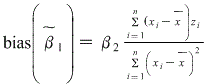
1. Suppose that the true relationship between y, x, and z is yi = β0 + β1xi + β2zi + ui, where  
economic theory predicts β0 > 0, β1 < 0, and β2 < 0. Ui is a random error with an expected  
value of zero. The following sample model has been proposed: http://s3.amazonaws.com/answer-board-image/cramster-equation-20111051839336345343677352007188332.gif

Answer the following:

a) Show than http://s3.amazonaws.com/answer-board-image/cramster-equation-2011105185636345343776320231938453.gif (beta one tilda)

is a biased estimator of http://s3.amazonaws.com/answer-board-image/cramster-equation-20111051847346345343725490015651796.gif and that the bias is equal to



Note: if you can’t see the equation above. In the numerator it says xi minus x bar times zi and in the denominator it says xi minus x bar squared.

﻿b) Let  http://s3.amazonaws.com/answer-board-image/cramster-equation-20111051855336345343773388850611761.gif( beta one hat) be the multiple regression estimate from y on x and z, would you

expect http://s3.amazonaws.com/answer-board-image/cramster-equation-20111091725106345377791060538112192.gif (standard error beta one tilde) or http://s3.amazonaws.com/answer-board-image/cramster-equation-20111091724446345377788463480293562.gif(standard error beta one hat)

to be smaller? Explain.

c) The following sample model has been estimated: http://s3.amazonaws.com/answer-board-image/cramster-equation-20111051843306345343701012442121384.gif The sign of the

coefficient on xi is the opposite of what economic theory predicts. Can this be explained  
by the omission of zi? What is the implied sign for the correlation between xi and zi?  
Explain your answer.