2 March 2010
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Credit Ratings and Bank Monitoring Ability

APPENDIX

Table A-1A: OLS regressions with small borrowers, credit bureau and Bank A

Sample period is 1997Q3 to 2000Q1, standard errors are robust.

	Dependent variable					
Explanatory variables	Credit bureau rating			Bank A rating		
Constant	0.466	0.697	0.536	0.884	1.554	1.547
	(0.008)	(0.014)	(0.148)	(0.018)	(0.032)	(0.034)
Lag credit bureau rating	0.886	0.872	0.858		-0.119	
	(0.002)	(0.002)	(0.002)		(0.004)	
Lag Bank A rating		-0.020		0.906	0.882	0.881
		(0.001)		(0.002)	(0.002)	(0.002)
Credit bureau rating dummies	No	No	No	No	No	Yes
Bank rating dummies	No	No	Yes	No	No	No
Residual Sum of Squares	21510	21386	21301	67667	66495	66409
Adj. R^2	.7799	.7812	.7825	.8133	.8166	.8168
Nobs	77940	77940	77940	77940	77940	77940

Table A-1B: OLS regressions with medium-sized borrowers, credit bureau and Bank A

Sample period is 1997Q3 to 2000Q1, standard errors are robust.

	Dependent variable					
Explanatory variables	Credit bureau rating			Bank A rating		
Constant	0.476 (0.008)	0.714 (0.013)	0.700 (0.045)	0.882 (0.017)	1.480 (0.029)	1.480 (0.032)
Lag credit bureau rating	0.886 (0.002)	0.871 (0.002)	0.856 (0.002)		-0.107 (0.003)	
Lag Bank A rating		-0.021 (0.001)		0.906 (0.002)	0.886 (0.002)	0.885 (0.002)
Credit bureau rating dummies	No	No	No	No	No	Yes
Bank rating dummies	No	No	Yes	No	No	No
Residual Sum of Squares	89542	89542	89542	89542	89542	89542
Adj. R^2	.7801	.7815	.7829	.8215	.8240	.8242
Nobs	23683	23533	23382	73824	72780	72669

Table A-1C: OLS regressions with large borrowers, credit bureau and Bank A

Sample period is 1997Q3 to 2000Q1, standard errors are robust.

	Dependent variable					
Explanatory variables	Credit bureau rating			Bank A rating		
Constant	0.526	0.742	0.829	0.776	1.313	1.311
	(0.012)	(0.019)	(0.058)	(0.023)	(0.041)	(0.045)
Lag credit bureau rating	0.877	0.862	0.847		-0.098	
	(0.003)	(0.003)	(0.003)		(0.005)	
Lag Bank A rating		-0.019		0.916	0.900	0.899
		(0.001)		(0.002)	(0.003)	(0.003)
Credit bureau rating dummies	No	No	No	No	No	Yes
Bank rating dummies	No	No	Yes	No	No	No
Residual Sum of Squares	41032	41032	41032	41032	41032	41032
Adj. R^2	.7676	.7690	.7706	.8398	.8416	.8417
Nobs	10368	10305	10232	33332	32963	32932

Table A-2A: OLS regressions with small borrowers, credit bureau and Bank A (compressed)
Bank A ratings have been compressed from 15 to 8 grades. Sample period is 1997Q3 to 2000Q1, standard errors are robust.

	Dependent variable					
Explanatory variables	Credit bureau rating			Bank A rating		
Constant	0.466	0.741	0.598	0.226	0.587	0.617
	(0.008)	(0.014)	(0.020)	(0.006)	(0.014)	(0.019)
Lag credit bureau rating	0.886	0.863	0.862		-0.065	
	(0.002)	(0.002)	(0.002)		(0.002)	
Lag Bank A rating		-0.060		0.937	0.902	0.899
		(0.002)		(0.002)	(0.002)	(0.002)
Credit bureau rating dummies	No	No	No	No	No	Yes
Bank rating dummies	No	No	Yes	No	No	No
Residual Sum of Squares	21510	21309	21301	10815	10490	10449
Adj. R^2	.7799	.7820	.7821	.8509	.8554	.8559
Nobs	77940	77940	77940	77940	77940	77940

Table A-2B: OLS regressions with medium-sized borrowers, credit bureau and Bank A (compressed)
Bank A ratings have been compressed from 15 to 8 grades. Sample period is 1997Q3 to 2000Q1, standard errors are robust.

