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LOADING DATA INTO DATABASE:

1. **Software alliances** is used to identify the firms that are inside and outside the software industry. Data is loaded into the database using the following queries.

```
CREATE TABLE SoftwareAlliances (prim_cusip VARCHAR(5), innet INT, firmname nvarchar(250));

LOAD DATA INFILE 'C:/SoftwareAlliances.csv' INTO TABLE SoftwareAlliances FIELDS TERMINATED BY ','
ENCLOSED BY '"'LINES TERMINATED BY '\n' IGNORE 1 ROWS;
```

2. **Edgelist** describes the firms that are joined at a particular year. Data into different tables based on the year

```
CREATE TABLE edgelist_1999 (cusip1 VARCHAR(5), cusip2 VARCHAR(5));

LOAD DATA INFILE 'C:/EdgeList_1999.csv' INTO TABLE edgelist_1999 FIELDS TERMINATED BY ','
ENCLOSED BY '"'LINES TERMINATED BY '\n' IGNORE 1 ROWS;

CREATE TABLE edgelist_2000 (cusip1 VARCHAR(5), cusip2 VARCHAR(5));

LOAD DATA INFILE 'C:/EdgeList_2000.csv' INTO TABLE edgelist_2000 FIELDS TERMINATED BY ','
ENCLOSED BY '"'LINES TERMINATED BY '\n' IGNORE 1 ROWS;

CREATE TABLE edgelist_2001 (cusip1 VARCHAR(5), cusip2 VARCHAR(5));

LOAD DATA INFILE 'C:/EdgeList_2001.csv' INTO TABLE edgelist_2001 FIELDS TERMINATED BY ','
ENCLOSED BY '"'LINES TERMINATED BY '\n' IGNORE 1 ROWS;

CREATE TABLE edgelist_2002 (cusip1 VARCHAR(5), cusip2 VARCHAR(5));

LOAD DATA INFILE 'C:/EdgeList_2002.csv' INTO TABLE edgelist_2002 FIELDS TERMINATED BY ','
ENCLOSED BY '"'LINES TERMINATED BY '\n' IGNORE 1 ROWS;

CREATE TABLE edgelist_2003 (cusip1 VARCHAR(5), cusip2 VARCHAR(5));

LOAD DATA INFILE 'C:/EdgeList_2003.csv' INTO TABLE edgelist_2003 FIELDS TERMINATED BY ','
ENCLOSED BY '"'LINES TERMINATED BY '\n' IGNORE 1 ROWS;

CREATE TABLE edgelist_2004 (cusip1 VARCHAR(5), cusip2 VARCHAR(5));

LOAD DATA INFILE 'C:/EdgeList_2004.csv' INTO TABLE edgelist_2004 FIELDS TERMINATED BY ','
ENCLOSED BY '"'LINES TERMINATED BY '\n' IGNORE 1 ROWS;

CREATE TABLE edgelist_2005 (cusip1 VARCHAR(5), cusip2 VARCHAR(5));

LOAD DATA INFILE 'C:/EdgeList_2005.csv' INTO TABLE edgelist_2005 FIELDS TERMINATED BY ','
ENCLOSED BY '"'LINES TERMINATED BY '\n' IGNORE 1 ROWS;

CREATE TABLE edgelist_2006 (cusip1 VARCHAR(5), cusip2 VARCHAR(5));

LOAD DATA INFILE 'C:/EdgeList_2006.csv' INTO TABLE edgelist_2006 FIELDS TERMINATED BY ','
ENCLOSED BY '"'LINES TERMINATED BY '\n' IGNORE 1 ROWS;

CREATE TABLE edgelist_2007 (cusip1 VARCHAR(5), cusip2 VARCHAR(5));
```

```
LOAD DATA INFILE 'C:/EdgeList_2007.csv' INTO TABLE edgelist_2007 FIELDS TERMINATED BY ','
ENCLOSED BY '"'LINES TERMINATED BY '\n' IGNORE 1 ROWS;

CREATE TABLE edgelist_2008 (cusip1 VARCHAR(5), cusip2 VARCHAR(5));

LOAD DATA INFILE 'C:/EdgeList_2008.csv' INTO TABLE edgelist_2008 FIELDS TERMINATED BY ','
ENCLOSED BY '"'LINES TERMINATED BY '\n' IGNORE 1 ROWS;

CREATE TABLE edgelist_2009(cusip1 VARCHAR(5), cusip2 VARCHAR(5));

LOAD DATA INFILE 'C:/EdgeList_2009.csv' INTO TABLE edgelist_2009 FIELDS TERMINATED BY ','
ENCLOSED BY '"'LINES TERMINATED BY '\n' IGNORE 1 ROWS;
```

3. **Firm metrics** contains firm's performance and investment measures. Loading data into database using the following queries

```
CREATE TABLE firmmetrics( firm_year INT, cusip VARCHAR(9), conm VARCHAR(100), currassets double,
total_assets double, sharesout double, itdebt double, employees double, invent double,
current_liabilities double, operincome double, physcap double, pref_stock double, sales double, adv
double, rd double, naicsh INT, stock_prices double, naics INT, naics3d INT, naics2d INT, naics4d INT,
naics1d INT, prim_cusip VARCHAR(5));

LOAD DATA INFILE 'C:/FirmMetrics2006-2010.csv' INTO TABLE firmmetrics FIELDS TERMINATED BY ','
ENCLOSED BY '"'LINES TERMINATED BY '\n' IGNORE 1 ROWS;
```

CLEANING DATA IN THE EDGELISTS:

If we observe the data in the edgelist, it contains data that are not in software alliances and the firms that are both outside industry. So we are deleting the data as there is no use of those entries.

Step1: delete alliances from edgelist2006 where companies are not available in software alliances table

```
select * from edgelist_2006 a left join softwarealliances b on a.cusip1 = b.prim_cusip where
b.prim_cusip is null and a.cusip2 not in (select prim_cusip from softwarealliances);

create table delete_edge(cusip1 varchar(5),cusip2 varchar(5));

insert into delete_edge (select a.cusip1,a.cusip2 from edgelist_2006 a left join softwarealliances b on
a.cusip1 = b.prim_cusip where b.prim_cusip is null and a.cusip2 not in (select prim_cusip from
softwarealliances));

delete from edgelist_2006 where cusip2 in (select cusip1 from delete_edge);

delete from delete_edge;
```

Step2: delete alliances from edgelist where both companies are not in software industry for 2006

```
select b.cusip1, b.cusip2 from softwarealliances a inner join edgelist_2006 b  on a.prim_cusip =b.cusip1
where a.innet=0 and b.cusip2 not in (select prim_cusip from softwarealliances where innet=1);
```

insert into delete_edge (select b.cusip1, b.cusip2 from softwarealliances a inner join edgelist_2006 b on a.prim_cusip =b.cusip1 where a.innet=0 and b.cusip2 not in (select prim_cusip from softwarealliances where innet=1));

delete from edgelist_2006 where (cusip1,cusip2) in (select * from delete_edge);

Step3: delete alliances from edgelist2007 where companies are not available in software alliances table

select * from edgelist_2007 a left join softwarealliances b on a.cusip1 = b.prim_cusip where b.prim_cusip is null and a.cusip2 not in (select prim_cusip from softwarealliances);

insert into delete_edge (select a.cusip1,a.cusip2 from edgelist_2007 a left join softwarealliances b on a.cusip1 = b.prim_cusip where b.prim_cusip is null and a.cusip2 not in (select prim_cusip from softwarealliances));

delete from edgelist_2007 where cusip2 in (select cusip1 from delete_edge);

Step4: delete alliances from edgelist where both companies are not in software industry for 2007

select b.cusip1, b.cusip2 from softwarealliances a inner join edgelist_2007 b on a.prim_cusip =b.cusip1 where a.innet=0 and b.cusip2 not in (select prim_cusip from softwarealliances where innet=1);

delete from delete_edge;

insert into delete_edge (select b.cusip1, b.cusip2 from softwarealliances a inner join edgelist_2007 b on a.prim_cusip =b.cusip1 where a.innet=0 and b.cusip2 not in (select prim_cusip from softwarealliances where innet=1));

delete from edgelist_2007 where (cusip1,cusip2) in (select * from delete_edge);

Step5: delete alliances from edgelist2008 where companies are not available in software alliances table

select * from edgelist_2008 a left join softwarealliances b on a.cusip1 = b.prim_cusip where b.prim_cusip is null and a.cusip2 not in (select prim_cusip from softwarealliances);

insert into delete_edge (select a.cusip1,a.cusip2 from edgelist_2008 a left join softwarealliances b on a.cusip1 = b.prim_cusip where b.prim_cusip is null and a.cusip2 not in (select prim_cusip from softwarealliances));

delete from edgelist_2008 where cusip2 in (select cusip1 from delete_edge);

Step6: delete alliances from edgelist where both companies are not in software industry for 2008

select b.cusip1, b.cusip2 from softwarealliances a inner join edgelist_2008 b on a.prim_cusip =b.cusip1 where a.innet=0 and b.cusip2 not in (select prim_cusip from softwarealliances where innet=1);

delete from delete_edge;

insert into delete_edge (select b.cusip1, b.cusip2 from softwarealliances a inner join edgelist_2008 b on a.prim_cusip =b.cusip1 where a.innet=0 and b.cusip2 not in (select prim_cusip from softwarealliances where innet=1));

delete from edgelist_2008 where (cusip1,cusip2) in (select * from delete_edge);

