

University patent portfolio in Japan: The impact of Japan's national university incorporation on university-industry technology transfer process

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—Regional Innovation Policies and SMEs—

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(NISTEP)

Major research materials:

➤ NISTEP Research Material No.147

“A Study on University Patent Portfolios:
Portfolio of Patent Application from Tohoku University”

➤ NISTEP Research Material No.154

“A Study on University Patent Portfolios (2):
The Impact of Intellectual Property Related Policies and the Change into
Corporation of National University”

➤ NISTEP Research Material No.160

“A Patent Portfolio of Universities and National Research Institutes by 8
S&T Priority Areas”

➤ NISTEP Research Material No.173

“Academic Start-up Survey 2007-08”

These materials are available on NISTEP website:
http://www.nistep.go.jp/achiev/l_all-e.html

➤ Japan Science and Technology Agency (JST)

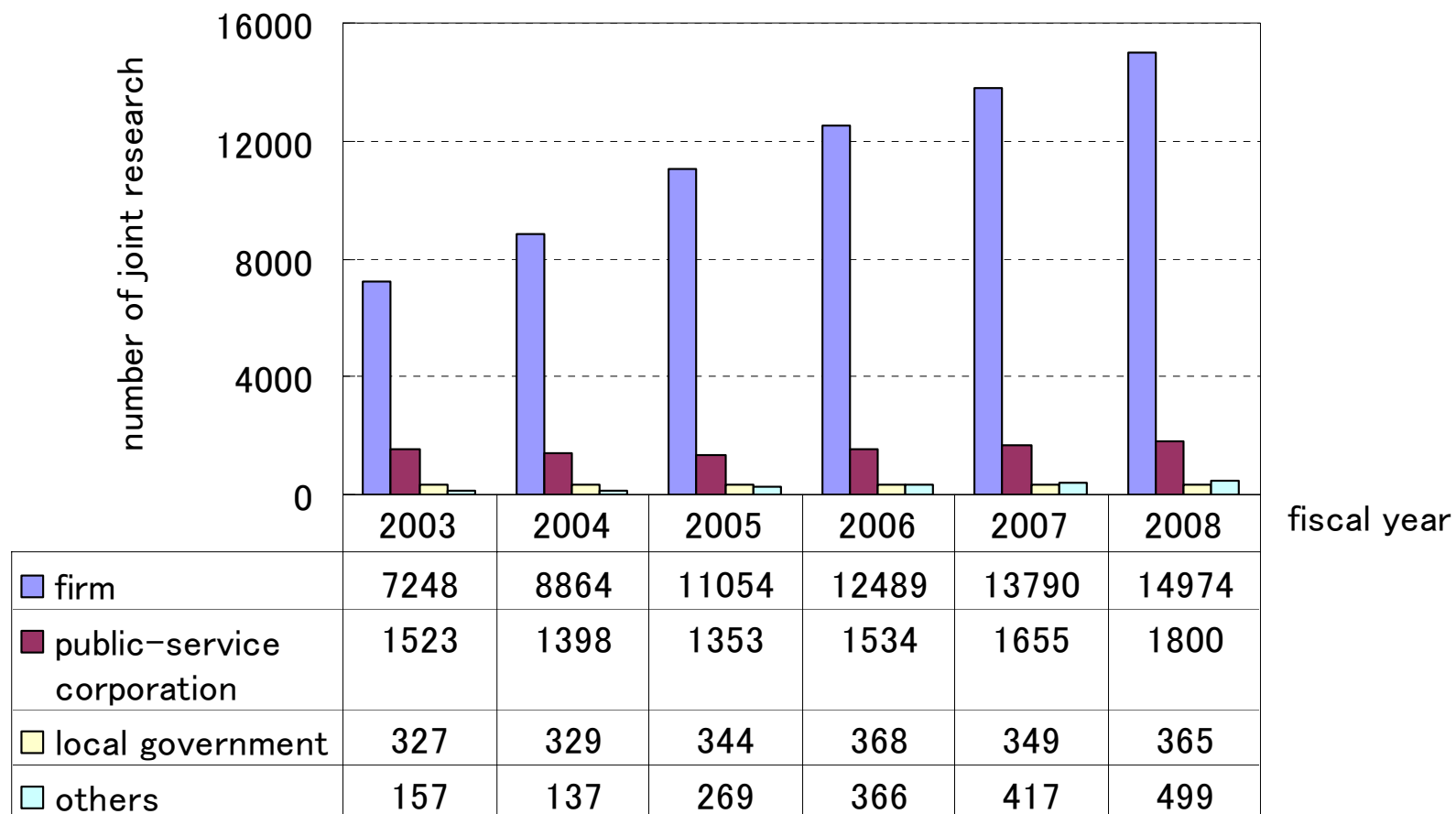
“Industry-university cooperation databook”

