年金の現状を把握し、現時点でどのような問題があり、どう改善すべきかを考える必要がある。

報告の目的

- 海外の障害年金との比較を行う。
- ⇒①日本の状況を相対化して理解することができる。
- ⇒②日本の制度をどう変えていくべきか（あるいは、べきでないか）を考える際の指針のひとつが得られる。

障害年金の日米比較①障害年金のコスト

＜アメリカ＞

- 1980年代後半以降、障害年金給付費総額は著しく増加。
- 収入支出の両面で対策が取られている。

アメリカの障害年金給付費総額の推移1957-2006年(単位 百万ドル)

資料 Social Security Administration, *Annual Statistical Supplement 2007*のTable 4.A2

障害年金の日米比較①障害年金のコスト

＜日本＞

- 障害年金給付費総額は緩やかな増加傾向。
- ☞ **障害年金のコストは低く抑えられている。**

　×障害の状態に至る人の少なさ。

　○障害年金の制度設計のあり方。

障害年金給付費の国際比較（2003年）　【単位 %】

	障害年金給付費／GDP	障害年金給付費／公的社会支出総額
日本	0.31	1.90
アメリカ	0.96	1.05
フランス	0.76	2.61
ドイツ	0.83	2.91
デンマーク	1.81	6.57
イギリス	1.97	9.55
スウェーデン	2.17	6.93

資料 OECD, *Social Expenditure Database 2007*より作成。

障害年金の日米比較②障害年金の認定基準と認定方法

＜アメリカ＞

概要 障害＝1年以上継続するか死に至ると予期される身体的・精神的機能障害によって、いかなる実質的な稼得活動にも従事できない状態。

一定以上の収入がある場合は年金の対象外

1. 実質的な稼得活動を行っているか？ — Yes → Not Disabled
2. 機能障害が深刻であるか？ — No → Not Disabled
3. 機能障害がリストに合致/匹敵するか？ — Yes → Disabled
4. 以前していた仕事を遂行できるか？ — Yes → Not Disabled
5. 他の種類の仕事を遂行できるか？ — Yes → Not Disabled / No → Disabled

リストに合致する重度の機能障害を有する場合はここで支給認定

年齢、教育、技能なども考慮して、稼得能力を失っている場合はここで支給認定
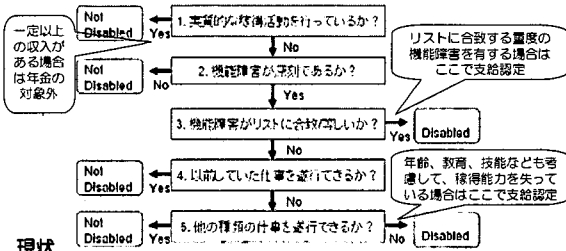
現状
・ 第5段階での支給認定の増加
・ 精神の障害や筋骨格系の障害に基づく裁定の増加
⇒ 不服申立ての多発、待ち時間の長期化、州間格差の顕在化。

障害年金の日米比較②障害年金の認定基準と認定方法

＜日本＞

概要
・ 1級から3級の機能障害リストに該当すれば支給認定。
・ 機能障害、日常生活能力を重視。

現状
・ 就労収入があっても障害年金の支給対象になる。
・ 支給認定の範囲が狭い。
⇒ 就労収入が高い人に高額の年金受給者がいる一方で、就労収入がゼロの人の中に年金未受給者が少なくない。

☞ 障害のために実質的な就労ができないことを重視するような形で障害認定のあり方を見直す必要があるのではないか。ただし、こうした変更にはデメリットもある。

その他
・地域間での認定率格差についての実態は不明。

障害年金の日米比較③障害年金と就労支援

＜アメリカ＞

形成過程での議論
・ 就労支援を強化すれば障害年金は不要である ⇒ 障害年金は必要であるが年金制度内で就労支援を行う仕組みを設ける。

現在の仕組み

給付設計の工夫
・ 受給者が就労開始後も一定期間は、現金給付および公的医療保障を継続。

就労チケットプログラム（2002年～）
・ 障害年金受給者は、就労チケットを利用して、政府認可のサービス供給者から、無料で就労支援サービスを受けることができる。ただし、プログラムへの参加は任意である。財源は年金基金が負担する。
・ 就労を目標とする受給者の労働市場への参入を促すことが期待されている。費用対策としての側面を有している。
・ プログラムへの参加率は低位に止まっている。①そもそも就労を目指す受給者は多くない。②受給者の中でのプログラムの認識度が低い。③サービス供給者の不足および受け入れ拒否がある。