Step7: delete alliances from edgelist2009 where companies are not available in software alliances table

select * from edgelist_2009 a left join softwarealliances b on a.cusip1 = b.prim_cusip where b.prim_cusip is null and a.cusip2 not in (select prim_cusip from softwarealliances);

insert into delete_edge (select a.cusip1,a.cusip2 from edgelist_2009 a left join softwarealliances b on a.cusip1 = b.prim_cusip where b.prim_cusip is null and a.cusip2 not in (select prim_cusip from softwarealliances));

delete from edgelist_2009 where cusip2 in (select cusip1 from delete_edge);

Step8: delete alliances from edgelist where both companies are not in software industry for 2009

select b.cusip1, b.cusip2 from softwarealliances a inner join edgelist_2009 b on a.prim_cusip =b.cusip1 where a.innet=0 and b.cusip2 not in (select prim_cusip from softwarealliances where innet=1);

delete from delete_edge;

insert into delete_edge (select b.cusip1, b.cusip2 from softwarealliances a inner join edgelist_2009 b on a.prim_cusip =b.cusip1 where a.innet=0 and b.cusip2 not in (select prim_cusip from softwarealliances where innet=1));

delete from edgelist_2009 where (cusip1,cusip2) in (select * from delete_edge);

Question a:

1. Deciles division based on Research and development:

For year 2006:

Step1: Calculation of deciles based on rd value in the firmmetrics for the year 2006.

select prim_cusip,rd,rank,round(10*(cnt-rank+1)/cnt,0) as decile from (SELECT prim_cusip,rd,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,rd from firmmetrics where firm_year='2006' and rd is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

ORDER BY rd desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct;

Step2: Created table and inserted the values of the above results into the created table.

```
create table cusipcomp (prim_cusip varchar(5), rd double, rank int, decile int);

insert into cusipcomp (select prim_cusip,rd,rank,round(10*(cnt-rank+1)/cnt,0) as decile from

(SELECT  prim_cusip,rd,@curRank := @curRank + 1 AS rank

FROM     (select prim_cusip,conm,rd from firmmetrics where firm_year='2006' and rd is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

ORDER BY  rd desc ) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct);
```

Step3: Join the table created with the edgelist_2006 to get the firm alliances in that year with their decile value.

```
select * from edgelist_2006 a inner join cusipcomp b on a.cusip1=b.prim_cusip;
```

Step4: Insert values into new table

```
create table withinwithout (cusip1 varchar(5),cusip2 varchar(5),prim_cusip varchar(5), rd double, rank int, decile int);

delete from withinwithout;

insert into withinwithout (select * from edgelist_2006 a inner join cusipcomp b on a.cusip1=b.prim_cusip);
```

Step5: In this step, we are dividing into deciles for the firms within software industry joined with firms outside software industry. We are assuming that cusip 1 is joining with the firm cusip2.

```
select a.cusip1,a.cusip2 from edgelist_2006 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));
```

Step6: insert the values into table delete_edge for comparision

```
insert into delete_edge(select a.cusip1,a.cusip2 from edgelist_2006 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));
```

Step7: To get values for deciles for the companies within software industry joined with outside software industry, left join table delete_edge with withinwithout

```
select distinct a.cusip,a.cusip1,b.decile from delete_edge a left join withinwithout b on a.cusip=b.prim_cusip where decile is not null;
```

For year 2007:

Step1: Calculation of deciles based on rd value in the firmmetrics for the year 2007.

```
select prim_cusip,rd,rank,round(10*(cnt-rank+1)/cnt,0) as decile from  (SELECT
prim_cusip,rd,@curRank := @curRank + 1 AS rank

FROM      (select prim_cusip,conm,rd from firmmetrics where firm_year='2007' and rd is not null group
by prim_cusip,conm)

p, (SELECT @curRank := 0) r

ORDER BY  rd desc ) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct;
```

Step2: Created table and inserted the values of the above results into the created table.

```
create table cusipcomp (prim_cusip varchar(5), rd double, rank int, decile int);

insert into cusipcomp (select prim_cusip,rd,rank,round(10*(cnt-rank+1)/cnt,0) as decile from

(SELECT  prim_cusip,rd,@curRank := @curRank + 1 AS rank

FROM      (select prim_cusip,conm,rd from firmmetrics where firm_year='2007' and rd is not null group
by prim_cusip,conm)

p, (SELECT @curRank := 0) r

ORDER BY  rd desc ) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct);
```

Step3: Join the table created with the edgelist_2007 to get the firm alliances in that year with their decile value.

```
select * from edgelist_2007 a inner join cusipcomp b on a.cusip1=b.prim_cusip;
```

Step4: Insert values into new table

```
create table withinwithout (cusip1 varchar(5),cusip2 varchar(5),prim_cusip varchar(5), rd double, rank
int, decile int);

delete from withinwithout;

insert into withinwithout (select * from edgelist_2007 a inner join cusipcomp b on
a.cusip1=b.prim_cusip);
```

Step5: In this step, we are dividing into deciles for the firms within software industry joined with firms outside software industry. We are assuming that cusip 1 is joining with the firm cusip2.

```
select a.cusip1,a.cusip2 from edgelist_2007 a left join softwarealliances b on a.cusip1 = b.prim_cusip
where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select
prim_cusip from softwarealliances where innet='0'));
```

Step6: insert the values into table delete_edge for comparision

insert into delete_edge(select a.cusip1,a.cusip2 from edgelist_2007 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step7: To get values for deciles for the companies within software industry joined with outside software industry, left join table delete_edge with withinwithout

select distinct a.cusip,a.cusip1,b.decile from delete_edge a left join withinwithout b on a.cusip=b.prim_cusip where decile is not null;

For year 2008:

Step1: Calculation of deciles based on rd value in the firmmetrics for the year 2008.

select prim_cusip,rd,rank,round(10*(cnt-rank+1)/cnt,0) as decile from (SELECT prim_cusip,rd,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,rd from firmmetrics where firm_year='2008' and rd is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

ORDER BY rd desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct;

Step2: Created table and inserted the values of the above results into the created table.

create table cusipcomp (prim_cusip varchar(5), rd double, rank int, decile int);

insert into cusipcomp (select prim_cusip,rd,rank,round(10*(cnt-rank+1)/cnt,0) as decile from

(SELECT prim_cusip,rd,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,rd from firmmetrics where firm_year='2008' and rd is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

ORDER BY rd desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct);

Step3: Join the table created with the edgelist_2008 to get the firm alliances in that year with their decile value.

select * from edgelist_2008 a inner join cusipcomp b on a.cusip1=b.prim_cusip;

Step4: Insert values into new table

create table withinwithout (cusip1 varchar(5),cusip2 varchar(5),prim_cusip varchar(5), rd double, rank int, decile int);

delete from withinwithout;

insert into withinwithout (select * from edgelist_2008 a inner join cusipcomp b on a.cusip1=b.prim_cusip);

Step5: In this step, we are dividing into deciles for the firms within software industry joined with firms outside software industry. We are assuming that cusip 1 is joining with the firm cusip2.

select a.cusip1,a.cusip2 from edgelist_2008 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step6: insert the values into table delete_edge for comparision

insert into delete_edge(select a.cusip1,a.cusip2 from edgelist_2008 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step7: To get values for deciles for the companies within software industry joined with outside software industry, left join table delete_edge with withinwithout

select distinct a.cusip,a.cusip1,b.decile from delete_edge a left join withinwithout b on a.cusip=b.prim_cusip where decile is not null;

For year 2009:

Step1: Calculation of deciles based on rd value in the firmmetrics for the year 2009.

select prim_cusip,rd,rank,round(10*(cnt-rank+1)/cnt,0) as decile from (SELECT prim_cusip,rd,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,rd from firmmetrics where firm_year='2009' and rd is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

ORDER BY rd desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct;

Step2: Created table and inserted the values of the above results into the created table.

create table cusipcomp (prim_cusip varchar(5), rd double, rank int, decile int);

insert into cusipcomp (select prim_cusip,rd,rank,round(10*(cnt-rank+1)/cnt,0) as decile from

(SELECT prim_cusip,rd,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,rd from firmmetrics where firm_year='2009' and rd is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

ORDER BY rd desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct);

Step3: Join the table created with the edgelist_2009 to get the firm alliances in that year with their decile value.

select * from edgelist_2009 a inner join cusipcomp b on a.cusip1=b.prim_cusip;

Step4: Insert values into new table

create table withinwithout (cusip1 varchar(5),cusip2 varchar(5),prim_cusip varchar(5), rd double, rank int, decile int);

delete from withinwithout;

insert into withinwithout (select * from edgelist_2009 a inner join cusipcomp b on a.cusip1=b.prim_cusip);

Step5: In this step, we are dividing into deciles for the firms within software industry joined with firms outside software industry. We are assuming that cusip 1 is joining with the firm cusip2.

