Appendix B

Results for the simulated data sets generated

assuming dependence between y_1 and y_3

Table B-0

The parameters of the distributions of the z_i for each data set, and the representation of the ratios y_i in terms of those z_i, when y_2 and (y_1, y_3) are independent and cov(y_1,y_3) > 0

Table #	z_1	z_2	z_3	z_4	y_1	y_2	y_3
B-1	(2,3)	(5,7)	(26,17)	(16,22)	$z_2 z_3$	z_1	$z_2 z_4$
B-2	(2,8)	(3,4)	(4,5)	(4,9)	$z_2 z_4$	z_1	$z_3 z_4$
B-3	(2,6)	(5,2)	(2,1)	(4,6)	$z_2 z_3$	z_1	$z_2 z_4$
B-4	(2,6)	(5,2)	(2,1)	(4,6)	$z_1 z_3$	z_2	$z_1 z_4$
B-5	(2,8)	(3,4)	(4,5)	(4,9)	$z_1 z_4$	z_2	$z_3 z_4$
B-6	(2,3)	(5,7)	(26,17)	(16,22)	$z_1 z_2$	z_3	$z_1 z_4$
B-7	(26,17)	(5,2)	(2,1)	(4,6)	$z_2 z_3$	z_1	$z_2 z_4$
B-8	(2,6)	(5,2)	(2,1)	(4,6)	$z_1 z_3$	z_2	$z_3 z_4$
B-9	(26,6)	(50,2)	(2,10)	(4,6)	$z_2 z_3$	z_1	$z_2 z_4$
B-10	(26,17)	(5,2)	(2,1)	(4,6)	$1 - z_2 z_3$	z_1	$1 - z_2 z_4$
B-11	(2,8)	(3,4)	(4,5)	(4,9)	$1 - z_1 z_4$	z_2	$1 - z_3 z_4$
B-12	(100,1)	(3,4)	(4,5)	(100,1.1)	$z_2 z_4$	z_1	$z_3 z_4$
B-13	(100,1)	(3,4)	(4,5)	(100,1.1)	$z_2 z_4$	$1 - z_1$	$z_3 z_4$
B-14	(2,8)	(3,4)	(4,5)	(4,9)	$1 - z_3 z_4$	$1 - z_1$	$1 - z_2 z_4$
B-15	(2,6)	(5,2)	(2,1)	(4,6)	$1 - z_1 z_4$	$1 - z_2$	$1 - z_1 z_3$

Table B-1

1. y_1 and y_3 are the two most strongly correlated ratios (empirically).
2. The signs of the true and the empirical correlations are preserved under the independent ratios model.
3. The signs of the true and the empirical correlations are also preserved under all three dependent ratios models.
4. The Euclidean distances between the true (respectively, the empirical) correlations and the dependent ratios model are at least as small as the distance between the true (respectively, the empirical except the model where, y_1 and y_2 are assumed to be correlated) correlations and the independent ratios model, for all three dependent ratios models considered.
5. The dependent ratios model with the true correlated pair gives a smaller Euclidean distance than the other two dependent ratios models.

Table B-2

1. y_1 and y_3 are the two most strongly correlated ratios (empirically).
2. The signs of the true and the empirical correlations are not preserved under the independent ratios model.
3. The signs of the true and the empirical correlations are preserved only under the model where y_1 and y_3 are dependent.
4. The Euclidean distances between the true (respectively, the empirical) correlations and the dependent ratios model are at least as small as the distance between the true (respectively, the empirical) correlations and the independent ratios model, for all three dependent ratios models considered.
5. The dependent ratios model with the true correlated pair gives a smaller Euclidean distance than the other two dependent ratios models.

Table B-3

1. y_1 and y_3 are the two most strongly correlated ratios (empirically).
2. The signs of the true and the empirical correlations are preserved under the independent ratios model.
3. The signs of the true and the empirical correlations are also preserved under all three dependent ratios models.
4. The Euclidean distances between the true (respectively, the empirical) correlations and the dependent ratios model are at least as small as the distance between the true (respectively, the empirical) correlations and the independent ratios model, for all three dependent ratios models considered.
5. The dependent ratios model with the true correlated pair gives a smaller Euclidean distance than the other two dependent ratios models.

Table B-4

1. y_1 and y_3 are the two most strongly correlated ratios (empirically).
2. The signs of the true and the empirical correlations are not preserved under the independent ratios model.
3. The signs of the true and the empirical correlations are preserved only under the model where y_1 and y_3 are dependent.
4. The Euclidean distances between the true (respectively, the empirical) correlations and the dependent ratios model are at least as small as the distance between the true (respectively, the empirical) correlations and the independent ratios model, for all three dependent ratios models considered.
5. The dependent ratios model with the true correlated pair gives a smaller Euclidean distance than the other two dependent ratios models.

Table B-5.

1. y_1 and y_3 are the two most strongly correlated ratios (empirically).
2. The signs of the true and the empirical correlations are not preserved under the independent ratios model.
3. The signs of the true and the empirical correlations are preserved only under the model where y_1 and y_3 are dependent.
4. The Euclidean distances between the true (respectively, the empirical) correlations and the dependent ratios model are at least as small as the distance between the true (respectively, the empirical) correlations and the independent ratios model, for all three dependent ratios models considered.
5. The dependent ratios model with the true correlated pair gives a smaller Euclidean distance than the other two dependent ratios models.

Table B-6.

1. y_1 and y_3 are the two most strongly correlated ratios (empirically).
2. The signs of the true and the empirical correlations are not preserved under the independent ratios model.
3. The signs of the true and the empirical correlations are preserved only under the model where y_1 and y_3 are dependent.
4. The Euclidean distances between the empirical correlations and the dependent ratios model are at least as small as the distance between the empirical correlations and the independent ratios model, for all three dependent ratios models considered.
5. The dependent ratios model with the true correlated pair gives a smaller Euclidean distance than the other two dependent ratios models with the empirical case but not with the other case.

