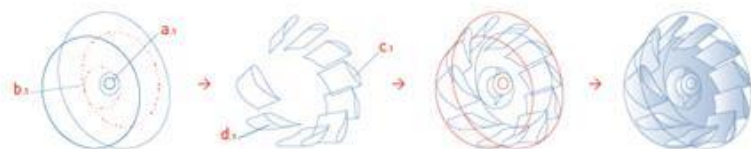


> Regional Initiative

PATENTS FOR DEVELOPMENT

Indicators of Technological
Innovation in Latin American and
Caribbean Countries (summary
document)

2015



Indicators of Technological Innovation in Latin American and Caribbean Countries
(summary document). 2015

Editor: CAF

CAF Energy Vice Presidency

Hamilton Moss, Corporate Vice President

Mauricio Garrón, Director. Energy Analysis and Strategy

Alvaro Atilano, Principal Executive. Study Coordinator

The preparation of this report was in charge of:

Alvaro Atilano, Principal Executive CAF

Jesús Mercado, Executive CAF

Helen Casanova, Officer CAF

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PRESENTATION

CAF identified the need to promote the generation of patentable innovative technologies that could be exportable. Latin America and the Caribbean have the potential to generate advanced technologies that may contribute to the sustainable development of the region and other regions around the world. To release this potential, we have started the Technological Patents Regional Initiative.

CAF's initiative intends to establish a regional platform for the generation of patentable technological concepts through international patent applications from Latin America and the Caribbean with the purpose of contributing to increase the exports of high technology from the region.

In the framework of CAF's Technological Patents for Development Regional Initiative, the Institution is pleased to present the document *2015 Technological Innovation Indicators by Regions*. This document compiles the main data and indicators that will be used throughout the implementation of the initiative, which will be presented in full in the publications *2015 Indicators of Technological Innovation in the Countries of Latin America and the Caribbean* and *2015 Indicators of technological Indicators by Regions*¹. The methodology used to define the indicators is accepted and used internationally.

The text is divided into 3 parts. The first part describes the indicators that will be presented, the methodology behind them, as well as the primary data sources. In the second part there is a brief presentation of the relationship between patents and technological development, using South Korea as a case study. The third section shows comparative graphs regarding the status of technological innovation in the countries of the region based on the defined indicators.

¹ The complete publications can be found at www.caf.com/patentes

We expect this work to fulfill its fundamental objective of offering readers of different backgrounds the necessary data and figures for the evaluation of the status of technological innovation in CAF's member countries in Latin America and the Caribbean and increase interest regarding CAF's Patents for Development Regional Initiative.

ACRONYMS

WB. The World Bank Group

CAF. Development Bank of Latin America

EPO. European Patent Office

IMF. International Monetary Fund

OECD. Organization for Economic Cooperation and Development

WIPO. World Intellectual Property Organization

PCT. Patent Cooperation Treaty

UN COMTRADE. United Nations Commodity Trade Statistics Database

UNSTATS. United Nations Statistics Division

USPTO. United States Patent and Trademark Office

METHODOLOGY

When addressing the subject of technological innovation, CAF will use the terminology *inputs*, *outputs*, and *outcomes* to define the parameters used in the construction of indicators to measure these activities.² The inputs define the resources allocated to innovation activities, which come from different sources (public or private), and have different classifications. The outputs are the specific result (material or immaterial) of the innovation process over which an evaluation process is generated to compare with the estimated results. On the other hand, outcomes describe the final effects targeted during the planning process, that is, the global result expected from the implementation of a technological development strategy. For the purpose of the initiative we will only define the indicators of inputs and outcomes:

- **Output Indicators:** The parameters used to establish a base line to evaluate the starting phase of the initiative will be the following: patent applications via PCT, USPTO applications and concessions, and EPO patent applications and concessions.
- **Outcome Indicators:** Different performance parameters will be used for these indicators which will help construct an image of the status of the technological innovation in the region. Among the parameters used are *High technology exports* and *Royalties from the use of intellectual property*. As with the aforementioned, indicators will be constructed based on these parameters in order to facilitate the understanding of the subject.

² This definition was partially taken from NYCEDC *Innovation Index*, New York City Economic Development Corporation 2011, and http://www.huffingtonpost.com/steven-strauss/managing-innovation_b_3375149.html

OUTPUT INDICATORS

Patent Applications via PCT: The application process of a patent via PCT (Patent Cooperation Treaty) has two main phases: the international phase and the national phase. In this case the applications via PCT will be used as a reference in the international phase. These applications are considered only as a petition, and they do not guarantee the granting of the patent in the national phase. However, it has been proven that there is a relationship between the increases of patent applications via PCT as a model of the performance of the technological innovation of a country.

USPTO Applications and Patent Concessions: The United States Patent and Trademark office (USPTO) is the federal entity in charge of granting invention patents for inventions in that country in compliance with the four basic requirements: be legal, new, useful, and not obvious. The USPTO is one of the main intellectual property offices in absolute terms in the world, and the concession of invention patents by this office implies the protection of high technology products exported to one of the main commercial markets in the world.

EPO Applications and Patent Concessions: European patents may be obtained for all the countries that signed the European Patent Convention by presenting a sole regional application before the European Patent Office (EPO). The EPO concessions are considered regional patents as they force any national office where a concession is presented, to grant a national patent. The concession of invention patents by the EPO implies the protection of high technology products exported to this regional market.

