Bias Plot

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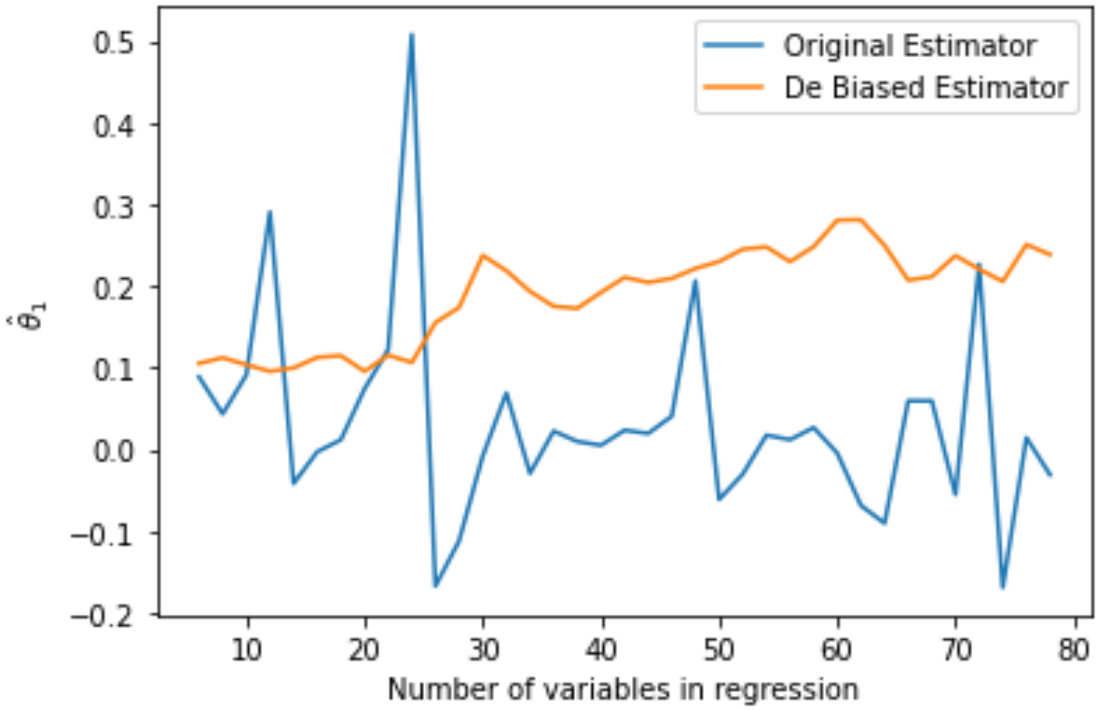
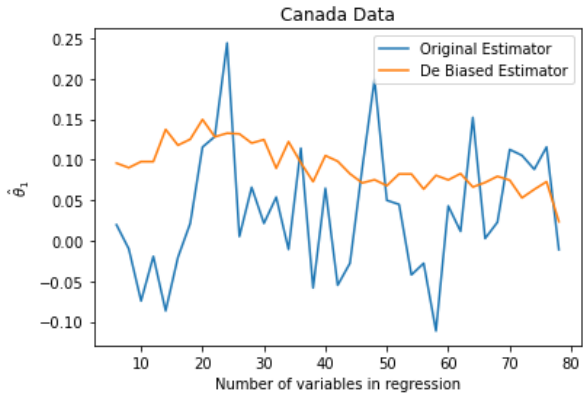
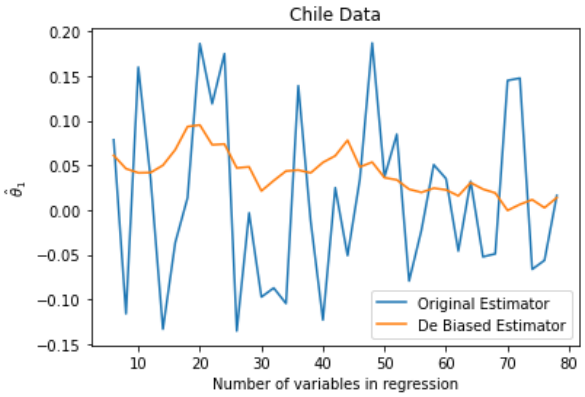


Figure 1: This figure shows how the first estimated coefficient of a linear regression relating interest rates to inflation changes with respect to the dimension of the regression i/e $\theta \in \mathbb{R}^n$, n is the parameter that changes. This coefficient tells us (if we choose n properly) how inflation depends on interest rates from one month ago. It's not clear what the "right" n is and as n increases we would be considering the dependence of interest rates further and further in the past. If we want to estimate the causal effect interest rates from one month ago have on inflation, we clearly can't rely on the original estimate if we don't know n since it varies pretty widely. On the other hand, the "de biased" estimate recovered from our algorithm converges to a much more "interpretable" value.

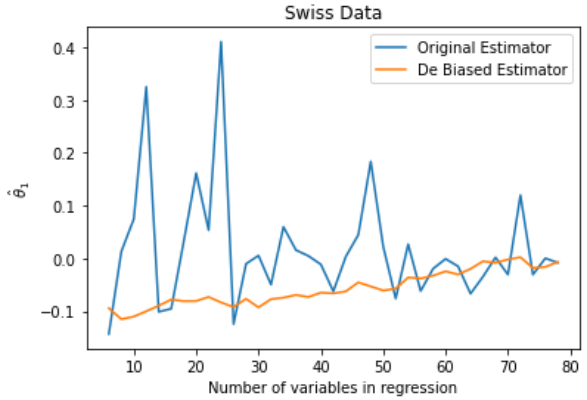
How to interpret these results. In effect, we are trying to estimate the parameters of an IIR using the "innovation form" or the technique from Ljung which "unfilters" the noise term to remove that source of bias. Then for the noise we can apply abbassi yadkori and for the inevitable omitted



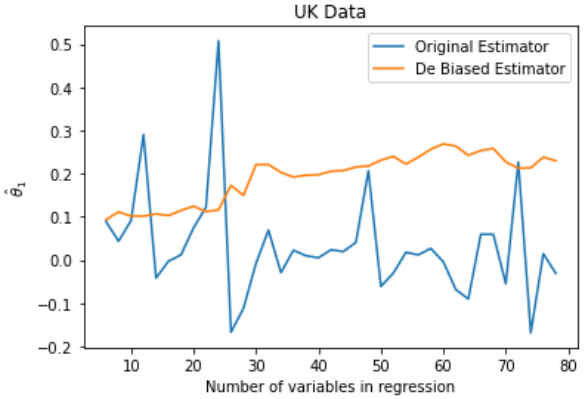
(a) Data from Canada



(b) Data from Chile



(c) Data from Switzerland



(d) Data From UK

Figure 2: Changes in regression coefficients for different sizes of regression parameter: effects of "debiasing" on interpretability.

variable bias we apply my algorithm. There are obviously lots of parameters to think about and implementation issues potentially, but it's highly promising that this works for a real data set.

Figure 3: Figure shows the same kind of experiment run on a regression relating mortgage interest rates with changes in median home price.