	Dependent variable					
Explanatory variables	Credit bureau rating			Bank A rating		
Constant	0.476 (0.008)	0.765 (0.013)	0.633 (0.017)	0.225 (0.005)	0.554 (0.013)	0.582 (0.018)
Lag credit bureau rating	0.886 (0.002)	0.861 (0.002)	0.860 (0.002)		-0.059 (0.002)	
Lag Bank A rating		-0.063 (0.002)		0.936 (0.002)	0.905 (0.002)	0.902 (0.002)
Credit bureau rating dummies	No	No	No	No	No	Yes
Bank rating dummies	No	No	Yes	No	No	No
Residual Sum of Squares	23683	23437	23429	11190	10896	10852
Adj. R^2	.7801	.7824	.7825	.8605	.8642	.8647
Nobs	89542	89542	89542	89542	89542	89542

Table A-2C: OLS regressions with large borrowers, credit bureau and Bank A (compressed)
Bank A ratings have been compressed from 15 to 8 grades. Sample period is 1997Q3 to 2000Q1, standard errors are robust.

	Dependent variable					
Explanatory variables	Credit bureau rating			Bank A rating		
Constant	0.526 (0.012)	0.797 (0.020)	0.682 (0.019)	0.187 (0.006)	0.470 (0.017)	0.498 (0.026)
Lag credit bureau rating	0.877 (0.003)	0.853 (0.003)	0.851 (0.003)		-0.051 (0.003)	
Lag Bank A rating		-0.059 (0.003)		0.946 (0.002)	0.922 (0.003)	0.920 (0.003)
Credit bureau rating dummies	No	No	No	No	No	Yes
Bank rating dummies	No	No	Yes	No	No	No
Residual Sum of Squares	10368	10263	10257	4530	4436	4423
Adj. R^2	.7676	.7699	.7700	.8800	.8825	.8828
Nobs	41032	41032	41032	41032	41032	41032

Table A-3A: OLS regressions with small borrowers, credit bureau and Bank B

Sample period is 1997Q3 to 2000Q1, standard errors are robust.

	Dependent variable					
Explanatory variables	Credit bureau rating			Bank B rating		
Constant	0.432 (0.029)	0.910 (0.075)	0.651 (0.055)	0.144 (0.020)	0.227 (0.033)	0.232 (0.035)
Lag credit bureau rating	0.886 (0.007)	0.861 (0.008)	0.861 (0.008)		-0.013 (0.003)	
Lag Bank B rating		-0.100 (0.014)		0.965 (0.005)	0.956 (0.006)	0.955 (0.006)
Credit bureau rating dummies	No	No	No	No	No	Yes
Bank rating dummies	No	No	Yes	No	No	No
Residual Sum of Squares	1326	1310	1309	172	171	171
Adj. R^2	.7771	.7797	.7796	.9139	.9143	.9143
Nobs	4564	4564	4564	4564	4564	4564

Table A-3B: OLS regressions with medium-sized borrowers, credit bureau and Bank B

Sample period is 1997Q3 to 2000Q1, standard errors are robust.

	Dependent variable					
Explanatory variables	Credit bureau rating			Bank B rating		
Constant	0.446 (0.008)	0.941 (0.019)	0.744 (0.084)	0.172 (0.006)	0.300 (0.009)	0.293 (0.010)
Lag credit bureau rating	0.885 (0.002)	0.858 (0.002)	0.858 (0.002)		-0.020 (0.001)	
Lag Bank B rating		-0.103 (0.003)		0.958 (0.002)	0.944 (0.002)	0.944 (0.002)
Credit bureau rating dummies	No	No	No	No	No	Yes
Bank rating dummies	No	No	Yes	No	No	No
Residual Sum of Squares	18406	18148	18140	2887	2861	2859
Adj. R^2	.7770	.7801	.7802	.9046	.9055	.9055
Nobs	68116	68116	68116	68116	68116	68116

Table A-3C: OLS regressions with large borrowers, credit bureau and Bank B

Sample period is 1997Q3 to 2000Q1, standard errors are robust.

