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: 

Answer the following:

a) Show than  (beta one tilda)

is a biased estimator of  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  ( beta one hat) be the multiple regression estimate from y on x and z, would you

expect  (standard error beta one tilde) or (standard error beta one hat)

 to be smaller? Explain.

c) The following sample model has been estimated:  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.