analysis

July 18, 2021

1 Corporate takeovers in Africa (2016-2021)

The data was aquired from Refinitiv for a legal firm in South Africa. It reflects all corporate takeovers across Africa from 2016 onwards. There is no quantitative data. The information is a listing containing the names of the target and aquiror companies, their sectors and nation of domicile. The analysis is done by differing groupings of the 6 categories and counting takeover listings (line numbers).

This notebook is written in R. The libraries used are loaded first.

```
[1]: library(tidyverse);
     library(Rgraphviz)
```

```
 Attaching packages   tidyverse
1.3.1

 ggplot2 3.3.3      purrr   0.3.4
 tibble  3.1.1      dplyr   1.0.5
 tidyr   1.1.3      stringr 1.4.0
 readr   1.4.0      forcats 0.5.1

 Conflicts
tidyverse_conflicts()
 dplyr::filter() masks stats::filter()
 dplyr::lag()    masks stats::lag()

Loading required package: graph

Loading required package: BiocGenerics

Loading required package: parallel


Attaching package: 'BiocGenerics'


The following objects are masked from 'package:parallel':
```

clusterApply, clusterApplyLB, clusterCall, clusterEvalQ,
        clusterExport, clusterMap, parApply, parCapply, parLapply,
        parLapplyLB, parRapply, parSapply, parSapplyLB

    The following objects are masked from 'package:dplyr':

        combine, intersect, setdiff, union

    The following objects are masked from 'package:stats':

        IQR, mad, sd, var, xtabs

    The following objects are masked from 'package:base':

        anyDuplicated, append, as.data.frame, basename, cbind, colnames,
        dirname, do.call, duplicated, eval, evalq, Filter, Find, get, grep,
        grepl, intersect, is.unsorted, lapply, Map, mapply, match, mget,
        order, paste, pmax, pmax.int, pmin, pmin.int, Position, rank,
        rbind, Reduce, rownames, sapply, setdiff, sort, table, tapply,
        union, unique, unsplit, which, which.max, which.min

    Attaching package: 'graph'

    The following object is masked from 'package:stringr':

        boundary

    Loading required package: grid

```
[ ]: Then the data is loaded.
```

```
[3]: data <- readxl::read_xls("resources/data.xls");data
```