	Dependent variable					
Explanatory variables	Credit bureau rating			Bank B rating		
Constant	0.459 (0.010)	0.944 (0.023)	0.686 (0.068)	0.153 (0.007)	0.272 (0.012)	0.263 (0.013)
Lag credit bureau rating	0.886 (0.002)	0.856 (0.003)	0.855 (0.003)		-0.018 (0.001)	
Lag Bank B rating		-0.099 (0.004)		0.962 (0.002)	0.949 (0.002)	0.949 (0.002)
Credit bureau rating dummies	No	No	No	No	No	Yes
Bank rating dummies	No	No	Yes	No	No	No
Residual Sum of Squares	10867	10702	10693	1921	1908	1907
Adj. R^2	.7838	.7871	.7873	.9109	.9116	.9116
Nobs	43765	43765	43765	43765	43765	43765

Table A-4A: Ordered logit regressions with small borrowers, credit bureau and Bank A
Sample period is 1997Q3 to 2000Q1, standard errors are robust.

	Dependent variable					
Explanatory variables	Credit bureau rating			Bank A rating		
Constant	4.655 (0.041)	3.714 (0.063)	4.744 (0.669)	2.378 (0.222)	1.929 (0.225)	1.564 (0.226)
Lag credit bureau rating	3.270 (0.017)	3.225 (0.017)	3.185 (0.018)		-0.095 (0.005)	
Lag Bank A rating		-0.083 (0.004)		2.720 (0.024)	2.706 (0.024)	2.702 (0.024)
Credit bureau rating dummies	No	No	No	No	No	Yes
Bank rating dummies	No	No	Yes	No	No	No
Pseudo-R^2	.5032	.5050	.5074	.5062	.5068	.5076
McKelvey & Zavoina's R^2	.802	.804	.806	.912	.912	.912
BIC	104909	104553	104177	156400	156238	155991
Nobs	77940	77940	77940	77940	77940	77940

Table A-4B: Ordered logit regressions with medium-sized borrowers, credit bureau and Bank A
Sample period is 1997Q3 to 2000Q1, standard errors are robust.

	Dependent variable					
Explanatory variables	Credit bureau rating			Bank A rating		
Constant	4.722 (0.040)	3.707 (0.060)	3.943 (0.255)	3.884 (0.103)	3.474 (0.107)	3.084 (0.109)
Lag credit bureau rating	3.335 (0.016)	3.289 (0.017)	3.246 (0.017)		-0.086 (0.005)	
Lag Bank A rating		-0.089 (0.004)		2.819 (0.023)	2.806 (0.023)	2.802 (0.023)
Credit bureau rating dummies	No	No	No	No	No	Yes
Bank rating dummies	No	No	Yes	No	No	No
Pseudo-R^2	.5085	.5105	.5129	.5181	.5185	.5194
McKelvey & Zavoina's R^2	.802	.804	.806	.918	.918	.918
BIC	117247	116783	116344	176016	175873	175572
Nobs	89542	89542	89542	89542	89542	89542

Table A-4C: Ordered logit regressions with large borrowers, credit bureau and Bank A
Sample period is 1997Q3 to 2000Q1, standard errors are robust.

	Dependent variable					
Explanatory variables	Credit bureau rating			Bank A rating		
Constant	4.622 (0.065)	3.667 (0.091)	2.930 (0.466)	3.337 (0.142)	2.984 (0.149)	2.638 (0.153)
Lag credit bureau rating	3.313 (0.025)	3.265 (0.025)	3.222 (0.025)		-0.072 (0.007)	
Lag Bank A rating		-0.083 (0.006)		2.928 (0.036)	2.918 (0.036)	2.916 (0.036)
Credit bureau rating dummies	No	No	No	No	No	Yes
Bank rating dummies	No	No	Yes	No	No	No
Pseudo-R^2	.4996	.5016	.5045	.5368	.5371	.5377
McKelvey & Zavoina's R^2	.784	.786	.789	.930	.930	.930
BIC	51849	51656	51483	80010	79974	79905
Nobs	41032	41032	41032	41032	41032	41032

Table A-5A: Ordered logit regressions with small borrowers, credit bureau and Bank A (compressed)
Bank A ratings have been compressed from 15 to 8 grades. Sample period is 1997Q3 to 2000Q1, standard errors are robust.

