

Author Metrics

AMIT

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Degree

```
df= read.csv("C:/Users/amitd/Desktop/FA/MasterDegree.csv")
df1th = subset(df,df$LowToHigh=="LTH")
dfhtl = subset(df,df$HighToLow=="HTL")
dfclp = subset(df,df$ConsistentlyLowPerf=="CLP")
dfchp = subset(df,df$ConsistentlyHighPerf=="CHP")
```

```
##ConsistentHighPerformers
dfchp[,4:24]
```

```
##      X1997 X1998 X1999 X2000 X2001 X2002 X2003 X2004 X2005 X2006 X2007 X2008
## 2       24    48    54    23    80    22    27    14    34    57    66    28
## 7       13    14    35    29    24    21    41    39    40    76    35    30
## 13      2    15     7    16    11     4    38    NA    15    21    20     9
## 15     13    12     7    10    31     2    12    12     7    12     6    17
##      X2009 X2010 X2011 X2012 X2013 X2014 X2015 X2016 X2017
## 2       53    54    46    61    63    48    26    76    27
## 7       29    83    59    23    57    88    68    37    15
## 13      15    24     4    14    17    27    31    33     8
## 15      10    10    15     4     3    18     8    23     4
```

```
M <- as.matrix(dfchp[,4:24])
M
```

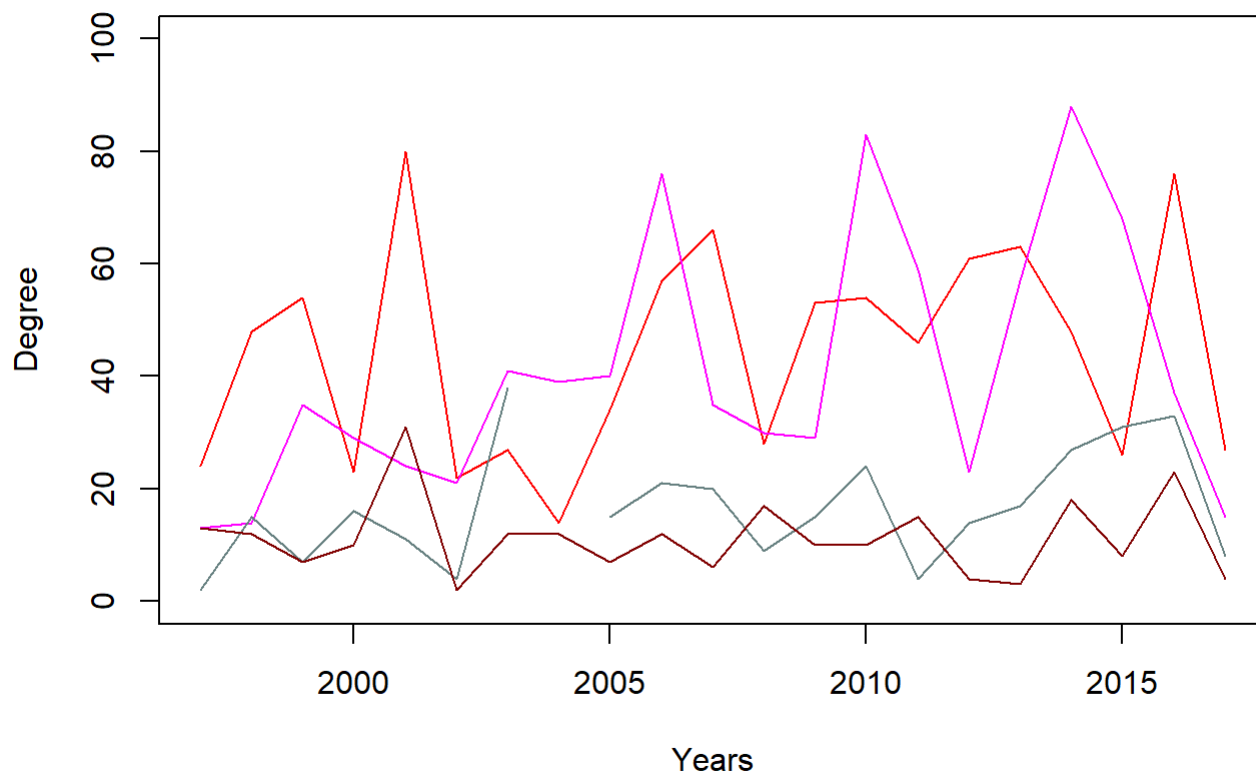
```
##      X1997 X1998 X1999 X2000 X2001 X2002 X2003 X2004 X2005 X2006 X2007 X2008
## 2       24    48    54    23    80    22    27    14    34    57    66    28
## 7       13    14    35    29    24    21    41    39    40    76    35    30
## 13      2    15     7    16    11     4    38    NA    15    21    20     9
## 15     13    12     7    10    31     2    12    12     7    12     6    17
##      X2009 X2010 X2011 X2012 X2013 X2014 X2015 X2016 X2017
## 2       53    54    46    61    63    48    26    76    27
## 7       29    83    59    23    57    88    68    37    15
## 13      15    24     4    14    17    27    31    33     8
## 15      10    10    15     4     3    18     8    23     4
```

```
x <- c(1997,1998,1999,2000,2001,2002,2003,2004,2005,2006,2007,2008,2009,2010,2011,2012,2013,2014
,2015,2016,2017)
length(x)
```

```
## [1] 21
```

```
dim(M)
```

```
## [1] 4 21
```



```
###ConsistentLowPerformers  
dfclp[,4:24]
```

##	X1997	X1998	X1999	X2000	X2001	X2002	X2003	X2004	X2005	X2006	X2007
## 90	NA	3	9	NA	3	4	NA	4	NA	3	NA
## 93	NA	4	NA	NA	8	NA	NA	NA	5	4	4
## 94	9	NA	NA	4	NA	2	NA	NA	4	23	5
## 95	NA	NA	7	5	6	NA	NA	NA	4	5	NA
## 96	NA	NA	2	NA	2	NA	2	NA	NA	2	NA
## 97	NA	NA	6	NA	NA	14	8	NA	NA	NA	NA
## 98	NA	NA	3	3	6	NA	5	NA	NA	NA	12
## 99	7	NA	NA	7	5	3	NA	NA	5	NA	NA
## 100	5	NA	NA	NA	NA	3	10	NA	NA	7	12

##	X2008	X2009	X2010	X2011	X2012	X2013	X2014	X2015	X2016	X2017
## 90	8	NA	5	NA	5	3	NA	NA	NA	6
## 93	NA	NA	NA	5	7	3	15	NA	NA	4
## 94	NA	NA	12	NA	8	NA	NA	NA	NA	19
## 95	NA	NA	NA	5	11	6	NA	13	NA	NA
## 96	NA	NA	7	NA	18	NA	NA	NA	18	NA
## 97	6	NA	9	13	5	9	NA	12	NA	NA
## 98	NA	6	NA	3	NA	NA	11	NA	6	NA
## 99	3	NA	NA	5	NA	NA	5	NA	3	NA
## 100	NA	5	NA	NA	8	NA	NA	NA	8	NA

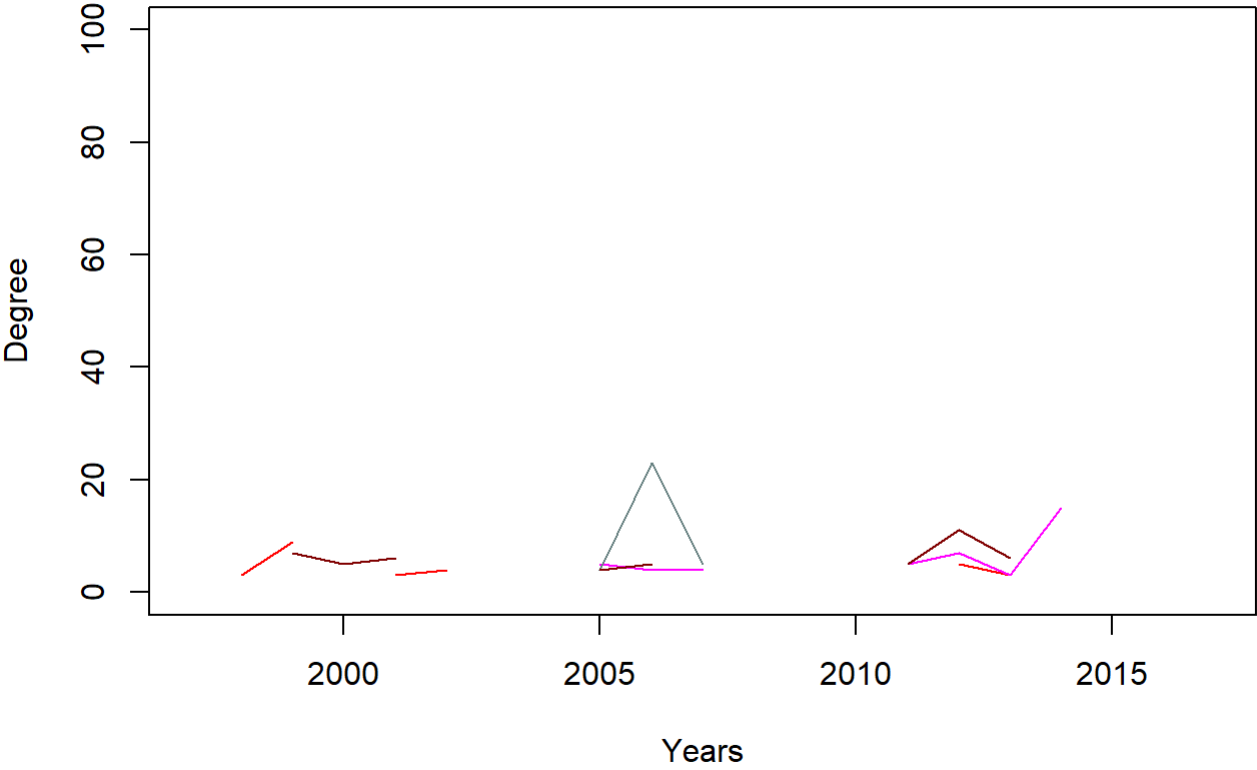
```
M <- as.matrix(dfclp[,4:24])
M
```

##	X1997	X1998	X1999	X2000	X2001	X2002	X2003	X2004	X2005	X2006	X2007
## 90	NA	3	9	NA	3	4	NA	4	NA	3	NA
## 93	NA	4	NA	NA	8	NA	NA	NA	5	4	4
## 94	9	NA	NA	4	NA	2	NA	NA	4	23	5
## 95	NA	NA	7	5	6	NA	NA	NA	4	5	NA
## 96	NA	NA	2	NA	2	NA	2	NA	NA	2	NA
## 97	NA	NA	6	NA	NA	14	8	NA	NA	NA	NA
## 98	NA	NA	3	3	6	NA	5	NA	NA	NA	12
## 99	7	NA	NA	7	5	3	NA	NA	5	NA	NA
## 100	5	NA	NA	NA	NA	3	10	NA	NA	7	12

##	X2008	X2009	X2010	X2011	X2012	X2013	X2014	X2015	X2016	X2017
## 90	8	NA	5	NA	5	3	NA	NA	NA	6
## 93	NA	NA	NA	5	7	3	15	NA	NA	4
## 94	NA	NA	12	NA	8	NA	NA	NA	NA	19
## 95	NA	NA	NA	5	11	6	NA	13	NA	NA
## 96	NA	NA	7	NA	18	NA	NA	NA	18	NA
## 97	6	NA	9	13	5	9	NA	12	NA	NA
## 98	NA	6	NA	3	NA	NA	11	NA	6	NA
## 99	3	NA	NA	5	NA	NA	5	NA	3	NA
## 100	NA	5	NA	NA	8	NA	NA	NA	8	NA

```
dim(M)
```

```
## [1] 9 21
```



```
###HighToLowPerformers
dfhtl[,4:24]
```

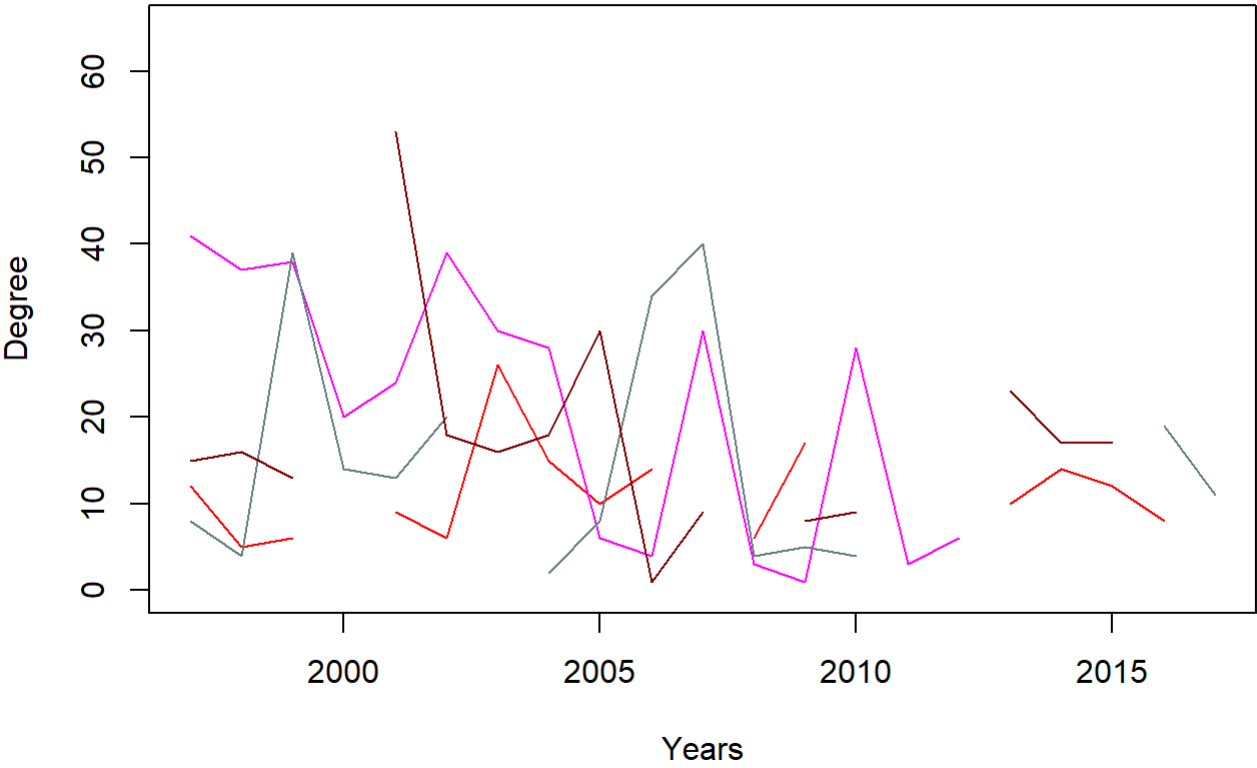
##	X1997	X1998	X1999	X2000	X2001	X2002	X2003	X2004	X2005	X2006	X2007	X2008
## 2	24	48	54	23	80	22	27	14	34	57	66	28
## 27	15	17	12	19	8	28	15	6	15	23	25	12
## 28	41	37	38	20	24	39	30	28	6	4	30	3
## 39	8	4	39	14	13	20	NA	2	8	34	40	4
## 46	15	16	13	NA	53	18	16	18	30	1	9	NA
## 54	12	5	6	NA	9	6	26	15	10	14	NA	6
## 55	9	5	4	10	4	4	5	6	3	2	11	2
## 66	NA	5	NA	219	273	NA	16	7	6	NA	3	NA
## 69	NA	3	NA	NA	12	3	8	16	12	13	NA	9
## 75	9	5	6	NA	12	5	NA	4	NA	NA	5	8
## 83	NA	4	19	6	6	NA	NA	NA	9	3	NA	NA
## 90	NA	3	9	NA	3	4	NA	4	NA	3	NA	8
## 98	NA	NA	3	3	6	NA	5	NA	NA	NA	12	NA
##	X2009	X2010	X2011	X2012	X2013	X2014	X2015	X2016	X2017			
## 2	53	54	46	61	63	48	26	76	27			
## 27	46	3	18	8	11	62	11	9	15			
## 28	1	28	3	6	NA	4	NA	5	NA			
## 39	5	4	NA	12	NA	10	NA	19	11			
## 46	8	9	NA	NA	23	17	17	NA	2			
## 54	17	NA	11	NA	10	14	12	8	NA			
## 55	7	NA	3	9	NA	NA	NA	NA	5			
## 66	NA	13	NA	6	5	NA	NA	NA	4			
## 69	3	NA	NA	NA	NA	9	NA	6	37			
## 75	NA	11	NA	1	6	NA	7	NA	NA			
## 83	NA	10	NA	4	6	6	NA	NA	20			
## 90	NA	5	NA	5	3	NA	NA	NA	6			
## 98	6	NA	3	NA	NA	11	NA	6	NA			

```
M <- as.matrix(dfhtl[,4:24])
M
```

##	X1997	X1998	X1999	X2000	X2001	X2002	X2003	X2004	X2005	X2006	X2007	X2008
## 2	24	48	54	23	80	22	27	14	34	57	66	28
## 27	15	17	12	19	8	28	15	6	15	23	25	12
## 28	41	37	38	20	24	39	30	28	6	4	30	3
## 39	8	4	39	14	13	20	NA	2	8	34	40	4
## 46	15	16	13	NA	53	18	16	18	30	1	9	NA
## 54	12	5	6	NA	9	6	26	15	10	14	NA	6
## 55	9	5	4	10	4	4	5	6	3	2	11	2
## 66	NA	5	NA	219	273	NA	16	7	6	NA	3	NA
## 69	NA	3	NA	NA	12	3	8	16	12	13	NA	9
## 75	9	5	6	NA	12	5	NA	4	NA	NA	5	8
## 83	NA	4	19	6	6	NA	NA	NA	9	3	NA	NA
## 90	NA	3	9	NA	3	4	NA	4	NA	3	NA	8
## 98	NA	NA	3	3	6	NA	5	NA	NA	NA	12	NA
##	X2009	X2010	X2011	X2012	X2013	X2014	X2015	X2016	X2017			
## 2	53	54	46	61	63	48	26	76	27			
## 27	46	3	18	8	11	62	11	9	15			
## 28	1	28	3	6	NA	4	NA	5	NA			
## 39	5	4	NA	12	NA	10	NA	19	11			
## 46	8	9	NA	NA	23	17	17	NA	2			
## 54	17	NA	11	NA	10	14	12	8	NA			
## 55	7	NA	3	9	NA	NA	NA	NA	5			
## 66	NA	13	NA	6	5	NA	NA	NA	4			
## 69	3	NA	NA	NA	NA	9	NA	6	37			
## 75	NA	11	NA	1	6	NA	7	NA	NA			
## 83	NA	10	NA	4	6	6	NA	NA	20			
## 90	NA	5	NA	5	3	NA	NA	NA	6			
## 98	6	NA	3	NA	NA	11	NA	6	NA			

dim(M)

[1] 13 21



```
###LowToHighPerformers
df1th[,4:24]
```

##	X1997	X1998	X1999	X2000	X2001	X2002	X2003	X2004	X2005	X2006	X2007	X2008
## 1	NA	10	NA	12	NA	4	13	37	24	53	49	43
## 3	2	3	6	17	21	4	20	9	14	17	17	31
## 4	NA	NA	7	5	NA	NA	12	15	57	19	9	40
## 5	5	NA	3	5	27	9	5	32	27	36	41	21
## 8	2	NA	5	3	13	NA	14	4	11	25	20	29
## 9	7	NA	17	13	4	32	14	94	31	14	26	19
## 10	NA	6	2	7	2	3	25	11	25	12	39	22
## 11	12	NA	NA	194	5	21	NA	NA	291	259	15	25
## 12	8	NA	11	1	10	5	6	7	4	9	45	4
## 16	NA	3	10	NA	22	4	NA	12	NA	2	7	19
## 17	1	12	3	4	5	9	14	3	11	20	17	25
## 18	3	3	12	NA	NA	4	4	7	30	26	5	11
## 20	NA	NA	4	5	29	10	12	4	4	13	10	17
## 23	13	NA	5	NA	25	22	7	14	NA	7	38	51
## 24	6	NA	23	14	21	24	18	22	3	34	30	39
## 25	8	6	3	3	4	11	NA	8	12	14	24	15
## 34	NA	NA	8	2	NA	NA	NA	NA	4	8	5	2
## 37	1	1	NA	1	NA	2	13	15	6	12	NA	4
## 38	3	NA	NA	NA	34	9	NA	9	11	NA	13	23
## 44	8	12	15	NA	NA	5	NA	7	88	NA	NA	41
## 45	NA	NA	8	17	11	11	NA	NA	66	4	11	15
## 48	NA	NA	3	3	NA	NA	NA	NA	6	8	NA	6
## 49	2	3	NA	12	14	NA	2	11	6	NA	12	10
## 56	8	NA	NA	NA	NA	9	NA	9	25	81	NA	NA
## 57	NA	NA	4	2	2	NA	NA	5	12	3	NA	NA
## 58	NA	3	NA	NA	6	1	NA	4	NA	19	NA	NA
## 62	NA	NA	4	3	NA	NA	5	6	NA	9	5	23
## 73	NA	3	NA	3	4	3	8	3	5	NA	3	NA
## 74	NA	8	NA	NA	4	NA	4	2	7	9	4	NA
## 82	NA	6	NA	NA	3	NA	4	NA	3	1	NA	NA
##	X2009	X2010	X2011	X2012	X2013	X2014	X2015	X2016	X2017			
## 1	54	80	84	102	66	90	47	56	55			
## 3	191	63	76	44	29	40	31	28	23			
## 4	35	109	78	49	40	84	106	77	75			
## 5	58	44	190	101	94	150	191	128	46			
## 8	14	33	45	63	76	82	129	51	51			
## 9	27	23	15	43	93	42	47	41	56			
## 10	26	20	31	54	73	162	132	61	42			
## 11	24	24	30	95	111	33	49	13	33			
## 12	19	26	29	10	43	23	18	15	20			
## 16	37	29	54	110	63	134	51	49	14			
## 17	24	43	29	80	46	97	51	23	NA			
## 18	15	30	17	64	55	19	65	55	40			
## 20	19	23	20	27	17	17	29	7	14			
## 23	51	18	45	29	25	68	52	35	44			
## 24	59	100	19	46	16	37	32	31	NA			
## 25	18	14	13	16	32	32	11	27	22			
## 34	4	12	12	28	49	15	19	30	10			
## 37	1	5	13	17	8	3	15	6	7			
## 38	8	32	9	18	24	14	50	26	6			
## 44	156	10	122	96	NA	16	12	7	NA			
## 45	3	11	NA	4	10	17	41	4	2			

