

Econometrics Test

2010 - 06 - 03

Name: _____

1. Say if the following statements are unambiguously true (TRUE), unambiguously false (FALSE) or impossible to classify the way they are stated (CAN'T SAY). Write the motivations to your answers **only** in the space provided. A "CAN'T SAY" answer with no motivations will be considered wrong.

- (a) For the computation of a Wald test the constrained estimate is not necessary.

TRUE ☐ FALSE ☐ CAN'T SAY ☐

- (b) Suppose you have this linear model: $y_i = x_{1i}\beta_1 + x_{2i}\beta_2 + \varepsilon_i$, where all symbols are scalars. If you used a Wald-type test for testing $H_o : \beta_1 + \beta_2 = 1$, the resulting χ^2 test would have 2 degrees of freedom.

TRUE ☐ FALSE ☐ CAN'T SAY ☐

- (c) The Laws of Large Numbers are results on convergence in distribution.

TRUE ☐ FALSE ☐ CAN'T SAY ☐

- (d) Maximum likelihood estimators are unbiased.

TRUE ☐ FALSE ☐ CAN'T SAY ☐

- (e) Unbiased estimators may be inconsistent.

TRUE ☐ FALSE ☐ CAN'T SAY ☐

2. Maximum Likelihood estimators often enjoy nice properties. In some cases, they don't. One notable case occurs when the support of the observed random variables depends on the unknown parameters: consider, for example, a continuous random variable with support $A = [0, \theta]$ and density function $f(x_i) = \frac{1}{\theta}$ (depicted in Figure 1), where θ is a positive real number (obviously, unknown).

Given a sample of n iid random variables with these characteristics, find a consistent estimator of θ and show formally its consistency.

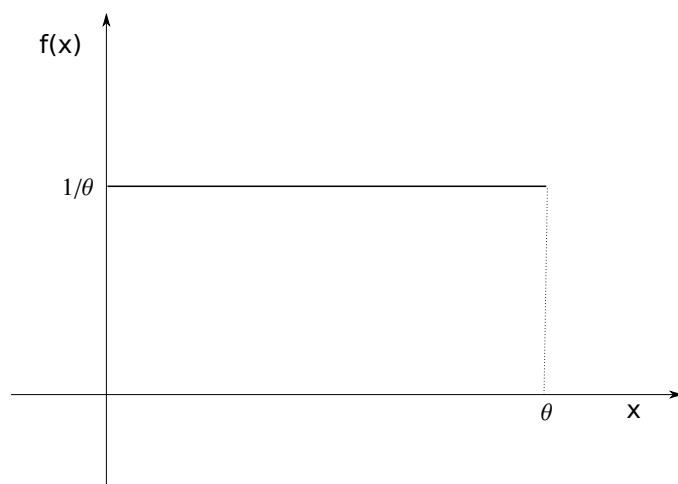


Figure 1: Density function

3. Table 1 contains estimates of two alternative models for Child Mortality Rate (CMR). Data are from 64 different countries. The explanatory variables are:

FLR	Female literacy rate
TFR	Total fertility rate
PGNP	Per-capita GNP
LPGNP	Log of per-capita GNP

- (a) Comment on the estimated coefficients, giving an interpretation where possible.
 (b) Based on the results displayed in Table 1, which of the two specifications would you consider preferable? Why?

Table 1: Model for Child Mortality Rate in 64 countries

	(A)	(B)
const	168.3** (32.89)	297.8** (42.63)
FLR	-1.768** (0.2480)	-1.334** (0.2610)
TFR	12.87** (4.191)	12.70** (3.893)
PGNP	-0.005511** (0.001878)	
LPGNP		-24.16** (5.468)
n	64	64
R^2	0.7474	0.7821
Total log-likelihood	-323.4	-318.7
RESET test	3.38783	2.39238
RESET p-value	0.0405946	0.100378

Standard errors in parentheses

* indicates significance at the 10 percent level

** indicates significance at the 5 percent level