OUTCOME INDICATORS

Exports of High Technology Products: The data used for the calculation of high technology products was obtained from the statistics of the World Bank Group. They are based on a methodology developed by the OECD and Eurostat to define what high technology exports are. Using a “goods approach”, the importance of expenditures in Research and Development on the total value of sales is measured to establish a classification (high, medium, low technology). Examples of these sectors include the aeronautical industry, information technology, scientific instruments, and pharmaceutical industry, among others.

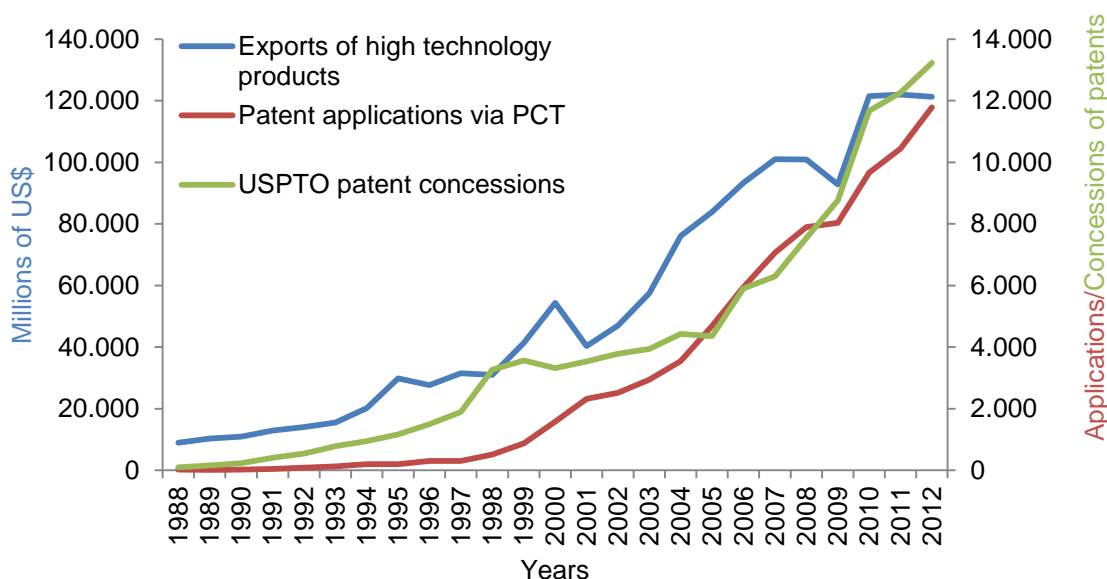
Royalties for the Use of Intellectual Property: Royalties and licensing rates are payments and charges between residents and non-residents for the authorized use of intangible assets, non-financial, non-manufactured, and intellectual property rights (such as patents, copyrights, registered trademarks, industrial processes, and franchises). In the beginning, work will be carried out with the data of the World Bank Group which includes all the incomes derived from any form of intellectual property, taken from data from the balance of payments of each country, in USD at current prices.³

³ This indicator is presented in the full publications that may be found at: www.caf.com/patentes

PATENTS AND TECHNOLOGICAL DEVELOPMENT

One of the most important hypotheses of CAF's Patents for Development Regional Initiative is that there is a close relationship between a technological innovation strategy based on international patents, and the increase of high technology exports in the long term. The model for the development of the technological base in South Korea (see Graph 1) is clear evidence of the relationship that exists between technological innovation aimed at exports, and the concessions of patents in the main world markets.

Graph 1. Relationship between patentable technological innovation and high technology exports in South Korea



Own preparation. Source: World Bank (March 2015) <http://datos.bancomundial.org/> USPTO Website (March 2015) http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_utlh.htm WIPO Website (March 2015) (www.wipo.int)

For this second edition of Indicators of Technological Innovation in the countries of Latin America and the Caribbean developed by CAF, it has been decided to present a comparison of all the indicators used with South Korea. This

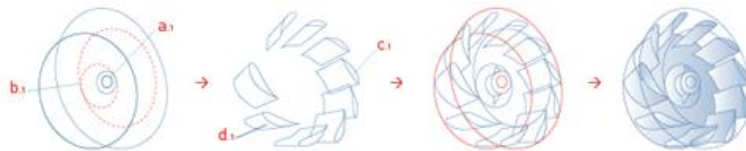
methodological selection has the purpose of providing a comparative approximation of the performance of technological innovation systems in countries which started with similar conditions, but that shows very different results in a period of 30 years.

For a technological innovation strategy to be successful in the long-term, it not only has to solve the technological needs of the region, but also must be aimed at increasing high technology exports and the incomes derived from the property of intangible assets.

CAF's Patent for Development Regional Initiative is aimed at technological innovation with an engineering emphasis to solve specific problems in the region, whose solutions may be copied in other parts of the world, to increase the regions' high technology exports in the medium and long term.

