

The 8th IP Seminar Business Intellectual Property: Strategy and Innovation

Patent Financing

Moderator: Dr. Yuanjia HU, University of Macau

August 5 & 6, 2016

Hong Kong

Introduction

- **Mr. Jie Ji** – Director of Hengqin International Intellectual Property Rights Exchange Center
Explorations and Practices on the Financing of Intellectual Property
- **Dr. Zhongfa MA** – Professor of Fudan University Law School in China
Legal Issues on Patent Pledge Financing in China
- **Dr. Defang OUYANG** – Assistant Professor of University of Macau
Big Data Analysis of Global Literature and Patents in Pharmaceuticals and Drug Delivery Area
- **Dr. Yongkang HUANG** – Senior Accountant and CPA of Tianjin Xingtai Certified Public Valuation
An Introduction of Intellectual Property Pledge in the Mainland of China
- **Dr. Yuanjia HU** – Assistant Professor of University of Macau
Patent Financing in China: An Empirical Study of Company X

Patent Financing in China: An Empirical Study of Company X

專利金融在中國：公司X的實證研究

Speaker: Dr. Yuanjia HU, University of Macau

August 5, 2016; HK

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Outline

Introduction

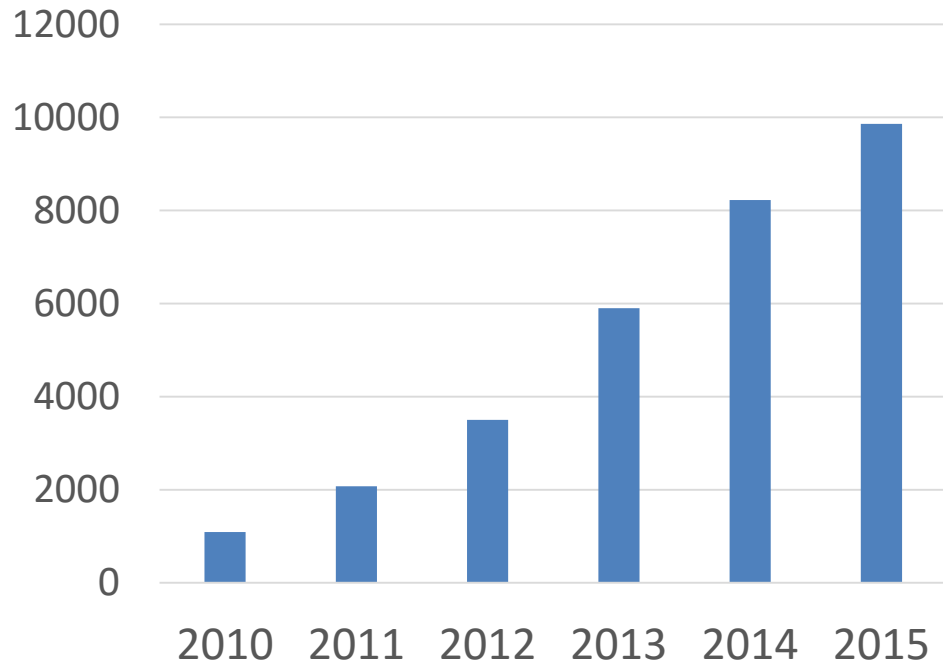