障害年金の日米比較③障害年金と就労支援

＜日本＞
・ 自立支援法以降、障害者の所得の確保に係わる施策として、就労支援が強調されるようになっている。ただし、その場合でも、障害年金の必要性は排除されない。
・ 現在のところ、年金制度内には受給者を直接の対象とするような就労支援策は存在しない。

☞ 費用対策という観点からの必要性があまりない。
☞ また、そうした仕組みを設けたとしても、その成果にはあまり期待できない。
←①障害年金受給者の職業リハビリの利用可能性を高めることが就労に繋がるかどうかが不明確である。
←②日本の現行制度では、障害年金が就業行動に及ぼすマイナスの影響が少ない（所得効果、給付に伴う収入制限の効果）。

障害年金の日米比較④障害年金と公的扶助

<アメリカ>
障害年金（社会保障障害保険）
・ 社会保障税を財源とする社会保険プログラム。
・ 拠出制と所得比例制が堅持されてる
⇒ 無年金者や低年金者が当然に生じる。

公的扶助（補足的所得保障〔SSI〕）
・ 連邦の一般財源による扶助プログラム。
・ 高齢者及び障害者だけを対象。扶養義務の範囲は配偶者と親権者に限定。申請場所や障害認定基準は障害年金と共通。
⇒ 障害年金から漏れる障害者を広くカバーしている。

※受給者の状況（18-64歳の障害者：2006年）
　障害年金受給者 約740万人（=同年齢層人口の約4%）
　SSIのみの受給者 約290万人、障害年金とSSIの同時受給者 約120万人。

障害年金の日米比較④障害年金と公的扶助

<日本>
障害年金
・ 国民皆年金の理念から社会保険の原則が大きく変更されている。
⇒ 障害基礎年金受給者の6割強は無拠出年金受給者である。
・ 一方、社会保険の形式が残されているために国民皆年金が達成できていない。
⇒ 無年金障害者は約12万人。老齢年金と比較して短期間の未納で無年金になる可能性がある。

生活保護
・ 無年金障害者であっても生活保護を受給する割合は少ない。

☞ 日本では、障害年金の財源調達のあり方や税を財源とする補完的な給付の位置づけを再検討する必要がある。

障害年金の日米比較⑤障害年金の給付設計と給付水準

<アメリカ>
給付設計
・ 障害の状態に至るまでの平均収入を基準とした所得比例給付（自営業者、被用者）。
・ 就労時に低所得だった場合には所得代替率を高くする。ただし、定額部分や最低補償額はなし。

給付水準
・ 障害年金給付額（2006年）月額977.70ドル。手取り賃金平均の約4割。PPPで円換算して121,235円。
・ ただし、1人当たり給付額には大きなばらつき。所得比例給付だけの年金では、低年金者の発生は防げない。特に、障害年金でその傾向が顕著。
・ 障害年金の給付水準の引き下げは、老齢年金の場合以上に困難になっている。
　←①高齢者と比べて障害者では、公的年金以外の資産形成で不利がある。
　←②障害の定義上、就労がほぼ不可能である。

障害年金の日米比較⑤障害年金の給付設計と給付水準

<日本>
給付設計
・ 被用者では定額給付＋所得比例給付。自営業者やパートでは定額給付のみ。
☞ 特に障害年金の場合、①定額部分を有することには積極的な評価ができるが、②被用者とそれ以外で給付設計が異なることは適切とは言えない。

給付水準
・ 障害年金の給付水準は、厚生年金同時受給の場合は高く、基礎年金のみの場合は低い。
・ 障害年金受給者の4分の3は基礎年金部分のみの受給者である。マクロ経済スライドにより、障害基礎年金の水準も今後低下する。
☞ 障害基礎年金の支給月額の妥当性を改めて検証する必要がある。

障害年金の日米比較⑥障害年金と老齢年金

＜アメリカ＞
- 両年金は遺族年金も含めて同一の制度に含まれている。ただし、下表のような大きな違いがある。

	給付対象	保険事故の特徴	稼得収入との関係
老齢年金	一定年齢への到達	客観的である、発生時期が明確、発生確率が高い。	受給者の稼得収入がいくらでも全額支給
障害年金	法律上の障害状態に認定	客観的でない、発生時期が不明確、発生確率が低い。	受給者の稼得収入が一定以上で不支給