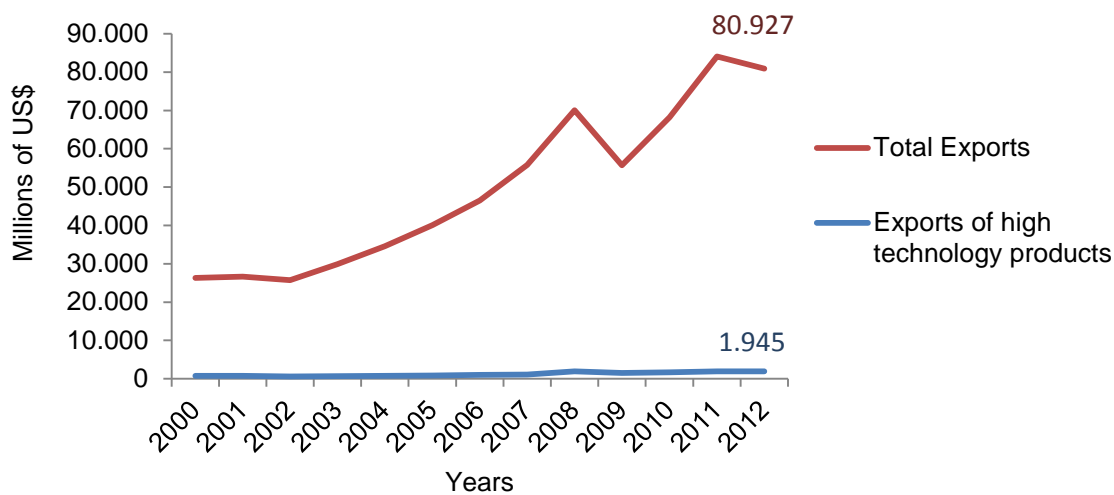
STATUS OF THE TECHNOLOGICAL INNOVATION IN LATIN AMERICA

GRAPHS PER COUNTRY



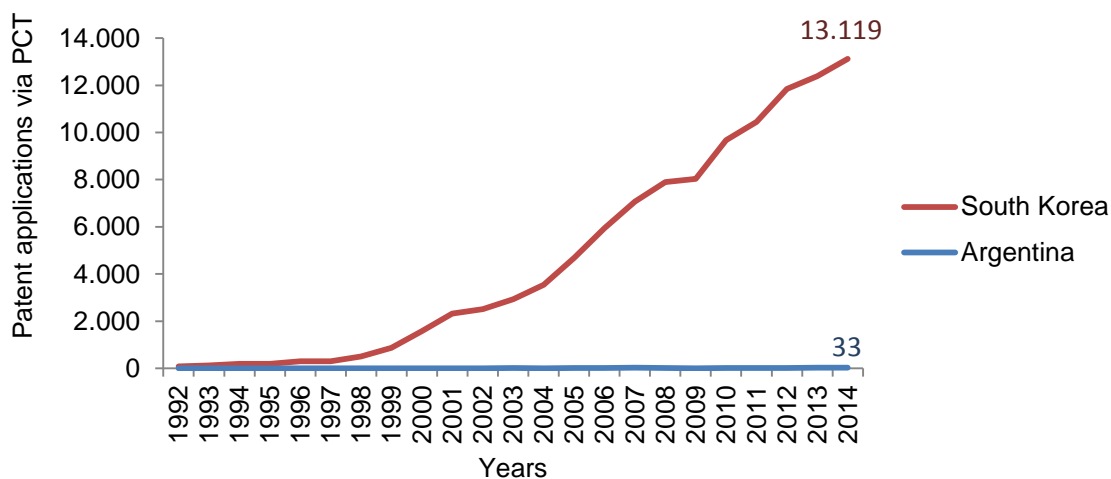
ARGENTINA

Graph 2. Total Exports vs Exports of high technology products- Argentina



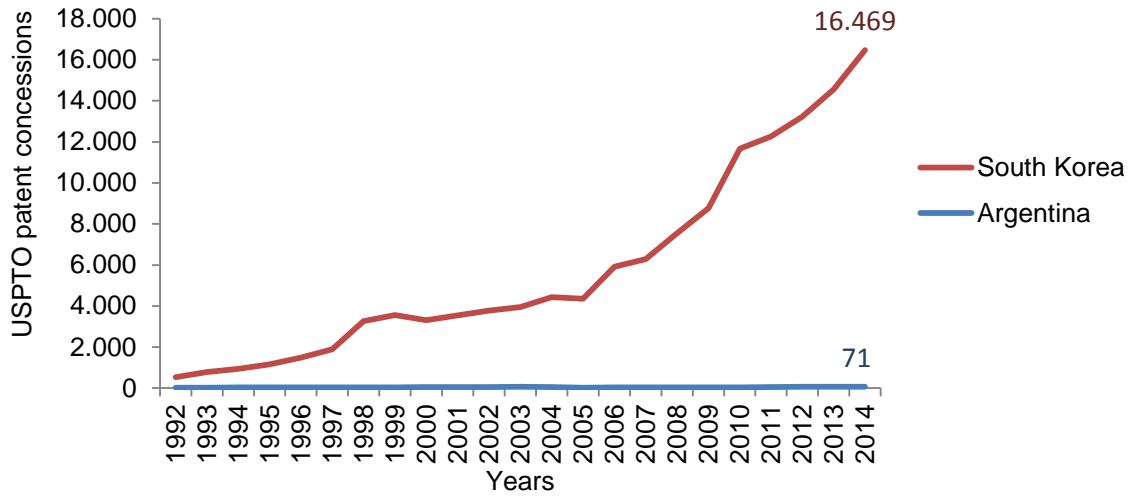
Own preparation. Source: United Nations Statistics Division (March 2015) <http://unstats.un.org/unsd/default.htm> and World Bank (March 2015) <http://datos.bancomundial.org/>