Methodology

Results

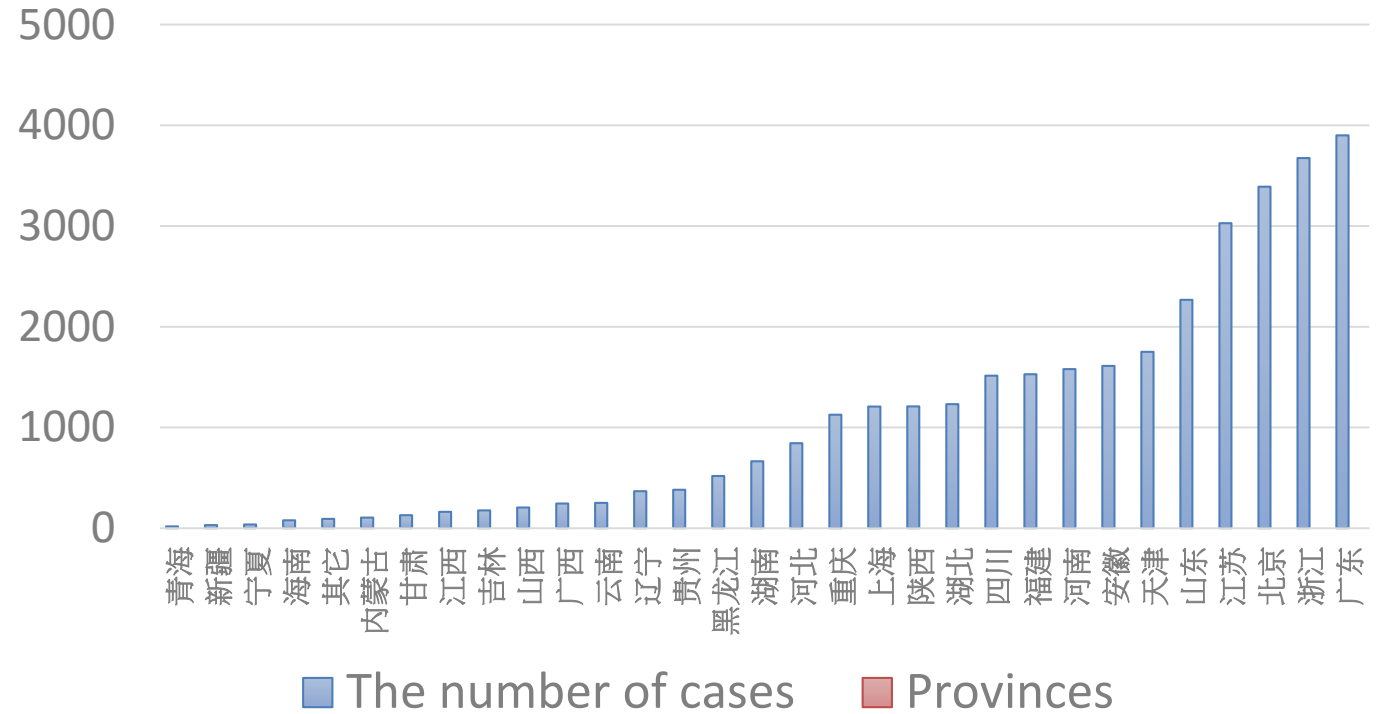
Future work

Introduction

The number of patent pledges

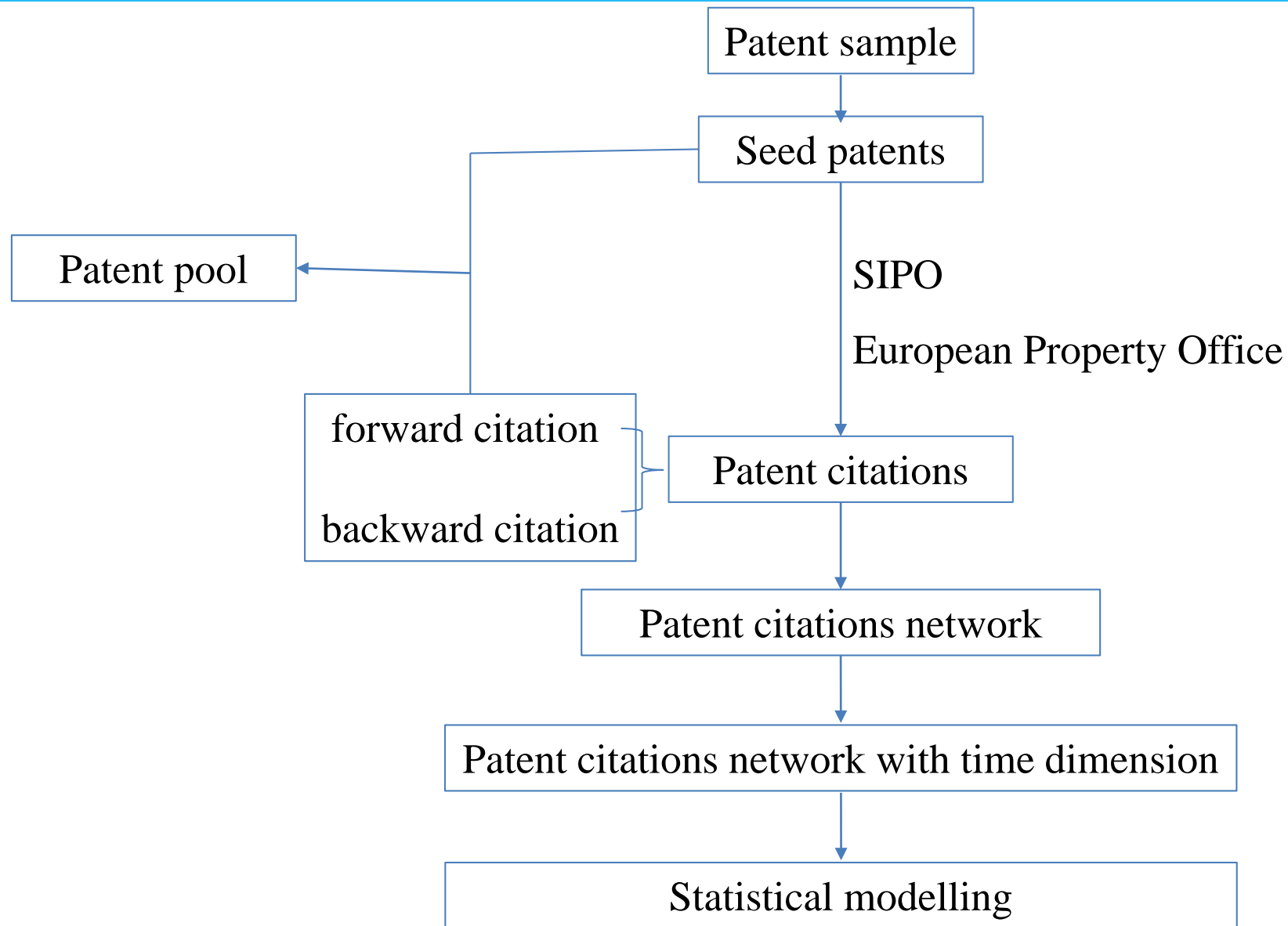


Regional distribution



Data source: SIPO

Methodology



Original data

name	firm	patent commerci alization	revenue	profit	Year	value	benchmar k year	effective duration	Patent No.	Trademark No.	know how	copyrigh t	clinical aproval	BC	FC	FS	CL
宋宝刚先生	0.00	0	NA	NA	2015.00	27530000.00	2014.00	1.00	NA	0.00	0	0	0	0	0	0	0
天津大学	0.00	0	NA	NA	2015.00	140094.00	2014.00	1.00	14.00	0	0	0	0				65
天津普德科技有限公司	1.00	1	31621046.64	10887620.96	2015.00	11600000.00	2015.00	1.00	1	0	0	1	0	0.00	0.00	1.00	2.00
天津天堰科技股份有限公司	1.00	1	246898087.15	61619388.71	2015.00	74337800.00	2014.00	1.00	4	12	0	0	0	20	0	8	9
天津纳艾杰尔科技有限公司	1.00	1	12618546.14	3312628.62	2015.00	13603400.00	2013.00	1.00	1	0	0	0	0	4	16	2	9.00
中国石油大学(北京)	0.00	0	NA	NA	2015.00	176256.00	2015.00	1.00	4.00	0	0	0	0	23	1	6	28
天津天堰科技股份有限公司	1.00	1	246898087.15	61619388.71	2015.00	8510200.00	2005.00	1.00	5	0	0	0	0	0	0	5	23
天津德中技术发展有限公司	1	1	NA	NA	2014.00	1120000.00	2013.00	1.00	0	0	0	1	0	0	0	0	0
			⋮			⋮					⋮						
天津和盛食品有限公司	1	1	NA	NA	2009.00	NA	2009.00	1.00	0	1	0	0	0	0	0	0	0
