



THE SCENARIO OF PATENT GRANTS IN GLOBAL PERSPECTIVE

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ABSTRACT

Patents have strengthened innovations in the field of business and have helped identify new uses for products. With the help of patent, a firm can capture international advantages and investments. Foreign investors have recognized that the market is sufficiently good for innovative products, and have ample opportunities for patents. The international inventors who file to acquire patents in different fields enhance the economic growth of the country and create employment opportunities. The patent shall, on request made by the applicant in the prescribed form, be granted to the applicant or in the case of a joint application, to the applicant jointly, and the controller shall cause the patent to be sealed with the seal of the patent office and the date on which the patent is sealed shall be entered in the register. This article draws the attention of patent granted by the countries around the world for the past five years.

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INTRODUCTION

Patent is a government authority or license conferring a right or title for a set period, especially, the sole right to exclude others from making, using or selling an invention. The word patent originates from the Latin word 'Patere' which means "to lay open" (to make available for public inspection). In short the term patent, which was a royal decree granting exclusive right to a person, predating the modern patent system. The pharmaceutical patent or drug patent is a patent for an invention in the chemical or pharmaceutical industry. Strictly speaking, in most jurisdictions, there is essentially no difference between the legal requirements to obtain a patent for an invention in the chemical pharmaceutical field as compared to obtaining a patent in the other fields, such as in the mechanical field. A chemical patent or a pharmaceutical patent is, therefore, not a 'Sui generis' right, i.e. a special legal type of patent. WIPO (World Intellectual Property Organization) provides a wide range of indicators covering the area of patent (WIPO (World Intellectual Property Organization), 2018d, 2018c, 2018a, 2018e, 2018b).

Literature Review

Most monetary contentions for patent assurance lay on a more extensive issue: the basic significance of development exercises and their outcomes for financial development and social welfare (Rockett, Eleanor Rockett, & Katharine, 2010). There are two fundamental ways in which patent rights encourage the advancement of innovation, development and social welfare (Peter S. Menell & Suzanne Scotchmer, 2007).

The principal way mirrors the private reward allowed for development, through the innovator's selective ideal to utilize or sell the patented creation ("reward theory"). The need to present some ex ante motivation component gets from the acknowledgment that the definitive consequence of the advancement procedure is the creation of new learning. As per old style contentions formalized by Arrow (Arrow, 1962; Griliches & Lichtenberg, 1984; Levin *et al.*, 1987), information additionally shares ordinary qualities of "public goods" like non-competition and non-selectiveness. The non-rival character of information implies that one specialist's utilization of it doesn't constrain its utilization by others. The non-excludable character implies that, when information has been generated, others can't be ceased from utilizing it. Accordingly, in a theoretical routine of faultless market rivalry, rival firms could misuse, at almost no cost, similar information created by the pioneer, which decreases the trend-setter's prizes to a time when it is never again advantageous to lead inventive action by any stretch of the imagination. Selective legitimate rights on developments through patents help limit this sort of market disappointment, by giving satisfactory motivating forces to take part in imaginative action. The "contract theory" of patent clarifies a subsequent principle way patents can advance development (Denicolò & Franzoni, 2004; Rockett *et al.*, 2010), to be specific, by giving contracts among designers and society, giving selective rights to the creator in return for the dissemination of data about the fundamental specialized arrangement. People in general, free accessibility of patent reports in national and worldwide patent workplaces ought to encourage the dispersal of specialized data that would then be able to be utilized by different entertainers to grow further novel arrangements, making extra gains for society

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Statement of the Problem

Economic theory has since quite a while ago contended that patents can possibly support advancement and new mechanical improvement, by giving motivators to R&D speculations and advancing the dissemination of thoughts because of the revelation of developments. The subject of whether patents really energize advancement has consequently pulled in an extensive consideration by financial scientists. The greater part of the work on the viability of patents as a way to improve development has been directed at the nation or the segment level, by taking a gander at the results of patent approach changes for ensuing inventive movement (Lerner, 1994; Sakakibara & Branstetter, 2001). In current scenario, some countries still follow their obstructive nature to grant the patent. So it is very essential to know the region status of world in respect of patent grant and general trends in economies.