Graph 3. Patent applications via PCT- Argentina - South Korea



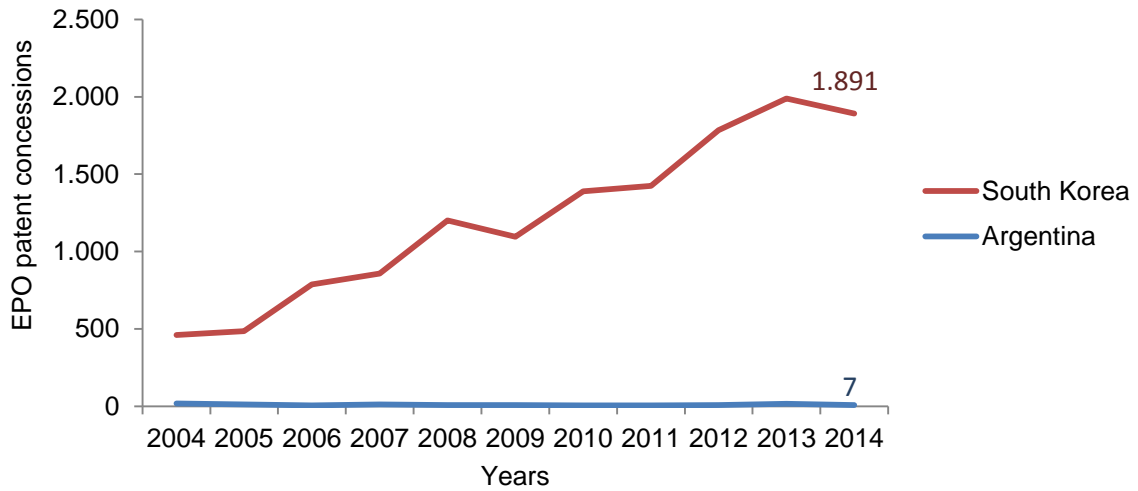
Own preparation. Source: WIPO Website (March 2015) (www.wipo.int)

Graph 4. USPTO patent concessions – Argentina - South Korea



Own preparation. Source: USPTO Website (March 2015) http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_utlh.htm

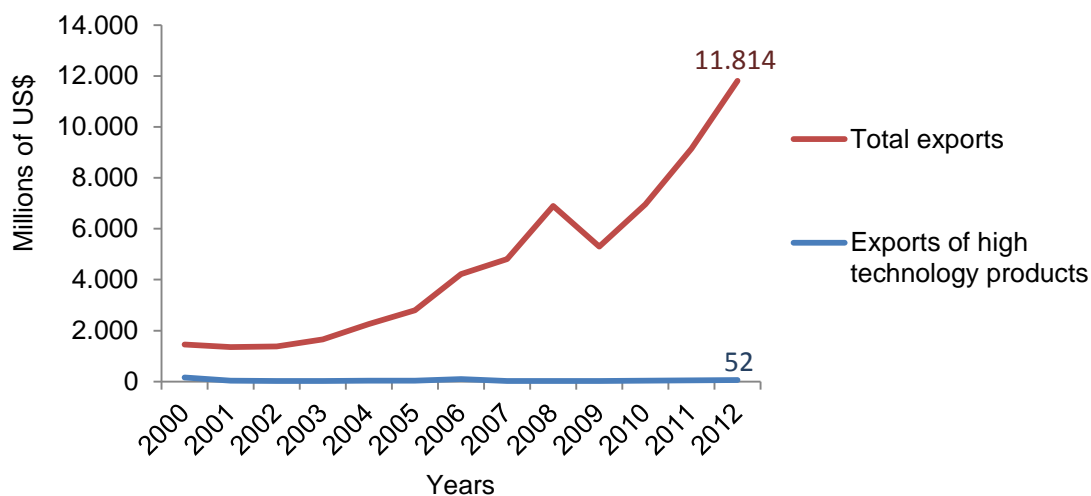
Graph 5. EPO patent concessions – Argentina - South Korea



Own preparation. Source: EPO Website (March 2015) <http://www.epo.org/about-us/annual-reports-statistics/statistics.html>