<http://sangakukan.jp/michishirube/databook+index.htm>

Major U-I collaboration and IP related policies

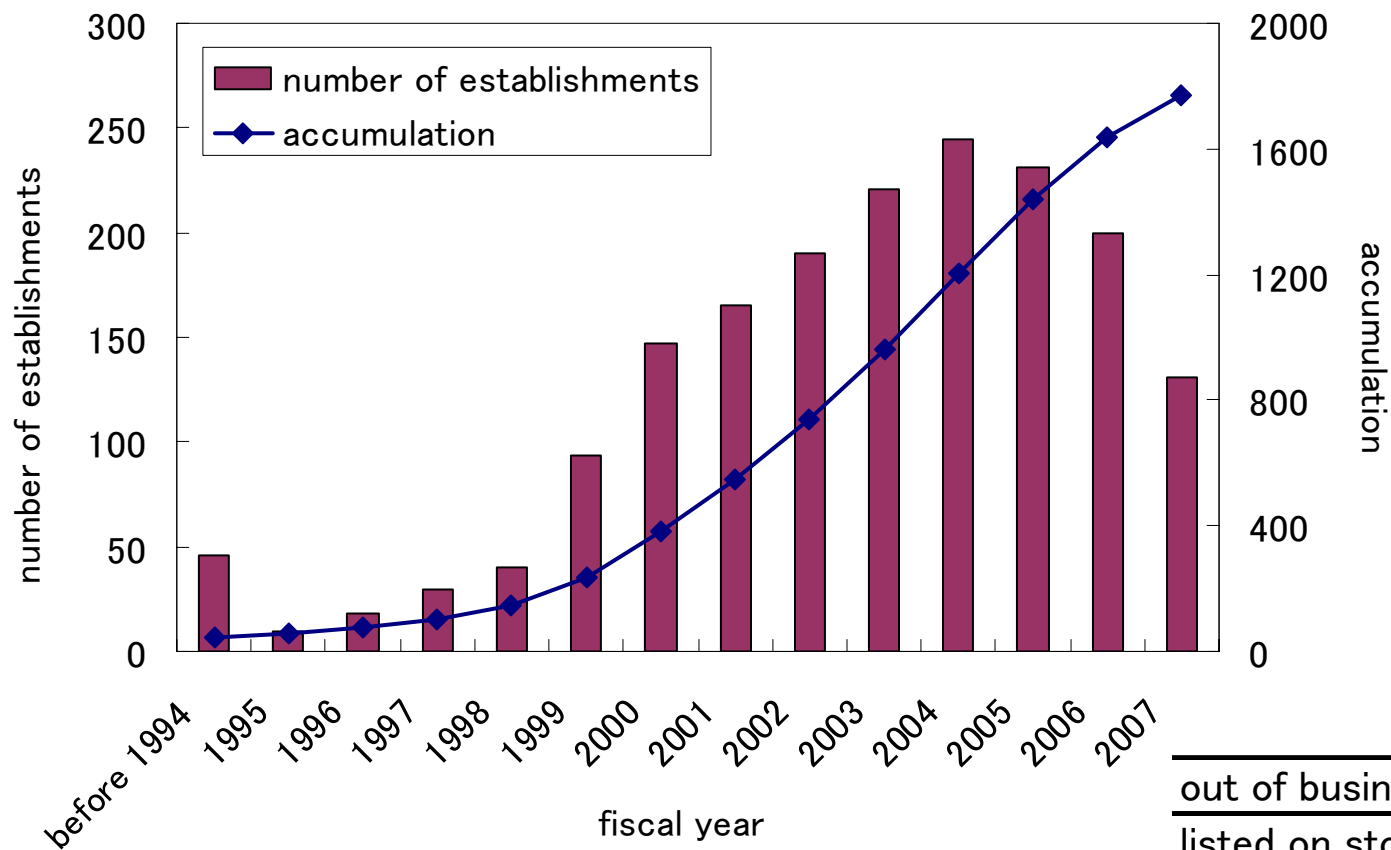
1995	Establishment of Science and Technology Basic Law
1996	Implementation of the First Science and Technology Basic Plan
1998	Establishment of the Law for Promoting University–Industry Technology Transfer (the TLO Law)
1999	Establishment of the Japanese Small Business Innovation Research (SBIR) the Industrial Revitalization Law (the Japanese Bayh–Dole Act)
2000	Establishment of the Industrial Technology Enhancement Act
2002	Amendment of the TLO Law
2003	Establishment of Intellectual Property Basic Act
2004	Establishment of the National University Incorporation Law Amendment of Intellectual Property Basic Act