Objective of the study

The main objective of this study is to understand the trend in patent grants around the world over the last five year.

METHODOLOGY

Patent applications and publication data available in WIPO (World Intellectual Property Organization) was reviewed to understand the recent trends in terms of growth and implication of international treaties such as TRIPS and related changes in national laws to be compliant with TRIPS. The trends were examined from the data for last five years (2013-2017). Worldwide patent applications based on 154 patent offices were registered at WIPO as considered for this study. The total patent applications include applications filed directly with national & regional patent offices and applications through the PCT (Patent Cooperation Treaty national phase). The World Bank assigns the world's economies into four income groups — high, upper-middle, lower-middle, and low. The researcher bases this assignment on GNI per capita calculated using the Atlas method. The units for this measure and for the thresholds are current US Dollars. As per this statistics, the total 154 countries or economies include 58 of higher income category, 43 of Upper middle-income category, 37 of Lower-middle income category and 16 of Low-income category of countries. Finally, analyses the trends observed in patent filing in various countries across the world and the different -areas in pharmaceutical industry.

Data Analysis

Worldwide Statistics of Patent Grant

Patent offices carry out examination process (both substantive and formal procedure) to decide whether to grant a patent or not for a particular invention. The procedure may vary in the different patent office situated across the world. The differences are due to the varying capacity of the offices and delays in the procedural arrangement, therefore, data related to application procedures in a given year cannot be compared with the granted patent.

Table 1.1 Patent Grant Status of Top 10

Patent Office	2017	Proportion (%)	Share of World Total (%)
China	420144		29.91
United States of America	318829		22.70
Japan	199577		14.21
Republic of Korea	120662		8.59
European Patent Office	105645	90.7	7.52
Russian Federation	34254		2.44
Canada	24099		1.72
Australia	22742		1.62
Germany	15653		1.11
India	12387		0.88
Others	130608	9.3	9.30
World	1404600	100	100

Note: Worldwide patent applications based on 154 patent offices were registered at WIPO. The total patent applications include applications filed directly with national & regional patent offices and applications through the PCT (Patent Cooperation Treaty national phase). Source: WIPO Database, December 2019.

In 2017, Chinese patent office granted 420144 patents. It was followed by the offices of the U.S., Japan, the Republic of Korea and the European patent offices (Table 1.1). The top 10 patent offices granted 90.7 percent of the world total in 2017 and rest of the patent offices granted only 9.3 percent of patents in the world (Annexure: Table 1.10).

Region wise status of Patent Grant

Table 1.2 Region wise status of Patent Grant

Region	Total Number of Patent Grant				
	2013	2014	2015	2016	2017
Africa	8700	8800	8600	7900	9400
Asia	656100	636900	700400	772300	803100
Europe	161900	161800	165400	195900	203600
Latin America and the Caribbean	19300	17900	17700	18900	20300
North America	301700	324400	320600	329500	342900
Oceania	22000	24100	27500	27800	25300
World	1169700	1173900	1240200	1352300	1404600

Notes:

- Worldwide patent applications based on 154 patent offices were registered at WIPO. The total patent application includes applications filed directly with national & regional patent offices and applications through the PCT (Patent Cooperation Treaty national phase).
- The region wise division consists of 29 patent offices situated in Africa, 43 offices in Asia, 45 offices in Europe, 30 offices in Latin America and the Caribbean, 2 offices in North America and 5 offices in Oceania region. Source: WIPO Database, December 2019.