## 48	9	39	NA	14	17	NA	NA	17	23
## 49	16	15	24	25	35	34	16	NA	NA
## 56	NA	1	NA	4	2	16	31	26	5
## 57	NA	4	2	4	7	9	13	NA	6
## 58	NA	17	10	23	9	19	7	7	NA
## 62	NA	5	7	18	5	18	8	11	NA
## 73	3	NA	5	3	NA	1	NA	15	6
## 74	5	NA	20	7	NA	7	17	NA	NA
## 82	7	1	NA	1	6	NA	NA	11	NA

```
M <- as.matrix(dflth[,4:24])  
M
```

##	X1997	X1998	X1999	X2000	X2001	X2002	X2003	X2004	X2005	X2006	X2007	X2008
## 1	NA	10	NA	12	NA	4	13	37	24	53	49	43
## 3	2	3	6	17	21	4	20	9	14	17	17	31
## 4	NA	NA	7	5	NA	NA	12	15	57	19	9	40
## 5	5	NA	3	5	27	9	5	32	27	36	41	21
## 8	2	NA	5	3	13	NA	14	4	11	25	20	29
## 9	7	NA	17	13	4	32	14	94	31	14	26	19
## 10	NA	6	2	7	2	3	25	11	25	12	39	22
## 11	12	NA	NA	194	5	21	NA	NA	291	259	15	25
## 12	8	NA	11	1	10	5	6	7	4	9	45	4
## 16	NA	3	10	NA	22	4	NA	12	NA	2	7	19
## 17	1	12	3	4	5	9	14	3	11	20	17	25
## 18	3	3	12	NA	NA	4	4	7	30	26	5	11
## 20	NA	NA	4	5	29	10	12	4	4	13	10	17
## 23	13	NA	5	NA	25	22	7	14	NA	7	38	51
## 24	6	NA	23	14	21	24	18	22	3	34	30	39
## 25	8	6	3	3	4	11	NA	8	12	14	24	15
## 34	NA	NA	8	2	NA	NA	NA	NA	4	8	5	2
## 37	1	1	NA	1	NA	2	13	15	6	12	NA	4
## 38	3	NA	NA	NA	34	9	NA	9	11	NA	13	23
## 44	8	12	15	NA	NA	5	NA	7	88	NA	NA	41
## 45	NA	NA	8	17	11	11	NA	NA	66	4	11	15
## 48	NA	NA	3	3	NA	NA	NA	NA	6	8	NA	6
## 49	2	3	NA	12	14	NA	2	11	6	NA	12	10
## 56	8	NA	NA	NA	NA	9	NA	9	25	81	NA	NA
## 57	NA	NA	4	2	2	NA	NA	5	12	3	NA	NA
## 58	NA	3	NA	NA	6	1	NA	4	NA	19	NA	NA
## 62	NA	NA	4	3	NA	NA	5	6	NA	9	5	23
## 73	NA	3	NA	3	4	3	8	3	5	NA	3	NA
## 74	NA	8	NA	NA	4	NA	4	2	7	9	4	NA
## 82	NA	6	NA	NA	3	NA	4	NA	3	1	NA	NA
##	X2009	X2010	X2011	X2012	X2013	X2014	X2015	X2016	X2017			
## 1	54	80	84	102	66	90	47	56	55			
## 3	191	63	76	44	29	40	31	28	23			
## 4	35	109	78	49	40	84	106	77	75			
## 5	58	44	190	101	94	150	191	128	46			
## 8	14	33	45	63	76	82	129	51	51			
## 9	27	23	15	43	93	42	47	41	56			
## 10	26	20	31	54	73	162	132	61	42			
## 11	24	24	30	95	111	33	49	13	33			
## 12	19	26	29	10	43	23	18	15	20			
## 16	37	29	54	110	63	134	51	49	14			
## 17	24	43	29	80	46	97	51	23	NA			
## 18	15	30	17	64	55	19	65	55	40			
## 20	19	23	20	27	17	17	29	7	14			
## 23	51	18	45	29	25	68	52	35	44			
## 24	59	100	19	46	16	37	32	31	NA			
## 25	18	14	13	16	32	32	11	27	22			
## 34	4	12	12	28	49	15	19	30	10			
## 37	1	5	13	17	8	3	15	6	7			
## 38	8	32	9	18	24	14	50	26	6			
## 44	156	10	122	96	NA	16	12	7	NA			
## 45	3	11	NA	4	10	17	41	4	2			

## 48	9	39	NA	14	17	NA	NA	17	23
## 49	16	15	24	25	35	34	16	NA	NA
## 56	NA	1	NA	4	2	16	31	26	5
## 57	NA	4	2	4	7	9	13	NA	6
## 58	NA	17	10	23	9	19	7	7	NA
## 62	NA	5	7	18	5	18	8	11	NA
## 73	3	NA	5	3	NA	1	NA	15	6
## 74	5	NA	20	7	NA	7	17	NA	NA
## 82	7	1	NA	1	6	NA	NA	11	NA

```
dim(M)
```

```
## [1] 30 21
```



```
##Betweenness
```

```
dfbt= read.csv("C:/Users/amitd/Desktop/FA/MasterBetweenness.csv")
df1thbt = subset(dfbt,dfbt$LowToHigh=="LTH")
dfhtlbt = subset(dfbt,dfbt$HighToLow=="HTL")
dfclpbt = subset(dfbt,dfbt$ConsistentlyLowPerf=="CLP")
dfchpbt = subset(dfbt,dfbt$ConsistentlyHighPerf=="CHP")
```

```
###ConsistentHighPerformers
```

```
dfchpbt[,4:24]
```

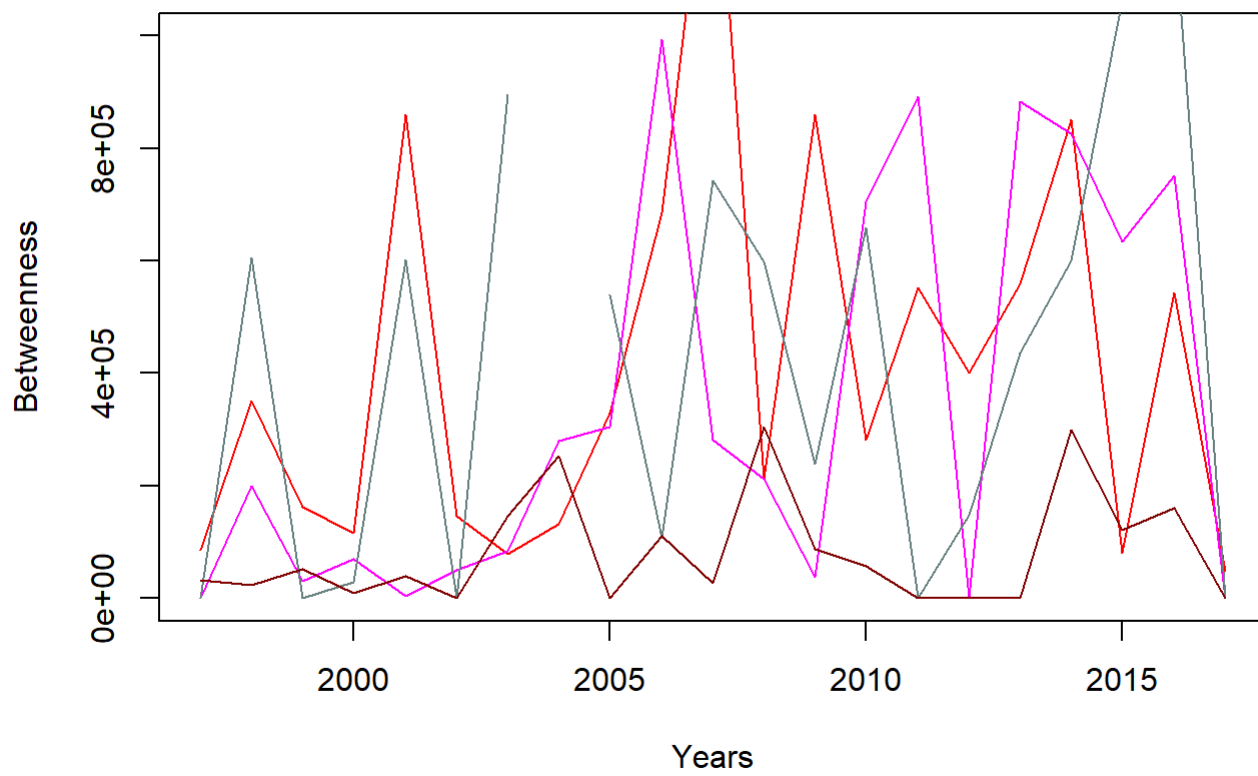
```
##      X1997      X1998      X1999      X2000      X2001      X2002      X2003
## 2  85215.37 351321.3 162488.67 115699.833 859756.764 147086.92 79480.27
## 7      0.00 200196.9 30715.42 70115.912 4016.651 49408.45 83340.27
## 13     0.00 606204.0    24.00 28697.500 602211.287    0.00 895590.67
## 15 31714.00 23420.0 51108.00 8818.658 38881.990    0.00 146665.00
##      X2004      X2005      X2006      X2007      X2008      X2009      X2010
## 2  132105.1 329963.2 686413.3 1435558.3 211627.1 860533.75 282152.7
## 7  280523.3 305494.2 994398.6 282225.0 212764.8 38542.99 705519.3
## 13      NA 538997.0 106827.4 741800.1 599254.0 239471.85 659275.6
## 15 253976.0    0.0 111172.5 26503.0 304521.4 87681.00 57743.0
##      X2011      X2012      X2013      X2014      X2015      X2016      X2017
## 2  551271.2 400616.57 560072.5 851113.5 80904.72 543243.2 49122.07
## 7  892784.2 2433.99 882602.4 826132.1 633945.05 752199.1 24.50
## 13     0.0 147971.63 437123.4 599933.2 1063385.73 1200036.5 0.00
## 15    72.0    7.00    0.0 298684.2 121674.76 160763.0 0.00
```

```
M <- as.matrix(dfchpbt[,4:24])
M
```

```
##      X1997      X1998      X1999      X2000      X2001      X2002      X2003
## 2  85215.37 351321.3 162488.67 115699.833 859756.764 147086.92 79480.27
## 7      0.00 200196.9 30715.42 70115.912 4016.651 49408.45 83340.27
## 13     0.00 606204.0    24.00 28697.500 602211.287    0.00 895590.67
## 15 31714.00 23420.0 51108.00 8818.658 38881.990    0.00 146665.00
##      X2004      X2005      X2006      X2007      X2008      X2009      X2010
## 2  132105.1 329963.2 686413.3 1435558.3 211627.1 860533.75 282152.7
## 7  280523.3 305494.2 994398.6 282225.0 212764.8 38542.99 705519.3
## 13      NA 538997.0 106827.4 741800.1 599254.0 239471.85 659275.6
## 15 253976.0    0.0 111172.5 26503.0 304521.4 87681.00 57743.0
##      X2011      X2012      X2013      X2014      X2015      X2016      X2017
## 2  551271.2 400616.57 560072.5 851113.5 80904.72 543243.2 49122.07
## 7  892784.2 2433.99 882602.4 826132.1 633945.05 752199.1 24.50
## 13     0.0 147971.63 437123.4 599933.2 1063385.73 1200036.5 0.00
## 15    72.0    7.00    0.0 298684.2 121674.76 160763.0 0.00
```

```
dim(M)
```

```
## [1] 4 21
```



```
###ConsistentLowPerformers  
dfc1pbt[,4:24]
```

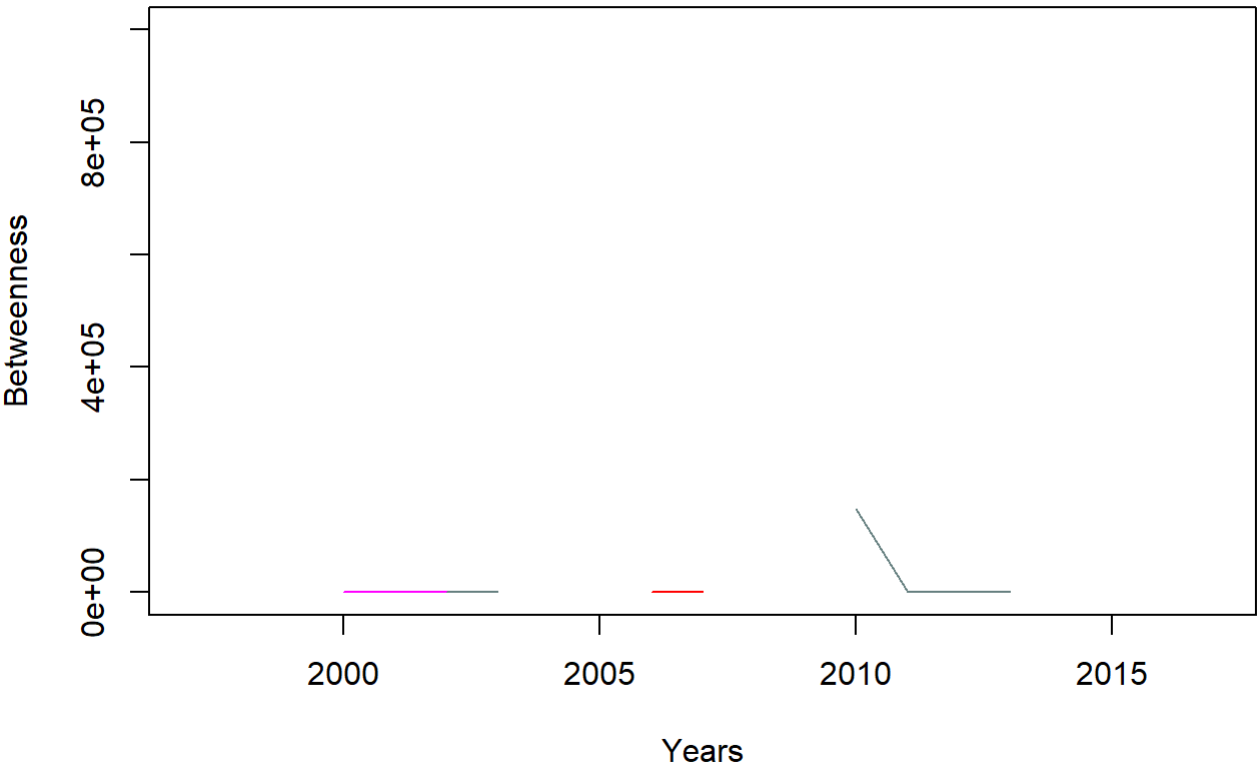
##	X1997	X1998	X1999	X2000	X2001	X2002	X2003	X2004	X2005	X2006
## 90	NA	0	0.0	NA	0.0	0	NA	0	NA	0.00
## 93	NA	0	NA	NA	7.5	NA	NA	NA	0.0000000	0.00
## 94	0	NA	NA	0	NA	0	NA	NA	0.0000000	76566.67
## 95	NA	NA	8518.5	0	0.2	NA	NA	NA	0.3333333	0.00
## 96	NA	NA	0.0	NA	0.0	NA	0	NA	NA	1.00
## 97	NA	NA	0.0	NA	NA	0	0	NA	NA	NA
## 98	NA	NA	0.0	0	10.0	NA	0	NA	NA	NA
## 99	0	NA	NA	1	0.0	0	NA	NA	0.0000000	NA
## 100	0	NA	NA	NA	NA	0	0	NA	NA	0.00
##	X2007	X2008	X2009	X2010	X2011	X2012	X2013	X2014	X2015	
## 90	NA	3	NA	0.000	NA	0.0	0	NA	NA	
## 93	0	NA	NA	NA	0	0.0	0	115346.8	NA	
## 94	0	NA	NA	1312.413	NA	0.0	NA	NA	NA	
## 95	NA	NA	NA	NA	0	0.0	0	NA	0.000	
## 96	NA	NA	NA	0.000	NA	768346.9	NA	NA	NA	
## 97	NA	0	NA	147959.368	0	0.0	0	NA	1333.787	
## 98	132500	NA	0	NA	0	NA	NA	0.0	NA	
## 99	NA	0	NA	NA	0	NA	NA	0.0	NA	
## 100	0	NA	0	NA	NA	0.0	NA	NA	NA	
##	X2016	X2017								
## 90	NA	9.0								
## 93	NA	0.0								
## 94	NA	212879.5								
## 95	NA	NA								
## 96	0	NA								
## 97	NA	NA								
## 98	0	NA								
## 99	0	NA								
## 100	0	NA								

```
M <- as.matrix(dfclpbt[,4:24])
M
```

##	X1997	X1998	X1999	X2000	X2001	X2002	X2003	X2004	X2005	X2006
## 90	NA	0	0.0	NA	0.0	0	NA	0	NA	0.00
## 93	NA	0	NA	NA	7.5	NA	NA	NA	0.0000000	0.00
## 94	0	NA	NA	0	NA	0	NA	NA	0.0000000	76566.67
## 95	NA	NA	8518.5	0	0.2	NA	NA	NA	0.3333333	0.00
## 96	NA	NA	0.0	NA	0.0	NA	0	NA	NA	1.00
## 97	NA	NA	0.0	NA	NA	0	0	NA	NA	NA
## 98	NA	NA	0.0	0	10.0	NA	0	NA	NA	NA
## 99	0	NA	NA	1	0.0	0	NA	NA	0.0000000	NA
## 100	0	NA	NA	NA	NA	0	0	NA	NA	0.00
##	X2007	X2008	X2009	X2010	X2011	X2012	X2013	X2014	X2015	
## 90	NA	3	NA	0.000	NA	0.0	0	NA	NA	
## 93	0	NA	NA	NA	0	0.0	0	115346.8	NA	
## 94	0	NA	NA	1312.413	NA	0.0	NA	NA	NA	
## 95	NA	NA	NA	NA	0	0.0	0	NA	0.000	
## 96	NA	NA	NA	0.000	NA	768346.9	NA	NA	NA	
## 97	NA	0	NA	147959.368	0	0.0	0	NA	1333.787	
## 98	132500	NA	0	NA	0	NA	NA	0.0	NA	
## 99	NA	0	NA	NA	0	NA	NA	0.0	NA	
## 100	0	NA	0	NA	NA	0.0	NA	NA	NA	
##	X2016	X2017								
## 90	NA	9.0								
## 93	NA	0.0								
## 94	NA	212879.5								
## 95	NA	NA								
## 96	0	NA								
## 97	NA	NA								
## 98	0	NA								
## 99	0	NA								
## 100	0	NA								

dim(M)

[1] 9 21



```
###HighToLowPerformers
dfhtlbt[,4:24]
```


##	X1997	X1998	X1999	X2000	X2001	X2002		
## 2	85215.37	351321.25	162488.67	115699.8325	859756.76	147086.921		
## 27	87533.98	781908.40	12560.32	42133.5442	0.00	186732.219		
## 28	284060.57	298740.55	710406.94	88528.4441	78073.86	346909.122		
## 39	0.00	0.00	299072.88	24860.9263	0.00	22832.847		
## 46	77220.00	35880.21	34074.00	NA	962746.26	32731.993		
## 54	47572.00	0.00	0.00	NA	10524.66	6775.916		
## 55	18647.42	0.00	0.00	324.6591	0.00	0.000		
## 66	NA	0.00	NA	655457.4155	0.00	NA		
## 69	NA	0.00	NA	NA	78928.31	0.000		
## 75	71346.00	0.00	2.00	NA	113395.50	0.250		
## 83	NA	0.00	255685.41	0.0000	3.00	NA		
## 90	NA	0.00	0.00	NA	0.00	0.000		
## 98	NA	NA	0.00	0.0000	10.00	NA		
##	X2003	X2004	X2005	X2006	X2007	X2008	X2009	
## 2	79480.2734	132105.05	329963.20	686413.334	1435558.27	211627.1	860533.8	
## 27	27022.8713	0.00	56424.36	350473.133	89804.83	163518.0	254047.7	
## 28	305768.9522	103914.55	24960.00	0.000	574650.94	0.0	0.0	
## 39	NA	0.00	0.00	567752.133	143757.96	0.0	0.0	
## 46	173942.8790	28859.80	58963.92	0.000	0.00	NA	0.0	
## 54	173534.8756	60376.26	0.00	25337.100	NA	0.0	128366.2	
## 55	740.1487	0.00	0.00	0.000	35106.41	0.0	0.0	
## 66	0.0000	0.00	0.00	NA	0.00	NA	NA	
## 69	9898.9361	115465.00	199624.00	1190.699	NA	0.0	0.0	
## 75	NA	0.00	NA	NA	0.00	0.0	NA	
## 83	NA	NA	112.00	0.000	NA	NA	NA	
## 90	NA	0.00	NA	0.000	NA	3.0	NA	
## 98	0.0000	NA	NA	NA	132500.00	NA	0.0	
##	X2010	X2011	X2012	X2013	X2014	X2015		
## 2	282152.676	551271.19	400616.57	560072.524	851113.5	80904.72		
## 27	0.000	30936.04	0.00	5562.324	196279.4	0.00		
## 28	36472.026	0.00	0.00	NA	0.0	NA		
## 39	0.000	NA	60955.42	NA	0.0	NA		
## 46	1275.863	NA	NA	32972.973	0.0	380899.24		
## 54	NA	0.00	NA	192684.000	0.0	0.00		
## 55	NA	0.00	0.00	NA	NA	NA		
## 66	158825.412	NA	32078.00	32117.000	NA	NA		
## 69	NA	NA	NA	NA	0.0	NA		
## 75	115480.333	NA	0.00	0.000	NA	0.00		
## 83	115480.000	NA	0.00	0.000	0.0	NA		
## 90	0.000	NA	0.00	0.000	NA	NA		
## 98	NA	0.00	NA	NA	0.0	NA		
##	X2016	X2017						
## 2	5.432432e+05	49122.07						
## 27	1.020720e+05	22090.19						
## 28	6.666667e-01	NA						
## 39	1.020720e+05	0.00						
## 46	NA	0.00						
## 54	0.000000e+00	NA						
## 55	NA	0.00						
## 66	NA	0.00						
## 69	0.000000e+00	914214.89						
## 75	NA	NA						

```
## 83      NA      0.00
## 90      NA      9.00
## 98 0.000000e+00      NA
```