select a.cusip1,a.cusip2 from edgelist_2009 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step6: insert the values into table delete_edge for comparision

insert into delete_edge(select a.cusip1,a.cusip2 from edgelist_2009 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step7: To get values for deciles for the companies within software industry joined with outside software industry, left join table delete_edge with withinwithout

select distinct a.cusip,a.cusip1,b.decile from delete_edge a left join withinwithout b on a.cusip=b.prim_cusip where decile is not null;

2. Deciles division based on Advertisments:

drop table cusipcomp;

For year 2006:

Step1: Calculation of deciles based on adv value in the firmmetrics for the year 2006.

select prim_cusip,adv,rank,round(10*(cnt-rank+1)/cnt,0) as decile from (SELECT prim_cusip,adv,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,adv from firmmetrics where firm_year='2006' and adv is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OADVER BY adv desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct;

Step2: Created table and inserted the values of the above results into the created table.

```
create table cusipcomp (prim_cusip varchar(5), adv double, rank int, decile int);

insert into cusipcomp (select prim_cusip,adv,rank,round(10*(cnt-rank+1)/cnt,0) as decile from

(SELECT  prim_cusip,adv,@curRank := @curRank + 1 AS rank

FROM      (select prim_cusip,conm,adv from firmmetrics where firm_year='2006' and adv is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OADVER BY  adv desc ) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct);
```

Step3: Join the table created with the edgelist_2006 to get the firm alliances in that year with their decile value.

```
select * from edgelist_2006 a inner join cusipcomp b on a.cusip1=b.prim_cusip;
```

Step4: Insert values into new table

```
create table withinwithout (cusip1 varchar(5),cusip2 varchar(5),prim_cusip varchar(5), adv double, rank int, decile int);

delete from withinwithout;

insert into withinwithout (select * from edgelist_2006 a inner join cusipcomp b on a.cusip1=b.prim_cusip);
```

Step5: In this step, we are dividing into deciles for the firms within software industry joined with firms outside software industry. We are assuming that cusip 1 is joining with the firm cusip2.

```
select a.cusip1,a.cusip2 from edgelist_2006 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));
```

Step6: insert the values into table delete_edge for comparision

```
insert into delete_edge(select a.cusip1,a.cusip2 from edgelist_2006 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));
```

Step7: To get values for deciles for the companies within software industry joined with outside software industry, left join table delete_edge with withinwithout

```
select distinct a.cusip,a.cusip1,b.decile from delete_edge a left join withinwithout b on a.cusip=b.prim_cusip where decile is not null;
```

For year 2007:

Step1: Calculation of deciles based on adv value in the firmmetrics for the year 2007.

select prim_cusip,adv,rank,round(10*(cnt-rank+1)/cnt,0) as decile from (SELECT prim_cusip,adv,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,adv from firmmetrics where firm_year='2007' and adv is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OADVER BY adv desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct;

Step2: Created table and inserted the values of the above results into the created table.

create table cusipcomp (prim_cusip varchar(5), adv double, rank int, decile int);

insert into cusipcomp (select prim_cusip,adv,rank,round(10*(cnt-rank+1)/cnt,0) as decile from

(SELECT prim_cusip,adv,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,adv from firmmetrics where firm_year='2007' and adv is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OADVER BY adv desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct);

Step3: Join the table created with the edgelist_2007 to get the firm alliances in that year with their decile value.

select * from edgelist_2007 a inner join cusipcomp b on a.cusip1=b.prim_cusip;

Step4: Insert values into new table

create table withinwithout (cusip1 varchar(5),cusip2 varchar(5),prim_cusip varchar(5), adv double, rank int, decile int);

delete from withinwithout;

insert into withinwithout (select * from edgelist_2007 a inner join cusipcomp b on a.cusip1=b.prim_cusip);

Step5: In this step, we are dividing into deciles for the firms within software industry joined with firms outside software industry. We are assuming that cusip 1 is joining with the firm cusip2.

select a.cusip1,a.cusip2 from edgelist_2007 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step6: insert the values into table delete_edge for comparision

insert into delete_edge(select a.cusip1,a.cusip2 from edgelist_2007 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step7: To get values for deciles for the companies within software industry joined with outside software industry, left join table delete_edge with withinwithout

select distinct a.cusip,a.cusip1,b.decile from delete_edge a left join withinwithout b on a.cusip=b.prim_cusip where decile is not null;

For year 2008:

Step1: Calculation of deciles based on adv value in the firmmetrics for the year 2008.

select prim_cusip,adv,rank,round(10*(cnt-rank+1)/cnt,0) as decile from (SELECT prim_cusip,adv,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,adv from firmmetrics where firm_year='2008' and adv is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OADVER BY adv desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct;

Step2: Created table and inserted the values of the above results into the created table.

create table cusipcomp (prim_cusip varchar(5), adv double, rank int, decile int);

insert into cusipcomp (select prim_cusip,adv,rank,round(10*(cnt-rank+1)/cnt,0) as decile from

(SELECT prim_cusip,adv,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,adv from firmmetrics where firm_year='2008' and adv is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OADVER BY adv desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct);

Step3: Join the table created with the edgelist_2008 to get the firm alliances in that year with their decile value.

select * from edgelist_2008 a inner join cusipcomp b on a.cusip1=b.prim_cusip;

Step4: Insert values into new table

create table withinwithout (cusip1 varchar(5),cusip2 varchar(5),prim_cusip varchar(5), adv double, rank int, decile int);

delete from withinwithout;

insert into withinwithout (select * from edgelist_2008 a inner join cusipcomp b on a.cusip1=b.prim_cusip);

Step5: In this step, we are dividing into deciles for the firms within software industry joined with firms outside software industry. We are assuming that cusip 1 is joining with the firm cusip2.

select a.cusip1,a.cusip2 from edgelist_2008 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step6: insert the values into table delete_edge for comparision

insert into delete_edge(select a.cusip1,a.cusip2 from edgelist_2008 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step7: To get values for deciles for the companies within software industry joined with outside software industry, left join table delete_edge with withinwithout

select distinct a.cusip,a.cusip1,b.decile from delete_edge a left join withinwithout b on a.cusip=b.prim_cusip where decile is not null;

For year 2009:

Step1: Calculation of deciles based on adv value in the firmmetrics for the year 2009.

select prim_cusip,adv,rank,round(10*(cnt-rank+1)/cnt,0) as decile from (SELECT prim_cusip,adv,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,adv from firmmetrics where firm_year='2009' and adv is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OADVER BY adv desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct;

Step2: Created table and inserted the values of the above results into the created table.

create table cusipcomp (prim_cusip varchar(5), adv double, rank int, decile int);

insert into cusipcomp (select prim_cusip,adv,rank,round(10*(cnt-rank+1)/cnt,0) as decile from

(SELECT prim_cusip,adv,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,adv from firmmetrics where firm_year='2009' and adv is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OADVER BY adv desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct);

Step3: Join the table created with the edgelist_2009 to get the firm alliances in that year with their decile value.

select * from edgelist_2009 a inner join cusipcomp b on a.cusip1=b.prim_cusip;

Step4: Insert values into new table

create table withinwithout (cusip1 varchar(5),cusip2 varchar(5),prim_cusip varchar(5), adv double, rank int, decile int);

delete from withinwithout;

insert into withinwithout (select * from edgelist_2009 a inner join cusipcomp b on a.cusip1=b.prim_cusip);

Step5: In this step, we are dividing into deciles for the firms within software industry joined with firms outside software industry. We are assuming that cusip 1 is joining with the firm cusip2.

select a.cusip1,a.cusip2 from edgelist_2009 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step6: insert the values into table delete_edge for comparision

insert into delete_edge(select a.cusip1,a.cusip2 from edgelist_2009 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step7: To get values for deciles for the companies within software industry joined with outside software industry, left join table delete_edge with withinwithout

select distinct a.cusip,a.cusip1,b.decile from delete_edge a left join withinwithout b on a.cusip=b.prim_cusip where decile is not null;

3. Deciles division based on Physical capacity investments:

drop table cusipcomp;

For year 2006:

Step1: Calculation of deciles based on physcap value in the firmmetrics for the year 2006.

select prim_cusip,physcap,rank,round(10*(cnt-rank+1)/cnt,0) as decile from (SELECT prim_cusip,physcap,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,physcap from firmmetrics where firm_year='2006' and physcap is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OPHYSCAPER BY physcap desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct;

Step2: Created table and inserted the values of the above results into the created table.

```
create table cusipcomp (prim_cusip varchar(5), physcap double, rank int, decile int);

insert into cusipcomp (select prim_cusip,physcap,rank,round(10*(cnt-rank+1)/cnt,0) as decile from

(SELECT  prim_cusip,physcap,@curRank := @curRank + 1 AS rank

FROM      (select prim_cusip,conm,physcap from firmmetrics where firm_year='2006' and physcap is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OPHYSCAPER BY  physcap desc ) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct);
```

Step3: Join the table created with the edgelist_2006 to get the firm alliances in that year with their decile value.

```
select * from edgelist_2006 a inner join cusipcomp b on a.cusip1=b.prim_cusip;
```