The total number of patents granted in 2013 was 1.16 million, which increased to 1.40 million in 2017. Asian based patent offices granted more than 500000 patents from 2016 onwards. Similarly, its share of patents granted increased from 56.09 percent in 2013 to 58 percent in 2017, supported by strong growth in the status of the Philippines. The Philippines witnessed remarkable growth (83.45 percent); their status of patent growth having increased from 4006 in 2016 to 7349 in 2017 (Table 1.2). India (40 percent) was the other country to exhibit double-digit growth in 2017. The overall growth in patent grants was mainly due to the increase in trend prevailed in China. Chinese patent office granted 15936 additional patents in 2017. After the Asian region, North American based patent office accounted for one – fourth of the world total and European offices accounted for a one-eighth total of the world. The total share of Africa, Latin America and the Caribbean and Oceania was only 4.27 percent in 2013, which decreased to 3.91 percent in 2017 (Table 1.2).

Region wise status of Patent Grant to Resident and Non-Resident

Table 1.3 Region wise status of Patent Grant to Resident and Non-Resident

Region	Status of Grant	Total Number of Patent Grant to Resident/Non-Resident				
		2013	2014	2015	2016	2017
Africa	Resident	1185	1286	1380	1178	1330
	Non-Resident	7515	7514	7220	6722	8070
Asia	Resident	480035	453109	502519	561716	592508
	Non-Resident	176065	183791	197881	210584	210592
Europe	Resident	100646	102724	104835	116733	116359
	Non-Resident	61254	59076	60565	79167	87241
Latin America and the Caribbean	Resident	1274	1274	1447	1515	1682
	Non-Resident	18026	16626	16253	17385	18618
North America	Resident	136363	147593	143823	147030	153436
	Non-Resident	165337	176807	176777	182470	189464
Oceania	Resident	1407	1585	1959	1738	1365
	Non-Resident	20593	22515	25541	26062	23935
World	Resident	721000	707500	756000	830000	866700
	Non-Resident	448700	466400	484200	522300	537900

Notes:

1. Worldwide patent applications based on 154 patent offices were registered at WIPO. The total patent application includes applications filed directly with national & regional patent offices and applications through the PCT (Patent Cooperation Treaty national phase).

2. The region wise division consists of 29 patent offices situated in Africa, 43 offices in Asia, 45 offices in Europe, 30 offices in Latin America and the Caribbean, 2 offices in North America and 5 offices in Oceania region. Source: WIPO Database, December 2019.

The total number of patents granted to residents in 2013 was 0.72 million, which increased to 0.86 million in 2017. And, patents granted to non-residents were 0.44 million in 2013, which went up to 0.53 million in 2017. Asian based patent offices reported highest rate of growth in the number of patents granted to residents, which increased from 480035 to 592508 during the same period (Table 1.3). The Asian and North American regions accounted for 74.37 percent of patents granted to non-residents. The remaining 25.63 percent of patent grants to those with non-resident status is contributed by African, European, Latin American & Caribbean and Oceania regions (Table 1.3).

Income wise status of Patent Grant

Table 1.4 Income wise status of Patent Grant

Income wise arrangement of Countries	Total Number of Patent Grant				
	2013	2014	2015	2016	2017
High-income	870000	845000	785400	847400	874800
Lower middle-income	17000	19100	18700	23300	24500
Low-income	7400	7500	7800	7400	7600
Upper middle-income	275300	302300	428300	474200	497700
World	1169700	1173900	1240200	1352300	1404600

Notes:

1. Worldwide patent applications based on 154 patent offices were registered at WIPO. The total patent applications include applications filed directly with national & regional patent offices and applications through the PCT (Patent Cooperation Treaty national phase).

2. The World Bank assigns the world's economies into four income groups — high, upper-middle, lower-middle, and low. The researcher bases this assignment on GNI per capita calculated using the Atlas method. The units for this measure and for the thresholds are current US Dollars.

3. The countries or economies include 58 of higher income category, 43 of Upper middle-income category, 37 of Lower-middle income category and 16 of Low-income category of countries.

