

Multiple regression: Multicollinearity

(1) None

. reg lwage educ exper female

Source	SS	df	MS	
Model	182.35726	3	60.7857535	Number of obs = 2000
Residual	490.219607	1996	.245601005	F(3, 1996) = 247.50
Total	672.576867	1999	.336456662	Prob > F = 0.0000
				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

. reg lwage educ exper female male

Source	SS	df	MS	
Model	182.35726	3	60.7857535	Number of obs = 2000
Residual	490.219607	1996	.245601005	F(3, 1996) = 247.50
Total	672.576867	1999	.336456662	Prob > F = 0.0000
				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
male	(dropped)				
_cons	1.055792	.0757381	13.94	0.000	.9072576 1.204326

(3) Almost collinear

. reg lwage educ exper female age

Source	SS	df	MS	
Model	182.468262	4	45.6170655	Number of obs = 2000
Residual	490.108605	1995	.245668474	F(4, 1995) = 185.69
Total	672.576867	1999	.336456662	Prob > F = 0.0000
				R-squared = 0.2713
				Adj R-squared = 0.2698
				Root MSE = .49565

lwage	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
educ	.1692465	.1115687	1.52	0.129	-.0495568 .3880498
exper	.0633711	.1113346	0.57	0.569	-.1549732 .2817154
female	-.2545469	.0222135	-11.46	0.000	-.298111 -.2109827
age	-.0524796	.1113744	-0.47	0.638	-.270902 .1659428
_cons	1.370917	.6728026	2.04	0.042	.0514472 2.690386

Not easy to detect

Summary

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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
				R-squared =	0.2711
				Adj R-squared =	0.2700
Total	672.576867	1999	.336456662	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