| DateAnnounced | DateEffective | Target.nam | Target.nat | Targ |
<dttm>	<chr>	<chr>	<chr>	<ch
2021-04-27	44313	Dragonfly Aerospace	South Africa	Tele
2021-04-20	-	Adapt IT Holdings Ltd	South Africa	IT C
2021-04-19	-	Millicom Tanzania Ltd	Tanzania	Wir
2021-04-08	44294	Paymob	Egypt	Soft
2021-04-07	-	Adapt IT Holdings Ltd	South Africa	IT C
2021-04-01	-	Airtel Africa Plc-Mobile	South Africa	Tele
2021-03-29	44284	Weelo LLC	Egypt	Soft
2021-03-23	-	Airtel Tchad SA	Chad	Oth
2021-03-23	44278	Selpal (Pty) Ltd	South Africa	IT C
2021-03-23	-	Airtel Gabon SA	Gabon	Wir
2021-03-23	-	Airtel Africa Plc -	Madagascar	Tele
2021-03-18	-	Airtel Africa Plc-Mobile	South Africa	Tele
2021-03-17	44272	M2M System	Kenya	IT C
2021-03-16	44293	Synapsys Systems (Pty) Ltd	South Africa	IT C
2021-03-10	-	Mtn Grp Ltd-Fibre And Finl	South Africa	Wir
2021-03-09	44264	K3 Telecom Liberia	Liberia	Inte
2021-02-25	-	Ctrack Africa Hldg Pty Ltd	South Africa	Soft
2021-02-22	44249	STE Leader Solution Tactile	Tunisia	Soft
2021-01-28	44224	Cowrywise Finl Tech Ltd	Nigeria	Soft
2021-01-01	44197	Orange Madagascar SA	Madagascar	Tele
2020-12-22	-	MineRP Holdings Pty Ltd	South Africa	IT C
2020-12-21	44186	Zeepay Ghana Ltd	Ghana	Soft
2020-12-18	-	Corex (Pty) Ltd	South Africa	Elec
2020-12-16	44181	OnePipe.io Services Ltd	Nigeria	Inte
2020-12-03	44234	Itsalat Intl Co	Egypt	Wir
2020-11-26	44161	Icolo Ltd	Kenya	Oth
2020-11-12	44147	Betking	Nigeria	Con
2020-11-12	44147	Peach Bots (Pty) Ltd	South Africa	Soft
2020-10-26	44130	LIQUID Telecommun Hldg Ltd	Mauritius	Tele
2020-10-20	-	Liquid Telecom Botswana	Botswana	Tele
2016-08-24	42606	Twiga Foods Ltd	Kenya	E-co
2016-07-25	42576	XLink Communications (Pty) Ltd	South Africa	Tele
2016-07-21	42572	BTech For Trading & Distn Co	Egypt	Elec
2016-07-05	42556	Rise Broadcast Pty Ltd	South Africa	Bro
2016-06-28	42776	Neotel (Pty) Ltd	South Africa	Tele
2016-06-18	42539	Buni TV	South Africa	Bro
2016-06-16	42537	Mobile Telecommunications Ltd	Namibia	Tele
2016-06-07	42528	Medtech SA	Morocco	IT C
2016-06-03	42524	Coporeti Support Svcs Pvt Ltd	Zimbabwe	Inte
2016-06-01	42735	Eaton Llp-S African towers	South Africa	Tele
2016-05-25	42515	Bluekey Holdings (Pty) Ltd	South Africa	Soft
2016-05-05	42495	Bharti Airtel Intl-Telecoms	Dem Rep Congo	Tele
2016-05-02	42589	Canar Telecommunications Co	Sudan	Tele
2016-04-29	42489	Novafone Inc	Liberia	Tele
2016-04-29	42733	Cote d'Ivoire Telecom SA	Ivory Coast	Tele
2016-04-27	42487	Bloy Mineral Resource	South Africa	Soft
2016-04-12	-	Skygistics (Pty) Ltd	South Africa	Spa
2016-04-11	-	Net 1 UEPS Technologies Inc	South Africa	Con
2016-04-07	42467	BSocial	Egypt	Inte
2016-03-29	42458	Rapid Blue (Pty) Ltd	South Africa	Bro

A tibble: 230 × 30

3

The relevant columns are selected and extracted into a tibble (a table) named "takeover".

```
[4]: takeovers <- data %>%
        select(dt=DateAnnounced,
               t.nam=Target.nam,
               a.nam=Acquiror.nam,
               t.sec=Target.sector,
               a.sec=Acquiror.sec,
               t.nat=Target.nat,
               a.nat=Acquiror.nat);
     takeovers
```