4. Most of the European countries come under the higher income category, therefore, European patent office is categorized into higher income group. Similarly, the African Intellectual property organization comes under the lower-income group and the Eurasian Patent organization under the lower-middle income group.

Source: WIPO Database, December 2019.

Offices of high-income countries granted more than half (62.28 per cent) of patents in 2017, which is low as compared to the year 2013 (it was recorded 74.37 per cent in 2013). The

share of upper-middle income economies increased from 23.53 percent in 2013 to 35.43 percent in 2017 (Table 1.4). Such a change in patent granted in upper middle-income economies is due to the strong growth in patent grants in Asian regions, especially, in China followed by the decrease in Japan. The patent grants in China increased from 0.22 million in 2013 to 0.40 million in 2017, whereas, patents grants in Japan decreased from 274791 in 2016 to 203087 in 2017. Chinese contribution of patent rights is the highest among the upper middle income category - 87 percent in 2017, while the remaining countries could claim only 13 percent of the total patent grants. The total share of the low and lower-middle income groups was only 2.08 percent in 2013 which recorded a slight increase to 2.23 percent in 2017 (Table 1.4).

Income wise status of Patent Grant to Resident/Non-Resident

Table 1.5 Income wise status of Patent Grant to Resident/Non-Resident

Income wise arrangement of Countries	Status of Grant	Total Number of Patent Grant to Resident/Non-Resident				
		2013	2014	2015	2016	2017
High-income	Resident	536241	501452	449918	486261	496642
	Non-Resident	333759	343548	335482	361139	378158
Lower middle-income	Resident	3618	3903	3674	3912	4335
	Non-Resident	13382	15197	15026	19388	20165
Low-income	Resident	6585	6656	6786	6513	6549
	Non-Resident	815	844	1014	887	1051
Upper middle-income	Resident	174484	195515	295620	333196	359138
	Non-Resident	100816	106785	132680	141004	138562
World	Resident	721000	707500	756000	830000	866700
	Non-Resident	448700	466400	484200	522300	537900

Notes:

1. Worldwide patent applications based on 154 patent offices were registered at WIPO. The total patent applications include applications filed directly with national & regional patent offices and applications through the PCT (Patent Cooperation Treaty national phase).

2. The World Bank assigns the world's economies into four income groups — high, upper-middle, lower-middle, and low. The researcher bases this assignment on GNI per capita calculated using the Atlas method. The units for this measure and for the thresholds are current US Dollars.

3. The countries or economies include 58 of higher income category, 43 of Upper middle-income category, 37 of Lower-middle income category and 16 of Low-income category of countries.

Most of the European countries come under the higher income category, therefore, European patent office is categorized into higher income group. Similarly, the African Intellectual property organization comes under the lower-income group and the Eurasian Patent organization under the lower-middle income group.

Source: WIPO Database, December 2019.

Patents grants by offices to residents and non-residents applicants are referred to as office data, whereas, patents granted to applicants at a national office or at foreign office are referred to as origin data. The residence status of patents grants in high income countries was 74.37 percent of world total in 2013 and it declined to 57.30 per cent in 2017. Similarly, the non-residence status of patents grant was 74.38 percent of world total in 2013 and it decreased to 70.30 percent in 2017 (Table 1.5). Offices of upper middle-income countries try to grant a large portion of patents at national or regional office. It should be noted that 24.20 percent patents were granted at their regional office in 2013 and it reached at 41.43 percent in 2017. China has been the largest source of grants more than 1 lakhs patents since 2012. It surpassed Japan from 2012 onwards. The total patent grant status in China shows that 89

percent of all patents grants for home applications and only 11 percent constitute the ones granted to overseas applicants. The total share of the low and lower-middle income groups of resident application was 1.41 percent in 2013, which decreased to 1.25 percent and non-residents status (Table 1.5).