王安刚先生	0	1	NA	NA	2008.00	7050000.00	2008.00	1.00	2	0	0	0	0				6
天津德格机械设			1.00	1737125.00	2008.00	4350000.00	2007.00	1.00	1	0	0	0	0				1.00
				NA	2007.00	3710000.00	2007.00	1.00	0	0	1	0	0				0
				NA	2005.00	4350000.00	2005.00	1.00	1	0	0	0	0				0

17 Variables

48 Observations

48-by-17 Matrix

General results

Table 1: Descriptive Statistics

Variable	mean	standard deviation	maximum	minimum
Value	26422479	37543765	201570000	140094
Firm	0.81	NA	1	0
Patent commercialization	0.94	NA	1	0
Revenue	56200109	78833520	246898087	1153846
Profit	11838096	19600801	61619389	-3719828
Year	2012	2.37	2015	2005
Benchmark year	2012	2.37	2015	2005
Effective duration	1	NA	1	0
Patent No.	2.66	3.01	14.00	0.00
Trademark No.	0.50	1.95	12.00	0.00
Know how	0.06	NA	1	0
Copyright	0.04	NA	1	0
Clinical approval	0.02	NA	1	0
BC	6.04	10.71	50.00	0.00
FC	4.09	8.13	40.00	0.00
FS	4.08	5.72	28.00	0.00
CL	10.10	12.92	65.00	0.00

Results

Table 2: Modelling results

Dependent Variable: LOG(VALUE)

Method: Least Squares

Sample: 1 48

Variable	t-Statistic	Prob.
FIRM	2.492129	0.0166
FIRM*FC	2.026773	0.0489
C	27.2614	0.0000
R-squared		0.24502
Adjusted R-squared		0.209905
Durbin-Watson stat		2.415384