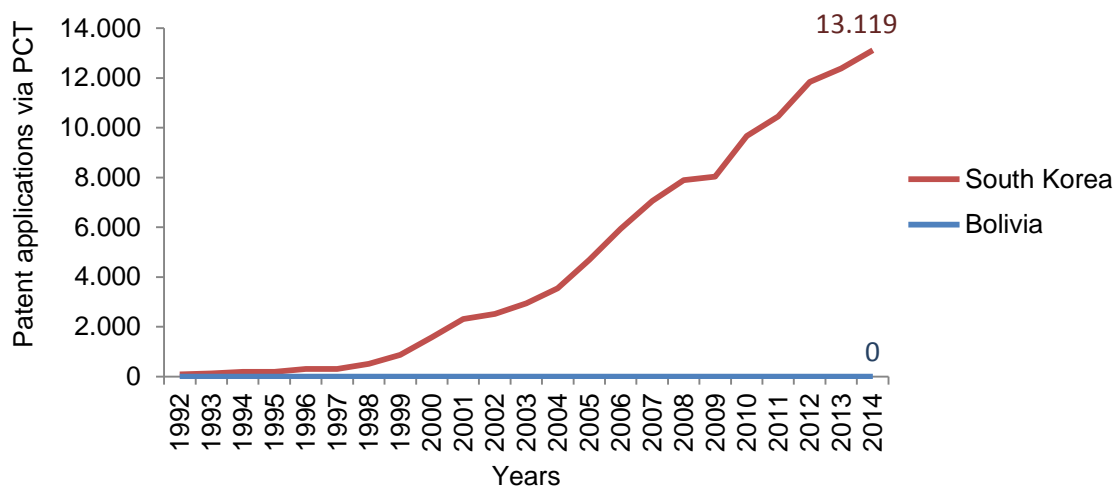
BOLIVIA

Graph 6. Total Exports vs Exports of high technology products- Bolivia



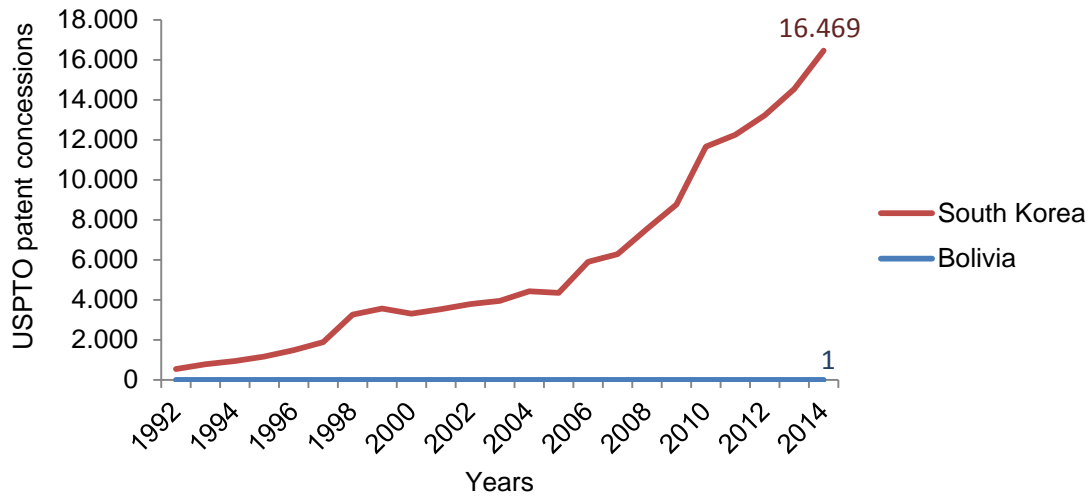
Own preparation. Source: United Nations Statistics Division (March 2015) <http://unstats.un.org/unsd/default.htm> and World Bank (March 2015) <http://datos.bancomundial.org/>

Graph 7. Patent applications via PCT- Bolivia - South Korea



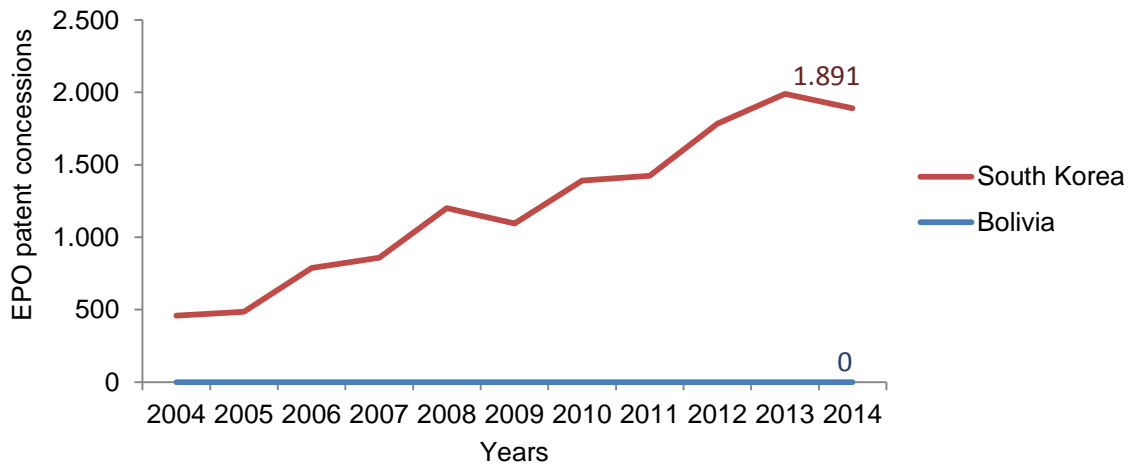
Own preparation. Source: WIPO Website (March 2015) (www.wipo.int)

Graph 8. USPTO patent concessions – Bolivia - South Korea



Own preparation. Source: USPTO Website (March 2015) http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_utlh.htm