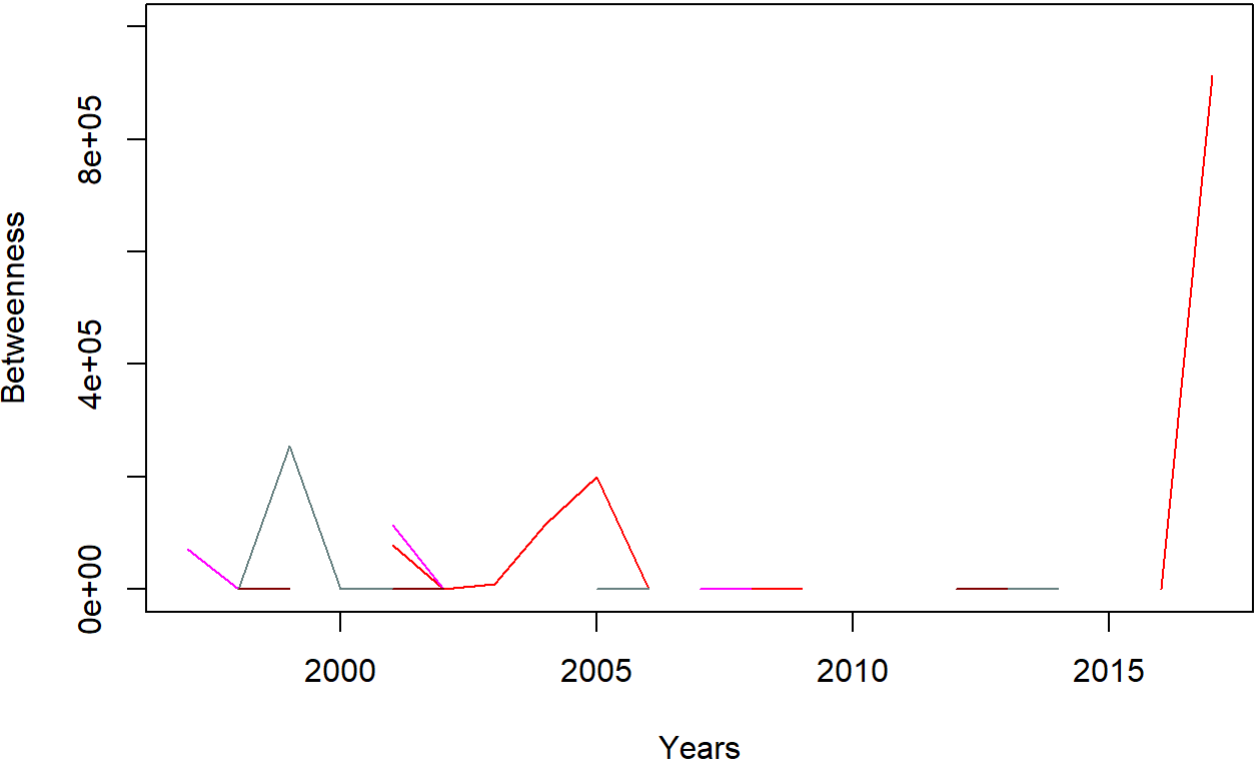
```
M <- as.matrix(dfhtlbt[,4:24])
M
```

##	X1997	X1998	X1999	X2000	X2001	X2002		
## 2	85215.37	351321.25	162488.67	115699.8325	859756.76	147086.921		
## 27	87533.98	781908.40	12560.32	42133.5442	0.00	186732.219		
## 28	284060.57	298740.55	710406.94	88528.4441	78073.86	346909.122		
## 39	0.00	0.00	299072.88	24860.9263	0.00	22832.847		
## 46	77220.00	35880.21	34074.00	NA	962746.26	32731.993		
## 54	47572.00	0.00	0.00	NA	10524.66	6775.916		
## 55	18647.42	0.00	0.00	324.6591	0.00	0.000		
## 66	NA	0.00	NA	655457.4155	0.00	NA		
## 69	NA	0.00	NA	NA	78928.31	0.000		
## 75	71346.00	0.00	2.00	NA	113395.50	0.250		
## 83	NA	0.00	255685.41	0.0000	3.00	NA		
## 90	NA	0.00	0.00	NA	0.00	0.000		
## 98	NA	NA	0.00	0.0000	10.00	NA		
##	X2003	X2004	X2005	X2006	X2007	X2008	X2009	
## 2	79480.2734	132105.05	329963.20	686413.334	1435558.27	211627.1	860533.8	
## 27	27022.8713	0.00	56424.36	350473.133	89804.83	163518.0	254047.7	
## 28	305768.9522	103914.55	24960.00	0.000	574650.94	0.0	0.0	
## 39	NA	0.00	0.00	567752.133	143757.96	0.0	0.0	
## 46	173942.8790	28859.80	58963.92	0.000	0.00	NA	0.0	
## 54	173534.8756	60376.26	0.00	25337.100	NA	0.0	128366.2	
## 55	740.1487	0.00	0.00	0.000	35106.41	0.0	0.0	
## 66	0.0000	0.00	0.00	NA	0.00	NA	NA	
## 69	9898.9361	115465.00	199624.00	1190.699	NA	0.0	0.0	
## 75	NA	0.00	NA	NA	0.00	0.0	NA	
## 83	NA	NA	112.00	0.000	NA	NA	NA	
## 90	NA	0.00	NA	0.000	NA	3.0	NA	
## 98	0.0000	NA	NA	NA	132500.00	NA	0.0	
##	X2010	X2011	X2012	X2013	X2014	X2015		
## 2	282152.676	551271.19	400616.57	560072.524	851113.5	80904.72		
## 27	0.000	30936.04	0.00	5562.324	196279.4	0.00		
## 28	36472.026	0.00	0.00	NA	0.0	NA		
## 39	0.000	NA	60955.42	NA	0.0	NA		
## 46	1275.863	NA	NA	32972.973	0.0	380899.24		
## 54	NA	0.00	NA	192684.000	0.0	0.00		
## 55	NA	0.00	0.00	NA	NA	NA		
## 66	158825.412	NA	32078.00	32117.000	NA	NA		
## 69	NA	NA	NA	NA	0.0	NA		
## 75	115480.333	NA	0.00	0.000	NA	0.00		
## 83	115480.000	NA	0.00	0.000	0.0	NA		
## 90	0.000	NA	0.00	0.000	NA	NA		
## 98	NA	0.00	NA	NA	0.0	NA		
##	X2016	X2017						
## 2	5.432432e+05	49122.07						
## 27	1.020720e+05	22090.19						
## 28	6.666667e-01	NA						
## 39	1.020720e+05	0.00						
## 46	NA	0.00						
## 54	0.000000e+00	NA						
## 55	NA	0.00						
## 66	NA	0.00						
## 69	0.000000e+00	914214.89						
## 75	NA	NA						

```
## 83      NA      0.00
## 90      NA      9.00
## 98 0.000000e+00      NA
```

```
dim(M)
```

```
## [1] 13 21
```



```
###LowToHighPerformers
df1thbt[,4:24]
```

##	X1997	X1998	X1999	X2000	X2001	X2002	X2003
## 1	NA	58890.74	NA	103845.388	NA	0.00	165441.012
## 3	0.00	0.00	130646.3	657605.723	189001.2561	0.00	217866.076
## 4	NA	NA	0.0	0.000	NA	NA	31696.043
## 5	0.00	NA	0.0	0.000	189229.1738	0.00	1702.240
## 8	0.00	NA	0.0	0.000	169141.1310	NA	132351.960
## 9	47572.00	NA	102198.0	47104.700	0.0000	0.00	7837.593
## 10	NA	0.00	0.0	0.000	0.0000	0.00	390551.223
## 11	36.00	NA	NA	0.000	10183.5131	355279.89	NA
## 12	0.00	NA	0.0	0.000	37816.0000	0.00	0.000
## 16	NA	0.00	136248.0	NA	189024.5000	0.00	NA
## 17	0.00	61265.56	0.0	0.000	855.9776	0.00	130209.355
## 18	0.00	0.00	0.0	NA	NA	0.00	41912.000
## 20	NA	NA	0.0	0.000	218341.6279	6146.53	8781.766
## 23	24013.51	NA	0.0	NA	160183.2549	187482.25	1.000
## 24	0.00	NA	0.0	11.000	0.0000	773838.83	105.000
## 25	0.00	0.00	0.0	0.000	0.0000	0.00	NA
## 34	NA	NA	14191.1	0.000	NA	NA	NA
## 37	0.00	0.00	NA	0.000	NA	0.00	13.500
## 38	543518.65	NA	NA	NA	0.0000	116226.00	NA
## 44	4891.60	0.00	411774.6	NA	NA	0.00	NA
## 45	NA	NA	133785.0	117082.109	0.0000	10949.70	NA
## 48	NA	NA	0.0	0.000	NA	NA	NA
## 49	0.00	0.00	NA	9817.559	9657.9816	NA	0.000
## 56	0.00	NA	NA	NA	NA	0.00	NA
## 57	NA	NA	1.0	0.000	0.0000	NA	NA
## 58	NA	0.00	NA	NA	0.0000	0.00	NA
## 62	NA	NA	0.0	0.000	NA	NA	0.000
## 73	NA	0.00	NA	0.000	0.0000	0.00	176139.257
## 74	NA	14054.00	NA	NA	0.0000	NA	0.000
## 82	NA	0.00	NA	NA	0.0000	NA	0.000
##	X2004	X2005	X2006	X2007	X2008	X2009	
## 1	8.823074e+04	333327.657	452244.151	451261.004	450714.3534	492801.369	
## 3	8.465422e+03	274468.000	690927.459	209961.384	246185.5969	1842631.272	
## 4	8.321105e+05	361708.119	341765.016	169137.783	344786.5751	270890.277	
## 5	5.083784e+05	357471.601	218782.466	1084737.922	140876.1215	86014.621	
## 8	3.333333e-01	7374.407	40102.005	127924.544	47462.9980	4560.086	
## 9	4.095058e+05	58486.668	13622.623	125701.589	193402.3861	35687.952	
## 10	2.114550e+04	187305.118	133732.630	154755.821	6397.0023	235990.788	
## 11	NA	279370.529	487036.163	6060.593	208233.1547	182368.207	
## 12	0.000000e+00	0.000	22.000	412175.850	13628.5000	409060.000	
## 16	1.483987e+04	NA	0.000	2735.046	19023.4945	51021.679	
## 17	0.000000e+00	0.000	15897.524	138776.376	21275.9671	140005.786	
## 18	1.442363e+04	335268.059	402460.523	0.000	618.2873	4052.636	
## 20	0.000000e+00	0.000	23129.158	3432.454	32880.5732	16259.451	
## 23	1.905032e+05	NA	0.000	96550.275	373372.7988	813368.614	
## 24	1.300845e+05	0.000	268015.545	26114.160	299728.0000	1239585.239	
## 25	0.000000e+00	0.000	0.000	53920.043	75114.3522	30960.868	
## 34	NA	0.000	49422.000	53006.000	0.0000	0.000	
## 37	3.464200e+04	2.000	24710.000	NA	0.0000	0.000	
## 38	0.000000e+00	2269.241	NA	0.000	334164.5945	2193.288	
## 44	2.074066e+04	47166.501	NA	NA	0.0000	902454.592	
## 45	NA	63813.255	0.000	0.000	0.0000	0.000	

## 48	NA	0.000	0.000	NA	0.0000	6843.489
## 49	7.824609e+03	49918.000	NA	4635.695	10664.2461	26219.023
## 56	9.236800e+04	64059.501	401326.477	NA	NA	NA
## 57	0.000000e+00	24960.000	0.000	NA	NA	NA
## 58	0.000000e+00	NA	123546.000	NA	NA	NA
## 62	0.000000e+00	NA	18.000	0.000	20435.2500	NA
## 73	0.000000e+00	6.000	NA	2.000	NA	0.000
## 74	0.000000e+00	4.500	8236.667	0.000	NA	0.000
## 82	NA	0.000	0.000	NA	NA	21.500
##	X2010	X2011	X2012	X2013	X2014	
## 1	986158.334	499941.433	821150.1444	443803.148	807662.4869	
## 3	573067.009	789645.436	612775.5159	138597.932	487905.4494	
## 4	285928.816	186980.353	75214.8030	235598.243	131534.7386	
## 5	167307.593	3575594.326	364061.8940	297407.410	478250.3350	
## 8	44836.708	156622.985	92186.4980	214751.488	91109.4060	
## 9	31547.728	99849.455	1098347.7970	2626113.091	56120.6155	
## 10	171358.948	293973.554	247012.8686	78722.722	1891303.2210	
## 11	448438.513	32394.242	1299274.2360	1542233.696	28426.3350	
## 12	237585.429	533916.766	34563.9937	514027.705	102924.5326	
## 16	36193.373	304716.874	59873.8803	942285.929	652523.9752	
## 17	36085.132	297747.743	195757.3488	50654.311	40750.0239	
## 18	71159.890	8277.556	121551.0771	29134.060	1708.7749	
## 20	69098.991	61109.007	128983.3992	64586.129	23089.0710	
## 23	8490.895	229093.019	27892.7419	56249.400	935806.0639	
## 24	484752.697	412485.006	1146440.2030	246098.902	783994.7795	
## 25	20680.371	39647.099	29579.6370	420211.193	98463.8068	
## 34	2712782.744	193518.000	67728.0235	36139.386	1293.6380	
## 37	14436.000	112887.000	20381.6342	41586.815	0.0000	
## 38	9142.011	1294.967	211.6014	14398.430	132.9228	
## 44	0.000	635810.264	413529.1206	NA	0.0000	
## 45	7104.298	NA	0.0000	61582.104	197616.0704	
## 48	74199.906	NA	1796.4496	4156.203	NA	
## 49	0.000	121469.654	135525.8535	137851.285	142542.4306	
## 56	0.000	NA	0.0000	0.000	235418.5292	
## 57	0.000	1.000	0.0000	0.000	15.5000	
## 58	76970.667	0.000	312702.2454	102489.815	149718.0499	
## 62	0.000	0.000	448989.0000	0.000	42.0000	
## 73	NA	0.000	0.0000	NA	0.0000	
## 74	NA	322472.000	0.0000	NA	0.0000	
## 82	0.000	NA	0.0000	64236.333	NA	
##	X2015	X2016	X2017			
## 1	637823.116	534703.863	193657.689			
## 3	194577.308	378903.345	95196.889			
## 4	310860.460	599267.591	53252.102			
## 5	866515.608	1045305.155	45361.599			
## 8	823969.875	493429.795	14420.146			
## 9	108024.801	60625.688	1191988.652			
## 10	484966.911	896417.054	64447.842			
## 11	110093.381	12741.582	101183.856			
## 12	8778.375	11370.826	30935.348			
## 16	88624.233	74758.898	1195.928			
## 17	206217.584	3787.972	NA			
## 18	109863.144	56106.216	44046.899			
## 20	73023.416	40604.558	52672.899			

##	23	319617.349	191606.143	209402.000
##	24	473889.770	430561.539	NA
##	25	12.000	62349.274	0.000
##	34	14806.387	17704.979	6030.233
##	37	20520.665	0.000	0.000
##	38	140948.547	5694.504	0.000
##	44	0.000	0.000	NA
##	45	201451.506	1.000	0.000
##	48	NA	3745.961	5440.803
##	49	313852.000	NA	NA
##	56	259074.454	266444.580	5281.419
##	57	55.500	NA	0.000
##	58	0.000	0.000	NA
##	62	6.000	10.500	NA
##	73	NA	103634.291	0.000
##	74	65762.543	NA	NA
##	82	NA	10.500	NA

```
M <- as.matrix(dflthbt[,4:24])  
M
```

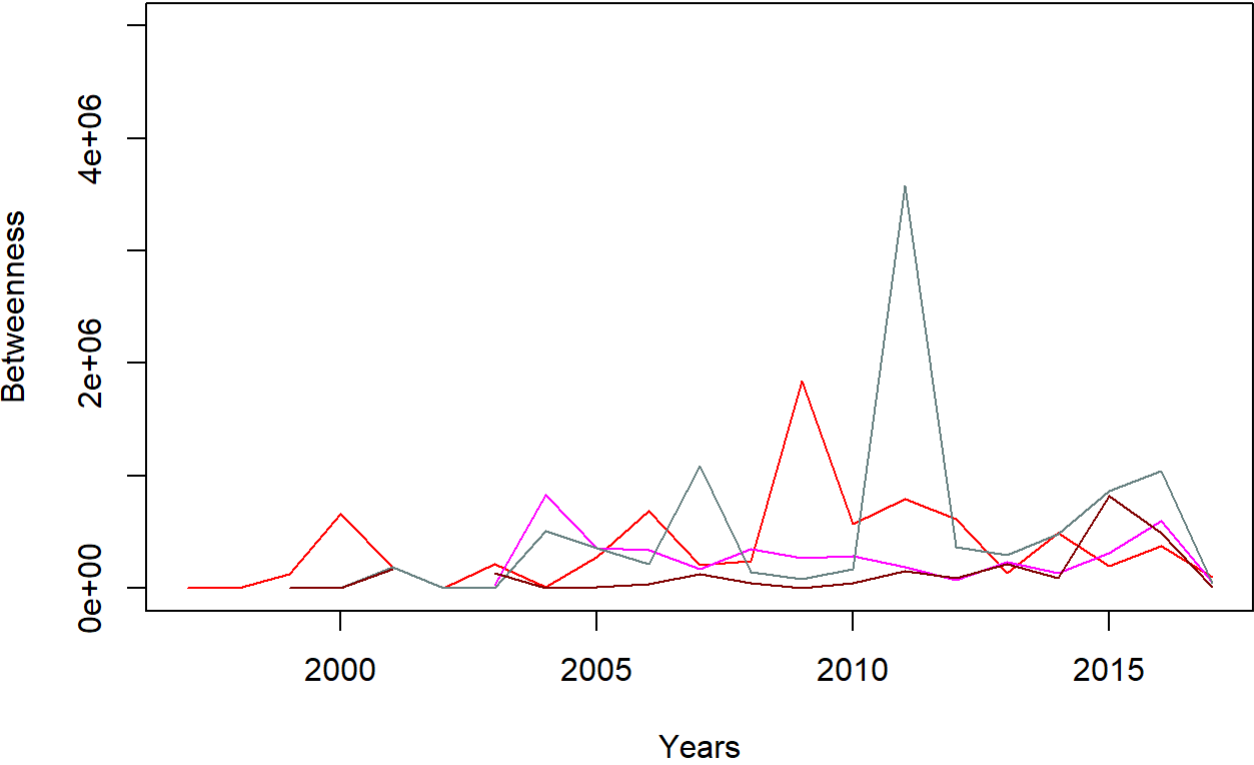
##	X1997	X1998	X1999	X2000	X2001	X2002	X2003
## 1	NA	58890.74	NA	103845.388	NA	0.00	165441.012
## 3	0.00	0.00	130646.3	657605.723	189001.2561	0.00	217866.076
## 4	NA	NA	0.0	0.000	NA	NA	31696.043
## 5	0.00	NA	0.0	0.000	189229.1738	0.00	1702.240
## 8	0.00	NA	0.0	0.000	169141.1310	NA	132351.960
## 9	47572.00	NA	102198.0	47104.700	0.0000	0.00	7837.593
## 10	NA	0.00	0.0	0.000	0.0000	0.00	390551.223
## 11	36.00	NA	NA	0.000	10183.5131	355279.89	NA
## 12	0.00	NA	0.0	0.000	37816.0000	0.00	0.000
## 16	NA	0.00	136248.0	NA	189024.5000	0.00	NA
## 17	0.00	61265.56	0.0	0.000	855.9776	0.00	130209.355
## 18	0.00	0.00	0.0	NA	NA	0.00	41912.000
## 20	NA	NA	0.0	0.000	218341.6279	6146.53	8781.766
## 23	24013.51	NA	0.0	NA	160183.2549	187482.25	1.000
## 24	0.00	NA	0.0	11.000	0.0000	773838.83	105.000
## 25	0.00	0.00	0.0	0.000	0.0000	0.00	NA
## 34	NA	NA	14191.1	0.000	NA	NA	NA
## 37	0.00	0.00	NA	0.000	NA	0.00	13.500
## 38	543518.65	NA	NA	NA	0.0000	116226.00	NA
## 44	4891.60	0.00	411774.6	NA	NA	0.00	NA
## 45	NA	NA	133785.0	117082.109	0.0000	10949.70	NA
## 48	NA	NA	0.0	0.000	NA	NA	NA
## 49	0.00	0.00	NA	9817.559	9657.9816	NA	0.000
## 56	0.00	NA	NA	NA	NA	0.00	NA
## 57	NA	NA	1.0	0.000	0.0000	NA	NA
## 58	NA	0.00	NA	NA	0.0000	0.00	NA
## 62	NA	NA	0.0	0.000	NA	NA	0.000
## 73	NA	0.00	NA	0.000	0.0000	0.00	176139.257
## 74	NA	14054.00	NA	NA	0.0000	NA	0.000
## 82	NA	0.00	NA	NA	0.0000	NA	0.000
##	X2004	X2005	X2006	X2007	X2008	X2009	
## 1	8.823074e+04	333327.657	452244.151	451261.004	450714.3534	492801.369	
## 3	8.465422e+03	274468.000	690927.459	209961.384	246185.5969	1842631.272	
## 4	8.321105e+05	361708.119	341765.016	169137.783	344786.5751	270890.277	
## 5	5.083784e+05	357471.601	218782.466	1084737.922	140876.1215	86014.621	
## 8	3.333333e-01	7374.407	40102.005	127924.544	47462.9980	4560.086	
## 9	4.095058e+05	58486.668	13622.623	125701.589	193402.3861	35687.952	
## 10	2.114550e+04	187305.118	133732.630	154755.821	6397.0023	235990.788	
## 11	NA	279370.529	487036.163	6060.593	208233.1547	182368.207	
## 12	0.000000e+00	0.000	22.000	412175.850	13628.5000	409060.000	
## 16	1.483987e+04	NA	0.000	2735.046	19023.4945	51021.679	
## 17	0.000000e+00	0.000	15897.524	138776.376	21275.9671	140005.786	
## 18	1.442363e+04	335268.059	402460.523	0.000	618.2873	4052.636	
## 20	0.000000e+00	0.000	23129.158	3432.454	32880.5732	16259.451	
## 23	1.905032e+05	NA	0.000	96550.275	373372.7988	813368.614	
## 24	1.300845e+05	0.000	268015.545	26114.160	299728.0000	1239585.239	
## 25	0.000000e+00	0.000	0.000	53920.043	75114.3522	30960.868	
## 34	NA	0.000	49422.000	53006.000	0.0000	0.000	
## 37	3.464200e+04	2.000	24710.000	NA	0.0000	0.000	
## 38	0.000000e+00	2269.241	NA	0.000	334164.5945	2193.288	
## 44	2.074066e+04	47166.501	NA	NA	0.0000	902454.592	
## 45	NA	63813.255	0.000	0.000	0.0000	0.000	

