Williamson-York Iterative Bivariate Fit Shell

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Bivariate:		
	m	-0.480533407446
	b	5.479910224033
	std err m	0.070620269529
	std err b	0.359246522551
	Goodness of fit	1.483294149258

Standard:						
m	-0.539577274984	std err m	0.042126548	last data:	B38
b	5.761185190439	std err b	0.189485196	No. of pts	10
r^2	0.95350386	std err y	0.316358879		
F	164.0572952				

(1) You will need "Data Analysis" add-in enabled (to use Solver); the approach is slightly different with Excel 2007
(2) Solver options: time: 100, iterations: 10000, precision: 1E-30, tolerance: 1E-20, convergence: 1E-30, check "Use Automatic Scaling"
(3) put x, y, variance(x) (or wx), and variance(y) (or wy) data in row 29 and below (check for other data below yours). Leave no gaps in data.
(4) Indicate whether values of variance(x) (or wx) and variance(y) (or wy) are weights (W) or variances (S) in C25.
(5) copy formulas in wi, wixi, wiyi, zi or βi, wiβiVi, wiβiUi, βiwi & wi(βi-βbar)² for each data pair (initial setup for up to 5500 data pairs)
(6) Select Tools/Solver and set difference (N21) to 0, by adjusting initial guess for m (M21). Can put std slope (K1) value as initial guess.
(7) Check for errors in results screen and accept new results if ok.
(8) Results in G1 and G2. Compare to standard least squares in K1 and K2
(9) Test with Pearson's data with York's weights (m=-0.480533407446, b=5.479910224033)

initial guess	difference
-0.4805334	0.00E+00

No. of pts: 10		weights or variances code			*Σwi*				*ΣwiβiUi*	*ΣwiβiVi*		*Σwi(βi-β bar)²*	
		W			*158.61212*				*-140.74687*	*292.89717*		*297.41889*	
3.85	*3.6*			*← Median*		*x bar*	*y bar*				*β bar*		*sum S*
3.82	*3.7*	*366.28*	*79.48*	*← Mean*		*4.9109694*	*3.1200254*				*-0.0117235*		*11.86635319*
x	**y**	**var(x) or wxi**	**var(y) or wyi**		**wi**	**wixi**	**wiyi**	**zi or βi**	**wiβiUi**	**wiβiVi**	**βiwi**	**wi(βi-βbar)²**	**S**
0.0	5.9	1000.0	1.0		0.99976914	0	5.89863793	-4.9111712	-13.649779	24.1130431	-4.9100374	23.9990461	0.176434679
0.9	5.4	1000.0	1.8		1.79925215	1.61932694	9.71596164	-4.0112742	-16.455246	28.9483439	-7.2172937	28.7815677	0.223656928
1.8	4.4	500.0	4.0		3.99262443	7.18672397	17.5675475	-3.1101445	-15.894263	38.6308947	-12.417639	38.3300456	0.184473388
2.6	4.6	800.0	8.0		7.98156957	20.7520809	36.71522	-2.3127407	-27.319297	42.6588787	-18.459301	42.2598597	1.089587879
3.3	3.5	200.0	20.0		19.5485987	64.5103757	68.4200955	-1.5924566	-11.828722	50.1499515	-31.130295	48.8464207	3.036957036
4.4	3.7	80.0	20.0		18.9084512	83.1971855	69.9612696	-0.5489536	-6.0200567	5.30379157	-10.379862	5.45728556	2.114871553
5.2	2.8	60.0	70.0		55.1442604	286.750154	154.403929	0.36902856	-6.5124549	5.8817179	20.3498069	7.99437979	1.809307092
6.1	2.8	20.0	70.0		38.7126764	236.147326	108.395494	0.95524677	-11.83459	43.9705428	36.9801593	36.1975704	2.445618588
6.5	2.4	1.8	100.0		7.23146103	47.0044967	17.3555065	1.50494259	-7.8359885	17.2933152	10.8829337	16.6343559	0.013719569
7.4	1.5	1.0	500.0		4.2934605	31.7716077	6.44019076	3.36373044	-23.396478	35.9466897	14.4420438	48.9183543	0.771726482