- 拠出要件や給付額算定方法に異なった取り扱いが見られる。
- 財源は老齢遺族保険信託基金と障害保険信託基金に分離されている。

障害年金の日米比較⑥障害年金と老齢年金

＜日本＞
- 両年金は一体的に運用されている。財源についても特に区分されていない。

現状
- 保険事故としての障害と老齢の違いが大きくなっている。
- 特に日本では、老齢年金改革の影響が障害年金にも及んでいる。
- ⇒①少子高齢化を理由とする給付削減（マクロ経済スライド）を障害年金にも適用することが正当化できるのか？
- ⇒②障害年金受給者は、公的年金以外の資産形成を行う余地が少なく、また、基礎年金のみの受給者が多いため、給付削減の影響を大きく受ける。
- ☞ **障害年金と老齢年金を別制度にするという選択肢を考えても良いのではないか。**

Long-Term Effects of a Recession at Labor Market Entry in Japan and the United States

Yuji Genda
Ayako Kondo
Souichi Ohta

ABSTRACT

We examine effects of entering the labor market during a recession on subsequent employment and earnings for Japanese and American men, using comparable household labor force surveys. We find persistent negative effects of the unemployment rate at graduation for less-educated Japanese men, in contrast to temporary effects for less-educated American men. The school-based hiring system and the dismissal regulation prolong the initial loss of employment opportunities for less-educated Japanese men. The effect on earnings for more-educated groups is also stronger in Japan, although the difference between the two countries is smaller than for less-educated groups.

I. Introduction

There is increasing evidence that labor market conditions at labor market entry affect subsequent wages and employment prospects (Ohtake and Inoki

1997 for Japan; Oreopoulos, von Wachter, and Heisz 2006 for Canada; Kahn 2006 for the United States).[1] However, these studies typically focus on employees in relatively large establishments or male college graduates, and tend to ignore less skilled workers in less stable employment. Yet, persistent negative effects of graduating during a recession for less skilled workers or those in unstable employment would have quite different implications for income mobility and inequality than that for more skilled workers. This paper sheds light on the effect of graduating during a recession for less-educated men and its relation to labor market institutions, by comparing more- and less-educated groups in Japan and the United States.

Specifically, we estimate the continuous influence of the unemployment rate at entry on subsequent employment status and real annual earnings, using two comparable cross-sectional household surveys from 1986 to 2005: the Labor Force Survey in Japan and the Current Population Survey in the United States. With controls for year- and region- fixed effects and region specific linear trends, we find that a recession at entry has a persistent negative effect for less-educated Japanese men: a one percentage point rise in the unemployment rate at entry reduces the likelihood of being employed by 3–4 percentage points over 12 years and, though standard errors are huge, leads to earning losses by 5–7 percent for the group without a college education. Sample decomposition by employment status suggests that the negative impact on earnings is due to a continuous decline in the probability of fulltime, regular employment. Although we also find a persistent, significantly negative effect on earnings for more-educated Japanese men, this effect for the more-educated group is not attributable to a decline in regular employment. Only temporary effects are observed for less-educated American men, and the effect on earnings for more-educated American men is modest and gradually fading. The pattern of persistence across groups with different educational background exhibits a striking contrast between the two countries.

We explain the persistent effects for less-educated Japanese men by two institutional features of Japanese labor market. First, Japanese labor law requires high schools to play a key role in the matching process between graduating seniors and prospective employers. Second, once hired, the case law severely restricts dismissal of regular workers in Japan. This is quite in contrast to the United States where high schools do not intervene in the hiring market, and dismissals are generally not costly. The Japanese school-based hiring system is meant to foster smooth transition from school to work for relatively less skilled workers. Under the strict dismissal regulation, however, less skilled workers who fail to obtain a job initially may suffer persistent disadvantages as employers bypass them in favor of new graduates whose qualifications can be vouched for by their schools.