Joint research between university and industry



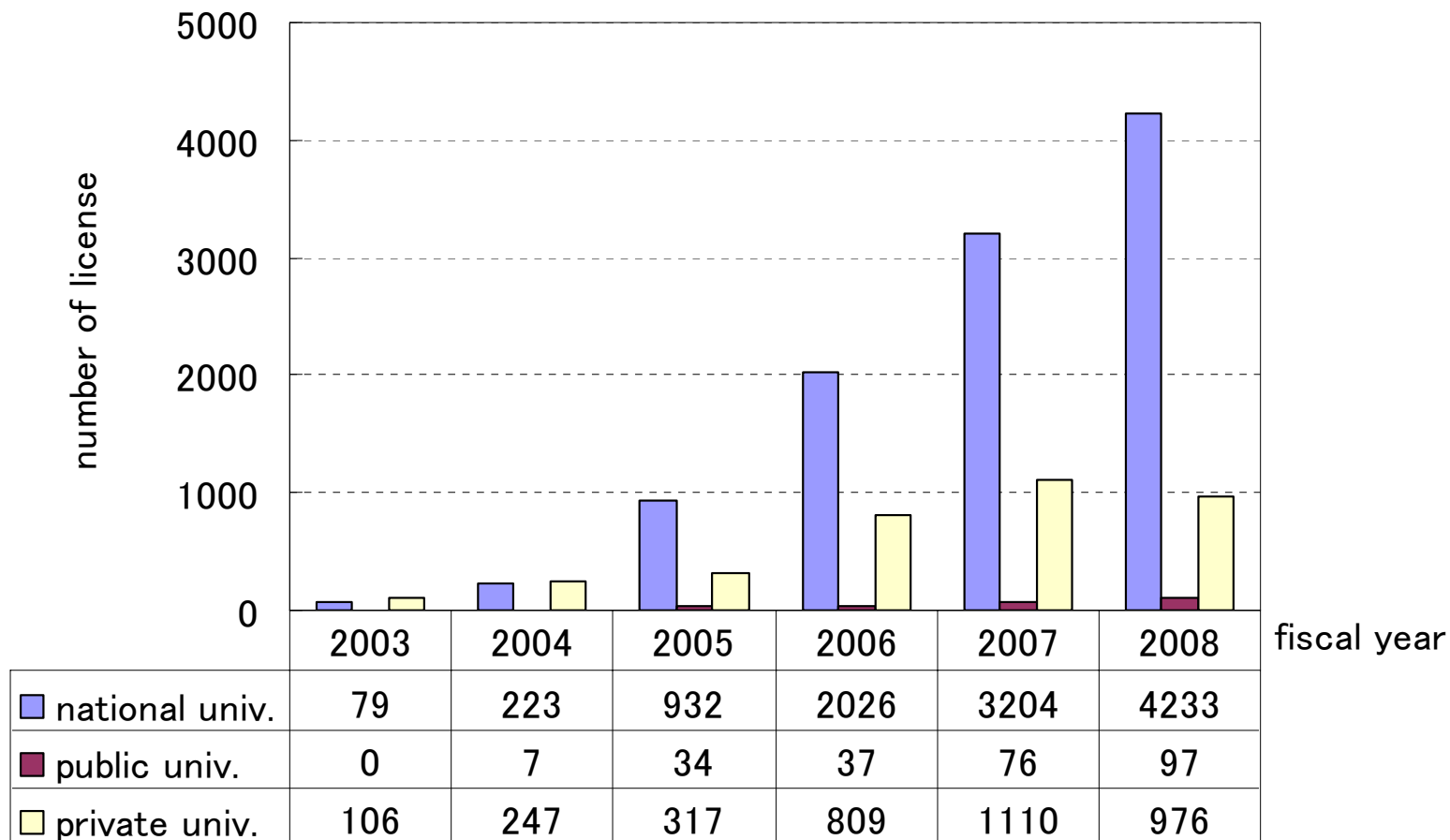
Source: MEXT-JST, 2009

Start-ups from university



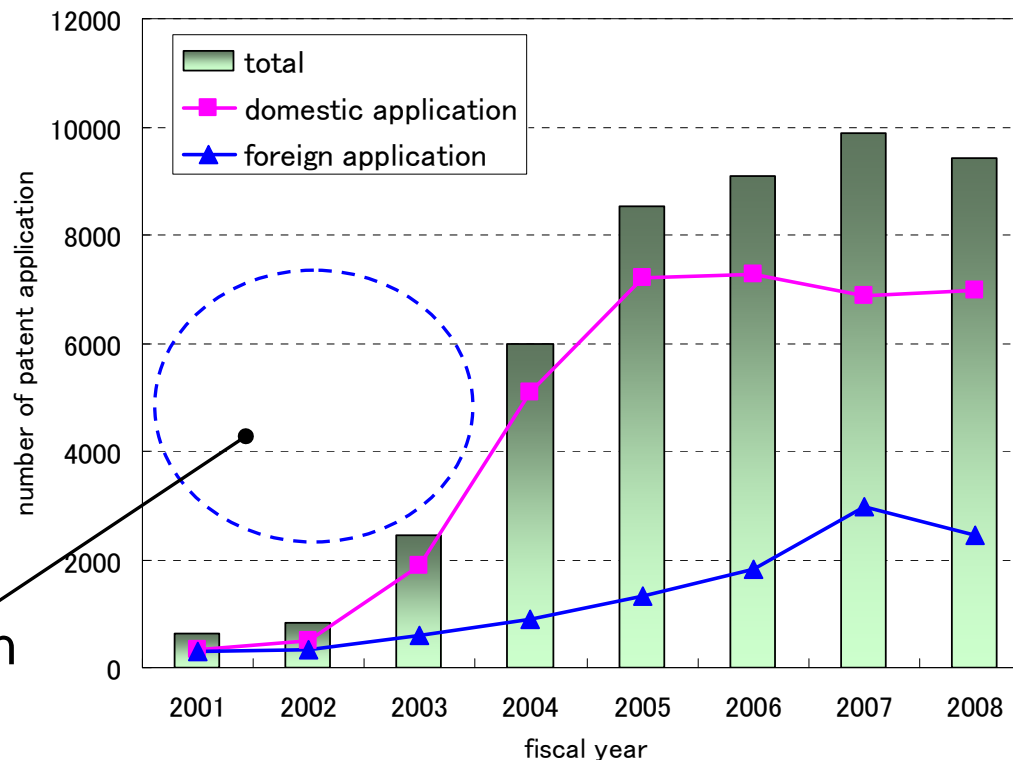
out of business	114
listed on stock market	21
sell-off	28
others	1605
total	1768

Patent licensing from university



Source: MEXT-JST, 2009

Patent application from university



No patent application for this period?