Table B-7.

1. y_1 and y_3 are the two most strongly correlated ratios (empirically).
2. The signs of the true and the empirical correlations are not preserved under the independent ratios model.
3. The signs of the true and the empirical correlations are preserved only under the model where y_1 and y_3 are dependent.
4. The Euclidean distances between the true (respectively, the empirical) correlations and the dependent ratios model are at least as small as the distance between the true (respectively, the empirical) correlations and the independent ratios model, for all three dependent ratios models considered.
5. The dependent ratios model with the true correlated pair gives a smaller Euclidean distance than the other two dependent ratios models.

Table B-8.

1. y_1 and y_3 are the two most strongly correlated ratios (empirically).
2. The signs of the true and the empirical correlations are preserved under the independent ratios model.
3. The signs of the true and the empirical correlations are preserved under all three dependent ratios models.
4. The Euclidean distances between the true (respectively, the empirical) correlations and the dependent ratios model are at least as small as the distance between the true (respectively, the empirical) correlations and the independent ratios model, for all three dependent ratios models considered.
5. The dependent ratios model with the true correlated pair gives a smaller Euclidean distance than the other two dependent ratios models.

Table B-9.

1. y_1 and y_3 are the two most strongly correlated ratios (empirically).
2. The signs of the empirical correlations are preserved under the independent ratios model.
3. The signs of the empirical correlations are preserved under all three dependent ratios models considered.
4. The Euclidean distances between the true (respectively, the empirical) correlations and the dependent ratios model are at least as small as the distance between the true (respectively, the empirical) correlations and the independent ratios model, for all three dependent ratios models considered.
5. The dependent ratios model with the true correlated pair gives a smaller Euclidean distance than the other two dependent ratios models.

Table B-10.

1. y_1 and y_3 are the two most strongly correlated ratios (empirically).
2. The signs of the true and the empirical correlations are not preserved under the independent ratios model.
3. The signs of the empirical correlations are preserved only under the model where y_1 and y_3 are dependent.
4. The Euclidean distances between the true (respectively, the empirical) correlations and the dependent ratios model are at least as small as the distance between the true (respectively, the empirical) correlations and the independent ratios model, for all three dependent ratios models considered.
5. The dependent ratios model with the true correlated pair gives a smaller Euclidean distance than the other two dependent ratios models.

Table B-11

1. y_1 and y_3 are the two most strongly correlated ratios (empirically).
2. The signs of the true and the empirical correlations are not preserved under the independent ratios model.
3. The signs of the true and the empirical correlations are preserved only under the model where y_1 and y_3 are dependent.
4. The Euclidean distances between the true (respectively, the empirical) correlations and the dependent ratios model are at least as small as the distance between the true (respectively, the empirical) correlations and the independent ratios model, for all three dependent ratios models considered.
5. The dependent ratios model with the true correlated pair gives a smaller Euclidean distance than the other two dependent ratios models.

Table B-12.

1. y_1 and y_3 are the two most strongly correlated ratios (empirically).
2. The signs of the true correlations are preserved under the independent ratios model.
3. The signs of the true correlations are preserved only under the model where y_2 and y_3 are dependent. While the signs of the empirical correlations are preserved only under the model where y_1 and y_2 are dependent. This is probably due to the insignificant correlation between y_1 and y_3.
4. The Euclidean distances between the empirical correlations and the dependent ratios model are at least as small as the distance between the empirical correlations and the independent ratios model, for all three dependent ratios models considered.

5. The dependent ratios model with the true correlated pair gives a smaller Euclidean distance than the other two dependent ratios models with the empirical case but not with the other case.

Table B-13.

1. y_1 and y_3 are the two most strongly correlated ratios (empirically).
2. The signs of the true correlations are preserved under the independent ratios model.
3. The signs of the true correlations are preserved only under the model where y_1 and y_2 are dependent. While the signs of the empirical correlations are preserved only under the model where y_2 and y_3 are dependent.
4. The Euclidean distances between the true (respectively, the empirical) correlations and the dependent ratios model are not at least as small as the distance between the true (respectively, the empirical) correlations and the independent ratios model, for some of the three dependent ratios models considered.
5. The dependent ratios model with the true correlated pair does not give a smaller Euclidean distance than the other two dependent ratios models.

Note: The answers of the last three questions above are not as expected. This is probably due to the insignificant correlation between y_1 and y_3.

Table B-14.

1. y_1 and y_3 are the two most strongly correlated ratios (empirically).
2. The signs of the true and the empirical correlations are not preserved under the independent ratios model.
3. The signs of the true and the empirical correlations are preserved only under the model where y_1 and y_3 are dependent.
4. The Euclidean distances between the empirical correlations and the dependent ratios model are at least as small as the distance between the empirical correlations and the independent ratios model, for all three dependent ratios models considered.
5. The dependent ratios model with the true correlated pair gives a smaller Euclidean distance than the other two dependent ratios models with the empirical case but not with the other case.

Table B-15.

1. y_1 and y_3 are the two most strongly correlated ratios (empirically).
2. The signs of the true and the empirical correlations are not preserved under the independent ratios model.
3. The signs of the true and the empirical correlations are preserved only under the model where y_1 and y_3 are dependent.
4. The Euclidean distances between the true (respectively, the empirical) correlations and the dependent ratios model are at least as small as the distance between the true

(respectively, the empirical) correlations and the independent ratios model, for some of the three dependent ratios models considered.

5. The dependent ratios model with the true correlated pair gives a smaller Euclidean distance than the other two dependent ratios models.