Step4: Insert values into new table

```
create table withinwithout (cusip1 varchar(5),cusip2 varchar(5),prim_cusip varchar(5), physcap double, rank int, decile int);

delete from withinwithout;

insert into withinwithout (select * from edgelist_2006 a inner join cusipcomp b on a.cusip1=b.prim_cusip);
```

Step5: In this step, we are dividing into deciles for the firms within software industry joined with firms outside software industry. We are assuming that cusip 1 is joining with the firm cusip2.

```
select a.cusip1,a.cusip2 from edgelist_2006 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));
```

Step6: insert the values into table delete_edge for comparision

```
insert into delete_edge(select a.cusip1,a.cusip2 from edgelist_2006 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));
```

Step7: To get values for deciles for the companies within software industry joined with outside software industry, left join table delete_edge with withinwithout

```
select distinct a.cusip,a.cusip1,b.decile from delete_edge a left join withinwithout b on a.cusip=b.prim_cusip where decile is not null;
```

For year 2007:

Step1: Calculation of deciles based on physcap value in the firmmetrics for the year 2007.

select prim_cusip,physcap,rank,round(10*(cnt-rank+1)/cnt,0) as decile from (SELECT prim_cusip,physcap,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,physcap from firmmetrics where firm_year='2007' and physcap is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OPHYSCAPER BY physcap desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct;

Step2: Created table and inserted the values of the above results into the created table.

create table cusipcomp (prim_cusip varchar(5), physcap double, rank int, decile int);

insert into cusipcomp (select prim_cusip,physcap,rank,round(10*(cnt-rank+1)/cnt,0) as decile from

(SELECT prim_cusip,physcap,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,physcap from firmmetrics where firm_year='2007' and physcap is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OPHYSCAPER BY physcap desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct);

Step3: Join the table created with the edgelist_2007 to get the firm alliances in that year with their decile value.

select * from edgelist_2007 a inner join cusipcomp b on a.cusip1=b.prim_cusip;

Step4: Insert values into new table

create table withinwithout (cusip1 varchar(5),cusip2 varchar(5),prim_cusip varchar(5), physcap double, rank int, decile int);

delete from withinwithout;

insert into withinwithout (select * from edgelist_2007 a inner join cusipcomp b on a.cusip1=b.prim_cusip);

Step5: In this step, we are dividing into deciles for the firms within software industry joined with firms outside software industry. We are assuming that cusip 1 is joining with the firm cusip2.

select a.cusip1,a.cusip2 from edgelist_2007 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step6: insert the values into table delete_edge for comparision

insert into delete_edge(select a.cusip1,a.cusip2 from edgelist_2007 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step7: To get values for deciles for the companies within software industry joined with outside software industry, left join table delete_edge with withinwithout

select distinct a.cusip,a.cusip1,b.decile from delete_edge a left join withinwithout b on a.cusip=b.prim_cusip where decile is not null;

For year 2008:

Step1: Calculation of deciles based on physcap value in the firmmetrics for the year 2008.

select prim_cusip,physcap,rank,round(10*(cnt-rank+1)/cnt,0) as decile from (SELECT prim_cusip,physcap,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,physcap from firmmetrics where firm_year='2008' and physcap is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OPHYSCAPER BY physcap desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct;

Step2: Created table and inserted the values of the above results into the created table.

create table cusipcomp (prim_cusip varchar(5), physcap double, rank int, decile int);

insert into cusipcomp (select prim_cusip,physcap,rank,round(10*(cnt-rank+1)/cnt,0) as decile from

(SELECT prim_cusip,physcap,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,physcap from firmmetrics where firm_year='2008' and physcap is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OPHYSCAPER BY physcap desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct);

Step3: Join the table created with the edgelist_2008 to get the firm alliances in that year with their decile value.

select * from edgelist_2008 a inner join cusipcomp b on a.cusip1=b.prim_cusip;

Step4: Insert values into new table

create table withinwithout (cusip1 varchar(5),cusip2 varchar(5),prim_cusip varchar(5), physcap double, rank int, decile int);

delete from withinwithout;

insert into withinwithout (select * from edgelist_2008 a inner join cusipcomp b on a.cusip1=b.prim_cusip);

Step5: In this step, we are dividing into deciles for the firms within software industry joined with firms outside software industry. We are assuming that cusip 1 is joining with the firm cusip2.

select a.cusip1,a.cusip2 from edgelist_2008 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step6: insert the values into table delete_edge for comparision

insert into delete_edge(select a.cusip1,a.cusip2 from edgelist_2008 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step7: To get values for deciles for the companies within software industry joined with outside software industry, left join table delete_edge with withinwithout

select distinct a.cusip,a.cusip1,b.decile from delete_edge a left join withinwithout b on a.cusip=b.prim_cusip where decile is not null;

For year 2009:

Step1: Calculation of deciles based on physcap value in the firmmetrics for the year 2009.

select prim_cusip,physcap,rank,round(10*(cnt-rank+1)/cnt,0) as decile from (SELECT prim_cusip,physcap,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,physcap from firmmetrics where firm_year='2009' and physcap is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OPHYSCAPER BY physcap desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct;

Step2: Created table and inserted the values of the above results into the created table.

create table cusipcomp (prim_cusip varchar(5), physcap double, rank int, decile int);

insert into cusipcomp (select prim_cusip,physcap,rank,round(10*(cnt-rank+1)/cnt,0) as decile from

(SELECT prim_cusip,physcap,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,physcap from firmmetrics where firm_year='2009' and physcap is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OPHYSCAPER BY physcap desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct);

Step3: Join the table created with the edgelist_2009 to get the firm alliances in that year with their decile value.

select * from edgelist_2009 a inner join cusipcomp b on a.cusip1=b.prim_cusip;

Step4: Insert values into new table

create table withinwithout (cusip1 varchar(5),cusip2 varchar(5),prim_cusip varchar(5), physcap double, rank int, decile int);

delete from withinwithout;

insert into withinwithout (select * from edgelist_2009 a inner join cusipcomp b on a.cusip1=b.prim_cusip);

Step5: In this step, we are dividing into deciles for the firms within software industry joined with firms outside software industry. We are assuming that cusip 1 is joining with the firm cusip2.

select a.cusip1,a.cusip2 from edgelist_2009 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step6: insert the values into table delete_edge for comparision

insert into delete_edge(select a.cusip1,a.cusip2 from edgelist_2009 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step7: To get values for deciles for the companies within software industry joined with outside software industry, left join table delete_edge with withinwithout

select distinct a.cusip,a.cusip1,b.decile from delete_edge a left join withinwithout b on a.cusip=b.prim_cusip where decile is not null;

4. Deciles division based on Employees:

drop table cusipcomp;

For year 2006:

Step1: Calculation of deciles based on employees value in the firmmetrics for the year 2006.

select prim_cusip,employees,rank,round(10*(cnt-rank+1)/cnt,0) as decile from (SELECT prim_cusip,employees,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,employees from firmmetrics where firm_year='2006' and employees is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OEMPLOYEESER BY employees desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct;

Step2: Created table and inserted the values of the above results into the created table.

create table cusipcomp (prim_cusip varchar(5), employees double, rank int, decile int);

insert into cusipcomp (select prim_cusip,employees,rank,round(10*(cnt-rank+1)/cnt,0) as decile from

(SELECT prim_cusip,employees,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,employees from firmmetrics where firm_year='2006' and employees is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OEMPLOYEESER BY employees desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct);

Step3: Join the table created with the edgelist_2006 to get the firm alliances in that year with their decile value.

select * from edgelist_2006 a inner join cusipcomp b on a.cusip1=b.prim_cusip;

Step4: Insert values into new table

create table withinwithout (cusip1 varchar(5),cusip2 varchar(5),prim_cusip varchar(5), employees double, rank int, decile int);

delete from withinwithout;

insert into withinwithout (select * from edgelist_2006 a inner join cusipcomp b on a.cusip1=b.prim_cusip);

Step5: In this step, we are dividing into deciles for the firms within software industry joined with firms outside software industry. We are assuming that cusip 1 is joining with the firm cusip2.

select a.cusip1,a.cusip2 from edgelist_2006 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step6: insert the values into table delete_edge for comparision

insert into delete_edge(select a.cusip1,a.cusip2 from edgelist_2006 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step7: To get values for deciles for the companies within software industry joined with outside software industry, left join table delete_edge with withinwithout

select distinct a.cusip,a.cusip1,b.decile from delete_edge a left join withinwithout b on a.cusip=b.prim_cusip where decile is not null;

For year 2007:

Name: Sai Lahari Jalaparthi UIN: 658795799

Step1: Calculation of deciles based on employees value in the firmmetrics for the year 2007.

```
select prim_cusip,employees,rank,round(10*(cnt-rank+1)/cnt,0) as decile from  (SELECT
prim_cusip,employees,@curRank := @curRank + 1 AS rank

FROM      (select prim_cusip,conm,employees from firmmetrics where firm_year='2007' and employees
is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OEMPLOYEESER BY  employees desc ) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct;
```

Step2: Created table and inserted the values of the above results into the created table.

```
create table cusipcomp (prim_cusip varchar(5), employees double, rank int, decile int);

insert into cusipcomp (select prim_cusip,employees,rank,round(10*(cnt-rank+1)/cnt,0) as decile from

(SELECT  prim_cusip,employees,@curRank := @curRank + 1 AS rank

FROM      (select prim_cusip,conm,employees from firmmetrics where firm_year='2007' and employees
is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OEMPLOYEESER BY  employees desc ) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct);
```