## 48	NA	0.000	0.000	NA	0.0000	6843.489
## 49	7.824609e+03	49918.000	NA	4635.695	10664.2461	26219.023
## 56	9.236800e+04	64059.501	401326.477	NA	NA	NA
## 57	0.000000e+00	24960.000	0.000	NA	NA	NA
## 58	0.000000e+00	NA	123546.000	NA	NA	NA
## 62	0.000000e+00	NA	18.000	0.000	20435.2500	NA
## 73	0.000000e+00	6.000	NA	2.000	NA	0.000
## 74	0.000000e+00	4.500	8236.667	0.000	NA	0.000
## 82	NA	0.000	0.000	NA	NA	21.500
##	X2010	X2011	X2012	X2013	X2014	
## 1	986158.334	499941.433	821150.1444	443803.148	807662.4869	
## 3	573067.009	789645.436	612775.5159	138597.932	487905.4494	
## 4	285928.816	186980.353	75214.8030	235598.243	131534.7386	
## 5	167307.593	3575594.326	364061.8940	297407.410	478250.3350	
## 8	44836.708	156622.985	92186.4980	214751.488	91109.4060	
## 9	31547.728	99849.455	1098347.7970	2626113.091	56120.6155	
## 10	171358.948	293973.554	247012.8686	78722.722	1891303.2210	
## 11	448438.513	32394.242	1299274.2360	1542233.696	28426.3350	
## 12	237585.429	533916.766	34563.9937	514027.705	102924.5326	
## 16	36193.373	304716.874	59873.8803	942285.929	652523.9752	
## 17	36085.132	297747.743	195757.3488	50654.311	40750.0239	
## 18	71159.890	8277.556	121551.0771	29134.060	1708.7749	
## 20	69098.991	61109.007	128983.3992	64586.129	23089.0710	
## 23	8490.895	229093.019	27892.7419	56249.400	935806.0639	
## 24	484752.697	412485.006	1146440.2030	246098.902	783994.7795	
## 25	20680.371	39647.099	29579.6370	420211.193	98463.8068	
## 34	2712782.744	193518.000	67728.0235	36139.386	1293.6380	
## 37	14436.000	112887.000	20381.6342	41586.815	0.0000	
## 38	9142.011	1294.967	211.6014	14398.430	132.9228	
## 44	0.000	635810.264	413529.1206	NA	0.0000	
## 45	7104.298	NA	0.0000	61582.104	197616.0704	
## 48	74199.906	NA	1796.4496	4156.203	NA	
## 49	0.000	121469.654	135525.8535	137851.285	142542.4306	
## 56	0.000	NA	0.0000	0.000	235418.5292	
## 57	0.000	1.000	0.0000	0.000	15.5000	
## 58	76970.667	0.000	312702.2454	102489.815	149718.0499	
## 62	0.000	0.000	448989.0000	0.000	42.0000	
## 73	NA	0.000	0.0000	NA	0.0000	
## 74	NA	322472.000	0.0000	NA	0.0000	
## 82	0.000	NA	0.0000	64236.333	NA	
##	X2015	X2016	X2017			
## 1	637823.116	534703.863	193657.689			
## 3	194577.308	378903.345	95196.889			
## 4	310860.460	599267.591	53252.102			
## 5	866515.608	1045305.155	45361.599			
## 8	823969.875	493429.795	14420.146			
## 9	108024.801	60625.688	1191988.652			
## 10	484966.911	896417.054	64447.842			
## 11	110093.381	12741.582	101183.856			
## 12	8778.375	11370.826	30935.348			
## 16	88624.233	74758.898	1195.928			
## 17	206217.584	3787.972	NA			
## 18	109863.144	56106.216	44046.899			
## 20	73023.416	40604.558	52672.899			

##	23	319617.349	191606.143	209402.000
##	24	473889.770	430561.539	NA
##	25	12.000	62349.274	0.000
##	34	14806.387	17704.979	6030.233
##	37	20520.665	0.000	0.000
##	38	140948.547	5694.504	0.000
##	44	0.000	0.000	NA
##	45	201451.506	1.000	0.000
##	48	NA	3745.961	5440.803
##	49	313852.000	NA	NA
##	56	259074.454	266444.580	5281.419
##	57	55.500	NA	0.000
##	58	0.000	0.000	NA
##	62	6.000	10.500	NA
##	73	NA	103634.291	0.000
##	74	65762.543	NA	NA
##	82	NA	10.500	NA

dim(M)

[1] 30 21



Eigen Value

```

dfev= read.csv("C:/Users/amitd/Desktop/FA/MasterEigenVector.csv")
dflthev = subset(dfev,dfev$LowToHigh=="LTH")
dfhtlev = subset(dfev,dfev$HighToLow=="HTL")
dfclpev = subset(dfev,dfev$ConsistentlyLowPerf=="CLP")
dfchpev = subset(dfev,dfev$ConsistentlyHighPerf=="CHP")

```

```

###ConsistentHighPerformers
dfchpev[,4:24]

```

```

##      X1997    X1998    X1999    X2000    X2001    X2002    X2003    X2004
## 2  3.09e-06  2.80e-06  2.40e-06  5.25e-06  3.97e-05  5.08e-06  1.34e-08  6.38e-07
## 7  6.35e-12  5.24e-09  9.06e-06  4.93e-11  4.85e-07  1.86e-07  1.22e-10  2.12e-05
## 13 1.13e-17  8.90e-07  5.15e-18  9.73e-06  7.32e-08  1.90e-18  4.91e-09      NA
## 15 3.00e-07  5.36e-13  2.99e-12  1.50e-09  7.66e-08  0.00e+00  1.99e-12  1.75e-12
##      X2005    X2006    X2007    X2008    X2009    X2010
## 2  0.0000441000 0.000050600 2.4678e-03 3.6700e-06 0.0000523000 1.16085e-04
## 7  0.0037561870 0.005476628 4.9400e-05 2.2098e-04 0.0000015700 7.34225e-04
## 13 0.0000002740 0.000000902 4.6200e-07 3.6600e-06 0.0032494220 6.78000e-05
## 15 0.0000000239 0.000031400 1.7900e-12 2.1500e-07 0.0000000354 3.86000e-08
##      X2011    X2012    X2013    X2014    X2015    X2016
## 2  1.01e-05  1.58e-05  9.70000e-06 0.004479275 0.000170964 0.000127094
## 7  3.16e-06  7.88e-05  8.35923e-04 0.027660735 0.000449388 0.000921442
## 13 0.00e+00  8.08e-05  5.26000e-05 0.000757800 0.000081200 0.000079600
## 15 0.00e+00  4.97e-17  7.84000e-08 0.003776435 0.007429875 0.000039200
##      X2017
## 2  2.70e-06
## 7  2.26e-06
## 13 3.05e-09
## 15 3.03e-11

```

```

M <- as.matrix(dfchpev[,4:24])
M

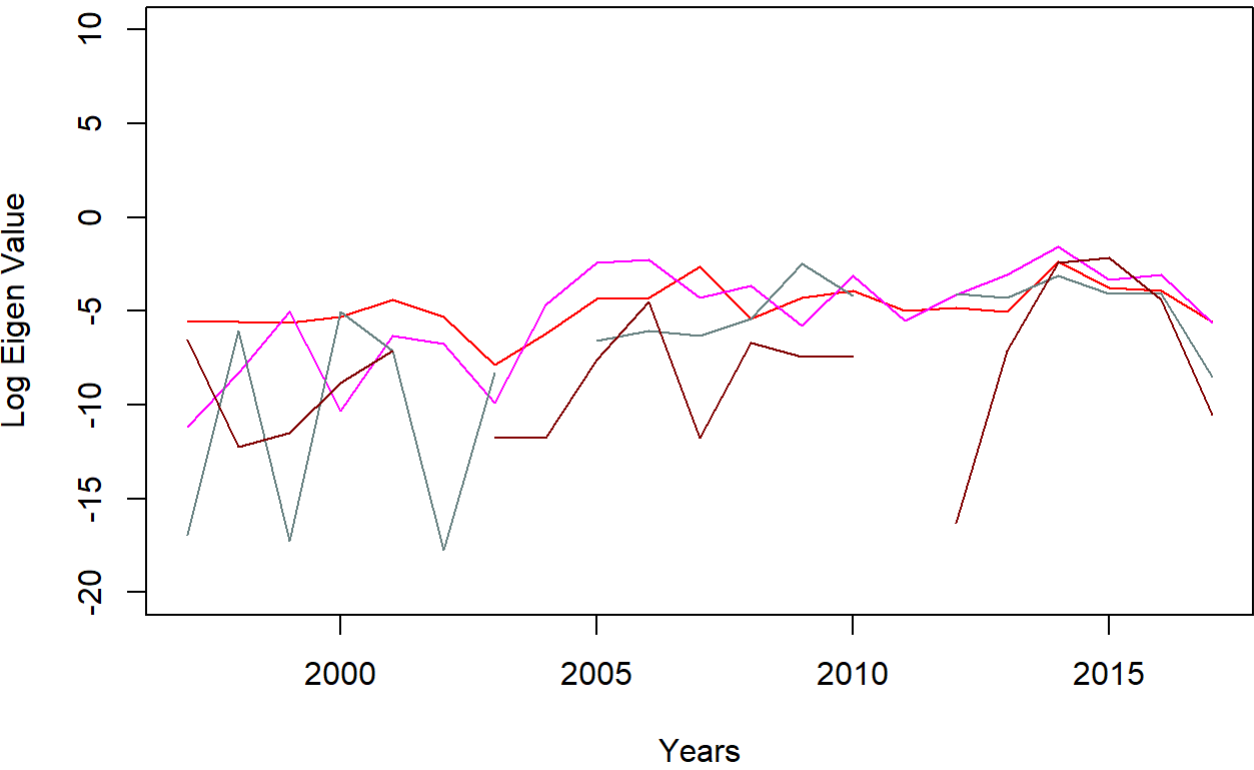
```

```
##      X1997      X1998      X1999      X2000      X2001      X2002      X2003      X2004
## 2  3.09e-06 2.80e-06 2.40e-06 5.25e-06 3.97e-05 5.08e-06 1.34e-08 6.38e-07
## 7  6.35e-12 5.24e-09 9.06e-06 4.93e-11 4.85e-07 1.86e-07 1.22e-10 2.12e-05
## 13 1.13e-17 8.90e-07 5.15e-18 9.73e-06 7.32e-08 1.90e-18 4.91e-09      NA
## 15 3.00e-07 5.36e-13 2.99e-12 1.50e-09 7.66e-08 0.00e+00 1.99e-12 1.75e-12
##      X2005      X2006      X2007      X2008      X2009      X2010
## 2  0.0000441000 0.000050600 2.4678e-03 3.6700e-06 0.0000523000 1.16085e-04
## 7  0.0037561870 0.005476628 4.9400e-05 2.2098e-04 0.0000015700 7.34225e-04
## 13 0.0000002740 0.000000902 4.6200e-07 3.6600e-06 0.0032494220 6.78000e-05
## 15 0.0000000239 0.000031400 1.7900e-12 2.1500e-07 0.0000000354 3.86000e-08
##      X2011      X2012      X2013      X2014      X2015      X2016
## 2  1.01e-05 1.58e-05 9.70000e-06 0.004479275 0.000170964 0.000127094
## 7  3.16e-06 7.88e-05 8.35923e-04 0.027660735 0.000449388 0.000921442
## 13 0.00e+00 8.08e-05 5.26000e-05 0.000757800 0.000081200 0.000079600
## 15 0.00e+00 4.97e-17 7.84000e-08 0.003776435 0.007429875 0.000039200
##      X2017
## 2  2.70e-06
## 7  2.26e-06
## 13 3.05e-09
## 15 3.03e-11
```

```
dim(M)
```

```
## [1]  4 21
```

Since Eigen Value vary from order 0 to 10^{-18}
I chose to plot Log of Eigen Value



```
###ConsistentLowPerformers  
dfclpev[,4:24]
```

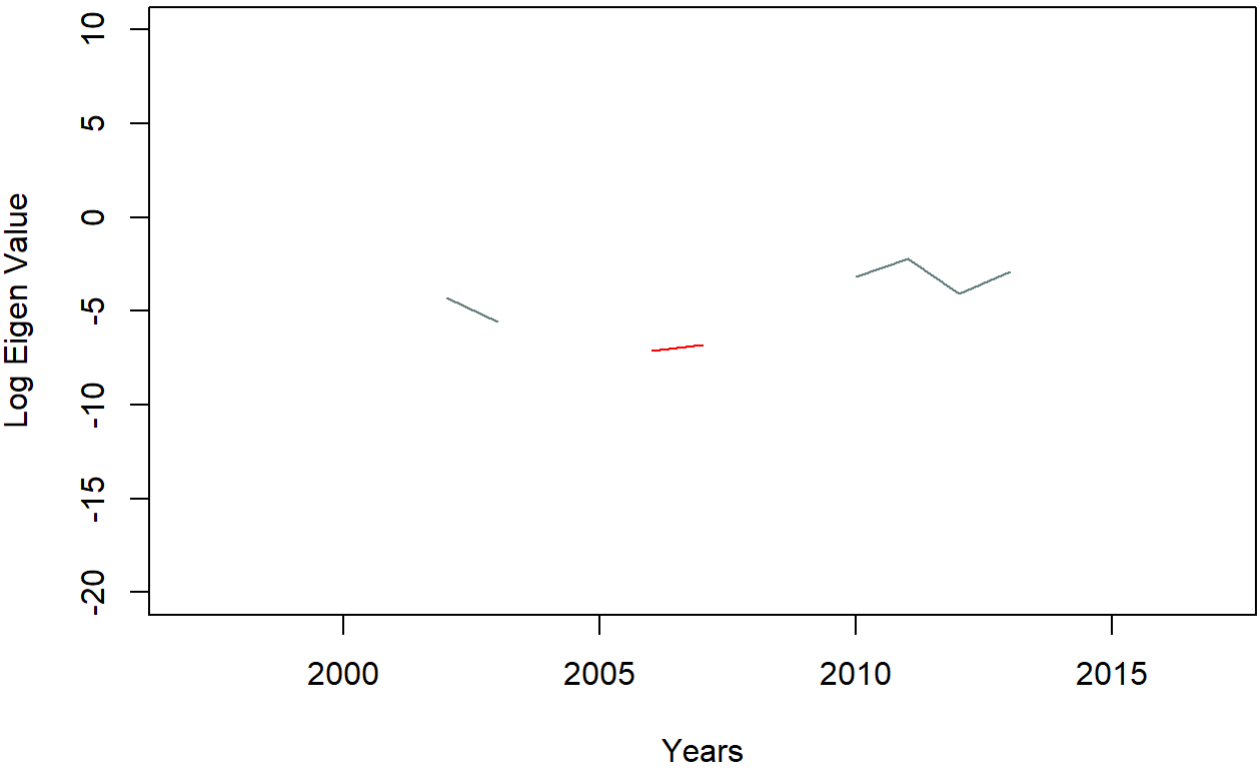
##	X1997	X1998	X1999	X2000	X2001	X2002	X2003	X2004
## 90	NA	0	1.20e-07	NA	1.62e-17	0.00e+00	NA	0
## 93	NA	0	NA	NA	5.80e-17	NA	NA	NA
## 94	5.57e-05	NA	NA	2.16e-07	NA	1.50e-08	NA	NA
## 95	NA	NA	3.93e-10	8.39e-09	5.82e-09	NA	NA	NA
## 96	NA	NA	9.65e-18	NA	4.27e-18	NA	0.00e+00	NA
## 97	NA	NA	2.30e-07	NA	NA	5.39e-05	2.56e-06	NA
## 98	NA	NA	5.15e-18	4.99e-11	0.00e+00	NA	6.11e-17	NA
## 99	3.51e-17	NA	NA	1.38e-16	0.00e+00	0.00e+00	NA	NA
## 100	0.00e+00	NA	NA	NA	NA	0.00e+00	1.67e-11	NA
##	X2005	X2006	X2007	X2008	X2009	X2010		
## 90	NA	0.00000e+00	NA	7.69000e-17	NA	1.34000e-08		
## 93	1.54e-17	1.39000e-08	1.64000e-17	NA	NA	NA		
## 94	9.62e-07	1.48985e-04	2.42775e-03	NA	NA	2.65000e-06		
## 95	0.00e+00	0.00000e+00	NA	NA	NA	NA		
## 96	NA	1.49000e-17	NA	NA	NA	0.00000e+00		
## 97	NA	NA	NA	4.84836e-04	NA	6.90178e-04		
## 98	NA	NA	6.09000e-08	NA	3.24e-05	NA		
## 99	0.00e+00	NA	NA	8.94000e-18	NA	NA		
## 100	NA	7.57000e-08	1.67000e-07	NA	1.49e-17	NA		
##	X2011	X2012	X2013	X2014	X2015			
## 90	NA	8.82000e-09	1.16000e-08	NA	NA			
## 93	0.0000005970	5.28000e-17	2.67000e-12	5.84000e-10	NA			
## 94	NA	1.26000e-05	NA	NA	NA			
## 95	0.0000012200	1.72000e-06	2.05000e-08	NA	0.001583682			
## 96	NA	4.64529e-04	NA	NA	NA			
## 97	0.0059667360	8.55000e-05	1.243639e-03	NA	0.007084340			
## 98	0.0000000000	NA	NA	2.82000e-06	NA			
## 99	0.0000000649	NA	NA	4.49426e-04	NA			
## 100	NA	2.93000e-09	NA	NA	NA			
##	X2016	X2017						
## 90	NA	1.72e-17						
## 93	NA	5.12e-18						
## 94	NA	4.89e-06						
## 95	NA	NA						
## 96	1.9400e-09	NA						
## 97	NA	NA						
## 98	7.3314e-04	NA						
## 99	7.9600e-18	NA						
## 100	4.5600e-11	NA						

```
M <- as.matrix(dfclpev[,4:24])
M
```

##	X1997	X1998	X1999	X2000	X2001	X2002	X2003	X2004
## 90	NA	0	1.20e-07	NA	1.62e-17	0.00e+00	NA	0
## 93	NA	0	NA	NA	5.80e-17	NA	NA	NA
## 94	5.57e-05	NA	NA	2.16e-07	NA	1.50e-08	NA	NA
## 95	NA	NA	3.93e-10	8.39e-09	5.82e-09	NA	NA	NA
## 96	NA	NA	9.65e-18	NA	4.27e-18	NA	0.00e+00	NA
## 97	NA	NA	2.30e-07	NA	NA	5.39e-05	2.56e-06	NA
## 98	NA	NA	5.15e-18	4.99e-11	0.00e+00	NA	6.11e-17	NA
## 99	3.51e-17	NA	NA	1.38e-16	0.00e+00	0.00e+00	NA	NA
## 100	0.00e+00	NA	NA	NA	NA	0.00e+00	1.67e-11	NA
##	X2005	X2006	X2007	X2008	X2009	X2010		
## 90	NA	0.00000e+00	NA	7.69000e-17	NA	1.34000e-08		
## 93	1.54e-17	1.39000e-08	1.64000e-17	NA	NA	NA		
## 94	9.62e-07	1.48985e-04	2.42775e-03	NA	NA	2.65000e-06		
## 95	0.00e+00	0.00000e+00	NA	NA	NA	NA		
## 96	NA	1.49000e-17	NA	NA	NA	0.00000e+00		
## 97	NA	NA	NA	4.84836e-04	NA	6.90178e-04		
## 98	NA	NA	6.09000e-08	NA	3.24e-05	NA		
## 99	0.00e+00	NA	NA	8.94000e-18	NA	NA		
## 100	NA	7.57000e-08	1.67000e-07	NA	1.49e-17	NA		
##	X2011	X2012	X2013	X2014	X2015			
## 90	NA	8.82000e-09	1.16000e-08	NA	NA			
## 93	0.0000005970	5.28000e-17	2.67000e-12	5.84000e-10	NA			
## 94	NA	1.26000e-05	NA	NA	NA			
## 95	0.0000012200	1.72000e-06	2.05000e-08	NA	0.001583682			
## 96	NA	4.64529e-04	NA	NA	NA			
## 97	0.0059667360	8.55000e-05	1.243639e-03	NA	0.007084340			
## 98	0.0000000000	NA	NA	2.82000e-06	NA			
## 99	0.0000000649	NA	NA	4.49426e-04	NA			
## 100	NA	2.93000e-09	NA	NA	NA			
##	X2016	X2017						
## 90	NA	1.72e-17						
## 93	NA	5.12e-18						
## 94	NA	4.89e-06						
## 95	NA	NA						
## 96	1.9400e-09	NA						
## 97	NA	NA						
## 98	7.3314e-04	NA						
## 99	7.9600e-18	NA						
## 100	4.5600e-11	NA						

dim(M)