Existing studies that focus on college graduates such as Oreopoulos, von Wachter, and Heisz (2006) typically draw on a combination of search frictions, specific human capital, and contract models similar to Beaudry and DiNardo's (1991) to interpret the persistent negative effect of graduating during a recession. These factors may

---

1. Other related studies include Welch (1979) and Card and Lemieux (2001) that looked at the persistent effect of labor supply (cohort size), instead of labor demand, at entry to the labor market on subsequent wages.

be more relevant to skilled workers with strong attachment to the labor force. Our finding of small penalties for graduating during a recession for less-educated American men suggests that the job market for less skilled worker is closer to a spot market. It is consistent with the well-known results that employment and wages are more sensitive to contemporaneous labor market fluctuations for less-educated workers in the United States, especially in downturns (Cutler and Katz 1991; Hines, Hoynes, and Krueger 2001).

An additional motivation for looking at Japanese men is a growing social concern about the deteriorated employment situation of young Japanese who entered the labor market during the prolonged recession of the mid-1990s through the early 2000s. As highlighted by Genda (2001), the cost of this recession was born disproportionately by young people who were in the course of transition from school to fulltime work, since cutting new hiring was much easier than firing incumbent workers. The fraction of the young labor force not in regular fulltime employment has sharply increased since the 1990s. Repairing the employment prospects of these young people stranded out of the "regular" track has emerged as a pressing issue, with growing fears of a future expansion of poverty and an increasing burden of social security. Our findings of high persistence of employment instability in the Japanese labor market prove that spontaneous recovery is unlikely.

The rest of the paper is organized as follows. The next section provides the Japanese institutional background in detail. Section III reviews underlying mechanisms by a simple screening model. Section IV describes data and methodology and examines comparability of Japanese and American data. Empirical results are reported in Section V. Section VI concludes.

II. Institutional Background

Japan's employment system is characterized by long-term employment beginning right after the completion of education and lasting until mandatory retirement. An obvious consequence of this so-called "lifetime" employment system is long job tenure and high job-retention rates for prime-aged male workers.[2] Another important consequence of the lifetime employment system is two-tier structure within an employer. To keep their regular employees during recessions, many Japanese firms also hire workers on fixed term contracts or parttime basis as a buffer. A "seishain," or a regular employee, works full time and is on an employment contract that does not specify the date of termination of the contract, usually thought to be on the lifetime employment track.[3] A nonregular worker is usually called

---

2. For instance, the average tenure of men at age 30–34 in 2000 is about 8.5 years in Japan, while it is about five years in the United States. Note that the difference in turnover rates between more and less-educated Japanese workers is similar to that of American workers: in both countries, the turnover rate of high school educated workers is higher than that of college educated workers.

3. In some occasions, even if an employee satisfies the two conditions, she is not considered as a "regular" employee. Thus, many surveys including the Labor Force Survey directly ask how the respondent is called by the employer to classify regular and nonregular workers.

"*arubaito*," a Japanese word meaning a side worker, or a "parttimer" regardless of how many hours she actually works.

Firing regular employees for economic reasons is almost prohibitive under the social norm against dismissal and the resulting case law in Japan. The prevalence of long-term employment had underdeveloped the job market for midcareer workers and created a perception that firms were responsible for their employees' job security by the 1970s. Reflecting this social norm, the so-called just cause case law (*kaikoken ranyou houri*) was established in the mid-1970s.[4] This case law requires employers to make every effort to avoid a dismissal of regular workers, including terminating temporary and parttime employment contracts and suspending new hiring. This requirement and the potential cost of litigation make a dismissal of regular workers prohibitive.[5] In contrast, termination of fixed term contracts is relatively easy, and the case law itself regards nonregular workers as a buffer that protects employment of regular workers.[6]

In addition to the different degree of employment protection, the hiring market for the regular fulltime workers and that for the nonregular provisional workers work quite differently. In the market for regular jobs, schools play a crucial role; especially, high schools have a legal obligation to share the responsibilities for recruitment of graduating seniors with assistance from the Public Employment Security Offices. Consequently, the hiring market for new graduates is isolated from the rest of the labor market. As pointed by Brinton and Kariya (1998), the institutional connection with school allows firms to reduce costs required for screening and finding suitable workers by relying on school information instead.

