Solow replication – extra page

Instead of bashing how difficult is it to run Shazam in Mac, I tried my best to do the missing question again in R.

It is still really slow to run Shazam under virtual box in the OS X system. I chose R for a cleaner and more efficient program running experience. Although it was difficult to self-learn the R language and the learning step is pretty steep, I didn’t regret my choice. It was a fun and challenging experience.

**Two :** I manually trim the data and compared to the original data set using quantile 10% 30% 50% 70% 90%. Since we use 20% trim in Shazam, we translate that into R language which means trimming 10% upper tail and 10% lower tail. The result is displayed as follow:

> quantile(qA,c(0.1,0.3,0.5,0.7,0.9))

10% 30% 50% 70% 90%

0.6373412 0.6719023 0.6866015 0.6981236 0.7154277

> quantile(k,c(0.1,0.3,0.5,0.7,0.9))

10% 30% 50% 70% 90%

2.21 2.50 2.63 2.74 3.06

By either trimming qA or k, we will have similar result. Thus, we choose to trim k(because the value is easier to observe) by manually drop any data that has lower(or equal) value than 10%: 2.21 and lager(or equal) than 90%: 3.06.

I will display the result as following:

1909 : 2.06 1929: 3.06

1910: 2.10 1930: 3.30

1912: 2.21 1931: 3.33

1914: 2.20 1932: 3.28

1917: 2.21 1933: 3.10

**Three :**

I used “boot” command in R with the function “standard error” and replication for 1,000 times. I have the result as following:

OLS: c(2.06,2.1,2.17,2.21,2.23,2.2,2.26,2.34,2.21,2.22,2.47,2.58,2.55,2.49,2.61,2.74,2.81,2.87,2.93,3.02,3.06,3.3,3.33,3.28,3.1,3,2.87,2.72,2.71,2.78,2.66,2.63,2.58,2.64,2.62,2.63,2.66,2.5,2.5,2.55,2.7)

> std.error(k)

[1] 0.05150842

And 20% trimmed: > k = c(2.17,2.23,2.26,2.34,2.22,2.47,2.58,2.55,2.49,2.61,2.74,2.81,2.87,2.93,3.02,3,2.87,2.72,2.71,2.78,2.66,2.63,2.58,2.64,2.62,2.63,2.66,2.5,2.5,2.55,2.7)

> std.error(k)

[1] 0.03925043

Appendix

> qA = c(0.623,0.626653103,0.633692458,0.637341153,0.639097744,0.636788049,0.642651297,0.650557621,0.637558685,0.638353765,0.662921348,0.674462114,0.671902269,0.666103128,0.676421405,0.688065844,0.695374801,0.700241741,0.705263158,0.712887439,0.715427658,0.735171261,0.737357259,0.733722871,0.71758877,0.709553159,0.699036323,0.687193842,0.686219081,0.692041522,0.682959049,0.680503145,0.675903614,0.682282282,0.697399527,0.69812362,0.700540541,0.686828717,0.686601495,0.691001698,0.704809287)

> quantile(qA)

0% 25% 50% 75% 100%

0.6230000 0.6629213 0.6866015 0.7002417 0.7373573

> quantile(qA,c(0.2,0.4,0.6,0.8))

20% 40% 60% 80%

0.6426513 0.6805031 0.6910017 0.7048093

> quantile(qA,c(0.1,0.3,0.5,0.7,0.9))

10% 30% 50% 70% 90%

0.6373412 0.6719023 0.6866015 0.6981236 0.7154277

> k = c(2.06,2.1,2.17,2.21,2.23,2.2,2.26,2.34,2.21,2.22,2.47,2.58,2.55,2.49,2.61,2.74,2.81,2.87,2.93,3.02,3.06,3.3,3.33,3.28,3.1,3,2.87,2.72,2.71,2.78,2.66,2.63,2.58,2.64,2.62,2.63,2.66,2.5,2.5,2.55,2.7)

> quantile(k,c(0.1,0.3,0.5,0.7,0.9))

10% 30% 50% 70% 90%

2.21 2.50 2.63 2.74 3.06

> plot(k,qA)

>

> qA = c(0.623,0.626653103,0.633692458,0.637341153,0.639097744,0.636788049,0.642651297,0.650557621,0.637558685,0.638353765,0.662921348,0.674462114,0.671902269,0.666103128,0.676421405,0.688065844,0.695374801,0.700241741,0.705263158,0.712887439,0.715427658,0.735171261,0.737357259,0.733722871,0.71758877,0.709553159,0.699036323,0.687193842,0.686219081,0.692041522,0.682959049,0.680503145,0.675903614,0.682282282,0.697399527,0.69812362,0.700540541,0.686828717,0.686601495,0.691001698,0.704809287)

starting httpd help server ... done

> boot(data=qA,statistic=standard error,R=1000)