Source: MEXT-JST, 2009

fiscal year	2001	2002	2003	2004	2005	2006	2007	2008
national univ.								
domestic application	346	496	918	3756	5349	5650	5215	5134
foreign application	295	333	426	396	906	1353	2427	1898
public univ.								
domestic application	-	-	63	115	269	313	347	435
foreign application	-	-	4	7	16	56	51	140
private univ.								
domestic application	-	-	900	1214	1579	1319	1320	1411
foreign application	-	-	151	506	408	399	509	417
total								
domestic application	346	496	1881	5085	7197	7282	6882	6980
foreign application	295	333	581	909	1330	1808	2987	2455

- In Japan, a patent certainly has inventors and applicants, and applicants have a right of the patent.
- Applicants of university patents could be “university”, “business entity”, “TLO”, “individual (inventor)”
- A survey by using “university” as applicants is not enough.



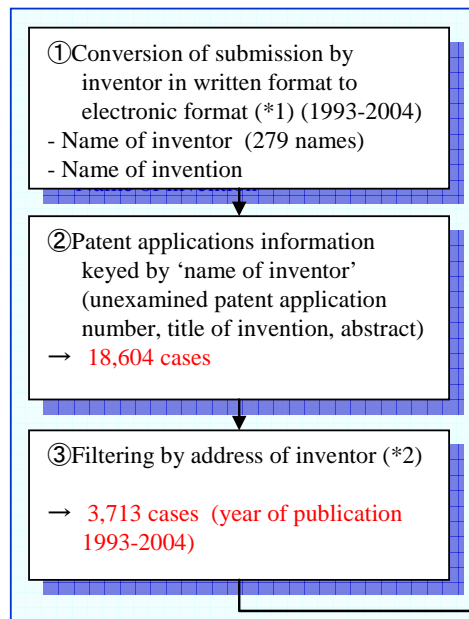
it is necessary to extract patents based on "Inventor" information for all university researchers.
Three universities were selected; Tohoku University, Hiroshima University, University of Tsukuba

..... Issues to be solved

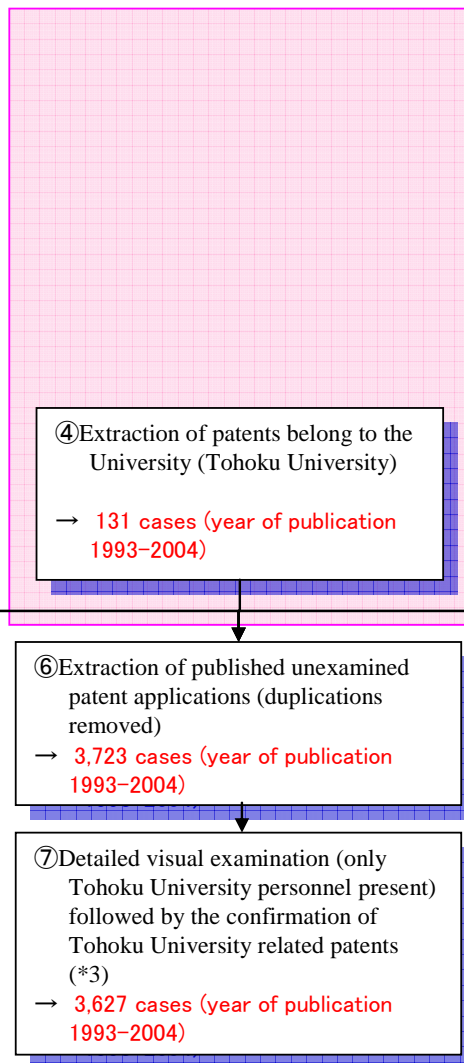
- ✓ It is necessary to accurately grasp all the names of researchers affiliated with universities and who are also related to patent applications (i.e. become inventors).
- ✓ Because name identification is not necessarily done at the Industrial Property Digital Library (IPDL), there are a number of mistakes in the database.
- ✓ It is necessary to distinguish whether the inventor is affiliated with the universities investigated, because many university researchers change their positions and move to other universities or organizations each year.

Tohoku university patent extraction flow

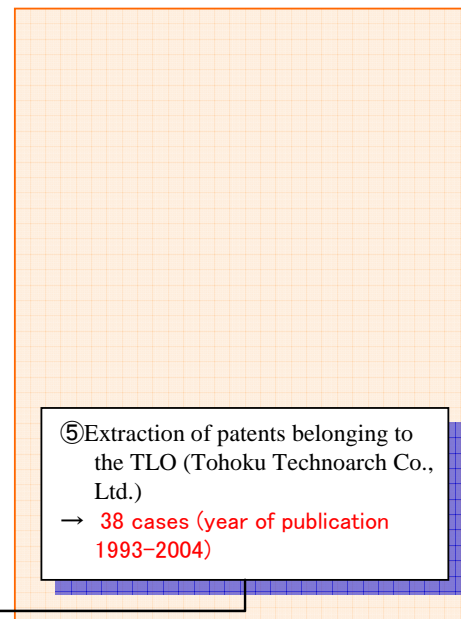
<Patents belonging to individuals or business entities >