[1] 9 21



```
###HighToLowPerformers  
dfhtlev[,4:24]
```


##	X1997	X1998	X1999	X2000	X2001		
## 2	3.09000e-06	2.80000e-06	2.40000e-06	5.25000e-06	3.97000e-05		
## 27	4.59000e-05	1.06000e-06	1.18000e-08	4.55000e-06	1.61000e-06		
## 28	2.17383e-04	7.18000e-05	2.55000e-05	5.76000e-05	2.19000e-06		
## 39	4.15000e-05	1.83000e-07	2.04000e-06	1.187725e-03	5.21000e-06		
## 46	1.12000e-10	4.12000e-06	1.879383e-03	NA	1.371090e-04		
## 54	9.57000e-07	4.77000e-08	2.55000e-07	NA	5.62000e-08		
## 55	1.72000e-06	7.56259e-04	1.39000e-07	7.29000e-07	3.44000e-05		
## 66	NA	4.37000e-08	NA	9.103858e-01	9.495265e-01		
## 69	NA	4.96000e-11	NA	NA	1.66000e-08		
## 75	0.00000e+00	0.00000e+00	0.00000e+00	NA	4.33000e-07		
## 83	NA	0.00000e+00	2.762244e-03	5.26000e-17	1.19000e-17		
## 90	NA	0.00000e+00	1.20000e-07	NA	1.62000e-17		
## 98	NA	NA	5.15000e-18	4.99000e-11	0.00000e+00		
##	X2002	X2003	X2004	X2005	X2006	X2007	X2008
## 2	0.000005080	1.34e-08	6.38e-07	4.41e-05	5.06000e-05	2.4678e-03	3.67e-06
## 27	0.000004600	2.68e-09	1.44e-07	1.81e-06	4.760243e-03	1.7200e-07	9.08e-05
## 28	0.000071700	1.60e-08	2.58e-06	2.44e-06	2.02000e-10	1.4300e-05	1.68e-06
## 39	0.000002730	NA	9.78e-08	3.03e-06	3.57000e-06	3.0400e-05	2.02e-07
## 46	0.000000718	2.51e-07	9.45e-08	2.64e-07	0.00000e+00	5.1600e-05	NA
## 54	0.000185872	5.70e-09	1.95e-07	1.88e-09	5.34000e-08	NA	3.04e-08
## 55	0.000054500	4.36e-11	6.11e-05	2.78e-05	3.362700e-04	7.2100e-06	5.07e-05
## 66	NA	2.97e-06	0.00e+00	0.00e+00	NA	7.9200e-10	NA
## 69	0.000000000	5.01e-11	5.35e-07	8.16e-07	3.78000e-05	NA	5.54e-05
## 75	0.000000000	NA	1.01e-17	NA	NA	0.0000e+00	5.91e-07
## 83	NA	NA	NA	0.00e+00	2.91000e-17	NA	NA
## 90	0.000000000	NA	0.00e+00	NA	0.00000e+00	NA	7.69e-17
## 98	NA	6.11e-17	NA	NA	NA	6.0900e-08	NA
##	X2009	X2010	X2011	X2012	X2013	X2014	
## 2	5.23000e-05	1.16085e-04	0.000010100	1.58000e-05	9.70e-06	4.479275e-03	
## 27	2.48000e-05	6.73000e-09	0.000028900	6.85000e-05	6.54e-07	2.020725e-03	
## 28	0.000000e+00	1.04927e-04	0.000000051	1.26000e-07	NA	6.80000e-07	
## 39	7.68000e-07	8.68000e-08	NA	3.62000e-06	NA	2.08000e-05	
## 46	5.84000e-12	1.65000e-06	NA	NA	4.66e-05	7.680650e-04	
## 54	1.050900e-04	NA	0.000338222	NA	7.06e-05	7.11000e-05	
## 55	8.09000e-05	NA	0.000049700	1.76063e-04	NA	NA	
## 66	NA	6.68000e-07	NA	5.20000e-10	2.30e-06	NA	
## 69	3.206029e-03	NA	NA	NA	NA	2.97000e-10	
## 75	NA	6.25000e-06	NA	1.84000e-17	9.57e-06	NA	
## 83	NA	1.33000e-06	NA	1.29176e-04	1.55e-16	1.374770e-04	
## 90	NA	1.34000e-08	NA	8.82000e-09	1.16e-08	NA	
## 98	3.24000e-05	NA	0.000000000	NA	NA	2.82000e-06	
##	X2015	X2016	X2017				
## 2	0.000170964	1.27094e-04	2.70000e-06				
## 27	0.000001380	8.93000e-08	3.28000e-06				
## 28	NA	3.31000e-07	NA				
## 39	NA	4.86000e-05	1.28000e-06				
## 46	0.000907124	NA	1.33000e-17				
## 54	0.006005438	2.40000e-08	NA				
## 55	NA	NA	9.27000e-06				
## 66	NA	NA	6.22000e-09				
## 69	NA	3.19000e-17	8.03771e-04				
## 75	0.000083300	NA	NA				

## 83	NA	NA 4.08000e-07
## 90	NA	NA 1.72000e-17
## 98	NA 7.33140e-04	NA

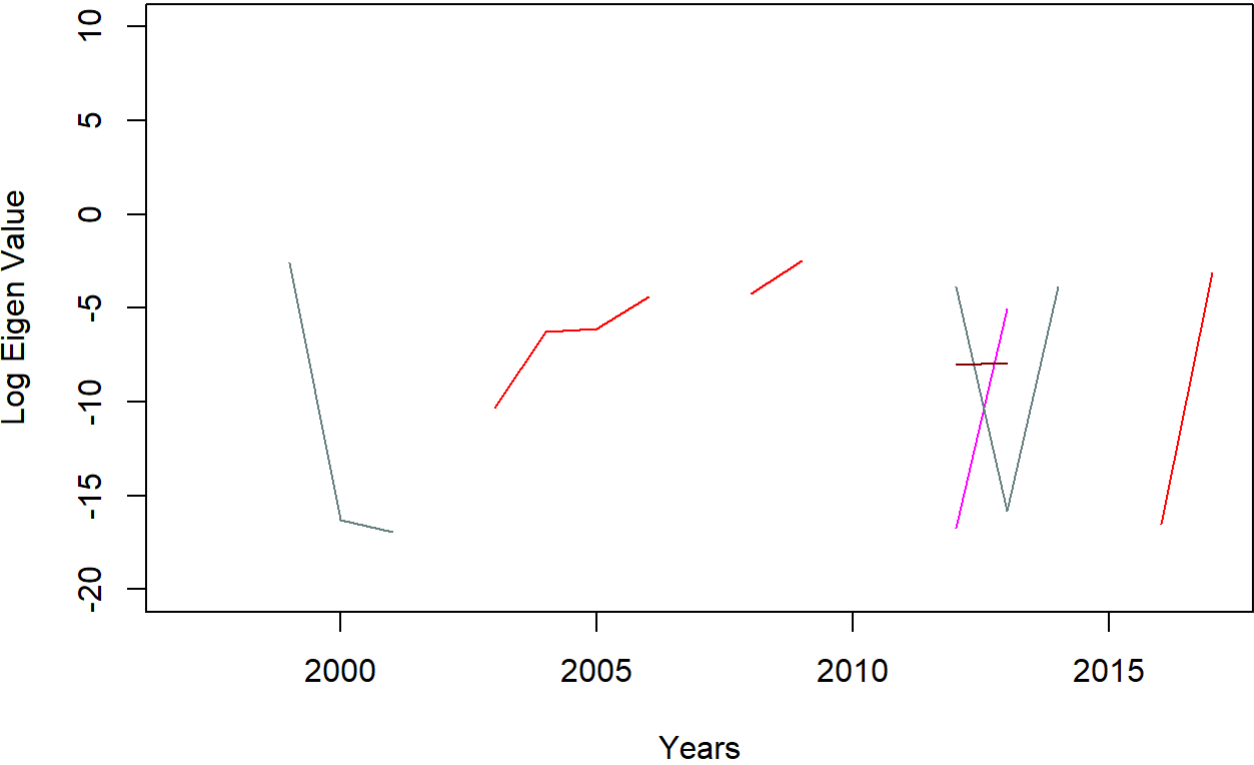
```
M <- as.matrix(dfhtlev[,4:24])  
M
```

##	X1997	X1998	X1999	X2000	X2001		
## 2	3.09000e-06	2.80000e-06	2.40000e-06	5.25000e-06	3.97000e-05		
## 27	4.59000e-05	1.06000e-06	1.18000e-08	4.55000e-06	1.61000e-06		
## 28	2.17383e-04	7.18000e-05	2.55000e-05	5.76000e-05	2.19000e-06		
## 39	4.15000e-05	1.83000e-07	2.04000e-06	1.187725e-03	5.21000e-06		
## 46	1.12000e-10	4.12000e-06	1.879383e-03	NA	1.371090e-04		
## 54	9.57000e-07	4.77000e-08	2.55000e-07	NA	5.62000e-08		
## 55	1.72000e-06	7.56259e-04	1.39000e-07	7.29000e-07	3.44000e-05		
## 66	NA	4.37000e-08	NA	9.103858e-01	9.495265e-01		
## 69	NA	4.96000e-11	NA	NA	1.66000e-08		
## 75	0.00000e+00	0.00000e+00	0.00000e+00	NA	4.33000e-07		
## 83	NA	0.00000e+00	2.762244e-03	5.26000e-17	1.19000e-17		
## 90	NA	0.00000e+00	1.20000e-07	NA	1.62000e-17		
## 98	NA	NA	5.15000e-18	4.99000e-11	0.00000e+00		
##	X2002	X2003	X2004	X2005	X2006	X2007	X2008
## 2	0.000005080	1.34e-08	6.38e-07	4.41e-05	5.06000e-05	2.4678e-03	3.67e-06
## 27	0.000004600	2.68e-09	1.44e-07	1.81e-06	4.760243e-03	1.7200e-07	9.08e-05
## 28	0.000071700	1.60e-08	2.58e-06	2.44e-06	2.02000e-10	1.4300e-05	1.68e-06
## 39	0.000002730	NA	9.78e-08	3.03e-06	3.57000e-06	3.0400e-05	2.02e-07
## 46	0.000000718	2.51e-07	9.45e-08	2.64e-07	0.00000e+00	5.1600e-05	NA
## 54	0.000185872	5.70e-09	1.95e-07	1.88e-09	5.34000e-08	NA	3.04e-08
## 55	0.000054500	4.36e-11	6.11e-05	2.78e-05	3.362700e-04	7.2100e-06	5.07e-05
## 66	NA	2.97e-06	0.00e+00	0.00e+00	NA	7.9200e-10	NA
## 69	0.000000000	5.01e-11	5.35e-07	8.16e-07	3.78000e-05	NA	5.54e-05
## 75	0.000000000	NA	1.01e-17	NA	NA	0.0000e+00	5.91e-07
## 83	NA	NA	NA	0.00e+00	2.91000e-17	NA	NA
## 90	0.000000000	NA	0.00e+00	NA	0.00000e+00	NA	7.69e-17
## 98	NA	6.11e-17	NA	NA	NA	6.0900e-08	NA
##	X2009	X2010	X2011	X2012	X2013	X2014	
## 2	5.23000e-05	1.16085e-04	0.000010100	1.58000e-05	9.70e-06	4.479275e-03	
## 27	2.48000e-05	6.73000e-09	0.000028900	6.85000e-05	6.54e-07	2.020725e-03	
## 28	0.000000e+00	1.04927e-04	0.000000051	1.26000e-07	NA	6.80000e-07	
## 39	7.68000e-07	8.68000e-08	NA	3.62000e-06	NA	2.08000e-05	
## 46	5.84000e-12	1.65000e-06	NA	NA	4.66e-05	7.680650e-04	
## 54	1.05090e-04	NA	0.000338222	NA	7.06e-05	7.11000e-05	
## 55	8.09000e-05	NA	0.000049700	1.76063e-04	NA	NA	
## 66	NA	6.68000e-07	NA	5.20000e-10	2.30e-06	NA	
## 69	3.206029e-03	NA	NA	NA	NA	2.97000e-10	
## 75	NA	6.25000e-06	NA	1.84000e-17	9.57e-06	NA	
## 83	NA	1.33000e-06	NA	1.29176e-04	1.55e-16	1.374770e-04	
## 90	NA	1.34000e-08	NA	8.82000e-09	1.16e-08	NA	
## 98	3.24000e-05	NA	0.000000000	NA	NA	2.82000e-06	
##	X2015	X2016	X2017				
## 2	0.000170964	1.27094e-04	2.70000e-06				
## 27	0.000001380	8.93000e-08	3.28000e-06				
## 28	NA	3.31000e-07	NA				
## 39	NA	4.86000e-05	1.28000e-06				
## 46	0.000907124	NA	1.33000e-17				
## 54	0.006005438	2.40000e-08	NA				
## 55	NA	NA	9.27000e-06				
## 66	NA	NA	6.22000e-09				
## 69	NA	3.19000e-17	8.03771e-04				
## 75	0.000083300	NA	NA				

```
## 83      NA      NA 4.08000e-07
## 90      NA      NA 1.72000e-17
## 98      NA 7.33140e-04      NA
```

```
dim(M)
```

```
## [1] 13 21
```



```
###LowToHighPerformers
df1thev[,4:24]
```

##	X1997	X1998	X1999	X2000	X2001
## 1	NA	2.93000e-06	NA	3.610000e-05	NA
## 3	0.000000e+00	0.000000e+00	1.500000e-07	2.070000e-07	1.500000e-06
## 4	NA	NA	2.750000e-11	3.710000e-18	NA
## 5	0.000000e+00	NA	2.050000e-09	1.061450e-04	1.123094e-02
## 8	1.000000e-17	NA	1.630000e-05	4.726345e-03	1.380520e-04
## 9	5.920000e-09	NA	3.755781e-03	8.080000e-05	8.780000e-05
## 10	NA	3.41000e-08	4.310000e-08	1.320000e-07	5.740000e-07
## 11	0.000000e+00	NA	NA	9.094853e-01	3.508138e-03
## 12	1.000000e-16	NA	1.220000e-05	0.000000e+00	1.890000e-10
## 16	NA	2.28000e-13	2.370000e-05	NA	3.629636e-03
## 17	7.530000e-18	9.58000e-06	5.200000e-08	5.320000e-09	4.050000e-05
## 18	2.720000e-10	5.86000e-10	1.902502e-03	NA	NA
## 20	NA	NA	4.310000e-09	2.050000e-07	4.135380e-04
## 23	3.312640e-04	NA	1.040000e-07	NA	2.460000e-06
## 24	7.200000e-07	NA	9.270000e-15	1.850000e-07	2.890000e-05
## 25	4.520000e-17	7.75873e-04	2.460000e-07	1.290000e-07	0.000000e+00
## 34	NA	NA	1.830933e-03	5.620000e-05	NA
## 37	0.000000e+00	0.00000e+00	NA	7.550000e-19	NA
## 38	3.900000e-05	NA	NA	NA	3.130000e-05
## 44	5.920000e-12	4.57000e-08	7.940000e-06	NA	NA
## 45	NA	NA	3.410000e-08	3.000000e-07	1.170000e-06
## 48	NA	NA	0.000000e+00	0.000000e+00	NA
## 49	5.920806e-03	7.41000e-07	NA	1.980000e-05	2.410000e-06
## 56	6.540000e-08	NA	NA	NA	NA
## 57	NA	NA	1.930000e-17	0.000000e+00	0.000000e+00
## 58	NA	2.49000e-17	NA	NA	5.910000e-15
## 62	NA	NA	0.000000e+00	1.131710e-04	NA
## 73	NA	0.00000e+00	NA	4.150000e-09	3.330000e-12
## 74	NA	2.57000e-11	NA	NA	1.710000e-18
## 82	NA	6.00000e-17	NA	NA	3.760000e-17
##	X2002	X2003	X2004	X2005	X2006
## 1	1.720000e-07	2.420000e-07	9.190000e-05	4.976700e-04	1.007870e-04
## 3	1.930000e-09	4.480000e-07	1.970000e-05	1.170000e-07	6.810000e-07
## 4	NA	1.400000e-08	6.250000e-05	7.978190e-04	2.213944e-03
## 5	2.591453e-03	4.240000e-07	4.041337e-03	5.210810e-04	1.032789e-02
## 8	NA	4.250000e-07	7.770000e-05	1.982420e-04	1.193083e-03
## 9	8.179575e-03	7.030000e-07	1.351924e-02	7.663170e-04	5.578420e-04
## 10	6.810000e-17	6.424441e-03	1.591030e-04	4.585120e-04	3.297060e-04
## 11	1.340373e-02	NA	NA	9.614078e-01	9.901260e-01
## 12	5.160000e-05	3.040000e-17	4.460000e-17	2.600000e-09	0.000000e+00
## 16	2.860000e-06	NA	4.187902e-03	NA	1.620000e-08
## 17	5.100000e-05	9.890000e-07	6.030000e-05	3.681700e-04	5.327392e-03
## 18	2.388680e-04	1.730000e-07	1.772150e-04	5.762370e-04	1.030466e-02
## 20	2.610000e-05	3.630000e-10	8.010000e-07	3.200000e-07	3.780000e-06
## 23	2.400000e-06	4.650000e-09	6.070000e-07	NA	1.440000e-08
## 24	4.516594e-03	0.000000e+00	4.847882e-03	3.550000e-17	5.540000e-07
## 25	9.650000e-07	NA	9.290000e-08	1.690000e-06	5.730000e-07
## 34	NA	NA	NA	2.250910e-04	2.070155e-03
## 37	0.000000e+00	0.000000e+00	9.180000e-12	0.000000e+00	2.480000e-10
## 38	7.030000e-05	NA	8.740000e-17	3.342620e-04	NA
## 44	2.730000e-17	NA	9.510000e-08	8.660000e-05	NA
## 45	1.420000e-07	NA	NA	3.143200e-04	2.710000e-17