CONCLUSION

The residential status of patent grant is one of the important elements of patent grant. In the current scenario, Asian region has been leading in the status of patent grant and the share of Africa, Europe, Latin America and the Caribbean, North America and Oceania declined over the past 5 years due to the accelerated growth in the granting status of China.

Annexure

Table 1.10 Worldwide, patent granted based on different patent offices were registered at WIPO

Office	Office (Code)	2013	2014	2015	2016	2017
African Intellectual Property Organization	OA	430	550	526	360	384
African Regional Intellectual Property Organization	AP	271	254	443	468	451
Albania	AL	9	5	10	5	10
Algeria	DZ	183	281	353	383	256
Andorra	AD					4
Argentina	AR	1297	1360	1559	1879	2302
Armenia	AM	99	108	81	93	74
Australia	AU	17112	19304	23098	23744	22742
Austria	AT	1256	962	1356	1135	1102
Azerbaijan	AZ	78	97	88	131	67
Bahamas	BS	123	238	192	47	20
Bahrain	BH					
Bangladesh	BD	134	121	101	106	144
Barbados	BB	9	3	10	26	
Belarus	BY	1117	1938	902	949	861
Belgium	BE	745	373	567	1620	1016
Belize	BZ	10	28	8	4	
Bolivia (Plurinational State of)	BO	43	97	75	86	63
Bosnia and Herzegovina	BA	31	5		12	4
Botswana	BW	3		4	3	4
Brazil	BR	2972	2749	3411	4195	5450
Brunei Darussalam	BN	93	71			41
Bulgaria	BG	125	72	37	42	77
Burundi	BI	4	1	13	6	27
Cabo Verde	CV					
Cambodia	KH			1	19	23
Canada	CA	23833	23749	22201	26424	24099
Chile	CL	898	1168	1058	2077	1574
China	CN	207688	233228	359316	404208	420144
China, Hong Kong SAR	HK	6564	5932	5963	5698	6671
China, Macao SAR	MO	22	16	36	57	21
Colombia	CO	2264	1212	1003	917	1164
Costa Rica	CR	106	114	130	67	190
Croatia	HR	159	90	45	35	20
Cuba	CU	125	94		93	74
Cyprus	CY	1				
Czech Republic	CZ	611	688	749	781	669
Denmark	DK	309	292	430	409	419
Dominican Republic	DO	68	129	155	100	127
Ecuador	EC	13	20	14	10	17
Egypt	EG	465	415	472	450	581
El Salvador	SV	48	77	35	40	24
Estonia	EE	78	38	24	27	15
Eswatini	SZ		2	2		
Ethiopia	ET	2	6	6	11	6
Eurasian Patent Organization	EA	1581	1600	1757	3081	3282
European Patent Office	EP	66696	64608	68431	95956	105645
Finland	FI	711	787	931	815	704
France	FR	11405	11889	12699	12374	11865
Gambia	GM			2	2	4
Georgia	GE	286	209	206	177	206
Germany	DE	13858	15030	14795	15652	15653
Ghana	GH				25	5
Greece	GR	282	316	262	271	261
Grenada	GD			9	14	
Guatemala	GT	65	105	51	52	50
Guyana	GY		1		10	21
Honduras	HN	132	94	69	53	54
Hungary	HU	1351	376	365	271	155
Iceland	IS	43	54	17	22	36
India	IN	3377	6153	6022	8248	12387