<Patents belonging to the University >



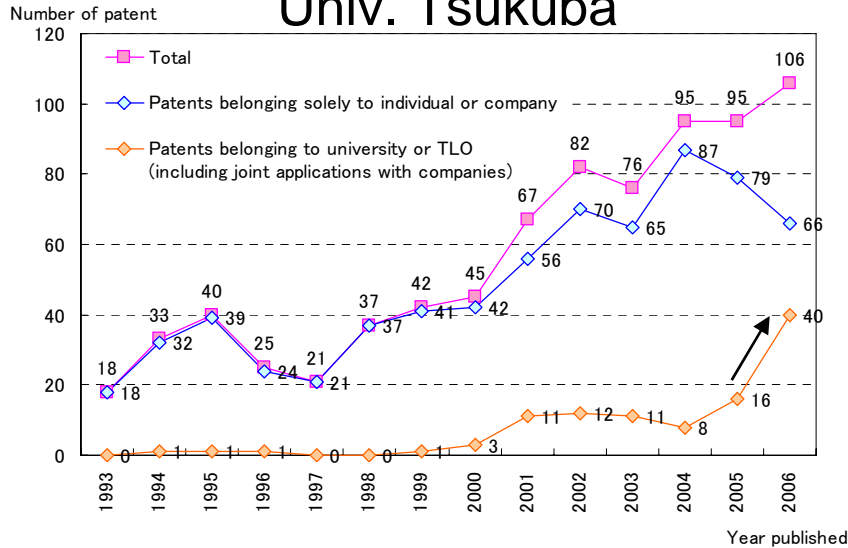
<Patents belonging to the TLO (Tohoku Technoarch Co., Ltd.) >



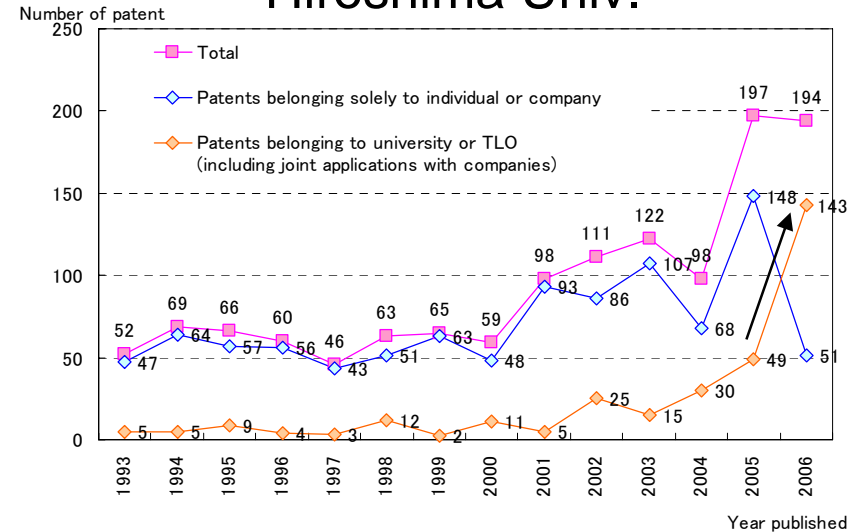
*1 Tohoku University research personnel are able to apply for patents after reviewed by a Deliberations Committee established by the University. Inventors were extracted based on the records of this committee.
*2 Addresses in (2) limited to those in 'Miyagi Prefecture' and 'Sendai City' (since some addresses do not include the name of the prefecture, they are defined as a sum of sets).
*3 Patent applications published in 1993-2004 were analyzed.

Patent applications from three universities

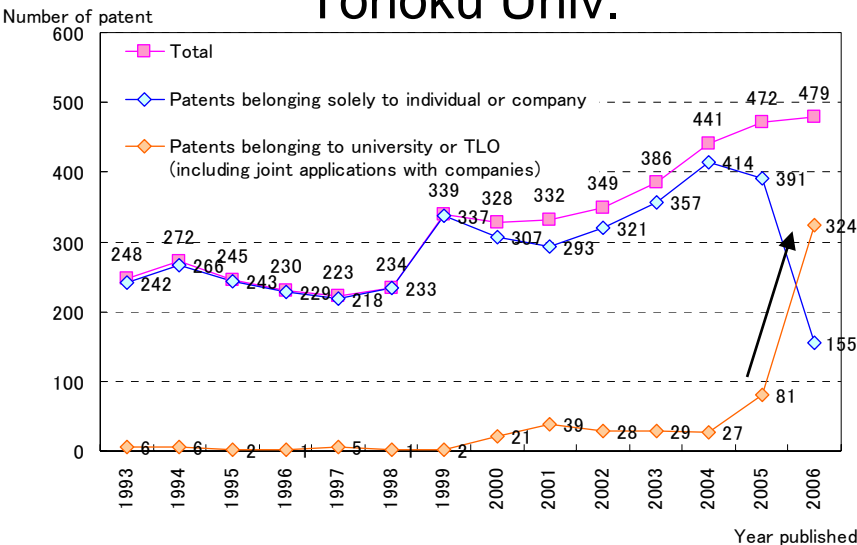
Univ. Tsukuba



Hiroshima Univ.