	Dependent variable					
Explanatory variables	Credit bureau rating			Bank A rating		
Constant	4.655 (0.041)	3.629 (0.060)	4.219 (0.094)	6.181 (0.063)	4.243 (0.078)	4.753 (0.087)
Lag credit bureau rating	3.270 (0.017)	3.206 (0.017)	3.202 (0.017)		-0.400 (0.010)	
Lag Bank A rating		-0.225 (0.009)		5.262 (0.035)	5.178 (0.036)	5.179 (0.036)
Credit bureau rating dummies	No	No	No	No	No	Yes
Bank rating dummies	No	No	Yes	No	No	No
Pseudo-R^2	.5032	.5057	.5061	.6815	.6874	.6875
McKelvey & Zavoina's R^2	.802	.804	.805	.884	.889	.889
BIC	104909	104400	104361	63302	62137	62151
Nobs	77940	77940	77940	77940	77940	77940

Table A-5B: Ordered logit regressions with medium-sized borrowers, credit bureau and Bank A (compressed)
Bank A ratings have been compressed from 15 to 8 grades. Sample period is 1997Q3 to 2000Q1, standard errors are robust.

	Dependent variable					
Explanatory variables	Credit bureau rating			Bank A rating		
Constant	4.722 (0.040)	3.610 (0.058)	4.131 (0.090)	6.518 (0.059)	4.572 (0.074)	5.077 (0.085)
Lag credit bureau rating	3.335 (0.016)	3.266 (0.017)	3.262 (0.017)		-0.396 (0.010)	dummies
Lag Bank A rating		-0.243 (0.009)	dummies	5.442 (0.033)	5.357 (0.034)	5.358 (0.034)
Credit bureau rating dummies	No	No	No	No	No	Yes
Bank rating dummies	No	No	Yes	No	No	No
Pseudo-R^2	.5085	.5113	.5118	.6990	.7042	.7043
McKelvey & Zavoina's R^2	.802	.805	.805	.888	.893	.893
BIC	117247	116597	116543	68268	67101	67106
Nobs	89542	89542	89542	89542	89542	89542

Table A-5C: Ordered logit regressions with large borrowers, credit bureau and Bank A (compressed)
Bank A ratings have been compressed from 15 to 8 grades. Sample period is 1997Q3 to 2000Q1, standard errors are robust.

	Dependent variable					
Explanatory variables	Credit bureau rating			Bank A rating		
Constant	4.622 (0.065)	3.541 (0.088)	3.975 (0.102)	7.508 (0.083)	5.580 (0.110)	6.017 (0.131)
Lag credit bureau rating	3.313 (0.025)	3.244 (0.025)	3.239 (0.025)		-0.395 (0.016)	
Lag Bank A rating		-0.236 (0.013)		5.718 (0.051)	5.647 (0.051)	5.648 (0.051)
Credit bureau rating dummies	No	No	No	No	No	Yes
Bank rating dummies	No	No	Yes	No	No	No
Pseudo-R^2	.4996	.5024	.5029	.7268	.7310	.7311
McKelvey & Zavoina's R^2	.784	.787	.787	.900	.904	.904
BIC	51849	51565	51571	29080	28645	28669
Nobs	41032	41032	41032	41032	41032	41032

Table A-6A: Ordered logit regressions with small borrowers, credit bureau and Bank B

Sample period is 1997Q3 to 2000Q1, standard errors are robust.

	Dependent variable					
Explanatory variables	Credit bureau rating			Bank B rating		
Constant	4.621 (0.159)	2.490 (0.298)	3.711 (0.543)	11.136 (0.754)	9.212 (0.864)	9.223 (0.853)
Lag credit bureau rating	3.265 (0.069)	3.184 (0.070)	3.180 (0.070)		-0.355 (0.080)	
Lag Bank B rating		-0.461 (0.056)		7.425 (0.176)	7.282 (0.177)	7.292 (0.178)
Credit bureau rating dummies	No	No	No	No	No	Yes
Bank rating dummies	No	No	Yes	No	No	No
Pseudo-R^2	.4985	.5032	.5034	.8246	.8268	.8272
McKelvey & Zavoina's R^2	.807	.811	.811	.878	.882	.883
BIC	6556	6503	6534	1643	1631	1653
Nobs	4564	4564	4564	4564	4564	4564

Table A-6B: Ordered logit regressions with medium-sized borrowers, credit bureau and Bank B
Sample period is 1997Q3 to 2000Q1, standard errors are robust.