A tibble: 230 × 7

dt	t.nam	a.nam	t.sec
<dttm>	<chr>	<chr>	<chr>
2021-04-27	Dragonfly Aerospace	Max Polyakov	Telecomm
2021-04-20	Adapt IT Holdings Ltd	Blacksheep Master Fund Ltd	IT Consul
2021-04-19	Millicom Tanzania Ltd	Axian Group	Wireless
2021-04-08	Paymob	Investor Group	Software
2021-04-07	Adapt IT Holdings Ltd	Volaris Group Inc	IT Consul
2021-04-01	Airtel Africa Plc-Mobile	Mastercard Inc	Telecomm
2021-03-29	Weelo LLC	Investor Group	Software
2021-03-23	Airtel Tchad SA	Helios Towers PLC	Other Tele
2021-03-23	Selpal (Pty) Ltd	First National Bank Corp	IT Consul
2021-03-23	Airtel Gabon SA	Helios Towers PLC	Wireless
2021-03-23	Airtel Africa Plc -	Helios Towers PLC	Telecomm
2021-03-18	Airtel Africa Plc-Mobile	The Rise Fund	Telecomm
2021-03-17	M2M System	BUI (Pty) Ltd	IT Consul
2021-03-16	Synapsys Systems (Pty) Ltd	Acronis International GmbH	IT Consul
2021-03-10	Mtn Grp Ltd-Fibre And Finl	Shareholders	Wireless
2021-03-09	K3 Telecom Liberia	Telecel Global Ltd	Internet S
2021-02-25	Ctrack Africa Hldg Pty Ltd	Main St 1816 Pty Ltd	Software
2021-02-22	STE Leader Solution Tactile	Aures Technologies SA	Software
2021-01-28	Cowrywise Finl Tech Ltd	Investor Group	Software
2021-01-01	Orange Madagascar SA	Orange SA	Telecomm
2020-12-22	MineRP Holdings Pty Ltd	Epiroc Canada Hldg Inc	IT Consul
2020-12-21	Zeepay Ghana Ltd	Goodsoil Vc	Software
2020-12-18	Corex (Pty) Ltd	Sysage Technology Co Ltd	Electronic
2020-12-16	OnePipe.io Services Ltd	Investor Group	Internet S
2020-12-03	Itsalat Intl Co	Raya Distribution Co SAE	Wireless
2020-11-26	Icolo Ltd	Pembani Remgro Infrastructure	Other Tele
2020-11-12	Betking	MultiChoice Group Ltd	Computer
2020-11-12	Peach Bots (Pty) Ltd	Investor Group	Software
2020-10-26	LIQUID Telecommun Hldg Ltd	CDC Group PLC	Telecomm
2020-10-20	Liquid Telecom Botswana	LIQUID Telecommun Hldg Ltd	Telecomm
2016-08-24	Twiga Foods Ltd	Stichting DOB Equity	E-commer
2016-07-25	XLink Communications (Pty) Ltd	Vodacom Ventures	Telecomm
2016-07-21	BTech For Trading & Distn Co	African Dvlp Partners II LP	Electronic
2016-07-05	Rise Broadcast Pty Ltd	Times Media Group Ltd	Broadcast
2016-06-28	Neotel (Pty) Ltd	Investor Group	Telecomm
2016-06-18	Buni TV	Trace TV SA	Broadcast
2016-06-16	Mobile Telecommunications Ltd	Samba Luxco Sarl	Telecomm
2016-06-07	Medtech SA	Mediterrania Capital II	IT Consul
2016-06-03	Coporeti Support Svcs Pvt Ltd	Brainworks Capital Management	Internet a
2016-06-01	Eaton Llp-S African towers	American Tower Corp	Telecomm
2016-05-25	Bluekey Holdings (Pty) Ltd	Seidor SA	Software
2016-05-05	Bharti Airtel Intl-Telecoms	Helios Towers Africa Ltd	Telecomm
2016-05-02	Canar Telecommunications Co	Sudanese Mobile Tele (Zain)	Telecomm
2016-04-29	Novafone Inc	Liberia Telecommunications	Telecomm
2016-04-29	Cote d'Ivoire Telecom SA	Orange Cote d'Ivoire SA	Telecomm
2016-04-27	Bloy Mineral Resource	ARANZ Geo Ltd	Software
2016-04-12	Skygistics (Pty) Ltd	ORBCOMM Inc	Space and
2016-04-11	Net 1 UEPS Technologies Inc	International Finance Corp	Computer
2016-04-07	BSocial	SOCIALEYEZ FZCO	Internet S
2016-03-29	Rapid Blue (Pty) Ltd	BBC Worldwide Ltd	Broadcast

5

Other than white space around entries (which should be cleaned up), the data looks fine.

To start with the analysis, look at the per nation acquisitions in Africa. Only nations with 3 or more takeovers are considered.

```
[10]: group.a.nat  <-  takeovers %>% group_by(a.nat) %>% summarise(n=n());
      group.a.nat  <- group.a.nat[order(group.a.nat$n,decreasing=TRUE),] %>%␣
       ↪filter(n>2)
      names(group.a.nat) <- c("Acquiror nation", "Count")
      group.a.nat
      names(group.a.nat) <- c("a.nat", "n")
```

A tibble: 20 × 2

Acquiror nation <chr>	Count <int>
United States	40
South Africa	35
United Kingdom	31
France	19
Mauritius	13
Morocco	7
Namibia	6
Netherlands	6
Switzerland	5
Utd Arab Em	5
Australia	4
Canada	4
Egypt	4
Germany	4
Hong Kong	4
Malaysia	4
India	3
Ivory Coast	3
Nigeria	3
Zimbabwe	3