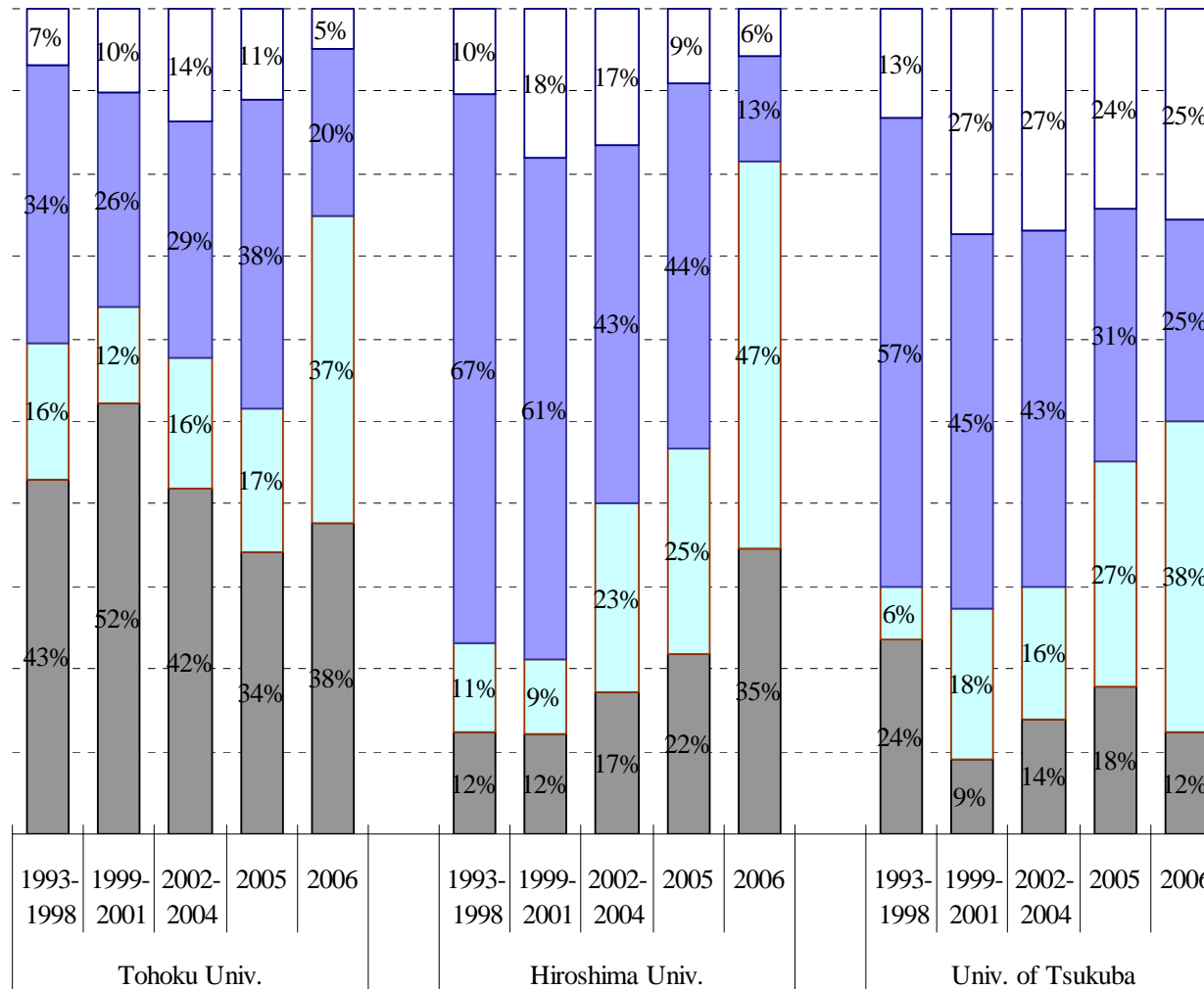


Tohoku Univ.



- Total
- ◇ Patents belonging to individual or firm
- ◇ Patents belonging to university or TLO

Comparison by application type for three universities

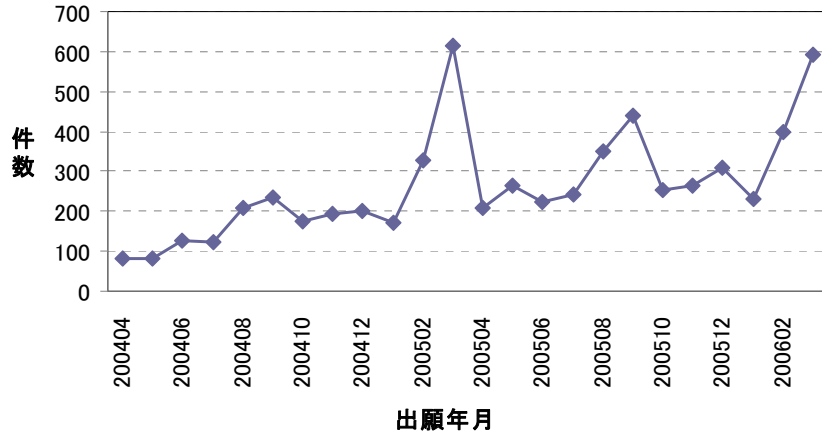


- Others
- Sole applications by firms
- Sole applications related to universities
- Joint applications by universities and firms

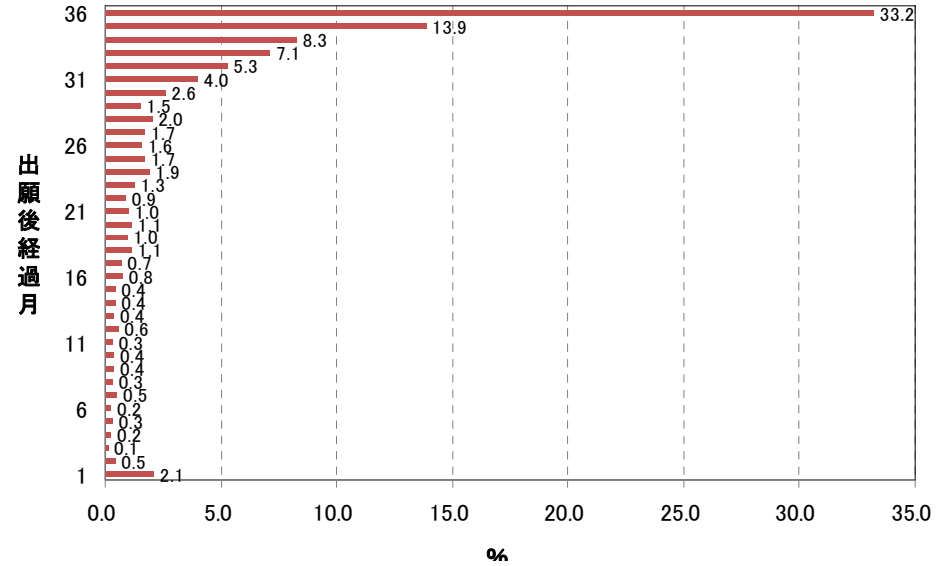
- The total number of patent applications have increased for the period. Especially, the increase has become rapid around 1998 to 2000, although there is a difference among the number of patent applications due to the differences of university size.
- Most of the university patents belong to Individuals or firms before the national university incorporation, while after that, university patents belonging to university or TLO have increased rapidly and consequently, the number of firm belonging patents have decreased.