Step3: Join the table created with the edgelist_2007 to get the firm alliances in that year with their decile value.

```
select * from edgelist_2007 a inner join cusipcomp b on a.cusip1=b.prim_cusip;
```

Step4: Insert values into new table

```
create table withinwithout (cusip1 varchar(5),cusip2 varchar(5),prim_cusip varchar(5), employees
double, rank int, decile int);

delete from withinwithout;

insert into withinwithout (select * from edgelist_2007 a inner join cusipcomp b on
a.cusip1=b.prim_cusip);
```

Step5: In this step, we are dividing into deciles for the firms within software industry joined with firms outside software industry. We are assuming that cusip 1 is joining with the firm cusip2.

```
select a.cusip1,a.cusip2 from edgelist_2007 a left join softwarealliances b on a.cusip1 = b.prim_cusip
where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select
prim_cusip from softwarealliances where innet='0'));
```

Step6: insert the values into table delete_edge for comparision

insert into delete_edge(select a.cusip1,a.cusip2 from edgelist_2007 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step7: To get values for deciles for the companies within software industry joined with outside software industry, left join table delete_edge with withinwithout

select distinct a.cusip,a.cusip1,b.decile from delete_edge a left join withinwithout b on a.cusip=b.prim_cusip where decile is not null;

For year 2008:

Step1: Calculation of deciles based on employees value in the firmmetrics for the year 2008.

select prim_cusip,employees,rank,round(10*(cnt-rank+1)/cnt,0) as decile from (SELECT prim_cusip,employees,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,employees from firmmetrics where firm_year='2008' and employees is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OEMPLOYEESER BY employees desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct;

Step2: Created table and inserted the values of the above results into the created table.

create table cusipcomp (prim_cusip varchar(5), employees double, rank int, decile int);

insert into cusipcomp (select prim_cusip,employees,rank,round(10*(cnt-rank+1)/cnt,0) as decile from

(SELECT prim_cusip,employees,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,employees from firmmetrics where firm_year='2008' and employees is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OEMPLOYEESER BY employees desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct);

Step3: Join the table created with the edgelist_2008 to get the firm alliances in that year with their decile value.

select * from edgelist_2008 a inner join cusipcomp b on a.cusip1=b.prim_cusip;

Step4: Insert values into new table

create table withinwithout (cusip1 varchar(5),cusip2 varchar(5),prim_cusip varchar(5), employees double, rank int, decile int);

delete from withinwithout;

insert into withinwithout (select * from edgelist_2008 a inner join cusipcomp b on a.cusip1=b.prim_cusip);

Step5: In this step, we are dividing into deciles for the firms within software industry joined with firms outside software industry. We are assuming that cusip 1 is joining with the firm cusip2.

select a.cusip1,a.cusip2 from edgelist_2008 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step6: insert the values into table delete_edge for comparision

insert into delete_edge(select a.cusip1,a.cusip2 from edgelist_2008 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step7: To get values for deciles for the companies within software industry joined with outside software industry, left join table delete_edge with withinwithout

select distinct a.cusip,a.cusip1,b.decile from delete_edge a left join withinwithout b on a.cusip=b.prim_cusip where decile is not null;

For year 2009:

Step1: Calculation of deciles based on employees value in the firmmetrics for the year 2009.

select prim_cusip,employees,rank,round(10*(cnt-rank+1)/cnt,0) as decile from (SELECT prim_cusip,employees,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,employees from firmmetrics where firm_year='2009' and employees is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OEMPLOYEESER BY employees desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct;

Step2: Created table and inserted the values of the above results into the created table.

create table cusipcomp (prim_cusip varchar(5), employees double, rank int, decile int);

insert into cusipcomp (select prim_cusip,employees,rank,round(10*(cnt-rank+1)/cnt,0) as decile from

(SELECT prim_cusip,employees,@curRank := @curRank + 1 AS rank

FROM (select prim_cusip,conm,employees from firmmetrics where firm_year='2009' and employees is not null group by prim_cusip,conm)

p, (SELECT @curRank := 0) r

OEMPLOYEESER BY employees desc) as dt,(select count(distinct prim_cusip) as cnt from

firmmetrics) as ct);

Step3: Join the table created with the edgelist_2009 to get the firm alliances in that year with their decile value.

select * from edgelist_2009 a inner join cusipcomp b on a.cusip1=b.prim_cusip;

Step4: Insert values into new table

create table withinwithout (cusip1 varchar(5),cusip2 varchar(5),prim_cusip varchar(5), employees double, rank int, decile int);

delete from withinwithout;

insert into withinwithout (select * from edgelist_2009 a inner join cusipcomp b on a.cusip1=b.prim_cusip);

Step5: In this step, we are dividing into deciles for the firms within software industry joined with firms outside software industry. We are assuming that cusip 1 is joining with the firm cusip2.

select a.cusip1,a.cusip2 from edgelist_2009 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step6: insert the values into table delete_edge for comparision

insert into delete_edge(select a.cusip1,a.cusip2 from edgelist_2009 a left join softwarealliances b on a.cusip1 = b.prim_cusip where a.cusip1 in (select prim_cusip from softwarealliances where innet='1') and a.cusip2 in (select prim_cusip from softwarealliances where innet='0'));

Step7: To get values for deciles for the companies within software industry joined with outside software industry, left join table delete_edge with withinwithout

select distinct a.cusip,a.cusip1,b.decile from delete_edge a left join withinwithout b on a.cusip=b.prim_cusip where decile is not null;

5. Calculation of investments capacity based on rd,adv and physcap:

Step1: Calculation of investment capacity for firms in the firmmetrics

Investment capacity = $\frac{rd+adv+physcap}{total\ assests}$

select prim_cusip, conm, firm_year, ((rd+adv+physcap)/total_assets) as investmentcapacity from firmmetrics group by prim_cusip, conm, firm_year having investmentcapacity is not null

Step2: Create table and insert those values

create table investcap (prim_cusip varchar(5),conm varchar(100), firm_year int, investmentcapacity double);

insert into investcap (select prim_cusip, conm, firm_year, ((rd+adv+physcap)/total_assets) as investmentcapacity from firmmetrics group by prim_cusip, conm, firm_year having investmentcapacity is not null);

Step3: Join the table with the edgelist_year to get investment capacity of the firms in that year and count the firm by grouping the cusip

select cusip1, investmentcapacity, count(cusip1) from edgelist_2006 a inner join investcap b on a.cusip1=b.prim_cusip and firm_year ='2006' group by cusip1 ;

select cusip1, investmentcapacity, count(cusip1) from edgelist_2007 a inner join investcap b on a.cusip1=b.prim_cusip and firm_year ='2007' group by cusip1 ;

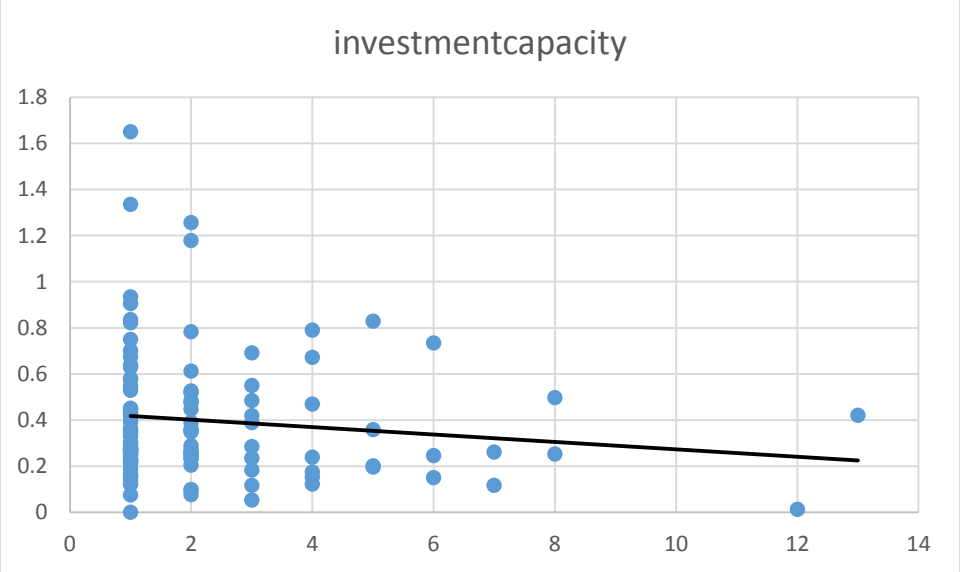
select cusip1, investmentcapacity, count(cusip1) from edgelist_2008 a inner join investcap b on a.cusip1=b.prim_cusip and firm_year ='2008' group by cusip1 ;

select cusip1, investmentcapacity, count(cusip1) from edgelist_2009 a inner join investcap b on a.cusip1=b.prim_cusip and firm_year ='2009' group by cusip1 ;

Graphical analysis:

The tables below are plotted for the Investment capacity against the number of alliances formed by a company in that year. The company details are omitted here for the purpose of the study. Each observation represents a particular company

For year 2006:



The simple linear regression line here shows a weak linear relationship. Even if a curvilinear graph is plotted for the data it follows a negative proportionality. That is, for the increase in the number of alliances there is a dramatic decrease in the investment capacity of a company. The linear regression is just an approximation to show the relation but should not be considered for interpreting actual results.