According to the Employment Security Law written in 1947, when Japan was still in the postwar turmoil, the government regulates the recruitment process of graduating seniors from junior high school in order to protect them from illegal and unethical employers. In the 1960s, its coverage expanded to graduating seniors from high school. The law forbids employers from making direct contact with seniors who hope to work or using private employment agencies for their recruiting. Instead, the Japanese law encourages schools and public employment offices to play crucial roles in youth employment decisions. Employers who attempt to hire new high school graduates are obliged to submit detailed job information such as job content and payment to the public employment offices. Then the offices evaluate whether the offered job contents and working conditions are appropriate, and after approving these conditions, they introduce the employers to job applicants through junior or senior high schools. Teachers, who can collect superior information about individual students' characters and performance in school, match each student with a job that is judged to be the best matched to him or her. Because schools have made long-

---

4. This case law was first codified in the Labor Standards Law in January 2004 and then included in the Labour Contract Law implemented in March 2008.

5. See, for example, Section 5.2 of Passet (2003) for a more detailed description.

6. The high union density in Japan contributed to the establishment of this case law and probably it further holds down the number of new hires during recessions. Nevertheless, it is worth keeping in mind that unions (insiders) are unlikely to affect the choice between graduating seniors (a pool of outsiders) and unemployed people who have already left schools (another pool of outsiders), which is the main focus of the model presented in the next section.

tem relationships with firms by providing students for many years, the accumulated information about each specific firm further improves matching between employers and employees.[7]

Unlike high schools, college students in Japan can make direct contacts with potential employers without mediation of college. A number of large private placement-service agencies provide job information for college graduates, instead of public employment offices. The hiring process is less legally regulated compared to the market for high school graduates. Nevertheless, the hiring market for new college graduates is also separated from the rest of the labor market to some extent, in the sense that many vacancies for regular fulltime jobs explicitly target senior students in college. The private placement-service agencies also distinguish new graduates from other job seekers, though not as strictly as the public employment offices do for high school graduates.

The likelihood that a new graduate obtains a fulltime regular job is procyclical and on a declining trend. Yet, the proportion of new graduates who immediately obtain a fulltime regular job was still as high as 79.8 percent for high school graduates and 90.9 percent for four-year college graduates in 1997, according to the Survey of Young Employees.[8] New graduates who failed to obtain a regular fulltime job upon graduation often start working at nonregular, provisional jobs. The recruitment of nonregular workers mostly relies on advertisement on local newspapers and job magazines, internet, and word-of-mouth advertising. Because schools do not intervene, all young applicants are treated equally in the local spot market. This is quite in contrast to the heavily institutionalized market of regular jobs for senior students.

Overall, the Japanese school-based hiring system can be considered as a subsidy for hiring new graduates from high school as regular workers, in that it allows firms to find suitable workers by relying on school's information. That is, Japanese firms can outsource the screening of new high school graduates to schools in collaboration with Public Employment Security Offices. Thus, even if expected productivity would be the same between newly graduating seniors and those who have already graduated in the past, firms would prefer to recruit from graduating seniors because risks of having an unqualified applicant is much lower. Therefore, Japanese youths who failed in transition from school face difficulty in searching appropriate jobs and revealing their potentiality without any assistance of schools after graduation.[9]

Unlike Japan, transition from education to stable employment in the United States is gradual and often takes several years. In particular, there is no formal assistance from high schools for graduating seniors. Instead, young workers try to find suitable

---

7. However, many troubles have arisen since the mid-1990s as both the demand for and the supply of high school graduates have declined. Ariga (2005) elaborates what went wrong in the 1990s.

8. Despite the decreasing number of new entrants to regular fulltime jobs, regular fulltime workers remain in long-term employment as before. The Survey of Young Employees shows that 68.1 percent of male regular employees at age 25–29 in 1997 had never changed their employer. Kato (2001) also shows that neither the job-retention rate nor the average tenure of regular employees, with controls for the age composition, has declined since the 1980s.

9. At the individual level, there is evidence that failure to obtain a regular fulltime job upon graduation lowers the likelihood of having a regular fulltime job in subsequent years in Japan (Sakai and Higuchi 2005; Kondo 2007).

jobs by frequent job changes. Topel and Ward (1992) report that two-thirds of all new jobs among young workers end in the first year. Neal (1999) shows that many job changes among young workers involve changes in industry and occupations, emphasizing the importance of searching for well-matched career. He also shows that less-educated workers tend to change industry and occupation more frequently. Another important difference is the substantial rate of layoffs in the United States. According to Farber (1998), the three-year job loss rate of 20–24-year-old workers is about 15 percent and the highest among the five age categories. Probably due to this weak restrictions on dismissals in general, the distinction between fixed-term and indefinite employment contracts is relatively subtle in the United States compared to the dichotomous classification of regular and nonregular jobs in Japan.