University patent data from application to registration

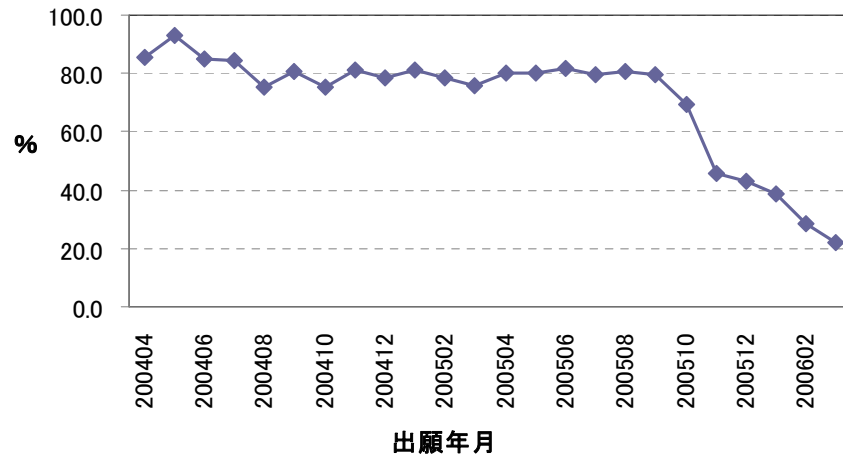
No. of application



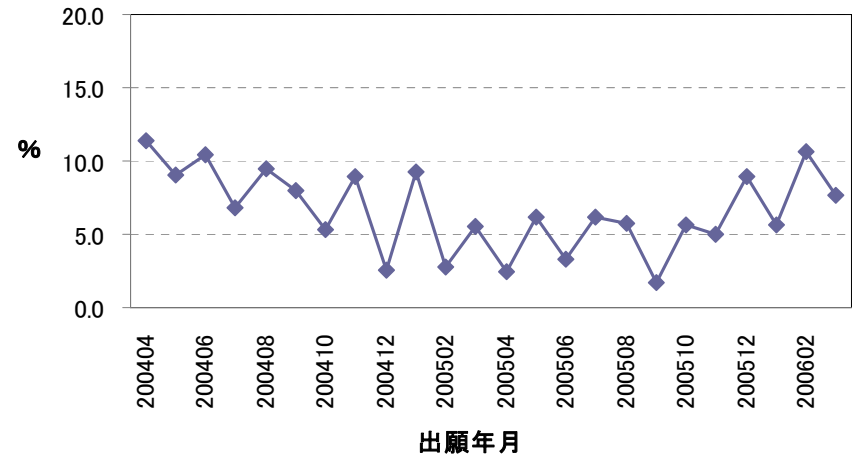
No. of months between application and examination