## 48	NA	NA	NA	5.310000e-05	3.950000e-05
## 49	NA	0.000000e+00	4.850000e-07	2.790000e-07	NA
## 56	5.690000e-07	NA	5.480000e-07	1.560000e-07	1.888267e-03
## 57	NA	NA	2.340000e-07	1.900000e-05	2.010000e-18
## 58	1.310000e-17	NA	5.170000e-10	NA	3.930000e-06
## 62	NA	1.420000e-17	5.330000e-16	NA	3.700000e-17
## 73	8.560000e-09	9.530000e-12	5.580000e-09	1.990000e-17	NA
## 74	NA	6.240000e-15	2.270000e-18	1.790000e-16	2.700000e-16
## 82	NA	5.840000e-17	NA	3.500000e-09	1.430000e-18
##	X2007	X2008	X2009	X2010	X2011
## 1	2.240000e-05	2.876380e-04	1.503490e-04	6.349740e-04	2.582250e-04
## 3	4.070000e-05	1.437450e-04	1.807697e-02	1.403133e-02	4.804520e-04
## 4	1.007360e-04	2.530413e-03	1.367817e-03	1.638313e-02	4.128106e-03
## 5	5.041161e-03	6.142006e-03	1.862004e-02	2.901323e-03	8.152054e-03
## 8	9.710000e-05	6.654584e-03	3.912405e-03	3.040548e-03	2.360698e-03
## 9	2.010950e-04	1.124347e-02	7.167656e-03	1.689358e-03	5.890107e-03
## 10	2.898384e-03	7.337521e-03	5.193520e-04	1.052342e-03	1.444184e-03
## 11	2.549400e-03	6.695225e-03	3.419840e-04	1.044111e-03	1.626434e-03
## 12	1.480000e-08	1.830000e-07	2.280000e-14	7.540000e-08	3.120000e-06
## 16	4.620000e-05	1.045793e-03	1.388158e-03	1.841541e-03	1.395194e-03
## 17	6.260000e-05	6.533312e-03	6.766800e-04	3.062358e-03	1.076065e-03
## 18	5.030000e-05	7.939000e-04	5.998940e-04	2.582535e-03	1.123753e-03
## 20	2.820000e-07	3.500000e-06	1.400000e-06	9.090000e-05	3.230000e-05
## 23	8.030000e-07	5.060000e-05	1.740000e-05	1.016960e-04	1.031290e-04
## 24	4.320000e-07	5.200000e-06	6.997854e-03	1.424443e-02	1.514560e-04
## 25	5.160000e-07	8.400000e-07	8.650000e-09	3.790000e-07	3.400000e-05
## 34	2.010000e-05	7.780000e-08	2.897880e-04	2.315170e-04	1.340000e-06
## 37	NA	2.830000e-08	1.860000e-18	6.020000e-07	9.340000e-11
## 38	2.595622e-03	1.319576e-03	1.910470e-04	9.872992e-03	3.996090e-04
## 44	NA	4.620000e-05	7.293617e-03	0.000000e+00	6.053506e-03
## 45	6.390000e-06	1.933160e-04	8.500000e-09	3.130000e-05	NA
## 48	NA	7.070000e-17	4.302800e-04	3.212408e-03	NA
## 49	9.200000e-08	8.050000e-07	4.200000e-08	1.110000e-05	8.130000e-05
## 56	NA	NA	NA	1.390000e-10	NA
## 57	NA	NA	NA	0.000000e+00	1.450000e-18
## 58	NA	NA	NA	1.560000e-08	5.320000e-09
## 62	5.390000e-10	8.450000e-14	NA	1.940000e-13	1.310000e-11
## 73	0.000000e+00	NA	4.760000e-05	NA	3.090000e-13
## 74	5.480000e-18	NA	5.220000e-17	NA	1.620000e-10
## 82	NA	NA	7.450000e-18	0.000000e+00	NA
##	X2012	X2013	X2014	X2015	X2016
## 1	1.439230e-04	5.810000e-05	1.232782e-03	9.057970e-03	4.088990e-04
## 3	1.984220e-04	7.350000e-05	4.770458e-03	1.588511e-03	4.620420e-04
## 4	4.930620e-03	2.153597e-03	1.448686e-01	4.167163e-02	9.070804e-03
## 5	1.009088e-02	6.808426e-03	2.388664e-01	1.379738e-01	4.485846e-02
## 8	8.782712e-03	7.938940e-03	1.451353e-01	5.432568e-02	7.220248e-03
## 9	3.666918e-03	1.175758e-02	8.404579e-02	3.142816e-02	1.106582e-02
## 10	5.264932e-03	1.284989e-02	2.032557e-01	1.241383e-01	1.538047e-02
## 11	6.245831e-03	4.025268e-03	5.044492e-02	1.429360e-02	1.223988e-03
## 12	1.391570e-04	2.194190e-04	1.678535e-03	7.930000e-05	7.090000e-05
## 16	1.716751e-02	2.630199e-03	1.810518e-01	2.792774e-02	9.397069e-03
## 17	7.094401e-03	2.613559e-03	2.461623e-01	3.357303e-02	1.013982e-02
## 18	4.735637e-03	4.224501e-03	3.875382e-02	4.474309e-02	2.051309e-02
## 20	8.800000e-06	6.050000e-06	7.140000e-06	6.060000e-05	6.242962e-03

```

## 23 1.630000e-05 5.250000e-06 9.598720e-04 1.689710e-04 1.720000e-05
## 24 7.900000e-05 4.090000e-05 1.204347e-03 8.720031e-03 5.274870e-04
## 25 6.830000e-06 7.230000e-06 5.640000e-06 7.070000e-06 1.042550e-04
## 34 2.635840e-03 4.528166e-03 3.714767e-02 2.043212e-02 9.285463e-03
## 37 2.410000e-06 7.870000e-06 5.310000e-06 4.310000e-05 2.290000e-05
## 38 1.613517e-03 8.001754e-03 3.716832e-02 2.015328e-02 5.831398e-03
## 44 4.330000e-05 NA 9.180000e-08 1.064600e-04 6.920000e-08
## 45 2.300000e-07 4.396580e-04 3.428017e-03 1.599753e-02 7.010000e-18
## 48 1.052664e-03 1.110522e-03 NA NA 1.096499e-02
## 49 2.250000e-05 3.860000e-06 2.512660e-04 2.990000e-07 NA
## 56 6.590000e-07 3.020000e-17 8.552825e-03 5.275170e-04 5.110000e-07
## 57 6.490000e-18 7.340000e-17 2.740000e-17 0.000000e+00 NA
## 58 1.350000e-07 1.247350e-04 4.410000e-07 1.540000e-17 0.000000e+00
## 62 3.850000e-08 4.210000e-17 0.000000e+00 0.000000e+00 0.000000e+00
## 73 1.570000e-10 NA 0.000000e+00 NA 5.080000e-06
## 74 1.740000e-08 NA 0.000000e+00 9.750000e-07 NA
## 82 0.000000e+00 6.580000e-10 NA NA 0.000000e+00
## X2017
## 1 7.280000e-06
## 3 2.540000e-06
## 4 1.424755e-03
## 5 5.702400e-04
## 8 7.973560e-04
## 9 3.549570e-04
## 10 5.134470e-04
## 11 4.795070e-04
## 12 3.590000e-06
## 16 1.792370e-04
## 17 NA
## 18 7.293420e-04
## 20 2.740000e-06
## 23 5.820000e-06
## 24 NA
## 25 2.910000e-11
## 34 8.450000e-05
## 37 2.630000e-09
## 38 2.394420e-04
## 44 NA
## 45 5.300000e-18
## 48 1.860980e-04
## 49 NA
## 56 5.600000e-05
## 57 0.000000e+00
## 58 NA
## 62 NA
## 73 5.630000e-12
## 74 NA
## 82 NA

```

```

M <- as.matrix(dflthev[,4:24])
M

```

##	X1997	X1998	X1999	X2000	X2001
## 1	NA	2.93000e-06	NA	3.610000e-05	NA
## 3	0.000000e+00	0.000000e+00	1.500000e-07	2.070000e-07	1.500000e-06
## 4	NA	NA	2.750000e-11	3.710000e-18	NA
## 5	0.000000e+00	NA	2.050000e-09	1.061450e-04	1.123094e-02
## 8	1.000000e-17	NA	1.630000e-05	4.726345e-03	1.380520e-04
## 9	5.920000e-09	NA	3.755781e-03	8.080000e-05	8.780000e-05
## 10	NA	3.41000e-08	4.310000e-08	1.320000e-07	5.740000e-07
## 11	0.000000e+00	NA	NA	9.094853e-01	3.508138e-03
## 12	1.000000e-16	NA	1.220000e-05	0.000000e+00	1.890000e-10
## 16	NA	2.28000e-13	2.370000e-05	NA	3.629636e-03
## 17	7.530000e-18	9.58000e-06	5.200000e-08	5.320000e-09	4.050000e-05
## 18	2.720000e-10	5.86000e-10	1.902502e-03	NA	NA
## 20	NA	NA	4.310000e-09	2.050000e-07	4.135380e-04
## 23	3.312640e-04	NA	1.040000e-07	NA	2.460000e-06
## 24	7.200000e-07	NA	9.270000e-15	1.850000e-07	2.890000e-05
## 25	4.520000e-17	7.75873e-04	2.460000e-07	1.290000e-07	0.000000e+00
## 34	NA	NA	1.830933e-03	5.620000e-05	NA
## 37	0.000000e+00	0.00000e+00	NA	7.550000e-19	NA
## 38	3.900000e-05	NA	NA	NA	3.130000e-05
## 44	5.920000e-12	4.57000e-08	7.940000e-06	NA	NA
## 45	NA	NA	3.410000e-08	3.000000e-07	1.170000e-06
## 48	NA	NA	0.000000e+00	0.000000e+00	NA
## 49	5.920806e-03	7.41000e-07	NA	1.980000e-05	2.410000e-06
## 56	6.540000e-08	NA	NA	NA	NA
## 57	NA	NA	1.930000e-17	0.000000e+00	0.000000e+00
## 58	NA	2.49000e-17	NA	NA	5.910000e-15
## 62	NA	NA	0.000000e+00	1.131710e-04	NA
## 73	NA	0.00000e+00	NA	4.150000e-09	3.330000e-12
## 74	NA	2.57000e-11	NA	NA	1.710000e-18
## 82	NA	6.00000e-17	NA	NA	3.760000e-17
##	X2002	X2003	X2004	X2005	X2006
## 1	1.720000e-07	2.420000e-07	9.190000e-05	4.976700e-04	1.007870e-04
## 3	1.930000e-09	4.480000e-07	1.970000e-05	1.170000e-07	6.810000e-07
## 4	NA	1.400000e-08	6.250000e-05	7.978190e-04	2.213944e-03
## 5	2.591453e-03	4.240000e-07	4.041337e-03	5.210810e-04	1.032789e-02
## 8	NA	4.250000e-07	7.770000e-05	1.982420e-04	1.193083e-03
## 9	8.179575e-03	7.030000e-07	1.351924e-02	7.663170e-04	5.578420e-04
## 10	6.810000e-17	6.424441e-03	1.591030e-04	4.585120e-04	3.297060e-04
## 11	1.340373e-02	NA	NA	9.614078e-01	9.901260e-01
## 12	5.160000e-05	3.040000e-17	4.460000e-17	2.600000e-09	0.000000e+00
## 16	2.860000e-06	NA	4.187902e-03	NA	1.620000e-08
## 17	5.100000e-05	9.890000e-07	6.030000e-05	3.681700e-04	5.327392e-03
## 18	2.388680e-04	1.730000e-07	1.772150e-04	5.762370e-04	1.030466e-02
## 20	2.610000e-05	3.630000e-10	8.010000e-07	3.200000e-07	3.780000e-06
## 23	2.400000e-06	4.650000e-09	6.070000e-07	NA	1.440000e-08
## 24	4.516594e-03	0.000000e+00	4.847882e-03	3.550000e-17	5.540000e-07
## 25	9.650000e-07	NA	9.290000e-08	1.690000e-06	5.730000e-07
## 34	NA	NA	NA	2.250910e-04	2.070155e-03
## 37	0.000000e+00	0.000000e+00	9.180000e-12	0.000000e+00	2.480000e-10
## 38	7.030000e-05	NA	8.740000e-17	3.342620e-04	NA
## 44	2.730000e-17	NA	9.510000e-08	8.660000e-05	NA
## 45	1.420000e-07	NA	NA	3.143200e-04	2.710000e-17

## 48	NA	NA	NA	5.310000e-05	3.950000e-05
## 49	NA	0.000000e+00	4.850000e-07	2.790000e-07	NA
## 56	5.690000e-07	NA	5.480000e-07	1.560000e-07	1.888267e-03
## 57	NA	NA	2.340000e-07	1.900000e-05	2.010000e-18
## 58	1.310000e-17	NA	5.170000e-10	NA	3.930000e-06
## 62	NA	1.420000e-17	5.330000e-16	NA	3.700000e-17
## 73	8.560000e-09	9.530000e-12	5.580000e-09	1.990000e-17	NA
## 74	NA	6.240000e-15	2.270000e-18	1.790000e-16	2.700000e-16
## 82	NA	5.840000e-17	NA	3.500000e-09	1.430000e-18
##	X2007	X2008	X2009	X2010	X2011
## 1	2.240000e-05	2.876380e-04	1.503490e-04	6.349740e-04	2.582250e-04
## 3	4.070000e-05	1.437450e-04	1.807697e-02	1.403133e-02	4.804520e-04
## 4	1.007360e-04	2.530413e-03	1.367817e-03	1.638313e-02	4.128106e-03
## 5	5.041161e-03	6.142006e-03	1.862004e-02	2.901323e-03	8.152054e-03
## 8	9.710000e-05	6.654584e-03	3.912405e-03	3.040548e-03	2.360698e-03
## 9	2.010950e-04	1.124347e-02	7.167656e-03	1.689358e-03	5.890107e-03
## 10	2.898384e-03	7.337521e-03	5.193520e-04	1.052342e-03	1.444184e-03
## 11	2.549400e-03	6.695225e-03	3.419840e-04	1.044111e-03	1.626434e-03
## 12	1.480000e-08	1.830000e-07	2.280000e-14	7.540000e-08	3.120000e-06
## 16	4.620000e-05	1.045793e-03	1.388158e-03	1.841541e-03	1.395194e-03
## 17	6.260000e-05	6.533312e-03	6.766800e-04	3.062358e-03	1.076065e-03
## 18	5.030000e-05	7.939000e-04	5.998940e-04	2.582535e-03	1.123753e-03
## 20	2.820000e-07	3.500000e-06	1.400000e-06	9.090000e-05	3.230000e-05
## 23	8.030000e-07	5.060000e-05	1.740000e-05	1.016960e-04	1.031290e-04
## 24	4.320000e-07	5.200000e-06	6.997854e-03	1.424443e-02	1.514560e-04
## 25	5.160000e-07	8.400000e-07	8.650000e-09	3.790000e-07	3.400000e-05
## 34	2.010000e-05	7.780000e-08	2.897880e-04	2.315170e-04	1.340000e-06
## 37	NA	2.830000e-08	1.860000e-18	6.020000e-07	9.340000e-11
## 38	2.595622e-03	1.319576e-03	1.910470e-04	9.872992e-03	3.996090e-04
## 44	NA	4.620000e-05	7.293617e-03	0.000000e+00	6.053506e-03
## 45	6.390000e-06	1.933160e-04	8.500000e-09	3.130000e-05	NA
## 48	NA	7.070000e-17	4.302800e-04	3.212408e-03	NA
## 49	9.200000e-08	8.050000e-07	4.200000e-08	1.110000e-05	8.130000e-05
## 56	NA	NA	NA	1.390000e-10	NA
## 57	NA	NA	NA	0.000000e+00	1.450000e-18
## 58	NA	NA	NA	1.560000e-08	5.320000e-09
## 62	5.390000e-10	8.450000e-14	NA	1.940000e-13	1.310000e-11
## 73	0.000000e+00	NA	4.760000e-05	NA	3.090000e-13
## 74	5.480000e-18	NA	5.220000e-17	NA	1.620000e-10
## 82	NA	NA	7.450000e-18	0.000000e+00	NA
##	X2012	X2013	X2014	X2015	X2016
## 1	1.439230e-04	5.810000e-05	1.232782e-03	9.057970e-03	4.088990e-04
## 3	1.984220e-04	7.350000e-05	4.770458e-03	1.588511e-03	4.620420e-04
## 4	4.930620e-03	2.153597e-03	1.448686e-01	4.167163e-02	9.070804e-03
## 5	1.009088e-02	6.808426e-03	2.388664e-01	1.379738e-01	4.485846e-02
## 8	8.782712e-03	7.938940e-03	1.451353e-01	5.432568e-02	7.220248e-03
## 9	3.666918e-03	1.175758e-02	8.404579e-02	3.142816e-02	1.106582e-02
## 10	5.264932e-03	1.284989e-02	2.032557e-01	1.241383e-01	1.538047e-02
## 11	6.245831e-03	4.025268e-03	5.044492e-02	1.429360e-02	1.223988e-03
## 12	1.391570e-04	2.194190e-04	1.678535e-03	7.930000e-05	7.090000e-05
## 16	1.716751e-02	2.630199e-03	1.810518e-01	2.792774e-02	9.397069e-03
## 17	7.094401e-03	2.613559e-03	2.461623e-01	3.357303e-02	1.013982e-02
## 18	4.735637e-03	4.224501e-03	3.875382e-02	4.474309e-02	2.051309e-02
## 20	8.800000e-06	6.050000e-06	7.140000e-06	6.060000e-05	6.242962e-03

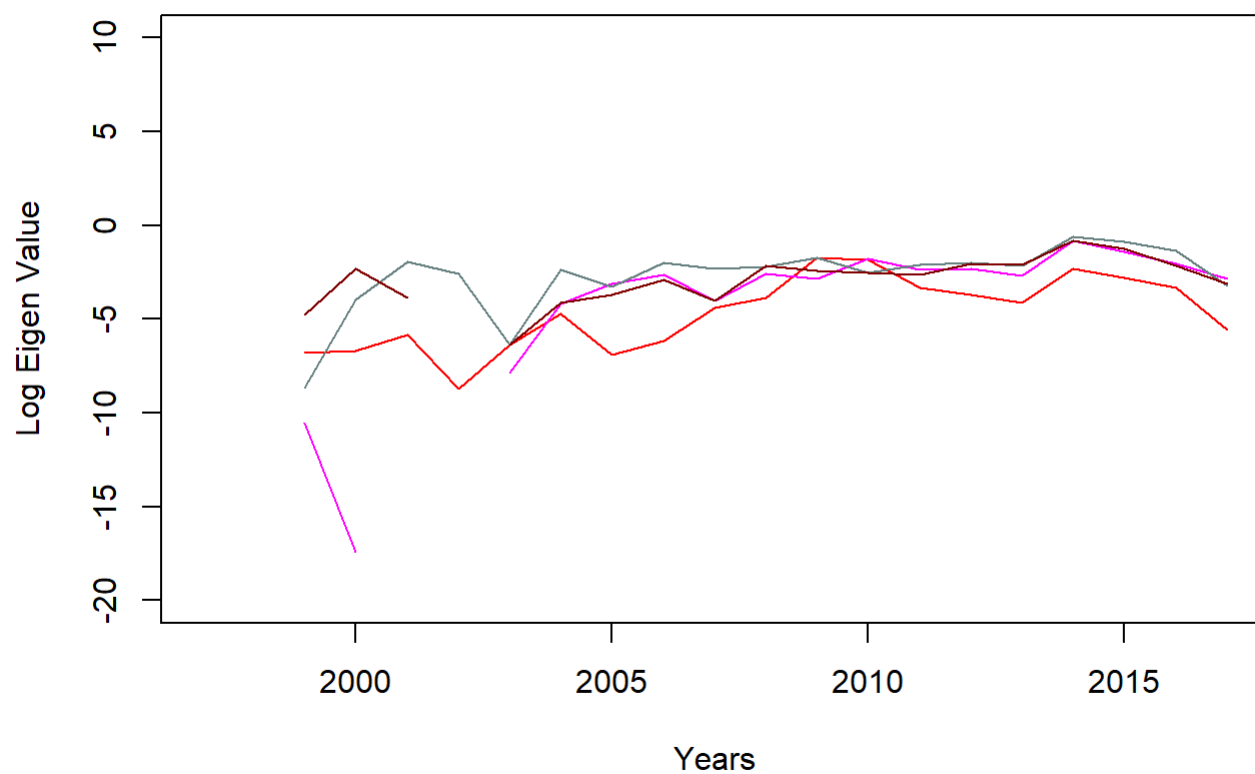
```

## 23 1.630000e-05 5.250000e-06 9.598720e-04 1.689710e-04 1.720000e-05
## 24 7.900000e-05 4.090000e-05 1.204347e-03 8.720031e-03 5.274870e-04
## 25 6.830000e-06 7.230000e-06 5.640000e-06 7.070000e-06 1.042550e-04
## 34 2.635840e-03 4.528166e-03 3.714767e-02 2.043212e-02 9.285463e-03
## 37 2.410000e-06 7.870000e-06 5.310000e-06 4.310000e-05 2.290000e-05
## 38 1.613517e-03 8.001754e-03 3.716832e-02 2.015328e-02 5.831398e-03
## 44 4.330000e-05 NA 9.180000e-08 1.064600e-04 6.920000e-08
## 45 2.300000e-07 4.396580e-04 3.428017e-03 1.599753e-02 7.010000e-18
## 48 1.052664e-03 1.110522e-03 NA NA 1.096499e-02
## 49 2.250000e-05 3.860000e-06 2.512660e-04 2.990000e-07 NA
## 56 6.590000e-07 3.020000e-17 8.552825e-03 5.275170e-04 5.110000e-07
## 57 6.490000e-18 7.340000e-17 2.740000e-17 0.000000e+00 NA
## 58 1.350000e-07 1.247350e-04 4.410000e-07 1.540000e-17 0.000000e+00
## 62 3.850000e-08 4.210000e-17 0.000000e+00 0.000000e+00 0.000000e+00
## 73 1.570000e-10 NA 0.000000e+00 NA 5.080000e-06
## 74 1.740000e-08 NA 0.000000e+00 9.750000e-07 NA
## 82 0.000000e+00 6.580000e-10 NA NA 0.000000e+00
## X2017
## 1 7.280000e-06
## 3 2.540000e-06
## 4 1.424755e-03
## 5 5.702400e-04
## 8 7.973560e-04
## 9 3.549570e-04
## 10 5.134470e-04
## 11 4.795070e-04
## 12 3.590000e-06
## 16 1.792370e-04
## 17 NA
## 18 7.293420e-04
## 20 2.740000e-06
## 23 5.820000e-06
## 24 NA
## 25 2.910000e-11
## 34 8.450000e-05
## 37 2.630000e-09
## 38 2.394420e-04
## 44 NA
## 45 5.300000e-18
## 48 1.860980e-04
## 49 NA
## 56 5.600000e-05
## 57 0.000000e+00
## 58 NA
## 62 NA
## 73 5.630000e-12
## 74 NA
## 82 NA

```

dim(M)

[1] 30 21



Closeness

```
dfcl= read.csv("C:/Users/amitd/Desktop/FA/MasterCloseness.csv")
df1thcl = subset(dfcl,dfcl$LowToHigh=="LTH")
dfhtlcl = subset(dfcl,dfcl$HighToLow=="HTL")
dfclpcl = subset(dfcl,dfcl$ConsistentlyLowPerf=="CLP")
dfchpcl = subset(dfcl,dfcl$ConsistentlyHighPerf=="CHP")

###ConsistentHighPerformers
dfchpcl[,4:24]
```