Variable	t-Statistic	Prob.
FIRM	3.107093	0.0033
C	26.56223	0.0000
R-squared		0.176639
Adjusted R-squared		0.158342
Durbin-Watson stat		2.213618

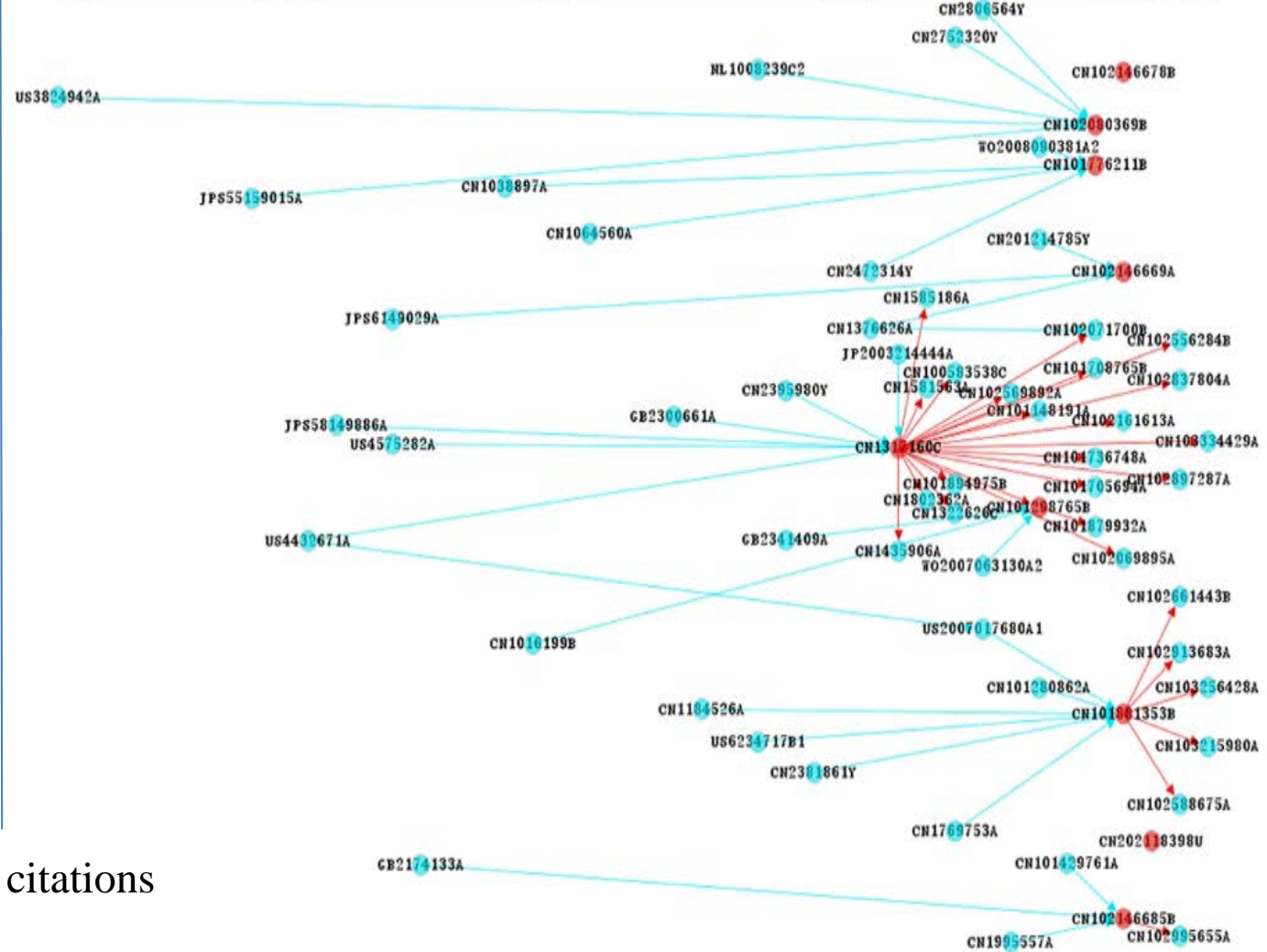
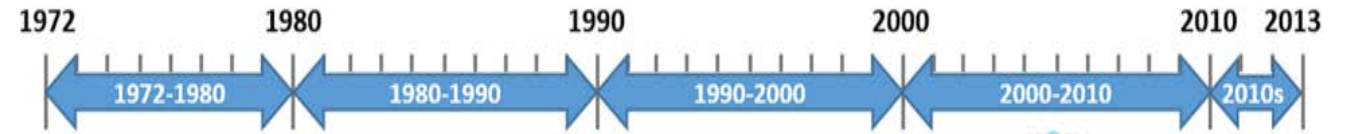