	Dependent variable					
Explanatory variables	Credit bureau rating			Bank B rating		
Constant	4.818 (0.043)	2.628 (0.080)	3.428 (0.575)	9.185 (0.308)	6.773 (0.309)	7.166 (0.313)
Lag credit bureau rating	3.393 (0.018)	3.312 (0.018)	3.310 (0.018)		-0.459 (0.019)	
Lag Bank B rating		-0.471 (0.015)		7.182 (0.044)	7.047 (0.044)	7.057 (0.045)
Credit bureau rating dummies	No	No	No	No	No	Yes
Bank rating dummies	No	No	Yes	No	No	No
Pseudo-R^2	.5066	.5115	.5117	.8090	.8131	.8132
McKelvey & Zavoina's R^2	.808	.813	.813	.873	.879	.880
BIC	94544	93612	93625	26056	25510	25529
Nobs	68116	68116	68116	68116	68116	68116

Table A-6C: Ordered logit regressions with large borrowers, credit bureau and Bank B
Sample period is 1997Q3 to 2000Q1, standard errors are robust.

	Dependent variable					
Explanatory variables	Credit bureau rating			Bank B rating		
Constant	4.844 (0.058)	2.617 (0.102)	4.004 (0.346)	10.186 (0.233)	7.909 (0.259)	8.285 (0.271)
Lag credit bureau rating	3.475 (0.023)	3.382 (0.024)	3.378 (0.024)		-0.423 (0.025)	
Lag Bank B rating		-0.472 (0.018)		7.212 (0.056)	7.063 (0.056)	7.067 (0.056)
Credit bureau rating dummies	No	No	No	No	No	Yes
Bank rating dummies	No	No	Yes	No	No	No
Pseudo-R^2	.5188	.5241	.5243	.8155	.8185	.8186
McKelvey & Zavoina's R^2	.808	.813	.813	.885	.889	.889
BIC	57197	56579	56599	17077	16813	16838
Nobs	43765	43765	43765	43765	43765	43765

Table A-7: Cox regressions on Credit Bureau defaults

The Breslow method has been used for tied observations.

A * indicates that the variable had to be dropped because no defaults occur for the dependent variable at the relevant lag.

The "-" sign indicates that the particular RHS variable is not available for this regression.

	Dependent variable: Credit bureau default							
Explanatory variables	RHS: Lag 2, Bank A or CB				RHS: Lag 2, Bank B or CB			
Lag credit bureau rating			0.37 (0.023)				0.36 (0.029)	
Lag bank rating	2.12 (0.098)				3.07 (0.28)			
Lag, Dummy bank rating = 2		0.068 (0.029)				*		
Lag, Dummy bank rating = 3		0.12 (0.041)				*		
Lag, Dummy bank rating = 4		0.39 (0.13)				8.95 (5.31)		
Lag, Dummy bank rating = 5		1.20 (0.41)				46.98 (28.00)		
Lag, Dummy bank rating = 6		2.84 (0.98)				62.68 (44.33)		
Lag, Dummy bank rating = 7		4.27 (1.55)				-		
Lag, Dummy CB rating = 1				43.05 (12.50)				35.36 (13.83)
Lag, Dummy CB rating = 2				15.77 (4.91)				16.45 (6.60)
Lag, Dummy CB rating = 3				4.16 (1.29)				3.82 (1.54)
Lag, Dummy CB rating = 4				2.08 (0.72)				1.41 (0.67)
Residual Sum of Squares								
Number of subjects	29631	29631	29631	29631	16466	16466	16466	16466
Number of failures	158	158	158	158	110	110	110	110
Nobs	187326	187326	187326	187326	106321	106321	106321	106321
Loglikelihood	-1476.3	-1478.4	-1442.6	-1440.4	-966.9	-962.1	-940.2	-937.9

Table A-8: Cox regressions on Bank defaults

The Breslow method has been used for tied observations.

A * indicates that the variable had to be dropped because no defaults occur for the dependent variable at the relevant lag.

The "-" sign indicates that the particular RHS variable is not available for this regression.