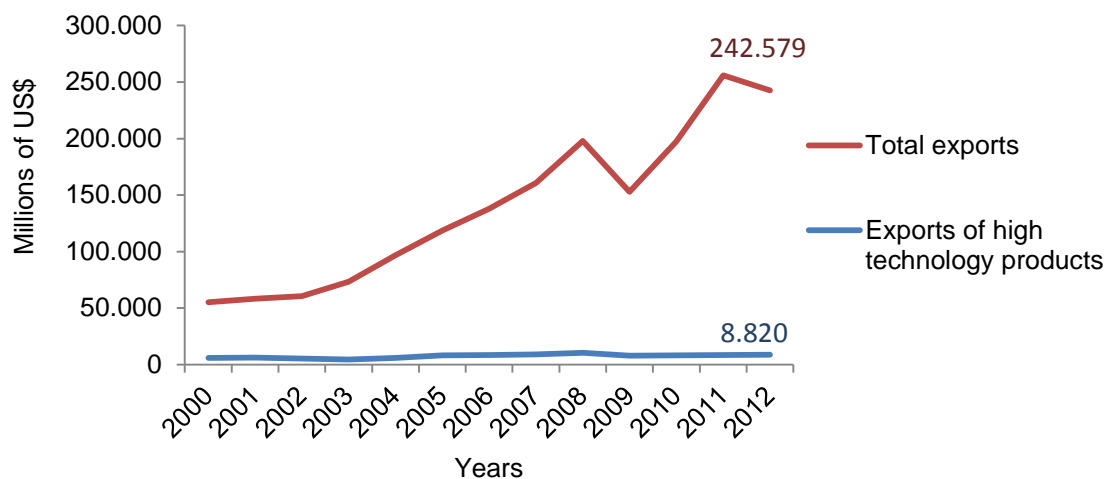
Graph 9. EPO patent concessions – Bolivia - South Korea



Own preparation. Source: EPO Website (March 2015) <http://www.epo.org/about-us/annual-reports-statistics/statistics.html>

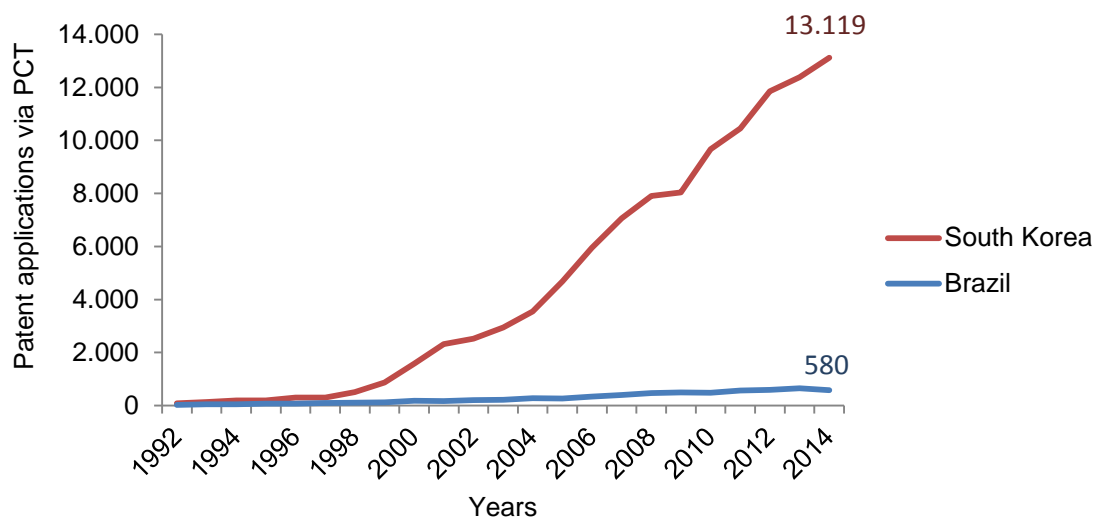
BRAZIL

Graph 10. Total Exports vs Exports of high technology products- Brazil



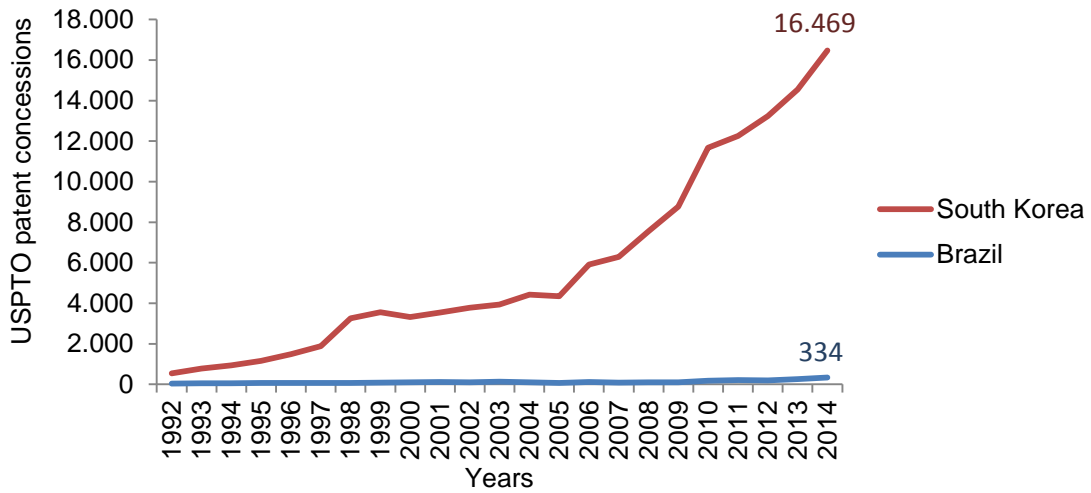
Own preparation. Source: United Nations Statistics Division (March 2015) <http://unstats.un.org/unsd/default.htm> and World Bank (March 2015) <http://datos.bancomundial.org/>