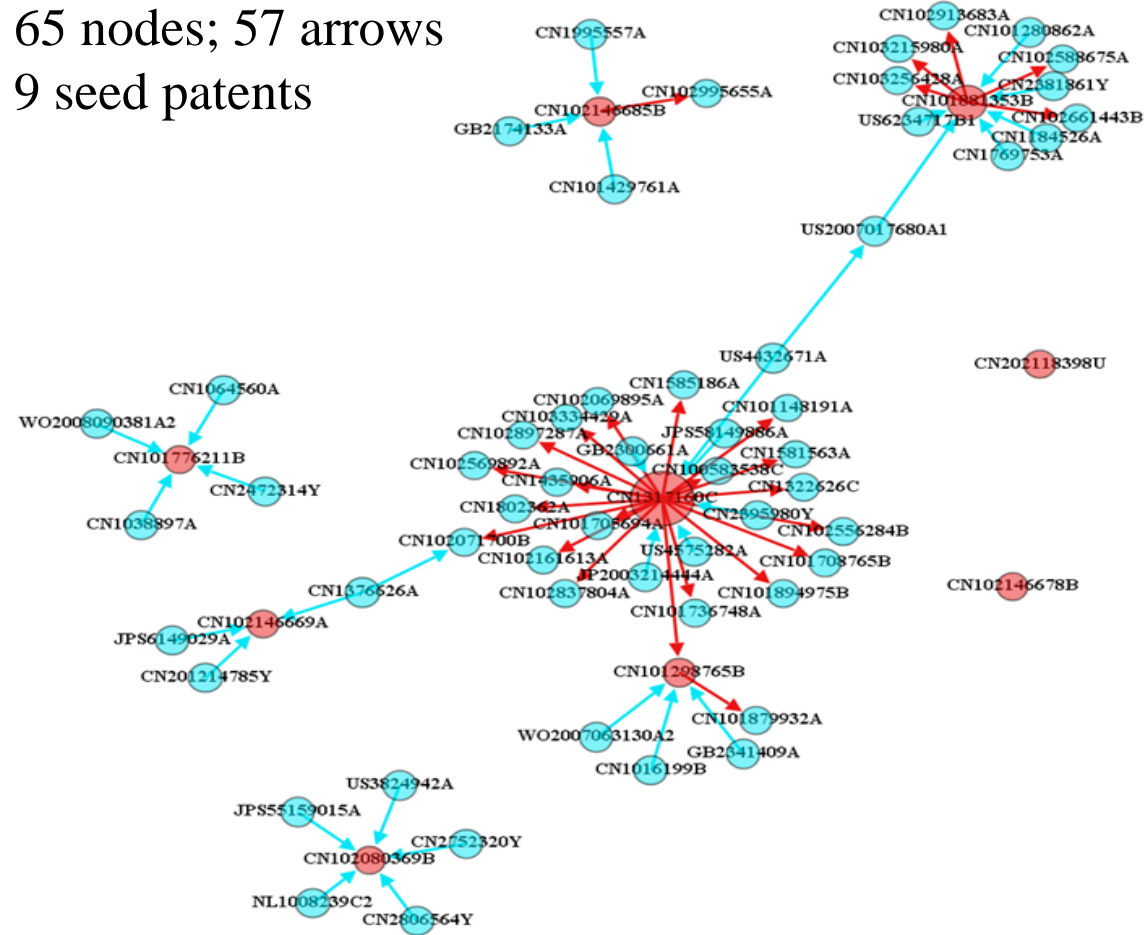
Variable	t-Statistic	Prob.
PATENT COMMERCIALIZATION	3.031693	0.004
C	15.56448	0.000
R-squared		0.169606
Adjusted R-squared		0.151153
Durbin-Watson stat		2.06292