Seeing this it is apparent that the US (40), UK (31) and France (19) are the 3 nations outside of Africa heavily involved in takeovers of African companies. Other major takeover nations within Africa are Mauritius (13) and South Africa (35). *Possible reasons* Until recently South Africa's economy was the largest in Africa, so their takeover tally might be expected. Mauritius has drawn much invest in recent years due to its very favourable tax laws. It could be that expatriated companies are becoming involved in takeovers of African companies to domicile themselves in Mauritius. The large number of takeovers from US, UK and France may reflect the history between nations and also the value being offered by African countries over the last 5 years.

Looking at the target nations: (only nations with 3 or more takeovers are listed)

```
[11]: group.t.nat  <-  takeovers %>% group_by(t.nat) %>% summarise(n=n());
      group.t.nat  <- group.t.nat[order(group.t.nat$n,decreasing=TRUE),] %>%␣
       ↪filter(n>2)
```

```
names(group.t.nat) <- c("Target nation", "Count")
group.t.nat
names(group.t.nat) <- c("t.nat", "n")
```

A tibble: 14 × 2

Target nation	Count
<chr>	<int>
South Africa	79
Egypt	29
Nigeria	22
Kenya	21
Mauritius	9
Tanzania	8
Morocco	7
Namibia	7
Ghana	5
Tunisia	5
Senegal	4
Botswana	3
Ivory Coast	3
Liberia	3

Here, one can see that there are four major countries in Africa facing the lion share of corporate takeovers. The nations are SA, Nigeria, Egypt and Kenya. Between them South Africa has nearly 3 times the number of takeovers as the second highest contender, Egypt and it takes the 2nd (Egypt),3rd (Nigeria) and 4th (Kenya) contenders to match the number of takeovers in South Africa. This seems to reflect a case of distress amongst companies in South Africa, that there should be so many targeted companies for takeover.

Now, look at the country specific relation between acquiror and target nations. Only nations with 3 or more takeovers are listed.

[15]:
```
group.t.nat.a.nat <- takeovers %>% group_by(a.nat,t.nat) %>% summarise(n=n());
group.t.nat.a.nat <- group.t.nat.a.nat[order(group.t.nat.a.nat$n,decreasing =␣
 ↪TRUE),] %>% filter(n>2)
names(group.t.nat.a.nat) <- c("Acquiror nation","Target nation","Tally");group.t.
 ↪nat.a.nat
names(group.t.nat.a.nat) <- c("a.nat","t.nat","n")
```

```
`summarise()` has grouped output by 'a.nat'. You can override using the
`.groups` argument.
```

	Acquiror nation <chr>	Target nation <chr>	Tally <int>
	United States	South Africa	17
	South Africa	South Africa	14
	United Kingdom	South Africa	11
	United States	Kenya	7
	Mauritius	South Africa	6
	United States	Egypt	6
	France	South Africa	5
	Namibia	Namibia	5
	South Africa	Kenya	5
	South Africa	Mauritius	5
	South Africa	Nigeria	5
A grouped_df: 25 × 3	Utd Arab Em	Egypt	5
	Hong Kong	South Africa	4
	Mauritius	Nigeria	4
	United Kingdom	Egypt	4
	United Kingdom	Nigeria	4
	United States	Nigeria	4
	Australia	South Africa	3
	Canada	South Africa	3
	Egypt	Egypt	3
	France	Kenya	3
	France	Tunisia	3
	Germany	South Africa	3
	Morocco	Morocco	3
	United Kingdom	Tanzania	3

Acquirors

```
[18]: acquirors <- levels(as.factor(group.t.nat.a.nat$a.nat));acquirors
```

1. 'Australia' 2. 'Canada' 3. 'Egypt' 4. 'France' 5. 'Germany' 6. 'Hong Kong' 7. 'Mauritius' 8. 'Morocco' 9. 'Namibia' 10. 'South Africa' 11. 'United Kingdom' 12. 'United States' 13. 'Utd Arab Em'