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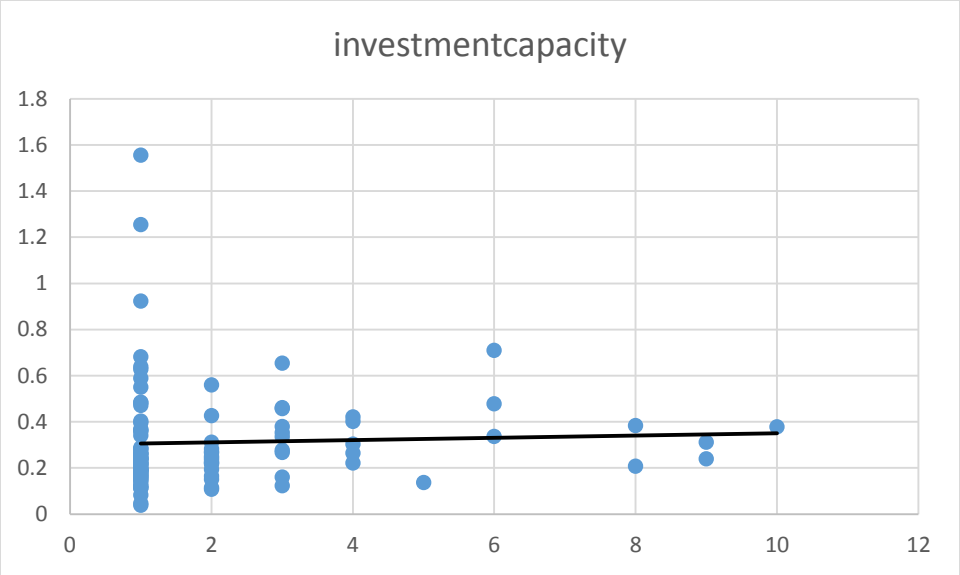
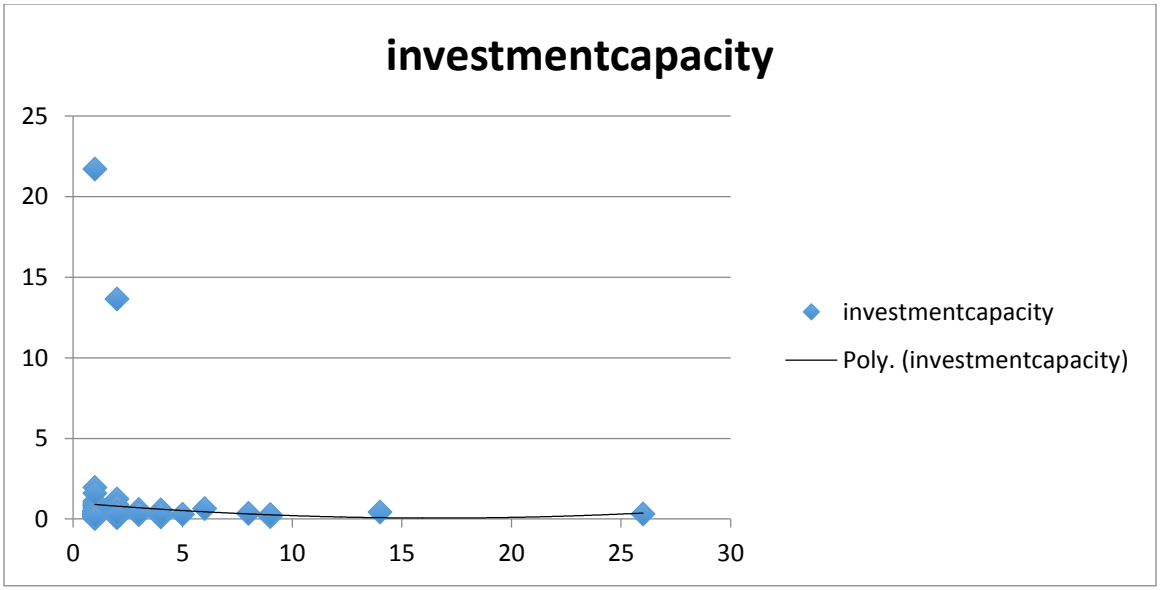
For year 2007:



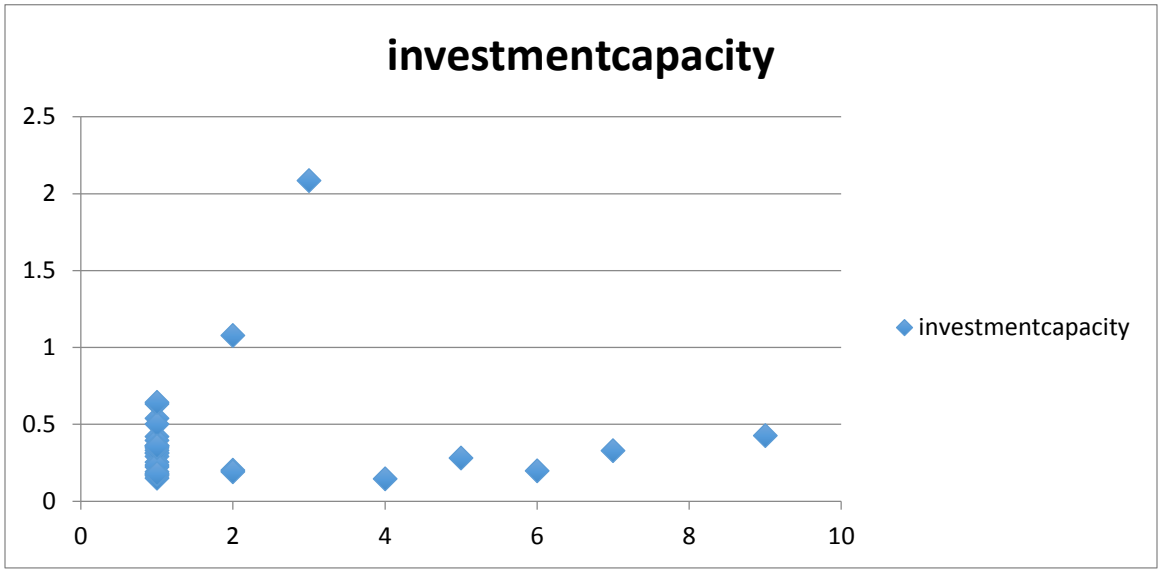
The above table is plotted for the Investment capacity against the number of alliances formed by a company in that year. The company details are omitted here for the purpose of the study. Each observation represents a particular company. The simple linear regression line here shows a weak linear relationship. Even if a curvilinear graph is plotted for the data it follows a negative proportionality. That is, for the increase in the number of alliances there is a dramatic decrease in the investment capacity of a company. The linear regression is just an approximation to show the relation but should not be considered for interpreting actual results.

For the Year 2008:



The same can also observed here. In this case instead of a linear curve a polynomial curve is used for approximation.

For the Year 2009:



By observation it can be concluded that with the increase in the number of alliances a company tends to decrease its investment capacity. Here, the parameter investment capacity must be analyzed before any conclusion about the analysis is made. The amount invested in R&D, the physical capital of a company and the amounts spent in advertisements are all added together and the ratio of this sum to the total assets is found out. This ratio is the investment capacity. It is calculated to measure the proportion of the investment made out of the total investments. Thus an investment capacity of 0.8 indicates that about 80% of the total investment is made for the alliance.

Another interesting point to be noted here is that, a major chunk of the companies are found to be spending more even though the number of alliances made is found to be less than 2.

Note: The values whose investment capacity is more than 1 are outliers and are neglected in this study.