Variable	t-Statistic	Prob.
TRADEMARK NO C	2.163653	0.0358
C	58.28553	0.0000
R-squared		0.094228
Adjusted R-squared		0.0741
Durbin-Watson stat		2.135782

Results

Company A

65 nodes; 57 arrows
9 seed patents

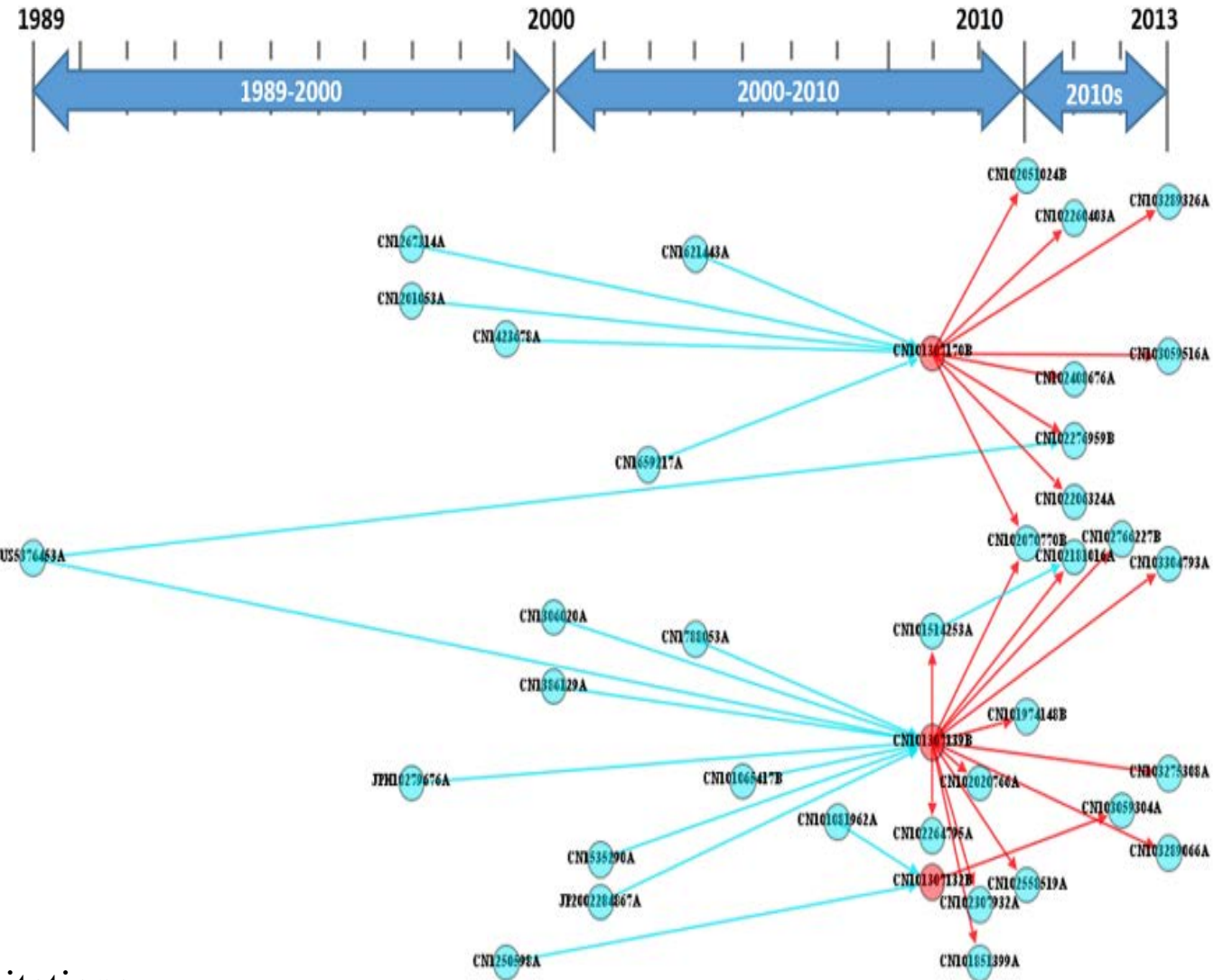
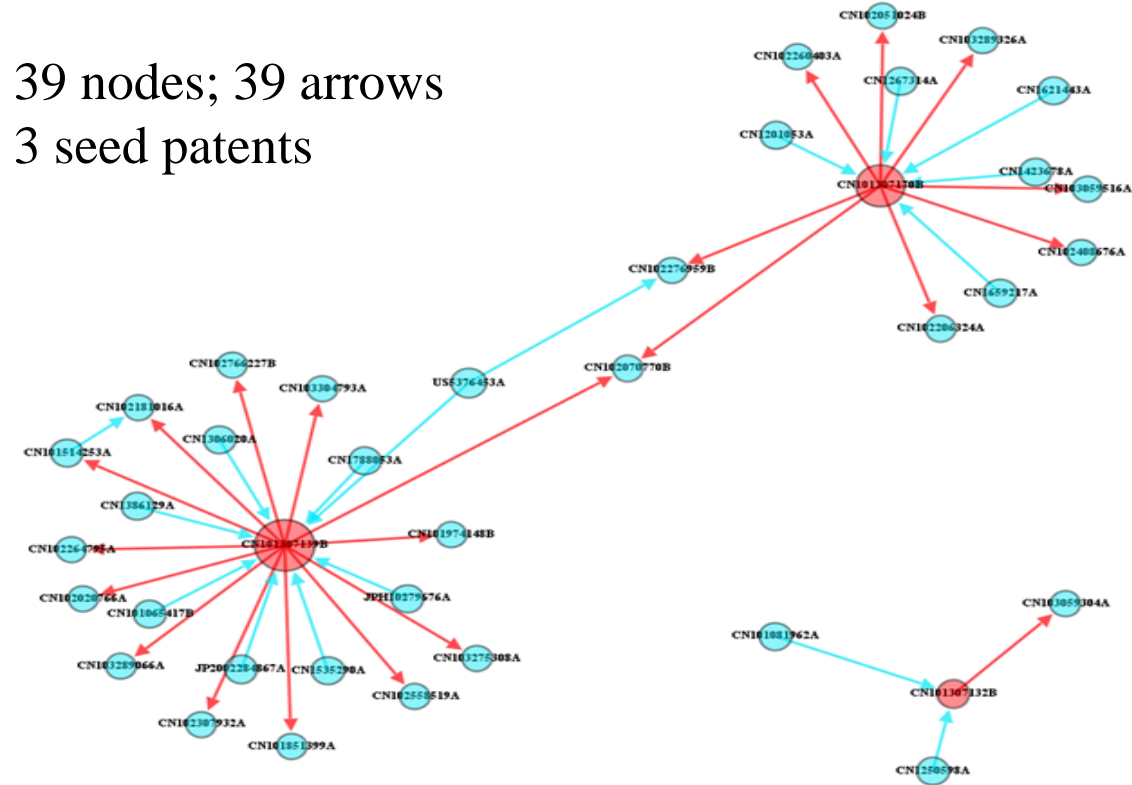