III. Underlying Mechanisms

Several theories explain how the advantage of obtaining a better job at entry lasts for several years, including time-intensive search models and a particular type of implicit long-term contracts with one-sided commitment by employers. These factors are common in Japan and the United States and expected to affect more-educated workers. On the other hand, the Japanese school-based hiring system is considered as a subsidy for hiring new graduates as regular workers, and it is relevant only for Japanese high school graduates. In this section, we first review mechanisms that are common to Japan and the United States, and then show that subsidized screening of newly graduating high school seniors can produce an additional permanent effect of graduating during a recession for less-educated Japanese men.

In the United States, Beaudry and DiNardo (1991) find that incumbent workers' wages rise during booms but do not fall during recessions as long as the workers remain employed, and they explain this by implicit long-term wage contracts with mobile workers. That is, firms cannot dismiss workers or cut their wages during a recession while they have to raise wages to keep workers from the better outside options. Then, it is natural to think that the benefit from obtaining a high-paying job upon graduation due to the tight labor market can last for years. Also, at least for large firms, there is evidence that external labor market conditions at entry to the firm affect long-term wage setting within the firm (Baker, Gibbs, and Holmstrom1994 for the United States; Ariga, Brunello, and Ohkusa 2000 for Japan).

Because it takes time to dissolve initial matches, we anticipate that turnover rates among those who enter the labor market during a recession stay high for several years after entry. In fact, Bowlus (1995) shows that a job that started during a recession tends to end sooner in the United States, implying deteriorated matching quality. Although the turnover rate itself is much lower in Japan, Ohta (1998) and Genda and Kurosawa (2001) find similar evidence that graduating during a recession raises the subsequent quitting rate of the cohort.

However, the school-based hiring system and prohibitive dismissal costs encourage Japanese firms to hire from new graduates excessively and distort the process of job reallocation among less-educated Japanese during economic upturns. In the absence of school's mediation, firms have to incur costs to examine a job applicant

and bear risks that the applicant turns out to be unqualified. Hiring an unqualified applicant is especially costly in Japan, where the dismissals are very costly. Since Japanese high schools have much better information on their students than the prospective employers do, they can screen the job applicants beforehand to reduce risks borne by the employers. Therefore, firms prefer to rely on the school-based hiring than open the door to nonregular workers and unemployed. Thus, even though the average nonregular worker in a cohort that entered the labor market during a recession is likely to be of higher quality than those in a cohort that entered the labor market during a boom, it may be almost equally difficult for them to get back to the market of regular jobs.

To see this point, suppose that each person stays in the labor force for two periods and there are two states: good (G) or bad (B). Each cohort consists of workers heterogeneous in productivity. The cohort size is fixed to N, and the distribution of productivity is uniform between 0 and N: $U[0,N]$. The number of vacancies for regular jobs is E_B in a bad year and E_G in a good year, where $E_B < E_G \leq N$. Students who cannot find any jobs become unemployed, and apply for regular jobs in the next period if any jobs are open to them. Each firm knows the distribution of productivity and can distinguish graduating seniors from unemployed people who have already left schools. However, the firm cannot observe each worker's productivity until it hires him. On the other hand, when school intervenes, the school can observe each student's productivity.[10] To keep the discussion as simple as possible, hereafter we describe the process as if there were only one firm offering a fixed wage to everyone.[11]

The job markets under different institutional settings work as follows. Without school's mediation, the employer randomly picks an applicant from the pool of graduating seniors or the pool of unemployed from the previous cohort. Then, it hires the applicant and learns his productivity. If dismissals are not too costly, a worker whose productivity turned out to be below a certain threshold is fired and goes back to the pool of job seekers. The firm no longer remembers workers whom it fired[12] and picks another applicant and repeats the same process until all vacancies are filled with workers above the threshold. Hence, at the end, the worst jobseekers are left unemployed. We call this "the U.S.-type market" hereafter. If dismissals are too costly, firms have to be stuck with the randomly picked workers. Lastly, under the school-based hiring system, the school simply assigns regular jobs to students in order of their productivity, and the least productive ones are left unemployed.