Graph 11. Patent applications via PCT – Brazil - South Korea



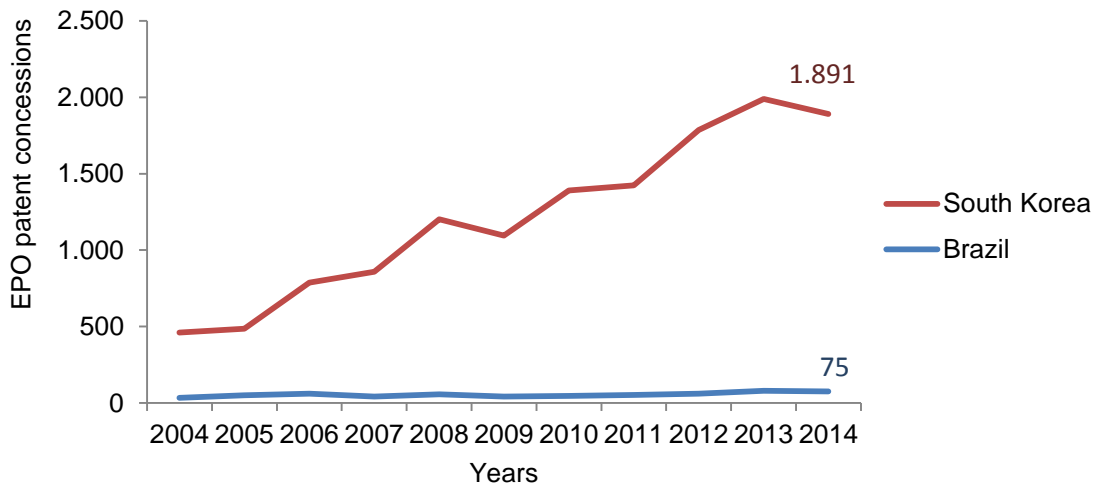
Own preparation. Source: WIPO Website (March 2015) (www.wipo.int)

Graph 12. USPTO patent concessions- Brazil - South Korea



Own preparation. Source: USPTO Website (March 2015) http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_utlh.htm

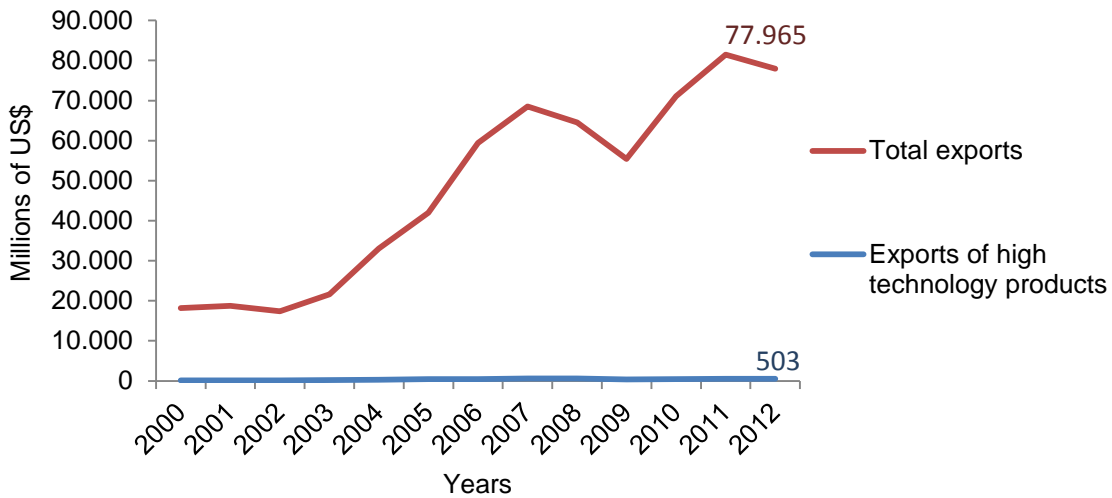
Graph 13. EPO patent concessions- Brazil - South Korea



Own preparation. Source: EPO Website (March 2015) <http://www.epo.org/about-us/annual-reports-statistics/statistics.html>