Targets

```
[20]: targets <- levels(as.factor(group.t.nat.a.nat$t.nat));targets
```

1. 'Egypt' 2. 'Kenya' 3. 'Mauritius' 4. 'Morocco' 5. 'Namibia' 6. 'Nigeria' 7. 'South Africa' 8. 'Tanzania' 9. 'Tunisia'
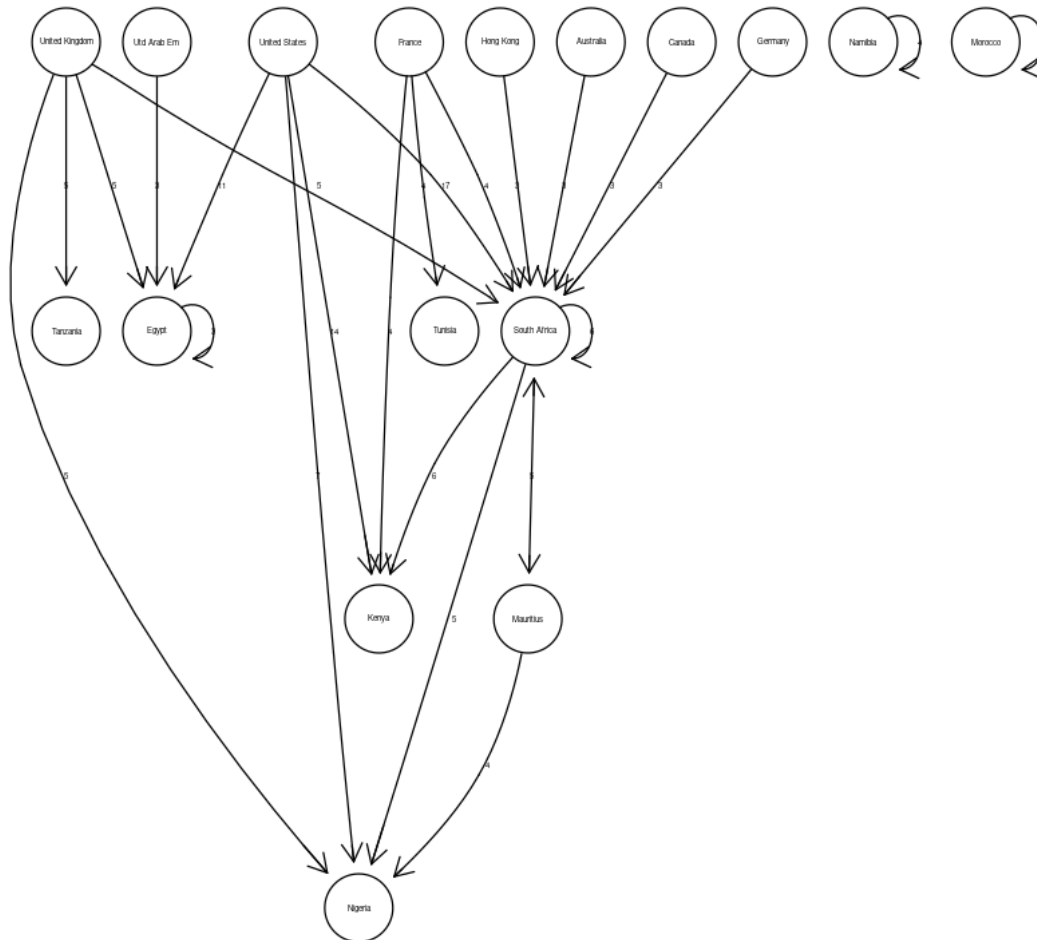
Now these relationships can be plotted with a directed graph.

```
[26]: reg <- ftM2graphNEL(ft = as.matrix(group.t.nat.a.nat[,-3]), edgemode="directed")
```

The edges of the graph can be numbered, although formatting needs to be worked on because the numbers are too small to see in the graph.

```
[27]: ew <- as.character(group.t.nat.a.nat$n)
      names(ew) <- edgeNames(reg)
      #edgeNames(reg)
      eAttrs <- list()
      eAttrs$label <- ew
      plot(reg,edgeAttrs=eAttrs)
```


Due to time constraints the analysis will end here.