	Dependent variable: Bank A default				Dependent variable: Bank B default			
Explanatory variables	RHS: Lag 2, Bank A or CB				RHS: Lag 2, Bank B or CB			
Lag credit bureau rating			0.32 (0.013)				.33 (.020)	
Lag bank rating	2.51 (.084)				4.98 (0.45)			
Lag, Dummy bank rating = 2		*				*		
Lag, Dummy bank rating = 3		3.19 (0.87)				*		
Lag, Dummy bank rating = 4		12.20 (3.33)				7.81 (3.60)		
Lag, Dummy bank rating = 5		36.53 (9.96)				44.15 (20.41)		
Lag, Dummy bank rating = 6		55.52 (16.13)				161.44 (78.85)		
Lag, Dummy bank rating = 7		106.73 (31.37)				-		
Lag, Dummy CB rating = 1				38.55 (7.53)				20.20 (5.11)
Lag, Dummy CB rating = 2				19.48 (3.91)				10.43 (2.70)
Lag, Dummy CB rating = 3				4.38 (0.89)				2.29 (0.60)
Lag, Dummy CB rating = 4				1.58 (0.38)				0.97 (0.31)
Residual Sum of Squares								
Number of subjects	29559	29559	29559	29559	16426	16426	16426	16426
Number of failures	360	360	360	360	186	186	186	186
Nobs	186814	186814	186814	186814	105908	105908	105908	105908
Loglikelihood	-3283.5	-3269.4	-3192.9	-3275.8	-1596.8	-1595.7	-1558.3	-1610.9

Table A-9: OLS regressions on continuous simulated data

The regressions are based on simulated continuous data using 1-quarter lags.
Data have been generated from a random walk process using the following parameters:
N = 1000; T = 20,σ_{cb} = 10, σ_{bank} = 2,5

	Dependent variable			
Explanatory variables	Credit bureau rating		Bank rating	
Constant	0.005 (0.032)	0.007 (0.030)	0.017 (0.031)	0.017 (0.031)
Lag credit bureau rating	1.011 (0.008)	0.680 (0.031)		-0.016 (0.032)
Lag bank rating		0.332 (0.031)	1.009 (0.007)	1.025 (0.031)
Residual Sum of Squares	1011	905	947	947
Adj. R^2	.9427	.9487	.9484	.9484
Nobs	1000	1000	1000	1000

Table A-10: OLS regressions based on staggered updating simulation.

In the simulation of ratings we use one-quarter lags and assume that 25% of the borrowers are observed without lag, 25% are observed with a one-period lag, 25% a two-period lag, and 25% with a three-period lag.

Data have been generated from a random walk process using the following parameters: N = 1000; T = 20,σ_{cb} = 10, σ_{bank} = 2,5

	Dependent variable			
Explanatory variables	Credit bureau rating		Bank rating	
Constant	0.010 (0.031)	0.008 (0.029)	-0.016 (0.031)	-0.017 (0.030)
Lag credit bureau rating	1.014 (0.008)	0.762 (0.022)		0.167 (0.023)
Lag bank rating		0.259 (0.021)	0.993 (0.008)	0.842 (0.022)
Residual Sum of Squares	973	845	963	913
Adj. R^2	.9399	.9478	.9423	.9452
Nobs	1000	1000	1000	1000

Table A-11: OLS regressions based on categorical data simulation.
In the simulation of ratings we use one-quarter lags and 6 categories, whose upper bounds are -6 2/3, -3 1/3, 0, 3 1/3, 6 2/3, and infinity.
Data have been generated from a random walk process using the following parameters:
N = 1000; T = 20, σ_{cb} = 10, σ_{bank} = 2,5

	Dependent variable					
Explanatory variables	Credit bureau rating			Bank rating		
Constant	0.033 (0.054)	0.033 (0.049)	2.867 (0.234)	0.112 (0.053)	0.070 (0.052)	-1.243 (0.308)
Lag credit bureau rating	0.945 (0.015)	0.544 (0.032)	0.543 (0.033)		0.227 (0.034)	
Lag bank rating		0.427 (0.032)		0.938 (0.014)	0.737 (0.033)	0.737 (0.033)
Credit bureau rating dummies	No	No	No	No	No	Yes
Bank rating dummies	No	No	Yes	No	No	No
Residual Sum of Squares	2165	1803	1800	2120	2023	2018
Adj. R^2	.8203	.8502	.8499	.8295	.8371	.8370
Nobs	1000	1000	1000	1000	1000	1000

Table A-12: OLS with staggered updating and categorical data simulation.