Question b:

Step1: Calculation of tobinsq value for the firms in the firmmetrics

select prim_cusip,conm,firm_year,((pref_stock+(stock_prices*sharesout)+current_liabilities-currassets+invent+itdebt)/(total_assets)) as tobinsq from firmmetrics group by prim_cusip, conm, firm_year having tobinsq is not null

Step2: Create table and insert values

create table tobin (prim_cusip varchar(5),conm varchar(100),firm_year int,tobinsq double);

insert into tobin(select
prim_cusip,conm,firm_year,((pref_stock+(stock_prices*sharesout)+current_liabilities-

currassets+invent+itdebt)/(total_assets)) as tobinsq from firmmetrics group by prim_cusip, conm, firm_year having tobinsq is not null);

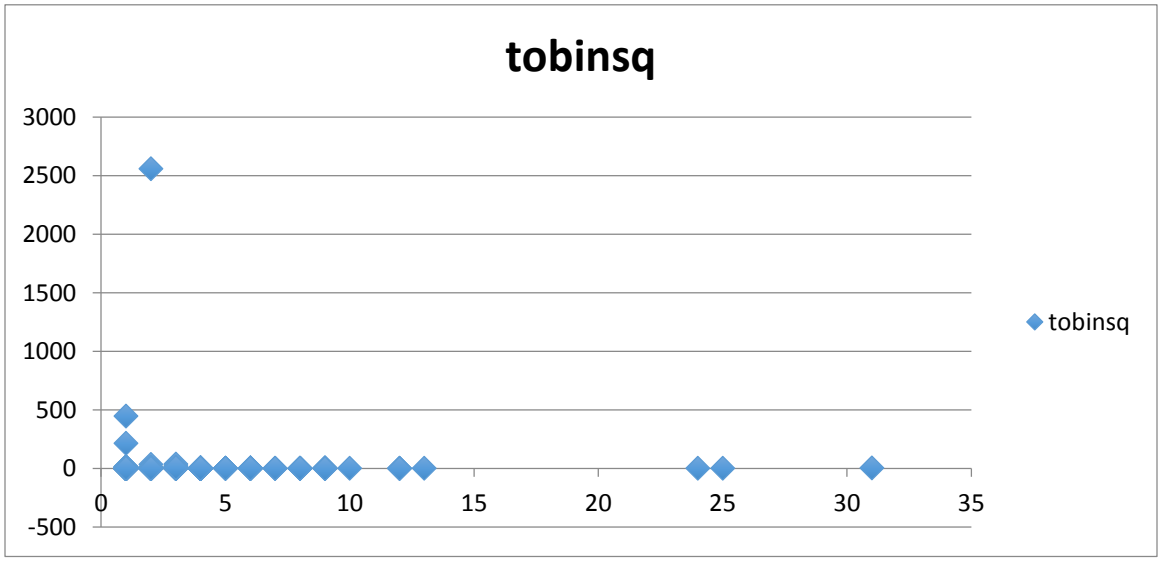
Step3: For the firms present in the edgelist_year joining with the tobin table to get tobinsq value for the firm in the edgelist_year

```
select a.cusip1, b.tobinsq, count(a.cusip1)  from edgelist_2006 a inner join tobin b on
a.cusip1=b.prim_cusip and firm_year ='2006' group by a.cusip1;

select a.cusip1, b.tobinsq, count(a.cusip1)  from edgelist_2007 a inner join tobin b on
a.cusip1=b.prim_cusip and firm_year ='2007' group by a.cusip1;

select a.cusip1, b.tobinsq, count(a.cusip1)  from edgelist_2008 a inner join tobin b on
a.cusip1=b.prim_cusip and firm_year ='2008' group by a.cusip1;

select a.cusip1, b.tobinsq, count(a.cusip1)  from edgelist_2009 a inner join tobin b on
a.cusip1=b.prim_cusip and firm_year ='2009' group by a.cusip1;
```

Analysis:

A similar analysis that was made earlier is used here except for the fact that the parameter used here is the tobin's Q index that is used to measure the performance of a company. We shall study the graphs plotted for tobin's Q value against the count of joint alliances made by a company.

For the Year 2006:



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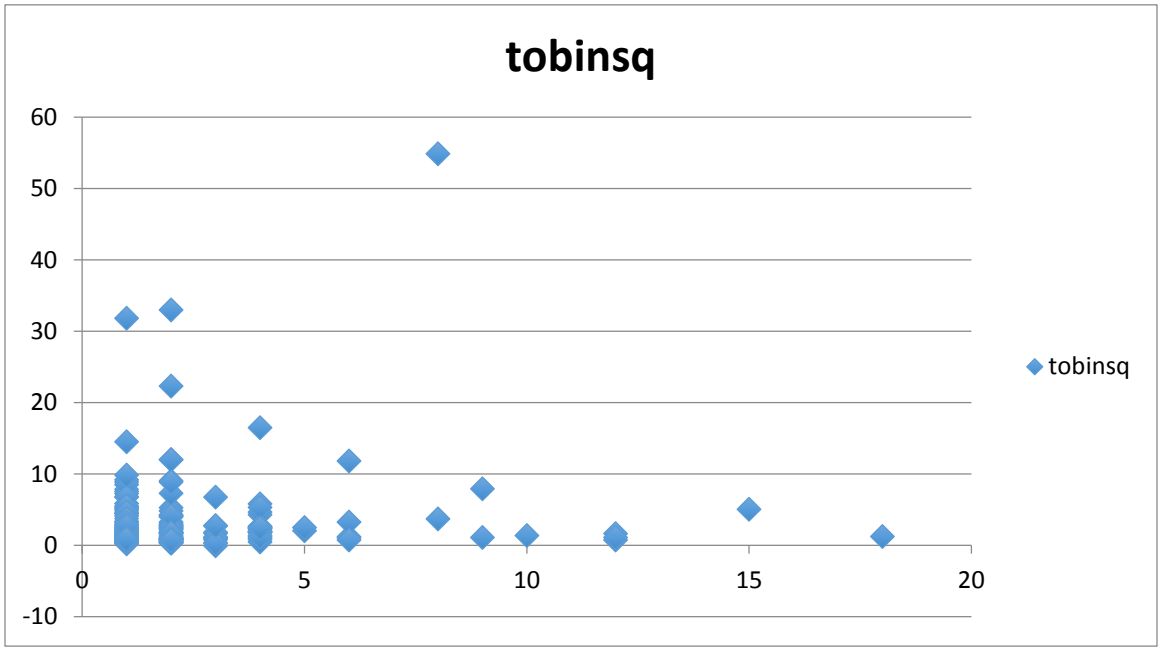
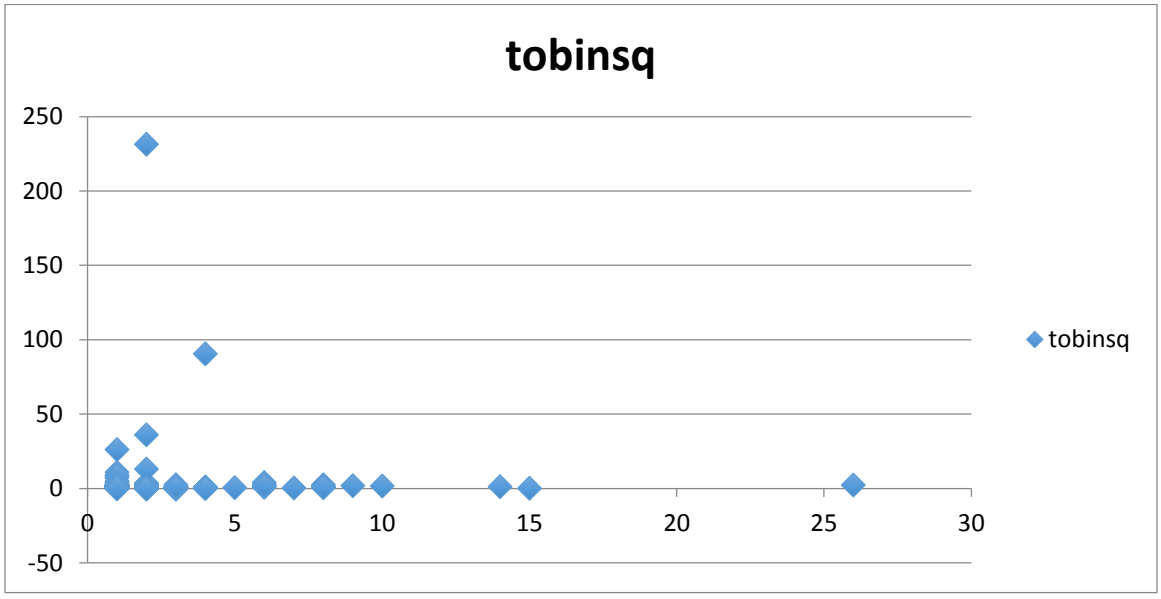
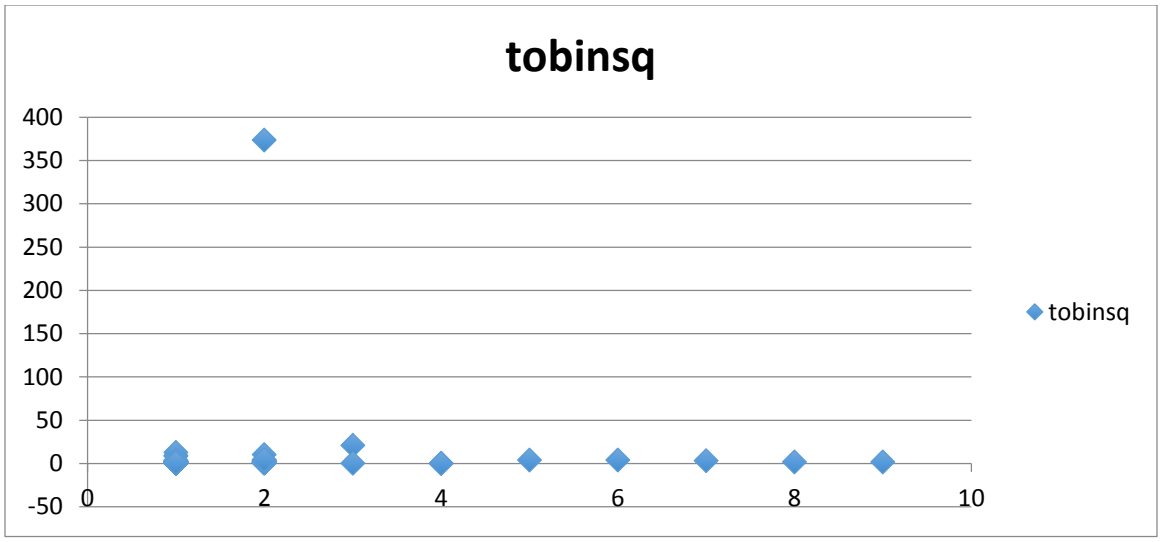
For the Year 2007:



For the Year 2008:



For the Year 2009:



Question C:

Step1: Calculation of the tobinsq value for the firms and retrieving the firms along with naics id's.

select prim_cusip,conm,firm_year,((pref_stock+(stock_prices*sharesout)+current_liabilities-currassets+invent+itdebt)/(total_assets)) as tobinsq, naics2d from firmmetrics group by prim_cusip, conm, firm_year having tobinsq is not null

Step2: alter table and insert the values

Aalter table tobin add column nacis2d int;

delete from tobin;

insert into tobin(select prim_cusip,conm,firm_year,((pref_stock+(stock_prices*sharesout)+current_liabilities-currassets+invent+itdebt)/(total_assets)) as tobinsq, naics2d from firmmetrics group by prim_cusip, conm, firm_year having tobinsq is not null);

Step3: For the edgelist_year tables join the tables with tobin with the cusip numbers

select a.cusip1,a.cusip2, b.tobinsq, b.nacis2d from edgelist_2006 a inner join tobin b on a.cusip1=b.prim_cusip and firm_year='2006';

select a.cusip1,a.cusip2, b.tobinsq, b.nacis2d from edgelist_2007 a inner join tobin b on a.cusip1=b.prim_cusip and firm_year='2007';

select a.cusip1,a.cusip2, b.tobinsq, b.nacis2d from edgelist_2008 a inner join tobin b on a.cusip1=b.prim_cusip and firm_year='2008';

select a.cusip1,a.cusip2, b.tobinsq, b.nacis2d from edgelist_2009 a inner join tobin b on a.cusip1=b.prim_cusip and firm_year='2009';

When we observe the values some of the firms are having different naics2d different for the same year. This is because naics2d is not a unique value for more accurate results we there by referred to naics4d.

Step4: Calculating tobinsq value for the firms in the firmmetrics and retrieving the results along with naics4d

```
create table tobin1 (prim_cusip varchar(5),conm varchar(100),firm_year int,tobinsq double,nacis4d int);

insert into tobin1(select
prim_cusip,conm,firm_year,((pref_stock+(stock_prices*sharesout)+current_liabilities-
currassets+invent+itdebt)/(total_assets)) as tobinsq, naics4d from firmmetrics group by prim_cusip,
conm, firm_year having tobinsq is not null);
```

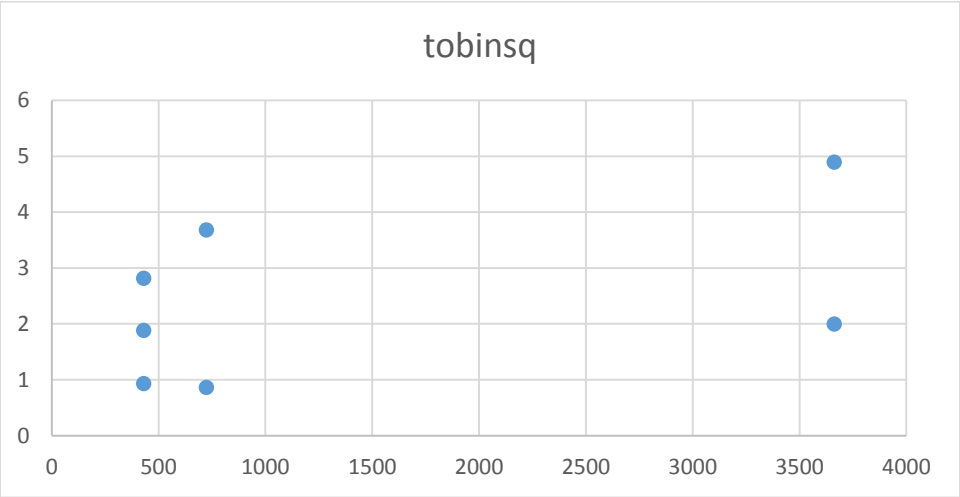
Step5: For the edgelist_year tables join the tables with tobin with the cusip numbers and naics4d

```
select a.cusip1,a.cusip2, b.tobinsq, b.nacis4d from edgelist_2006 a inner join tobin1 b on
a.cusip1=b.prim_cusip and firm_year='2006';

select a.cusip1,a.cusip2, b.tobinsq, b.nacis4d from edgelist_2006 a inner join tobin1 b on
a.cusip1=b.prim_cusip and firm_year='2007';

select a.cusip1,a.cusip2, b.tobinsq, b.nacis4d from edgelist_2006 a inner join tobin1 b on
a.cusip1=b.prim_cusip and firm_year='2008';

select a.cusip1,a.cusip2, b.tobinsq, b.nacis4d from edgelist_2006 a inner join tobin1 b on
a.cusip1=b.prim_cusip and firm_year='2009';
```

Analysis:

For the study we are considering only the firms that are joined with other firms that differ with naics4d.

2006:



From the above we observe that for a firm with different naics4d they have different performance measures. The dot represents the naics4d for each firm with different tobinsq. Performance varies depending on the firms they had joined

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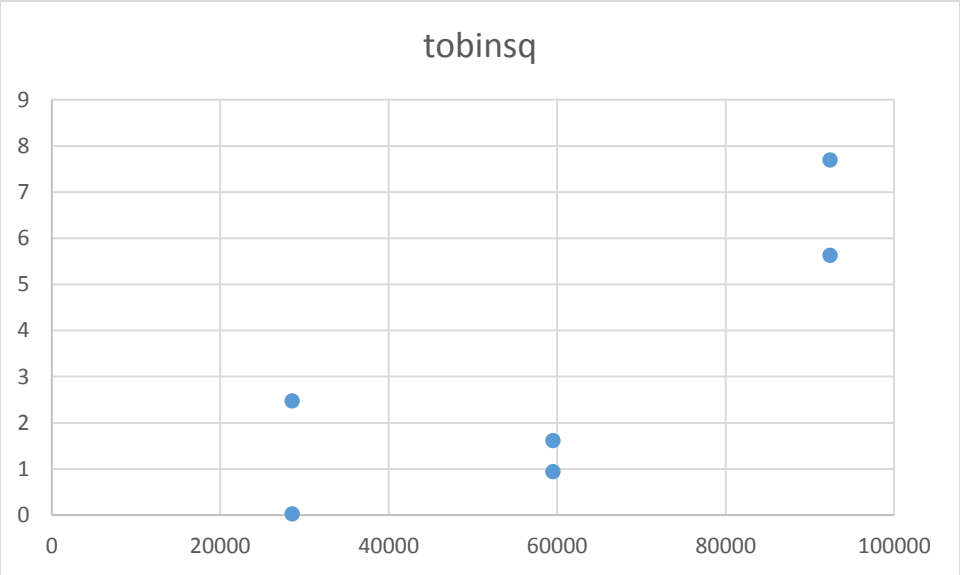
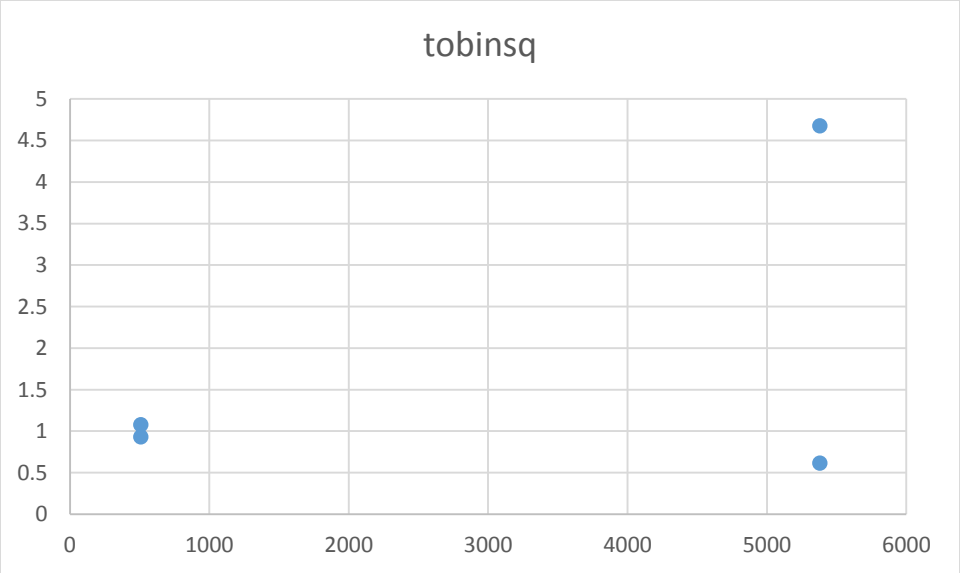
Similarly for the years 2007, 2008, 2009

2007:



2008:



2009:

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