- seed patents
- patents mediated by citations
- forward citation
- backward citation

Results

Company B

39 nodes; 39 arrows
3 seed patents



● seed patents

● patents mediated by citations

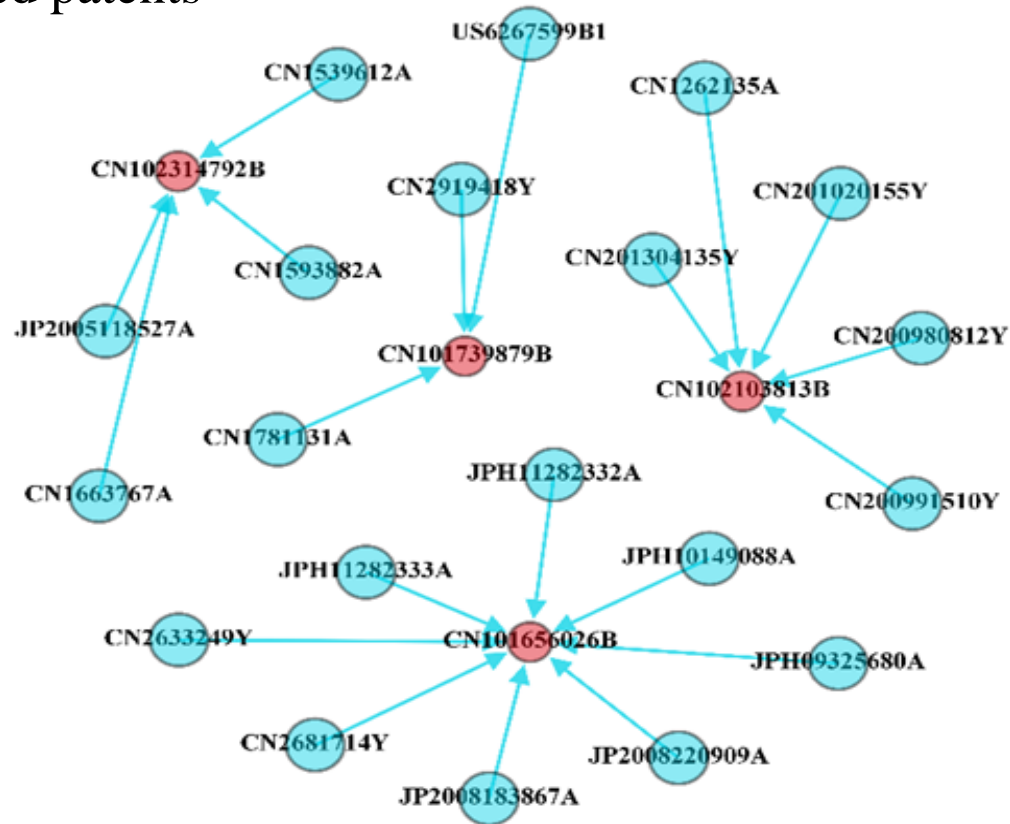
→ forward citation

→ backward citation

Results

Company C

24 nodes; 20 arrows
4 seed patents

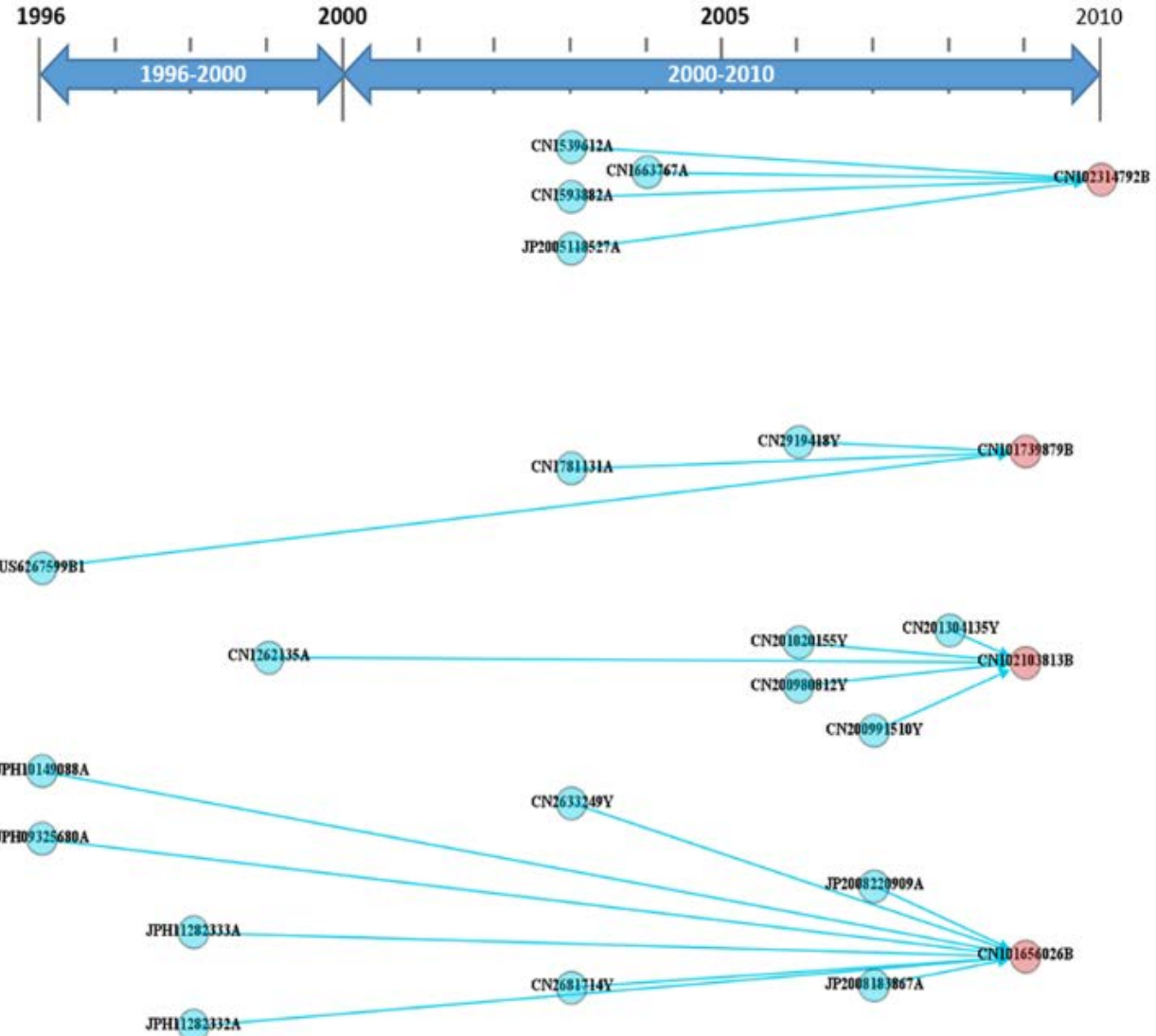


● seed patents

● patents mediated by citations

→ forward citation

→ backward citation



Results

Table 3: Analysis of patent citation network

Names	Patents			Share of degree of seed patents	
	Seed	Citing/cited	Pool	In-degree	Out-degree
Company A	9	56	65	52.5%	45.8%
Company B	3	36	39	38.5%	56.4%
Company C	4	20	24	100.0%	0.0%

- Patents of Company A and B have the higher technological value.
- Patents of Company C integrate various existing technologies in the domain, but they lie in the downstream and do not show significant technological spillover or influence.

Future work

- Integrating parameters of network analysis into patent pledge valuation models
- Conducting big data analysis at the national level

Collected cases: **33341**

Q&A

Thank you!

Speakers

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