In the simulation, we use a one-quarter lag based on staggering plus a categorical data simulation of ratings. The data simulates the distribution of Bank B ratings and credit bureau ratings of Bank B's customers. Data have been generated from a random walk process using the following parameters:
$N = 1000$; $T = 20, \sigma_{cb} = 10$, $\sigma_{bank} = 2{,}5$

	Dependent variable					
Explanatory variables	Credit bureau rating			Bank rating		
Constant	0.151 (0.031)	-0.541 (0.089)	0.222 (0.099)	0.487 (0.061)	0.830 (0.069)	1.632 (0.149)
Lag credit bureau rating	0.929 (0.014)	0.800 (0.021)	0.778 (0.021)		0.152 (0.016)	
Lag bank rating		0.248 (0.030)		0.869 (0.016)	0.700 (0.023)	0.691 (0.024)
Credit bureau rating dummies	No	No	No	No	No	Yes
Bank rating dummies	No	No	Yes	No	No	No
Residual Sum of Squares	193	180	177	116	107	106
Adj. R^2	.8206	.8319	.8351	.7555	.7760	.7760
Nobs	1000	1000	1000	1000	1000	1000

Table A-13: Ordered logit regressions based on categorical data simulation.

In the simulation of ratings we use one-quarter lags and 6 categories, whose upper bounds are -6 2/3, -3 1/3, 0, 3 1/3, 6 2/3, and infinity.

Data have been generated from a random walk process using the following parameters: $N = 1000$; $T = 20, \sigma_{cb} = 10$, $\sigma_{bank} = 2,5$

	Dependent variable					
Explanatory variables	Credit bureau rating			Bank rating		
Constant	-6.375 (0.299)	-7.498 (0.359)	-11.965 (0.614)	-6.434 (0.300)	-6.651 (0.312)	-9.138 (0.538)
Lag credit bureau rating	1.198 (0.044)	0.780 (0.054)	0.783 (0.054)		0.356 (0.054)	
Lag bank rating		0.651 (0.052)		1.210 (0.045)	0.952 (0.056)	0.954 (0.056)
Credit bureau rating dummies	No	No	No	No	No	Yes
Bank rating dummies	No	No	Yes	No	No	No
Pseudo-R^2	.5556	.6129	.6133	.5682	.5836	.5849
Nobs	914	914	914	914	914	914

Table A-14: Ordered logit regressions with staggered updating and categorical data simulation.

In the simulation, we use a one-quarter lag based on staggering plus a categorical data simulation of ratings. The data simulates the distribution of Bank B ratings and credit bureau ratings of Bank B's customers. Data have been generated from a random walk process using the following parameters: $N = 1000$; $T = 20, \sigma_{cb} = 10$, $\sigma_{bank} = 2,5$

	Dependent variable					
Explanatory variables	Credit bureau rating			Bank rating		
Constant	5.999 (0.254)	12.833 (0.904)	26.532 (0.027)	10.998 (0.612)	9.875 (0.620)	7.967 (0.631)
Lag credit bureau rating	3.874 (0.145)	3.241 (0.155)	3.233 (0.016)		1.915 (0.214)	
Lag bank rating		2.093 (0.238)		4.821 (0.192)	3.686 (0.207)	3.691 (0.209)
Credit bureau rating dummies	No	No	No	No	No	Yes
Bank rating dummies	No	No	Yes	No	No	No
Pseudo-R^2	.5586	.5936	.5949	.5874	.6393	.6411
Nobs	991	991	991	991	991	991

Table A-15: Log Likelihoods in Cox proportional hazards model; Small borrowers

Loglikelihood values for models with only one RHS variable come from regressions similar to those in Tables 13-14 (lag 1) and Tables A.7-A.8 (lag 2) but for small borrowers only, are not reported elsewhere..
Significance of an additional RHS variable is shown at the 10 (*), 5 (**), 1 (***), and 0.1 (****) percent levels.
In the likelihood ratio tests (lower panel), the value displayed is 2*log(likelihood ratio).