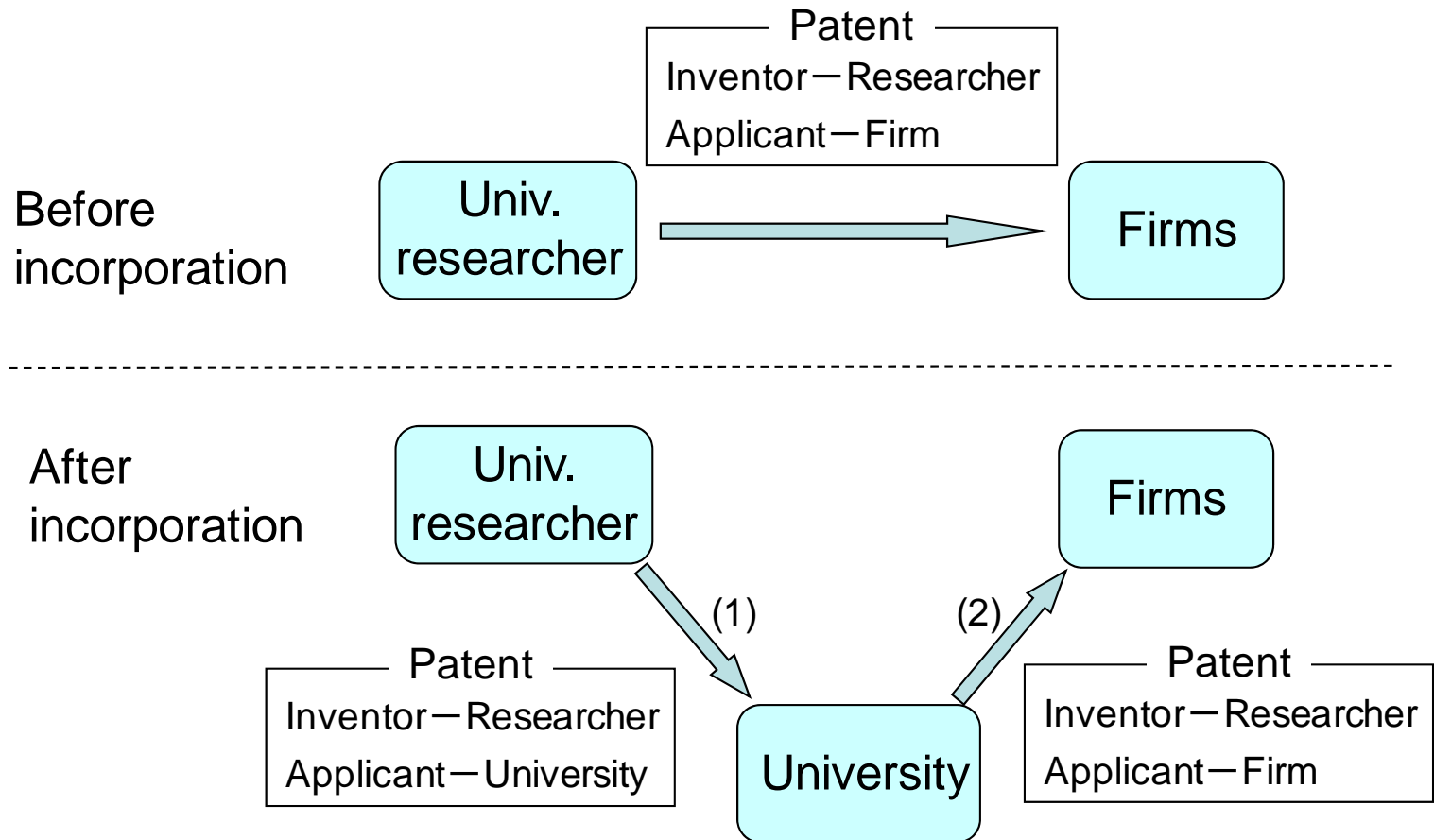
Request rate for examination



Registration rate

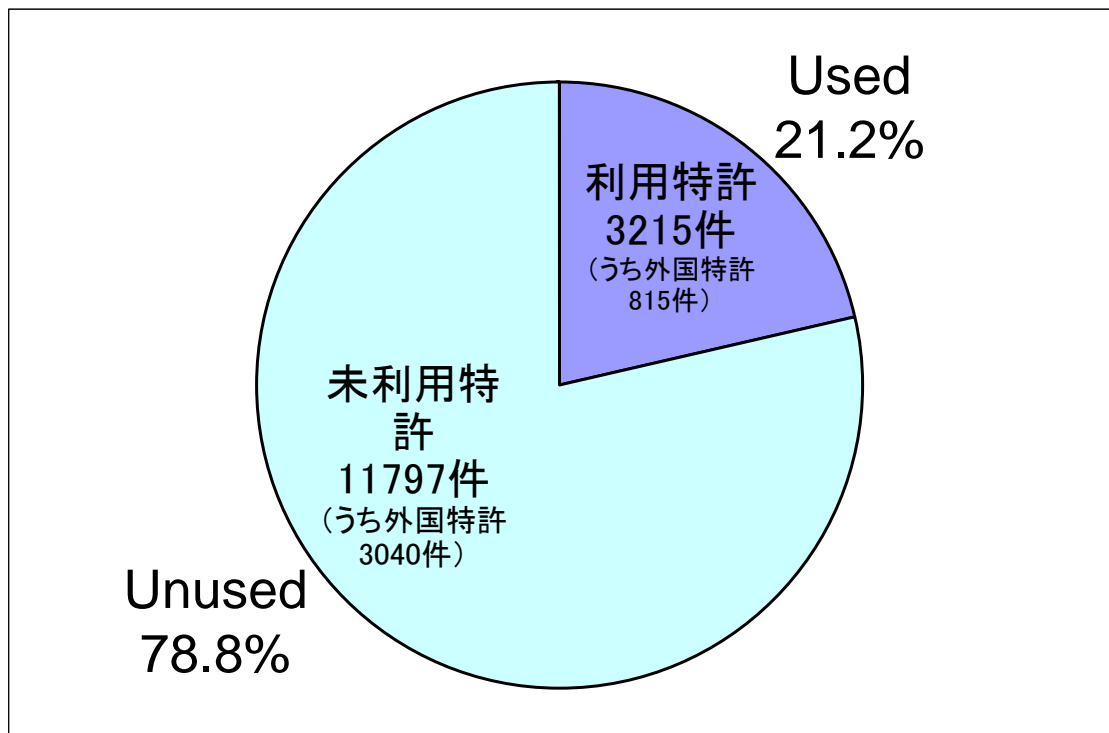


Technology transfer process between before and after the incorporation



Difference of the technology transfer process between before and after the national university incorporation. After the incorporation, (1) university patents invented by university researchers once belong to university, and then (2) these patents are tried to transfer to firms, resulting that one process has been added.

University patent utilization



JPO				Abroad			
Used		Unused		Used		Unused	
No.	Ratio (%)	No.	Ratio (%)	No.	Ratio (%)	No.	Ratio (%)
2400	21.5%	8757	78.5%	815	21.0%	3040	79.0%

Source: JPO, 2009

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Thank you for your attention
ご清聴ありがとうございました

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