10. This is an extreme assumption just for simplicity. In reality, firms can screen job applicants by interviews to some extent, and school's information is not perfect. The point is that schools have better information than firms.
11. We are assuming that wages do not adjust and the number of vacancies is rationed. Although exploring why wages do not adjust is beyond the scope of this paper, the Wage Census shows that the starting salaries for Japanese new graduates (conditional on educational background) have been downwardly rigid in Japan since the 1980s. Having multiple firms does not change the results qualitatively but complicates the case without school's mediation. For the case of the school-based hiring system, introducing heterogeneous employers shows that, even if some firms start hiring from the pool of unemployed, the jobs available to unemployed workers are far worse than the job that the most productive unemployed worker could have obtained if he had graduated in a good year.
12. Because, in reality, he would apply for jobs offered by other employers.

Because we are interested in job reallocation during upturns, consider the case where a good year comes after a bad year. The most productive E_B students who graduated in year t-1 have settled in regular jobs, and the remaining $N-E_B$ students have become unemployed. In year t, the total number of job openings increases to E_G. Since the best E_B students graduating in this year are more productive than any unemployed people from the previous cohort, they must settle in regular jobs in both the U.S.-type market and the school-based hiring system. The distribution of productivity among the rest of the students is the same as the distribution among the unemployed people who graduated in the previous year: $U[0,N-E_B]$.

If the firm continued to hire from the pool of graduating seniors, the average productivity among the students who are still seeking for a job would fall below the average productivity among unemployed people from the previous cohort. Thus, in the U.S.-type market, the firm should start hiring from the pool of unemployed people when the best E_B students have been already hired. In contrast, the school-based hiring system ensures that students who are assigned to regular jobs are at least as productive as $N-E_G$. Recall that the average productivity of the unemployed from the previous cohort is $\frac{N-E_B}{2}$. Then, the firm is unwilling to hire from the pool of unemployed people from the previous cohort if

(1) $N-E_G \geq \dfrac{N-E_B}{2}$

Inequality Equation 1 can be rewritten as follows:

(2) $E_G - E_B \leq 1/2[N-E_B]$

This simple model therefore implies that the firm does not hire from the pool of unemployed during an upturn unless the boost in labor demand exceeds half of the level of unemployment during the preceding recession. Although the model is overly simplified and exaggerates the difference in information on workers' productivity between the school and the firm, it illustrates how the subsidized screening of new graduates and strict employment protection could deprive young Japanese who dropped out from the system of opportunities to recover the initial loss.

In reality, many high school graduates in Japan who failed to obtain a regular job upon graduation find a nonregular job, thus "unemployed" in the above model includes nonregular workers. This is roughly 15–30 percent of high school graduates who do not proceed to college, and the ratio is countercyclical. If they are trapped in nonregular job and unemployment regardless of labor market conditions in the year they graduated, a recession at graduation has a persistent negative effect at the cohort level by reducing the number of regular jobs available to the cohort.

The loss of opportunity to accumulate human capital can magnify the negative effect of graduation during a recession. As pointed by Oreopoulos, von Wachter, and Heisz (2006), it is difficult to explain long-term effects of short-term shocks to the labor market with models of human capital accumulation unless job mobility is limited. However, if a worker who enters the labor force during a recession is forced to enter a sector with fewer training opportunities than he would have otherwise and it takes time to dissolve this initial match, the loss of opportunity to accumulate

human capital also will lower the average productivity of the cohort in the long run. Provided that provisional workers have much fewer opportunities of training, the loss of work experience on the regular employment track is likely to lower the average productivity of the cohort in the long run and aggravate the loss of earnings for less-educated Japanese men.

Given the lower turnover rate in Japan, the process of dissolving initial bad matches is expected to take a longer time in Japan. Nevertheless, the turnover rate is lower and returns to experience/tenure are greater for the more-educated group in both countries. Thus, without additional mechanisms that affect less-educated Japanese, the resulting penalties for graduating during a recession would be stronger for the more-educated group in both Japan and the United States. Hence, if the negative effect of graduating during a recession is particularly strong for less-educated Japanese men, it is likely to be attributable to the lack of opportunity to rejoin in the regular job market after graduating without a job.

IV. Data and Methodology

Our sample consists of Japanese men and American white men who completed their education in 1983 or later and have potential experience in the range of one to 12 years. We restrict our sample to men in order to avoid additional complications from the labor supply behavior of married women, which is quite different in the United States and Japan. We also drop nonwhites from the sample of American men to keep away from issues related to racial disparities.