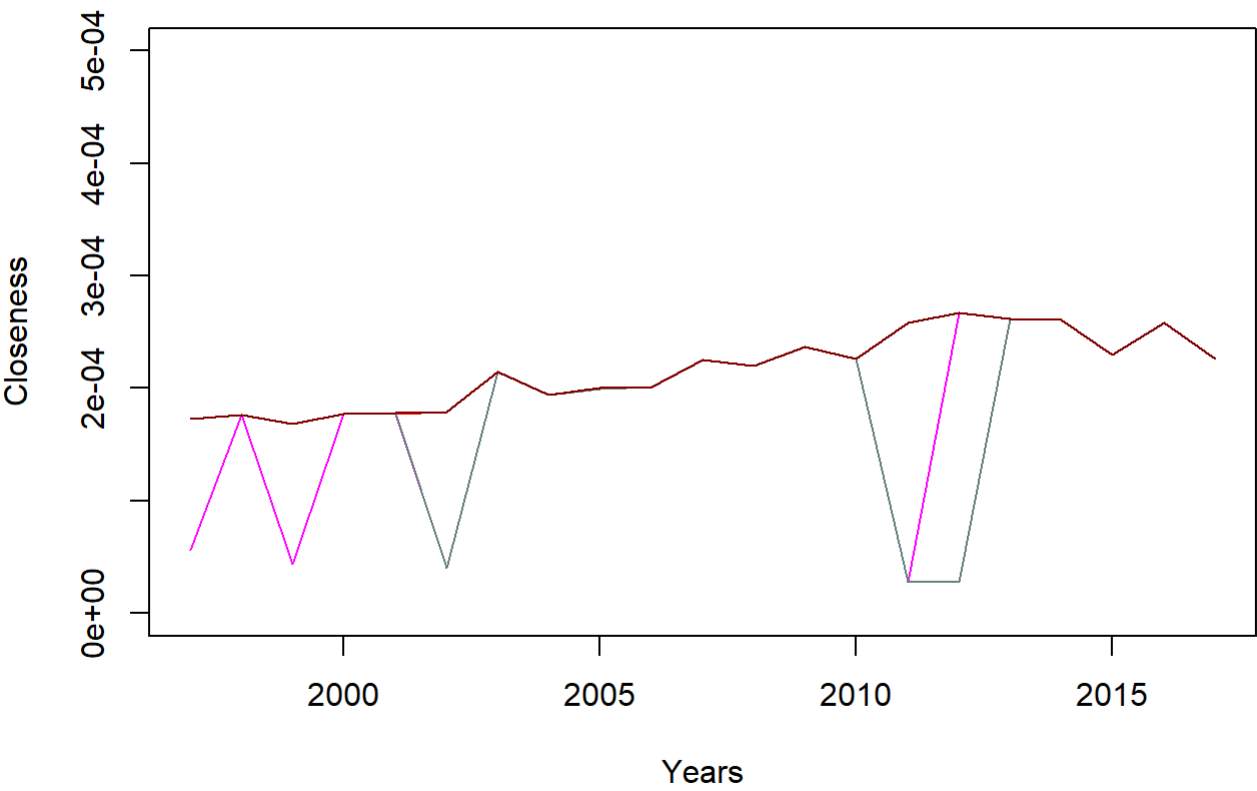
```
##           X1997           X1998           X1999           X2000           X2001           X2002
## 2  0.000173073 0.000176808 0.000168102 0.000177050 0.000177761 0.000178987
## 7  0.000173003 0.000176745 0.000168075 0.000176989 0.000177729 0.000178950
## 13 0.000056600 0.000176738 0.000043600 0.000177028 0.000177708 0.000040100
## 15 0.000173054 0.000176665 0.000168038 0.000177003 0.000177734 0.000040100
##           X2003           X2004           X2005           X2006           X2007           X2008
## 2  0.000214526 0.000194245 0.000200008 0.000201379 0.000225037 0.000220248
## 7  0.000214495 0.000194235 0.000200010 0.000201378 0.000225028 0.000220263
## 13 0.000214518      NA 0.000199959 0.000201333 0.000224996 0.000220232
## 15 0.000214433 0.000194152 0.000199941 0.000201362 0.000224919 0.000220213
##           X2009           X2010           X2011           X2012           X2013           X2014
## 2  0.000237082 0.000226603 0.000258390 0.00026737 0.000261773 0.000261044
## 7  0.000237044 0.000226619 0.000258355 0.00026735 0.000261810 0.000261059
## 13 0.000237063 0.000226591 0.000027700 0.00026735 0.000261752 0.000261015
## 15 0.000236979 0.000226530 0.000027700 0.00002790 0.000261708 0.000261037
##           X2015           X2016           X2017
## 2  0.000229988 0.000257927 0.000226443
## 7  0.000229986 0.000257955 0.000226428
## 13 0.000229976 0.000257921 0.000226358
## 15 0.000230010 0.000257899 0.000226314
```

```
M <- as.matrix(dfchpcl[,4:24])
M
```

```
##           X1997           X1998           X1999           X2000           X2001           X2002
## 2  0.000173073 0.000176808 0.000168102 0.000177050 0.000177761 0.000178987
## 7  0.000173003 0.000176745 0.000168075 0.000176989 0.000177729 0.000178950
## 13 0.000056600 0.000176738 0.000043600 0.000177028 0.000177708 0.000040100
## 15 0.000173054 0.000176665 0.000168038 0.000177003 0.000177734 0.000040100
##           X2003           X2004           X2005           X2006           X2007           X2008
## 2  0.000214526 0.000194245 0.000200008 0.000201379 0.000225037 0.000220248
## 7  0.000214495 0.000194235 0.000200010 0.000201378 0.000225028 0.000220263
## 13 0.000214518      NA 0.000199959 0.000201333 0.000224996 0.000220232
## 15 0.000214433 0.000194152 0.000199941 0.000201362 0.000224919 0.000220213
##           X2009           X2010           X2011           X2012           X2013           X2014
## 2  0.000237082 0.000226603 0.000258390 0.00026737 0.000261773 0.000261044
## 7  0.000237044 0.000226619 0.000258355 0.00026735 0.000261810 0.000261059
## 13 0.000237063 0.000226591 0.000027700 0.00026735 0.000261752 0.000261015
## 15 0.000236979 0.000226530 0.000027700 0.00002790 0.000261708 0.000261037
##           X2015           X2016           X2017
## 2  0.000229988 0.000257927 0.000226443
## 7  0.000229986 0.000257955 0.000226428
## 13 0.000229976 0.000257921 0.000226358
## 15 0.000230010 0.000257899 0.000226314
```

```
dim(M)
```

```
## [1] 4 21
```



```
###ConsistentLowPerformers  
dfc1pcl[,4:24]
```

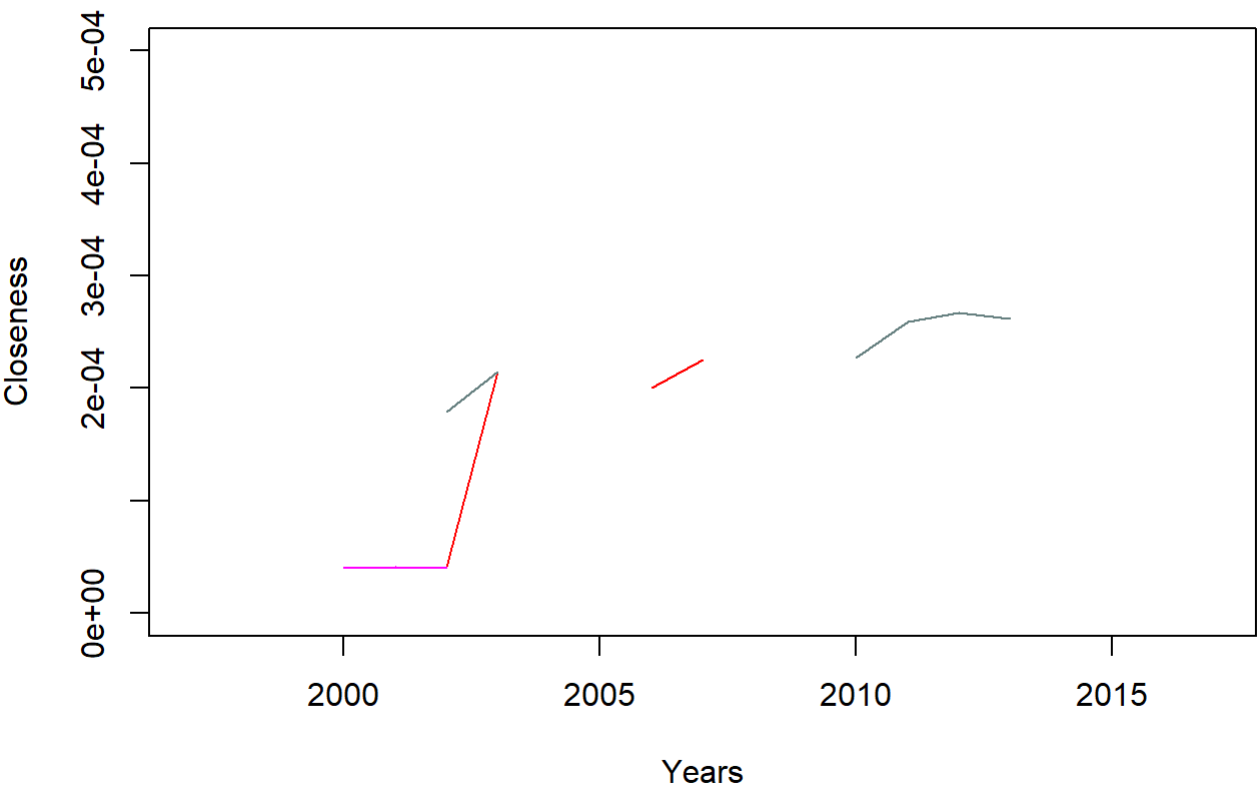
##	X1997	X1998	X1999	X2000	X2001	X2002
## 90	NA	5.07e-05	0.000168075	NA	0.000040800	0.000040100
## 93	NA	5.08e-05	NA	NA	0.000040800	NA
## 94	0.000173076	NA	NA	0.000177040	NA	0.000178954
## 95	NA	NA	0.000168065	0.000177025	0.000177725	NA
## 96	NA	NA	0.000043500	NA	0.000040800	NA
## 97	NA	NA	0.000168090	NA	NA	0.000178989
## 98	NA	NA	0.000043500	0.000176986	0.000040800	NA
## 99	0.000056600	NA	NA	0.000040400	0.000040800	0.000040100
## 100	0.000056700	NA	NA	NA	NA	0.000040100
##	X2003	X2004	X2005	X2006	X2007	X2008
## 90	NA	3.54e-05	NA	0.000033700	NA	0.000031500
## 93	NA	NA	0.000033400	0.000201276	0.000032300	NA
## 94	NA	NA	0.000199981	0.000201374	0.000225018	NA
## 95	NA	NA	0.000033400	0.000033700	NA	NA
## 96	0.000039000	NA	NA	0.000033700	NA	NA
## 97	0.000214550	NA	NA	NA	NA	0.000220264
## 98	0.000039000	NA	NA	NA	0.000224973	NA
## 99	NA	NA	0.000033400	NA	NA	0.000031500
## 100	0.000214462	NA	NA	0.000201323	0.000224978	NA
##	X2009	X2010	X2011	X2012	X2013	
## 90	NA	0.000226527	NA	0.000267254	0.000261675	
## 93	NA	NA	0.000258316	0.000027900	0.000261585	
## 94	NA	0.000226582	NA	0.000267357	NA	
## 95	NA	NA	0.000258362	0.000267337	0.000261697	
## 96	NA	0.000030100	NA	0.000267389	NA	
## 97	NA	0.000226612	0.000258422	0.000267369	0.000261807	
## 98	0.000237023	NA	0.000027700	NA	NA	
## 99	NA	NA	0.000258319	NA	NA	
## 100	0.000029900	NA	NA	0.000267231	NA	
##	X2014	X2015	X2016	X2017		
## 90	NA	NA	NA	0.000038800		
## 93	0.000260845	NA	NA	0.000038800		
## 94	NA	NA	NA	0.000226453		
## 95	NA	0.000230001	NA	NA		
## 96	NA	NA	0.000257792	NA		
## 97	NA	0.000230014	NA	NA		
## 98	0.000260941	NA	0.000257945	NA		
## 99	0.000261004	NA	0.000034000	NA		
## 100	NA	NA	0.000257757	NA		

```
M <- as.matrix(dfclpcl[,4:24])
M
```

##	X1997	X1998	X1999	X2000	X2001	X2002
## 90	NA	5.07e-05	0.000168075	NA	0.000040800	0.000040100
## 93	NA	5.08e-05	NA	NA	0.000040800	NA
## 94	0.000173076	NA	NA	0.000177040	NA	0.000178954
## 95	NA	NA	0.000168065	0.000177025	0.000177725	NA
## 96	NA	NA	0.000043500	NA	0.000040800	NA
## 97	NA	NA	0.000168090	NA	NA	0.000178989
## 98	NA	NA	0.000043500	0.000176986	0.000040800	NA
## 99	0.000056600	NA	NA	0.000040400	0.000040800	0.000040100
## 100	0.000056700	NA	NA	NA	NA	0.000040100
##	X2003	X2004	X2005	X2006	X2007	X2008
## 90	NA	3.54e-05	NA	0.000033700	NA	0.000031500
## 93	NA	NA	0.000033400	0.000201276	0.000032300	NA
## 94	NA	NA	0.000199981	0.000201374	0.000225018	NA
## 95	NA	NA	0.000033400	0.000033700	NA	NA
## 96	0.000039000	NA	NA	0.000033700	NA	NA
## 97	0.000214550	NA	NA	NA	NA	0.000220264
## 98	0.000039000	NA	NA	NA	0.000224973	NA
## 99	NA	NA	0.000033400	NA	NA	0.000031500
## 100	0.000214462	NA	NA	0.000201323	0.000224978	NA
##	X2009	X2010	X2011	X2012	X2013	
## 90	NA	0.000226527	NA	0.000267254	0.000261675	
## 93	NA	NA	0.000258316	0.000027900	0.000261585	
## 94	NA	0.000226582	NA	0.000267357	NA	
## 95	NA	NA	0.000258362	0.000267337	0.000261697	
## 96	NA	0.000030100	NA	0.000267389	NA	
## 97	NA	0.000226612	0.000258422	0.000267369	0.000261807	
## 98	0.000237023	NA	0.000027700	NA	NA	
## 99	NA	NA	0.000258319	NA	NA	
## 100	0.000029900	NA	NA	0.000267231	NA	
##	X2014	X2015	X2016	X2017		
## 90	NA	NA	NA	0.000038800		
## 93	0.000260845	NA	NA	0.000038800		
## 94	NA	NA	NA	0.000226453		
## 95	NA	0.000230001	NA	NA		
## 96	NA	NA	0.000257792	NA		
## 97	NA	0.000230014	NA	NA		
## 98	0.000260941	NA	0.000257945	NA		
## 99	0.000261004	NA	0.000034000	NA		
## 100	NA	NA	0.000257757	NA		

dim(M)

[1] 9 21



```
###HighToLowPerformers  
dfhtlcl[,4:24]
```


##	X1997	X1998	X1999	X2000	X2001	X2002
## 2	0.000173073	0.000176808	0.000168102	0.000177050	0.000177761	0.000178987
## 27	0.000173078	0.000176801	0.000168087	0.000177053	0.000177746	0.000178988
## 28	0.000173081	0.000176808	0.000168106	0.000177057	0.000177750	0.000178997
## 39	0.000173072	0.000176787	0.000168101	0.000177059	0.000177750	0.000178986
## 46	0.000173021	0.000176797	0.000168093	NA	0.000177755	0.000178960
## 54	0.000173068	0.000176784	0.000168086	NA	0.000177726	0.000178988
## 55	0.000173072	0.000176797	0.000168085	0.000177045	0.000177751	0.000178980
## 66	NA	0.000176783	NA	0.000177073	0.000177769	NA
## 69	NA	0.000176745	NA	NA	0.000177729	0.000040100
## 75	0.000172961	0.000050800	0.000043500	NA	0.000177728	0.000040100
## 83	NA	0.000050800	0.000168084	0.000040400	0.000040800	NA
## 90	NA	0.000050700	0.000168075	NA	0.000040800	0.000040100
## 98	NA	NA	0.000043500	0.000176986	0.000040800	NA
##	X2003	X2004	X2005	X2006	X2007	X2008
## 2	0.000214526	0.000194245	0.000200008	0.000201379	0.000225037	0.000220248
## 27	0.000214512	0.000194220	0.000199987	0.000201384	0.000225005	0.000220235
## 28	0.000214542	0.000194251	0.000199990	0.000201297	0.000225016	0.000220231
## 39	NA	0.000194221	0.000199991	0.000201369	0.000225029	0.000220218
## 46	0.000214532	0.000194200	0.000199963	0.000033700	0.000225031	NA
## 54	0.000214531	0.000194224	0.000199942	0.000201327	NA	0.000220208
## 55	0.000214497	0.000194254	0.000199994	0.000201368	0.000225018	0.000220258
## 66	0.000214522	0.000035400	0.000033400	NA	0.000224936	NA
## 69	0.000214471	0.000194234	0.000199954	0.000201337	NA	0.000220254
## 75	NA	0.000035400	NA	NA	0.000032300	0.000220215
## 83	NA	NA	0.000033400	0.000033700	NA	NA
## 90	NA	0.000035400	NA	0.000033700	NA	0.000031500
## 98	0.000039000	NA	NA	NA	0.000224973	NA
##	X2009	X2010	X2011	X2012	X2013	X2014
## 2	0.000237082	0.000226603	0.000258390	0.000267370	0.000261773	0.000261044
## 27	0.000237072	0.000226512	0.000258374	0.000267373	0.000261740	0.000261040
## 28	0.000029900	0.000226593	0.000258338	0.000267299	NA	0.000260943
## 39	0.000237054	0.000226533	NA	0.000267345	NA	0.000260982
## 46	0.000236944	0.000226560	NA	NA	0.000261753	0.000261008
## 54	0.000237084	NA	0.000258415	NA	0.000261776	0.000261002
## 55	0.000237080	NA	0.000258388	0.000267380	NA	NA
## 66	NA	0.000226549	NA	0.000267204	0.000261734	NA
## 69	0.000237062	NA	NA	NA	NA	0.000260853
## 75	NA	0.000226569	NA	0.000027900	0.000261762	NA
## 83	NA	0.000226556	NA	0.000267374	0.000027800	0.000260992
## 90	NA	0.000226527	NA	0.000267254	0.000261675	NA
## 98	0.000237023	NA	0.000027700	NA	NA	0.000260941
##	X2015	X2016	X2017			
## 2	0.000229988	0.000257927	0.000226443			
## 27	0.000229952	0.000257859	0.000226445			
## 28	NA	0.000257838	NA			
## 39	NA	0.000257906	0.000226432			
## 46	0.000229996	NA	0.000038800			
## 54	0.000230012	0.000257836	NA			
## 55	NA	NA	0.000226454			
## 66	NA	NA	0.000226378			
## 69	NA	0.000034000	0.000226481			
## 75	0.000229971	NA	NA			

## 83	NA	NA 0.000226434
## 90	NA	NA 0.000038800
## 98	NA 0.000257945	NA

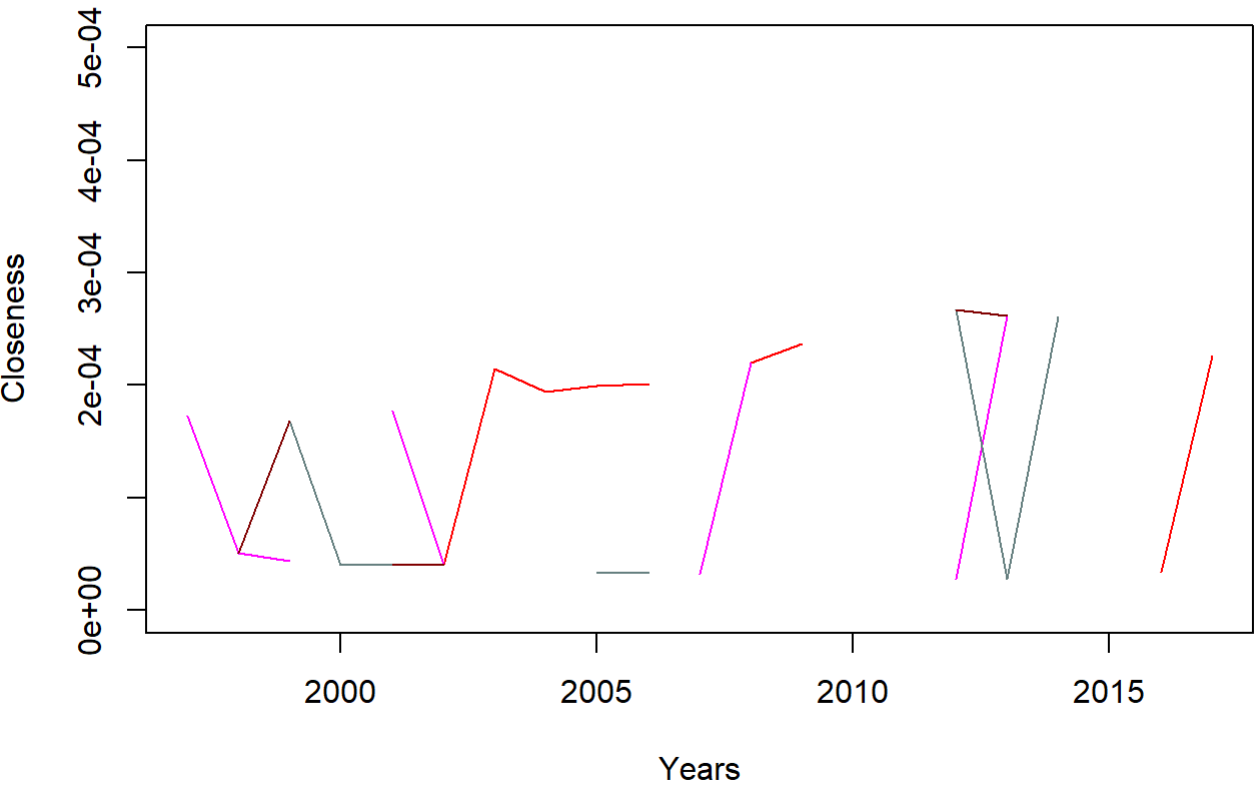
```
M <- as.matrix(dfhtlcl[,4:24])  
M
```

