

Multiple regression: Multicollinearity

(1) None

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. reg lwage educ exper female;
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Source	SS	df	MS	Number of obs = 2000		
Model	182.35726	3	60.7857535	F(3, 1996) = 247.50		
Residual	490.219607	1996	.245601005	Prob > F = 0.0000		
Total	672.576867	1999	.336456662	R-squared = 0.2711		
				Adj R-squared = 0.2700		
				Root MSE = .49558		

lwage	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
educ	.1167441	.0053157	21.96	0.000	.1063191	.127169
exper	.0109089	.000869	12.55	0.000	.0092046	.0126132
female	-.2543189	.0222067	-11.45	0.000	-.2978696	-.2107682
_cons	1.055792	.0757381	13.94	0.000	.9072576	1.204326

(2) Perfectly collinear

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. reg lwage educ exper female male;
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Source	SS	df	MS	Number of obs = 2000		
Model	182.35726	3	60.7857535	F(3, 1996) = 247.50		
Residual	490.219607	1996	.245601005	Prob > F = 0.0000		
Total	672.576867	1999	.336456662	R-squared = 0.2711		
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lwage	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
educ	.1167441	.0053157	21.96	0.000	.1063191	.127169
exper	.0109089	.000869	12.55	0.000	.0092046	.0126132
female	-.2543189	.0222067	-11.45	0.000	-.2978696	-.2107682
male	(dropped)					
_cons	1.055792	.0757381	13.94	0.000	.9072576	1.204326

(3) Almost collinear

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. reg lwage educ exper female age;
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Source	SS	df	MS	Number of obs = 2000		
Model	183.543629	4	45.8859073	F(4, 1995) = 187.19		
Residual	489.033238	1995	.245129443	Prob > F = 0.0000		
Total	672.576867	1999	.336456662	R-squared = 0.2729		
				Adj R-squared = 0.2714		
				Root MSE = .49511		

lwage	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
educ	.1469495	.0147213	9.98	0.000	.1180787	.1758203
exper	.041083	.0137433	2.99	0.003	.0141303	.0680357
female	-.2540997	.0221856	-11.45	0.000	-.297609	-.2105904
age	-.030119	.0136908	-2.20	0.028	-.0569688	-.0032693
_cons	1.264275	.1212689	10.43	0.000	1.026448	1.502102

Not easy to detect