

AEB 6571 - Econometric Methods I

Assignment 9

Charles B. Moss

October 29, 2010

1. Using the double exponential distribution (Casella and Berger 623) construct a method of moments estimator and a maximum likelihood estimator for the data presented in Table 1.
2. Using the Type XII Burr distribution

$$f(x|c, k) = ckx^{c-1} (1 + x^c)^{-(k+1)} \quad (1)$$

estimate the c and k coefficients using maximum likelihood and the sample from Table 1. Test the hypothesis that $k \geq 1.10$. The type XII Burr distribution has been used to model income distribution in the economics literature [Schmittlein(1983), Tadikamalla(1980)].

References

- [Schmittlein(1983)] Schmittlein, D.C. 1983. "Some Sampling Properties of a Model for Income Distribution." *Journal of Business & Economic Statistics* 1:147–153.
- [Tadikamalla(1980)] Tadikamalla, P.R. 1980. "A Look at the Burr and Related Distributions." *International Statistical Review - Revue Internationale de Statistique* 48:337–344.

Table 1: Empirical Distributions

Observation	Double	
	Exponential	Burr
1	6.1249	0.6192
2	2.7000	0.0159
3	3.3233	0.0385
4	5.7135	0.4463
5	4.5769	0.1618
6	6.0452	0.5818
7	4.8211	0.2049
8	5.5993	0.4064
9	7.4934	1.7472
10	7.6120	1.9126
11	6.0284	0.5741
12	8.1820	2.9857
13	3.6072	0.0554
14	6.7909	1.0292
15	5.5174	0.3796
16	5.1180	0.2690
17	7.3392	1.5545
18	8.5919	4.1779
19	6.4503	0.7955
20	4.3930	0.1344