##	X1997	X1998	X1999	X2000	X2001	X2002
## 2	0.000173073	0.000176808	0.000168102	0.000177050	0.000177761	0.000178987
## 27	0.000173078	0.000176801	0.000168087	0.000177053	0.000177746	0.000178988
## 28	0.000173081	0.000176808	0.000168106	0.000177057	0.000177750	0.000178997
## 39	0.000173072	0.000176787	0.000168101	0.000177059	0.000177750	0.000178986
## 46	0.000173021	0.000176797	0.000168093	NA	0.000177755	0.000178960
## 54	0.000173068	0.000176784	0.000168086	NA	0.000177726	0.000178988
## 55	0.000173072	0.000176797	0.000168085	0.000177045	0.000177751	0.000178980
## 66	NA	0.000176783	NA	0.000177073	0.000177769	NA
## 69	NA	0.000176745	NA	NA	0.000177729	0.000040100
## 75	0.000172961	0.000050800	0.000043500	NA	0.000177728	0.000040100
## 83	NA	0.000050800	0.000168084	0.000040400	0.000040800	NA
## 90	NA	0.000050700	0.000168075	NA	0.000040800	0.000040100
## 98	NA	NA	0.000043500	0.000176986	0.000040800	NA
##	X2003	X2004	X2005	X2006	X2007	X2008
## 2	0.000214526	0.000194245	0.000200008	0.000201379	0.000225037	0.000220248
## 27	0.000214512	0.000194220	0.000199987	0.000201384	0.000225005	0.000220235
## 28	0.000214542	0.000194251	0.000199990	0.000201297	0.000225016	0.000220231
## 39	NA	0.000194221	0.000199991	0.000201369	0.000225029	0.000220218
## 46	0.000214532	0.000194200	0.000199963	0.000033700	0.000225031	NA
## 54	0.000214531	0.000194224	0.000199942	0.000201327	NA	0.000220208
## 55	0.000214497	0.000194254	0.000199994	0.000201368	0.000225018	0.000220258
## 66	0.000214522	0.000035400	0.000033400	NA	0.000224936	NA
## 69	0.000214471	0.000194234	0.000199954	0.000201337	NA	0.000220254
## 75	NA	0.000035400	NA	NA	0.000032300	0.000220215
## 83	NA	NA	0.000033400	0.000033700	NA	NA
## 90	NA	0.000035400	NA	0.000033700	NA	0.000031500
## 98	0.000039000	NA	NA	NA	0.000224973	NA
##	X2009	X2010	X2011	X2012	X2013	X2014
## 2	0.000237082	0.000226603	0.000258390	0.000267370	0.000261773	0.000261044
## 27	0.000237072	0.000226512	0.000258374	0.000267373	0.000261740	0.000261040
## 28	0.000029900	0.000226593	0.000258338	0.000267299	NA	0.000260943
## 39	0.000237054	0.000226533	NA	0.000267345	NA	0.000260982
## 46	0.000236944	0.000226560	NA	NA	0.000261753	0.000261008
## 54	0.000237084	NA	0.000258415	NA	0.000261776	0.000261002
## 55	0.000237080	NA	0.000258388	0.000267380	NA	NA
## 66	NA	0.000226549	NA	0.000267204	0.000261734	NA
## 69	0.000237062	NA	NA	NA	NA	0.000260853
## 75	NA	0.000226569	NA	0.000027900	0.000261762	NA
## 83	NA	0.000226556	NA	0.000267374	0.000027800	0.000260992
## 90	NA	0.000226527	NA	0.000267254	0.000261675	NA
## 98	0.000237023	NA	0.000027700	NA	NA	0.000260941
##	X2015	X2016	X2017			
## 2	0.000229988	0.000257927	0.000226443			
## 27	0.000229952	0.000257859	0.000226445			
## 28	NA	0.000257838	NA			
## 39	NA	0.000257906	0.000226432			
## 46	0.000229996	NA	0.000038800			
## 54	0.000230012	0.000257836	NA			
## 55	NA	NA	0.000226454			
## 66	NA	NA	0.000226378			
## 69	NA	0.000034000	0.000226481			
## 75	0.000229971	NA	NA			

```
## 83      NA      NA 0.000226434
## 90      NA      NA 0.000038800
## 98      NA 0.000257945      NA
```

```
dim(M)
```

```
## [1] 13 21
```



```
###LowToHighPerformers
df1thcl[,4:24]
```

##	X1997	X1998	X1999	X2000	X2001	X2002
## 1	NA	0.000176786	NA	0.000177050	NA	0.000178965
## 3	0.000056600	0.000050800	0.000168078	0.000177035	0.000177728	0.000178935
## 4	NA	NA	0.000168037	0.000040400	NA	NA
## 5	0.000056600	NA	0.000168074	0.000177033	0.000177761	0.000178996
## 8	0.000056600	NA	0.000168095	0.000177049	0.000177753	NA
## 9	0.000173047	NA	0.000168102	0.000177046	0.000177749	0.000179006
## 10	NA	0.000176777	0.000168075	0.000177015	0.000177731	0.000040100
## 11	0.000056600	NA	NA	0.000177070	0.000177750	0.000179000
## 12	0.000056600	NA	0.000168069	0.000040400	0.000177690	0.000178972
## 16	NA	0.000176715	0.000168072	NA	0.000177749	0.000178972
## 17	0.000056600	0.000176792	0.000168060	0.000177017	0.000177739	0.000178983
## 18	0.000173029	0.000176741	0.000168099	NA	NA	0.000178987
## 20	NA	NA	0.000168078	0.000177039	0.000177759	0.000178983
## 23	0.000173067	NA	0.000168079	NA	0.000177746	0.000178987
## 24	0.000173053	NA	0.000168008	0.000177021	0.000177737	0.000178992
## 25	0.000056600	0.000176786	0.000168083	0.000177014	0.000040800	0.000178966
## 34	NA	NA	0.000168094	0.000177042	NA	NA
## 37	0.000056600	0.000050700	NA	0.000040400	NA	0.000040100
## 38	0.000173067	NA	NA	NA	0.000177740	0.000178981
## 44	0.000173018	0.000176763	0.000168081	NA	NA	0.000040100
## 45	NA	NA	0.000168064	0.000177029	0.000177731	0.000178946
## 48	NA	NA	0.000043500	0.000040400	NA	NA
## 49	0.000173073	0.000176796	NA	0.000177049	0.000177747	NA
## 56	0.000173043	NA	NA	NA	NA	0.000178978
## 57	NA	NA	0.000043500	0.000040400	0.000040800	NA
## 58	NA	0.000050700	NA	NA	0.000177646	0.000040100
## 62	NA	NA	0.000043500	0.000177055	NA	NA
## 73	NA	0.000050800	NA	0.000177006	0.000177682	0.000178942
## 74	NA	0.000176721	NA	NA	0.000040800	NA
## 82	NA	0.000050800	NA	NA	0.000040800	NA
##	X2003	X2004	X2005	X2006	X2007	X2008
## 1	0.000214533	0.000194250	0.000200015	0.000201373	0.000225020	0.000220268
## 3	0.000214535	0.000194245	0.000199969	0.000201353	0.000225019	0.000220261
## 4	0.000214521	0.000194249	0.000200020	0.000201379	0.000225031	0.000220288
## 5	0.000214544	0.000194263	0.000200017	0.000201386	0.000225046	0.000220278
## 8	0.000214543	0.000194249	0.000200013	0.000201384	0.000225024	0.000220279
## 9	0.000214552	0.000194274	0.000200019	0.000201376	0.000225041	0.000220276
## 10	0.000214545	0.000194257	0.000200017	0.000201375	0.000225044	0.000220283
## 11	NA	NA	0.000200024	0.000201393	0.000225039	0.000220282
## 12	0.000039000	0.000035400	0.000199939	0.000033700	0.000224951	0.000220183
## 16	NA	0.000194260	NA	0.000201317	0.000225021	0.000220273
## 17	0.000214545	0.000194245	0.000200015	0.000201385	0.000225030	0.000220280
## 18	0.000214527	0.000194257	0.000200018	0.000201388	0.000225005	0.000220269
## 20	0.000214518	0.000194242	0.000199979	0.000201361	0.000225002	0.000220246
## 23	0.000214473	0.000194239	NA	0.000201329	0.000225014	0.000220264
## 24	0.000039100	0.000194257	0.000033400	0.000201337	0.000224984	0.000220234
## 25	NA	0.000194206	0.000199983	0.000201335	0.000224997	0.000220226
## 34	NA	NA	0.000200009	0.000201375	0.000225009	0.000220204
## 37	0.000039100	0.000194167	0.000033400	0.000201286	NA	0.000220190
## 38	NA	0.000035400	0.000200010	NA	0.000225037	0.000220282
## 44	NA	0.000194210	0.000199992	NA	NA	0.000220255
## 45	NA	NA	0.000200011	0.000033700	0.000224992	0.000220260

##	48	NA	NA	0.000200000	0.000201363	NA	0.000031500
##	49	0.000039000	0.000194235	0.000199976	NA	0.000224998	0.000220217
##	56	NA	0.000194211	0.000199962	0.000201384	NA	NA
##	57	NA	0.000194221	0.000199991	0.000033700	NA	NA
##	58	NA	0.000194157	NA	0.000201344	NA	NA
##	62	0.000039000	0.000194081	NA	0.000033700	0.000224937	0.000220057
##	73	0.000214453	0.000194183	0.000033400	NA	0.000032300	NA
##	74	0.000214348	0.000035400	0.000033400	0.000201205	0.000032300	NA
##	82	0.000039000	NA	0.000199946	0.000033700	NA	NA
##		X2009	X2010	X2011	X2012	X2013	X2014
##	1	0.000237081	0.000226614	0.000258410	0.000267395	0.000261781	0.000261034
##	3	0.000237112	0.000226619	0.000258408	0.000267396	0.000261785	0.000261051
##	4	0.000237107	0.000226639	0.000258442	0.000267421	0.000261814	0.000261078
##	5	0.000237113	0.000226629	0.000258446	0.000267433	0.000261831	0.000261085
##	8	0.000237102	0.000226629	0.000258432	0.000267429	0.000261827	0.000261076
##	9	0.000237102	0.000226622	0.000258426	0.000267418	0.000261825	0.000261070
##	10	0.000237097	0.000226618	0.000258429	0.000267421	0.000261827	0.000261080
##	11	0.000237088	0.000226620	0.000258429	0.000267428	0.000261829	0.000261065
##	12	0.000236892	0.000226541	0.000258354	0.000267344	0.000261793	0.000261025
##	16	0.000237103	0.000226623	0.000258430	0.000267432	0.000261816	0.000261074
##	17	0.000237098	0.000226627	0.000258427	0.000267427	0.000261816	0.000261079
##	18	0.000237095	0.000226627	0.000258427	0.000267414	0.000261822	0.000261058
##	20	0.000237058	0.000226588	0.000258372	0.000267356	0.000261757	0.000260978
##	23	0.000237082	0.000226596	0.000258400	0.000267368	0.000261773	0.000261047
##	24	0.000237088	0.000226628	0.000258403	0.000267375	0.000261757	0.000261030
##	25	0.000237021	0.000226551	0.000258353	0.000267356	0.000261768	0.000260963
##	34	0.000237093	0.000226609	0.000258343	0.000267413	0.000261824	0.000261060
##	37	0.000029900	0.000226521	0.000258249	0.000267335	0.000261745	0.000260966
##	38	0.000237089	0.000226629	0.000258415	0.000267402	0.000261814	0.000261061
##	44	0.000237107	0.000030100	0.000258400	0.000267377	NA	0.000260902
##	45	0.000236992	0.000226590	NA	0.000267302	0.000261793	0.000261034
##	48	0.000237093	0.000226628	NA	0.000267399	0.000261808	NA
##	49	0.000237019	0.000226590	0.000258400	0.000267374	0.000261767	0.000261021
##	56	NA	0.000226486	NA	0.000267310	0.000027800	0.000261041
##	57	NA	0.000030000	0.000027700	0.000027900	0.000027800	0.000030200
##	58	NA	0.000226519	0.000258295	0.000267305	0.000261782	0.000260929
##	62	NA	0.000226397	0.000258207	0.000267262	0.000027800	0.000030200
##	73	0.000237058	NA	0.000258200	0.000267189	NA	0.000030200
##	74	0.000029900	NA	0.000258244	0.000267257	NA	0.000030200
##	82	0.000029900	0.000030000	NA	0.000027900	0.000261664	NA
##		X2015	X2016	X2017			
##	1	0.000230018	0.000257930	0.000226451			
##	3	0.000230007	0.000257946	0.000226445			
##	4	0.000230028	0.000257975	0.000226491			
##	5	0.000230041	0.000257983	0.000226484			
##	8	0.000230032	0.000257970	0.000226489			
##	9	0.000230025	0.000257971	0.000226481			
##	10	0.000230040	0.000257975	0.000226485			
##	11	0.000230020	0.000257951	0.000226485			
##	12	0.000229972	0.000257914	0.000226441			
##	16	0.000230024	0.000257964	0.000226476			
##	17	0.000230026	0.000257963	NA			
##	18	0.000230030	0.000257972	0.000226484			
##	20	0.000229980	0.000257920	0.000226443			

```
## 23 0.000229986 0.000257912 0.000226453
## 24 0.000230012 0.000257941          NA
## 25 0.000229949 0.000257936 0.000226333
## 34 0.000230019 0.000257968 0.000226469
## 37 0.000229969 0.000257903 0.000226354
## 38 0.000230022 0.000257967 0.000226472
## 44 0.000229958 0.000257828          NA
## 45 0.000230021 0.000034000 0.000038800
## 48          NA 0.000257966 0.000226477
## 49 0.000229911          NA          NA
## 56 0.000229983 0.000257870 0.000226427
## 57 0.000030400          NA 0.000038800
## 58 0.000030400 0.000034000          NA
## 62 0.000030400 0.000034000          NA
## 73          NA 0.000257892 0.000226331
## 74 0.000229930          NA          NA
## 82          NA 0.000034000          NA
```

```
M <- as.matrix(dflthcl[,4:24])
M
```

##	X1997	X1998	X1999	X2000	X2001	X2002
## 1	NA	0.000176786	NA	0.000177050	NA	0.000178965
## 3	0.000056600	0.000050800	0.000168078	0.000177035	0.000177728	0.000178935
## 4	NA	NA	0.000168037	0.000040400	NA	NA
## 5	0.000056600	NA	0.000168074	0.000177033	0.000177761	0.000178996
## 8	0.000056600	NA	0.000168095	0.000177049	0.000177753	NA
## 9	0.000173047	NA	0.000168102	0.000177046	0.000177749	0.000179006
## 10	NA	0.000176777	0.000168075	0.000177015	0.000177731	0.000040100
## 11	0.000056600	NA	NA	0.000177070	0.000177750	0.000179000
## 12	0.000056600	NA	0.000168069	0.000040400	0.000177690	0.000178972
## 16	NA	0.000176715	0.000168072	NA	0.000177749	0.000178972
## 17	0.000056600	0.000176792	0.000168060	0.000177017	0.000177739	0.000178983
## 18	0.000173029	0.000176741	0.000168099	NA	NA	0.000178987
## 20	NA	NA	0.000168078	0.000177039	0.000177759	0.000178983
## 23	0.000173067	NA	0.000168079	NA	0.000177746	0.000178987
## 24	0.000173053	NA	0.000168008	0.000177021	0.000177737	0.000178992
## 25	0.000056600	0.000176786	0.000168083	0.000177014	0.000040800	0.000178966
## 34	NA	NA	0.000168094	0.000177042	NA	NA
## 37	0.000056600	0.000050700	NA	0.000040400	NA	0.000040100
## 38	0.000173067	NA	NA	NA	0.000177740	0.000178981
## 44	0.000173018	0.000176763	0.000168081	NA	NA	0.000040100
## 45	NA	NA	0.000168064	0.000177029	0.000177731	0.000178946
## 48	NA	NA	0.000043500	0.000040400	NA	NA
## 49	0.000173073	0.000176796	NA	0.000177049	0.000177747	NA
## 56	0.000173043	NA	NA	NA	NA	0.000178978
## 57	NA	NA	0.000043500	0.000040400	0.000040800	NA
## 58	NA	0.000050700	NA	NA	0.000177646	0.000040100
## 62	NA	NA	0.000043500	0.000177055	NA	NA
## 73	NA	0.000050800	NA	0.000177006	0.000177682	0.000178942
## 74	NA	0.000176721	NA	NA	0.000040800	NA
## 82	NA	0.000050800	NA	NA	0.000040800	NA
##	X2003	X2004	X2005	X2006	X2007	X2008
## 1	0.000214533	0.000194250	0.000200015	0.000201373	0.000225020	0.000220268
## 3	0.000214535	0.000194245	0.000199969	0.000201353	0.000225019	0.000220261
## 4	0.000214521	0.000194249	0.000200020	0.000201379	0.000225031	0.000220288
## 5	0.000214544	0.000194263	0.000200017	0.000201386	0.000225046	0.000220278
## 8	0.000214543	0.000194249	0.000200013	0.000201384	0.000225024	0.000220279
## 9	0.000214552	0.000194274	0.000200019	0.000201376	0.000225041	0.000220276
## 10	0.000214545	0.000194257	0.000200017	0.000201375	0.000225044	0.000220283
## 11	NA	NA	0.000200024	0.000201393	0.000225039	0.000220282
## 12	0.000039000	0.000035400	0.000199939	0.000033700	0.000224951	0.000220183
## 16	NA	0.000194260	NA	0.000201317	0.000225021	0.000220273
## 17	0.000214545	0.000194245	0.000200015	0.000201385	0.000225030	0.000220280
## 18	0.000214527	0.000194257	0.000200018	0.000201388	0.000225005	0.000220269
## 20	0.000214518	0.000194242	0.000199979	0.000201361	0.000225002	0.000220246
## 23	0.000214473	0.000194239	NA	0.000201329	0.000225014	0.000220264
## 24	0.000039100	0.000194257	0.000033400	0.000201337	0.000224984	0.000220234
## 25	NA	0.000194206	0.000199983	0.000201335	0.000224997	0.000220226
## 34	NA	NA	0.000200009	0.000201375	0.000225009	0.000220204
## 37	0.000039100	0.000194167	0.000033400	0.000201286	NA	0.000220190
## 38	NA	0.000035400	0.000200010	NA	0.000225037	0.000220282
## 44	NA	0.000194210	0.000199992	NA	NA	0.000220255
## 45	NA	NA	0.000200011	0.000033700	0.000224992	0.000220260

## 48	NA	NA	0.000200000	0.000201363	NA	0.000031500
## 49	0.000039000	0.000194235	0.000199976	NA	0.000224998	0.000220217
## 56	NA	0.000194211	0.000199962	0.000201384	NA	NA
## 57	NA	0.000194221	0.000199991	0.000033700	NA	NA
## 58	NA	0.000194157	NA	0.000201344	NA	NA
## 62	0.000039000	0.000194081	NA	0.000033700	0.000224937	0.000220057
## 73	0.000214453	0.000194183	0.000033400	NA	0.000032300	NA
## 74	0.000214348	0.000035400	0.000033400	0.000201205	0.000032300	NA
## 82	0.000039000	NA	0.000199946	0.000033700	NA	NA
##	X2009	X2010	X2011	X2012	X2013	X2014
## 1	0.000237081	0.000226614	0.000258410	0.000267395	0.000261781	0.000261034
## 3	0.000237112	0.000226619	0.000258408	0.000267396	0.000261785	0.000261051
## 4	0.000237107	0.000226639	0.000258442	0.000267421	0.000261814	0.000261078
## 5	0.000237113	0.000226629	0.000258446	0.000267433	0.000261831	0.000261085
## 8	0.000237102	0.000226629	0.000258432	0.000267429	0.000261827	0.000261076
## 9	0.000237102	0.000226622	0.000258426	0.000267418	0.000261825	0.000261070
## 10	0.000237097	0.000226618	0.000258429	0.000267421	0.000261827	0.000261080
## 11	0.000237088	0.000226620	0.000258429	0.000267428	0.000261829	0.000261065
## 12	0.000236892	0.000226541	0.000258354	0.000267344	0.000261793	0.000261025
## 16	0.000237103	0.000226623	0.000258430	0.000267432	0.000261816	0.000261074
## 17	0.000237098	0.000226627	0.000258427	0.000267427	0.000261816	0.000261079
## 18	0.000237095	0.000226627	0.000258427	0.000267414	0.000261822	0.000261058
## 20	0.000237058	0.000226588	0.000258372	0.000267356	0.000261757	0.000260978
## 23	0.000237082	0.000226596	0.000258400	0.000267368	0.000261773	0.000261047
## 24	0.000237088	0.000226628	0.000258403	0.000267375	0.000261757	0.000261030
## 25	0.000237021	0.000226551	0.000258353	0.000267356	0.000261768	0.000260963
## 34	0.000237093	0.000226609	0.000258343	0.000267413	0.000261824	0.000261060
## 37	0.000029900	0.000226521	0.000258249	0.000267335	0.000261745	0.000260966
## 38	0.000237089	0.000226629	0.000258415	0.000267402	0.000261814	0.000261061
## 44	0.000237107	0.000030100	0.000258400	0.000267377	NA	0.000260902
## 45	0.000236992	0.000226590	NA	0.000267302	0.000261793	0.000261034
## 48	0.000237093	0.000226628	NA	0.000267399	0.000261808	NA
## 49	0.000237019	0.000226590	0.000258400	0.000267374	0.000261767	0.000261021
## 56	NA	0.000226486	NA	0.000267310	0.000027800	0.000261041
## 57	NA	0.000030000	0.000027700	0.000027900	0.000027800	0.000030200
## 58	NA	0.000226519	0.000258295	0.000267305	0.000261782	0.000260929
## 62	NA	0.000226397	0.000258207	0.000267262	0.000027800	0.000030200
## 73	0.000237058	NA	0.000258200	0.000267189	NA	0.000030200
## 74	0.000029900	NA	0.000258244	0.000267257	NA	0.000030200
## 82	0.000029900	0.000030000	NA	0.000027900	0.000261664	NA
##	X2015	X2016	X2017			
## 1	0.000230018	0.000257930	0.000226451			
## 3	0.000230007	0.000257946	0.000226445			
## 4	0.000230028	0.000257975	0.000226491			
## 5	0.000230041	0.000257983	0.000226484			
## 8	0.000230032	0.000257970	0.000226489			
## 9	0.000230025	0.000257971	0.000226481			
## 10	0.000230040	0.000257975	0.000226485			
## 11	0.000230020	0.000257951	0.000226485			
## 12	0.000229972	0.000257914	0.000226441			
## 16	0.000230024	0.000257964	0.000226476			
## 17	0.000230026	0.000257963	NA			
## 18	0.000230030	0.000257972	0.000226484			
## 20	0.000229980	0.000257920	0.000226443			

```
## 23 0.000229986 0.000257912 0.000226453
## 24 0.000230012 0.000257941      NA
## 25 0.000229949 0.000257936 0.000226333
## 34 0.000230019 0.000257968 0.000226469
## 37 0.000229969 0.000257903 0.000226354
## 38 0.000230022 0.000257967 0.000226472
## 44 0.000229958 0.000257828      NA
## 45 0.000230021 0.000034000 0.000038800
## 48      NA 0.000257966 0.000226477
## 49 0.000229911      NA      NA
## 56 0.000229983 0.000257870 0.000226427
## 57 0.000030400      NA 0.000038800
## 58 0.000030400 0.000034000      NA
## 62 0.000030400 0.000034000      NA
## 73      NA 0.000257892 0.000226331
## 74 0.000229930      NA      NA
## 82      NA 0.000034000      NA
```

```
dim(M)
```

```
## [1] 30 21
```