Our primary sources of data for Japanese men are the Special Survey of the Labour Force Survey (*Roudouryoku Chousa Tokubetsu Chousa* 1986–2001) and the Detailed Supplement to the Labour Force Survey (*Roudouryoku Chousa Tokutei Chosahyo* 2002–2005), both conducted by the Statistics Bureau. The Special Survey was conducted annually in February until 2001, and each year's sample consists of about 90,000 individuals older than 15 in about 40,000 randomly drawn households. In 2002, the annual Special Survey was replaced with the monthly detailed supplement with a sample size of 23,000 individuals; to avoid seasonality bias, we use February samples only. Both surveys are cross-sectional and include the same questions on annual earnings, detailed employment status and employer characteristics, and basic demographic characteristics.

We use the March Supplement to the Current Population Survey, conducted by the Census Bureau and the Bureau of Labor Statistics, to do the same exercise for American men. The March supplement to the Current Population Survey is also cross-sectional, consists of a random sample of households and contains most of the key variables in a comparable form. The sample size varies from about 100,000 in the 1980s to 200,000 individuals in the 2000s.

One of the primary dependent variables is log real annual earnings.[13] This is the total income from salary and wages (excluding self-employed persons in incorpo-

---

13. Ideally, using the average hourly earnings would be helpful to make our results more comparable to the much of the U.S. literature. However, we had to give up calculating hourly wages because the Japanese Labour Force Survey does not include information on the weeks worked last year or usual hours per week, while its only income measure is total annual labor income in the previous year.

rated business) of the person in the past year, deflated by the consumer price index. Note that income from other sources is not included. Also, even if the respondent is not employed in the reference week, he is supposed to report positive earnings as long as he has worked at some point in the previous year. Thus, only people who report zero income for the whole year are dropped from the regression. The appendixes describe construction of the variable and detail of those missing observations. The other dependent variables including employment status and weekly hours worked are directly taken from the survey questionnaires and measured in the reference week of each survey. The measure of regional labor market conditions for Japan is the unemployment rates for ten regions based on the monthly Labour Force Survey, which are available since 1983. For the United States, we use the state unemployment rates issued by the Bureau of Labor Statistics as the Local Area Unemployment Statistics. The Japanese regions are on average one-fifth the size of the average American state, while having twice the average population.

We define a cohort as a group of people who entered the labor market in the same year and region or state, and then assign each person a vector of past and current regional unemployment rates based on his cohort. Since both the Labour Force Survey and the Current Population Survey are cross-sectional data sets lacking detailed employment history, we have to compute the year of graduation from the year of birth and educational background. Students in Japan typically receive job offers by the autumn of their last year of enrollment, while they graduate in March of the following year. Thus, we define entry-year y for the Japanese sample as follows: *year of birth + 6 + schooling* for those born in April-December, and *year of birth + 5 + schooling* for those born in January-March.[14] For the U.S. sample, we compute year of graduation y as year of survey $-$ age $+$ 6 $+$ the highest grade attended. This corresponds to the year of graduation for a person who entered elementary school at age 6 and went straight to the highest grade. Also, we have to use the region/state of current residence as the best available proxy for the region/state of residence at entry. The appendixes provide a lengthy discussion about the adequacy of our definition of cohorts and reservations that come from measurement errors.

We estimate the effects of the unemployment rate at entry to the labor market on current employment status and earnings net of region-fixed components and year-fixed components.[15] It is also necessary to control for temporary macro shocks at the time of the survey because unemployment rates may be autocorrelated, and the effect of the contemporaneous unemployment rate is itself worth estimating. To take into account these issues, we estimate the following probit model:

(3) $Y_{ityr} = 1$ if $Y^*_{ityr} = \beta_{(t-y)} u_{yr} + \gamma_{(t-y)} u_{tr} + \delta' X_{it} + \phi_t + \eta_r + \theta_r t + v_y + \varepsilon_{ityr} > 0$

        $= 0$ otherwise

---

14. The Japanese Labor Force Survey does not ask years of education, but asks the school attended. Thus, we define years of education as follows: nine for junior high school graduates, 12 for high school graduates, 14 for junior/tech college graduates, 16 for college graduates and those with further education.
15. The results from specifications without year dummies are presented in the appendixes for sensitivity checks.