Error: unexpected symbol in "boot(data=qA,statistic=standard error"

> boot(data=qA,statistic=se,R=1000)

Error in boot(data = qA, statistic = se, R = 1000) :

object 'se' not found

> boot(data=qA,statistic = standard ,error, R=1000)

Error in boot(data = qA, statistic = standard, error, R = 1000) :

object 'error' not found

> boot(qA,standard error, R=1000)

Error: unexpected symbol in "boot(qA,standard error"

> boot(qA,se, R=1000)

Error in boot(qA, se, R = 1000) : object 'se' not found

> ?se

No documentation for ‚Äòse‚Äô in specified packages and libraries:

you could try ‚Äò??se‚Äô

> boot(qA,sd/sqrt(n), R=1000)

Error in boot(qA, sd/sqrt(n), R = 1000) : object 'n' not found

> dim(qa)

Error: object 'qa' not found

> dim(qa)

Error: object 'qa' not found

> dim(qA)

NULL

> qA

[1] 0.6230000 0.6266531 0.6336925 0.6373412 0.6390977 0.6367880 0.6426513 0.6505576 0.6375587 0.6383538 0.6629213

[12] 0.6744621 0.6719023 0.6661031 0.6764214 0.6880658 0.6953748 0.7002417 0.7052632 0.7128874 0.7154277 0.7351713

[23] 0.7373573 0.7337229 0.7175888 0.7095532 0.6990363 0.6871938 0.6862191 0.6920415 0.6829590 0.6805031 0.6759036

[34] 0.6822823 0.6973995 0.6981236 0.7005405 0.6868287 0.6866015 0.6910017 0.7048093

> length(qA)

[1] 41

> boot(qA,sd/sqrt(41), R=1000)

Error in sd/sqrt(41) : non-numeric argument to binary operator

> install.pacakges(plotrix)

Error: could not find function "install.pacakges"

> install.packages("plotrix")

--- Please select a CRAN mirror for use in this session ---

trying URL 'https://mirrors.nics.utk.edu/cran/bin/macosx/mavericks/contrib/3.2/plotrix\_3.6-1.tgz'

Content type 'application/x-gzip' length 656636 bytes (641 KB)

==================================================

downloaded 641 KB

The downloaded binary packages are in

/var/folders/k6/53lprdwx64v0rb3j30n3hg480000gn/T//RtmpFKKpdL/downloaded\_packages

> std.error(qA)

[1] 0.004791591

> boot(qA,std.error, R=1000)

ORDINARY NONPARAMETRIC BOOTSTRAP

Call:

boot(data = qA, statistic = std.error, R = 1000)

Bootstrap Statistics :

original bias std. error

t1\* 0.004791591 0 0

> k = c(2.06,2.1,2.17,2.21,2.23,2.2,2.26,2.34,2.21,2.22,2.47,2.58,2.55,2.49,2.61,2.74,2.81,2.87,2.93,3.02,3.06,3.3,3.33,3.28,3.1,3,2.87,2.72,2.71,2.78,2.66,2.63,2.58,2.64,2.62,2.63,2.66,2.5,2.5,2.55,2.7)

> std.error(k)

[1] 0.05150842

> boot(k,std,error,R=1000)

Error in boot(k, std, error, R = 1000) : object 'error' not found

> boot(k,std.error,R=1000)

ORDINARY NONPARAMETRIC BOOTSTRAP

Call:

boot(data = k, statistic = std.error, R = 1000)

Bootstrap Statistics :

original bias std. error

t1\* 0.05150842 0 0

> k = c(2.17,2.23,2.26,2.34,2.22,2.47,2.58,2.55,2.49,2.61,2.74,2.81,2.87,2.93,3.02,3,2.87,2.72,2.71,2.78,2.66,2.63,2.58,2.64,2.62,2.63,2.66,2.5,2.5,2.55,2.7)

> std.error(k)

[1] 0.03925043

> boot(k,std.error,R=1000)

ORDINARY NONPARAMETRIC BOOTSTRAP

Call:

boot(data = k, statistic = std.error, R = 1000)

Bootstrap Statistics :

original bias std. error

t1\* 0.03925043 0 0

>