Office	Office (Code)	2013	2014	2015	2016	2017
Indonesia	ID			1911	3005	2309
Iran (Islamic Republic of)	IR	3476	3060	2936	3268	4151
Iraq	IQ			312		388
Ireland	IE	116	69	48	64	60
Israel	IL	3697	3984	4492	4938	
Italy	IT	8114	7795	7153	6429	4855
Jamaica	JM	42	28	74	5	2
Japan	JP	277079	227142	189358	203087	199577
Jordan	JO	48	115	83	121	119
Kazakhstan	KZ	1500	1504	1504	1011	869
Kenya	KE	71	53	24	26	43
Kyrgyzstan	KG	88	100	111	120	78
Lao People's Democratic Republic	LA	1		2	2	3
Latvia	LV	136	141	147	68	87
Lebanon	LB	325	316	279		
Lithuania	LT	93	120	133	103	143
Luxembourg	LU		152	153	184	487
Madagascar	MG	40	24	23	19	23
Malawi	MW	3		1	7	
Malaysia	MY	2660	2705	2877	3324	5063
Malta	MT	15	4	10	6	
Mauritius	MU	5	9	4	2	4
Mexico	MX	10368	9819	9338	8652	8510
Monaco	MC	5	5	8	9	10
Mongolia	MN	212	216	234	157	105
Montenegro	ME	121	14	10	8	
Morocco	MA	937			352	413
Mozambique	MZ	43	60	54	35	
Namibia	NA			23	28	16
Nepal	NP	1		2		
Netherlands	NL	2029	1722	1377	1914	2307
New Zealand	NZ	4752	4677	4259	3910	2430
Nicaragua	NI	72	62			
Nigeria	NG	645			886	552
North Macedonia	MK	378				
Norway	NO	1430	1413	1446	2525	2147
Oman	OM			29	17	17
Pakistan	PK	282	185	131	214	169
Panama	PA	266	166	78	13	4
Papua New Guinea	PG	57		70		
Paraguay	PY					
Patent Office of the Cooperation Council for the Arab States of the Gulf	GC	553	503	662	673	2240
Peru	PE	287	332	362	403	510
Philippines	PH	2207	2159	2200	4006	1645
Poland	PL	2804	2852	2572	3548	2904
Portugal	PT	130	97	76	38	55
Qatar	QA					37
Republic of Korea	KR	127330	129786	101873	108875	120662
Republic of Moldova	MD	61	54	61	70	62
Romania	RO	451	356	305	355	407
Russian Federation	RU	31638	33950	34706	33536	34254
Rwanda	RW					176
Saint Vincent and the Grenadines	VC					10
Samoa	WS			64		
San Marino	SM	160	201	290	467	624
Sao Tome and Principe	ST				1	3
Saudi Arabia	SA	233	561	763	595	501
Serbia	RS	136	105	86	68	47
Seychelles	SC				9	29
Singapore	SG	5575	5538	7054	7341	6217
Slovakia	SK	115	94	82	122	82
Slovenia	SI					
South Africa	ZA	4756	5065	4499	4255	5535
Spain	ES	3004	3235	2561	2308	2011
Sri Lanka	LK	236		262	123	178
Sudan	SD	216	190	196	164	177
Sweden	SE	685	588	889	866	1031
Switzerland	CH	534	677	687	617	771
Syrian Arab Republic	SY			14	32	3
Tajikistan	TJ	2				
Thailand	TH	1149	1286	1364	1838	3080
Trinidad and Tobago	TT	34	39	33	60	66
Tunisia	TN	535	552	589	583	555
Turkey	TR	1211	1276	1723	1764	1900
Uganda	UG	3	1			2
Ukraine	UA	3635	3319	3014	2813	2590
United Arab Emirates	AE	63	110	177	222	
United Kingdom	GB	5235	4986	5464	5602	6311
United Republic of Tanzania	TZ	3	4	1		
United States of America	US	277835	300678	298407	303049	318829
Uruguay	UY		31	19		27
Uzbekistan	UZ	184	179	153	166	205
Viet Nam	VN	1182	1397	1388	1423	1745
Yemen	YE	62	20	15		28
Zambia	ZM	21	23	17	27	18

Note: The total patent grants includes applications filed directly with national & regional patent offices and applications through the PCT (Patent Cooperation Treaty national phase).

Source: WIPO Database, December 2019.

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