	Dependent variable			
	Credit bureau default		Bank default	
Explanatory variables	Bank A	Bank B	Bank A	Bank B
Lag of CB rating	-632.8	-165.0	-813.2	-144.6
Lag of Bank Rating	-706.7	-178.4	-892.2	-149.6
Lag of CB and Bank Rating	-630.2	-162.8	-796.9	-139.6
Lag 2 of CB rating	-561.8	-126.6	-1024.4	-137.6
Lag 2 of Bank Rating	-607.9	-135.2	-1105.2	-146.8
Lag 2 of CB and Bank Rating	-561.1	-125.5	-1014.8	-134.0
Likelihood ratio tests for exclusion of particular lags				
Single Lag Only				
Exclusion of Lag of Bank Rating	5.3 **	4.3 **	32.7 ****	10.1 ***
Exclusion of Lag of CB Rating	152.9 ****	31.1 ****	190.6 ****	20.1 ****
Second Lag Only				
Exclusion of Lag 2 of Bank Rating	1,4	2,1	19.3 ****	7.2 ***
Exclusion of Lag 2 of CB Rating	93.5 ****	19.5 ****	180.8 ****	25.6 ****

Table A-16: Log Likelihoods in Cox proportional hazards model; Medium-sized borrowers

Loglikelihood values for models with only one RHS variable come from regressions similar to those in Tables 13-14 (lag 1) and Tables A.7-A.8 (lag 2) but for medium-sized borrowers only, are not reported elsewhere.. Significance of an additional RHS variable is shown at the 10 (*), 5 (**), 1 (***), and 0.1 (****) percent levels. In the likelihood ratio tests (lower panel), the value displayed is 2*log(likelihood ratio).

	Dependent variable			
	Credit bureau default		Bank default	
Explanatory variables	Bank A	Bank B	Bank A	Bank B
Lag of CB rating	-626.9	-700.0	-1263.1	-850.4
Lag of Bank Rating	-626.8	-721.6	-1242.4	-896.9
Lag of CB and Bank Rating	-604.6	-682.2	-1191.0	-832.9
Lag 2 of CB rating	-576.6	-561.4	-1456.4	-1016.8
Lag 2 of Bank Rating	-584.0	-580.8	-1491.6	-1045.4
Lag 2 of CB and Bank Rating	-566.3	-551.5	-1423.0	-993.2
Likelihood ratio tests for exclusion of particular lags				
Single Lag Only				
Exclusion of Lag of Bank Rating	44.5 ****	35.1 ****	144.2 ****	34.9 ****
Exclusion of Lag of CB Rating	44.2 ****	78.6 ****	102.8 ****	127.9 ****
Second Lag Only				
Exclusion of Lag 2 of Bank Rating	20.7 ****	19.9 ****	66.9 ****	47.3 ****
Exclusion of Lag 2 of CB Rating	35.5 ****	58.7 ****	137.2 ****	104.4 ****

Table A-17: Log Likelihoods in Cox proportional hazards model; Large borrowers

Loglikelihood values for models with only one RHS variable come from regressions similar to those in Tables 13-14 (lag 1) and Tables A.7-A.8 (lag 2) but for large borrowers only, are not reported elsewhere..
Significance of an additional RHS variable is shown at the 10 (*), 5 (**), 1 (***), and 0.1 (****) percent levels.
In the likelihood ratio tests (lower panel), the value displayed is 2*log(likelihood ratio).

	Dependent variable			
	Credit bureau default		Bank default	
Explanatory variables	Bank A	Bank B	Bank A	Bank B
Lag of CB rating	-150.2	-166.0	-301.4	-242.5
Lag of Bank Rating	-125.1	-160.0	-274.5	-217.8
Lag of CB and Bank Rating	-124.9	-156.8	-262.2	-213.6
Lag 2 of CB rating	-144.5	-153.0	-335.9	-252.0
Lag 2 of Bank Rating	-127.7	-151.9	-324.4	-253.7
Lag 2 of CB and Bank Rating	-127.3	-149.2	-312.2	-241.8
Likelihood ratio tests for exclusion of particular lags				
Single Lag Only				
Exclusion of Lag of Bank Rating	50.6 ****	18.3 ****	78.4 ****	57.9 ****
Exclusion of Lag of CB Rating	0.6	6.4 **	24.6 ****	8.5 ***
Second Lag Only				
Exclusion of Lag 2 of Bank Rating	34.4 ****	7.5 ***	47.2 ****	20.4 ****
Exclusion of Lag 2 of CB Rating	0.8	5.2 **	24.4 ****	23.8 ****