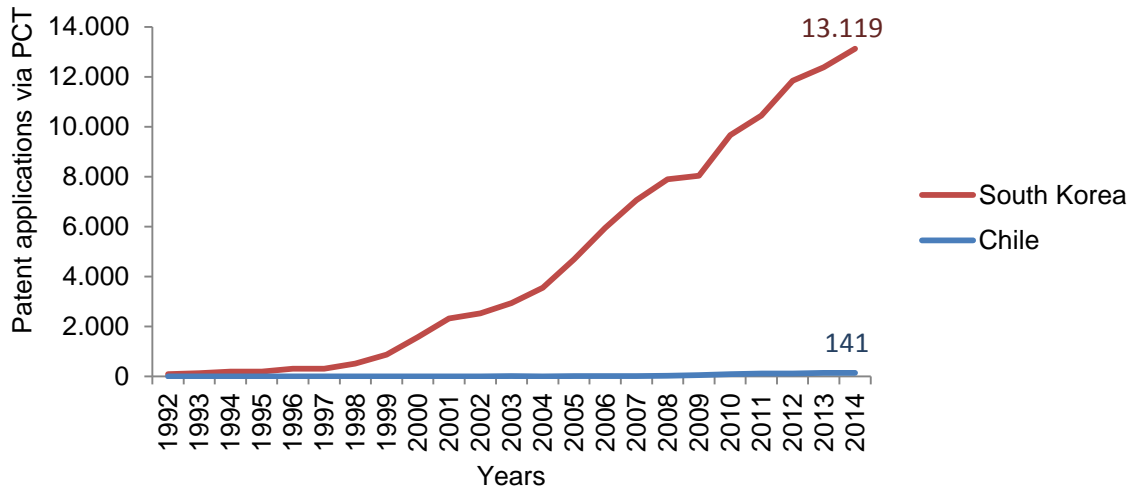
CHILE

Graph 14. Total Exports vs Exports of high technology products- Chile



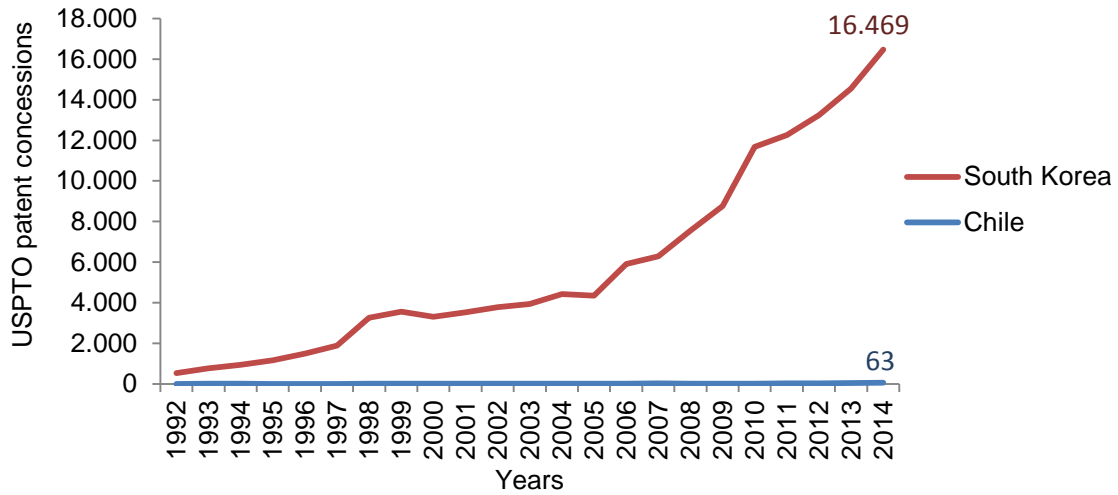
Own preparation. Source: United Nations Statistics Division (March 2015) <http://unstats.un.org/unsd/default.htm> and World Bank (March 2015) <http://datos.bancomundial.org/>

Graph 15. Patent applications via PCT- Chile - South Korea



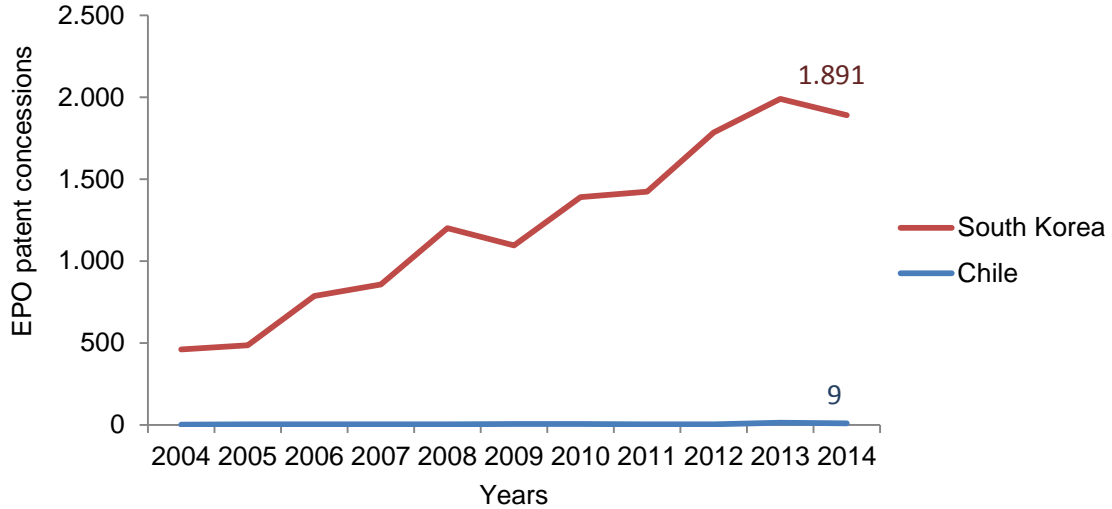
Own preparation. Source: WIPO Website (March 2015) (www.wipo.int)

Graph 16. USPTO patent concessions- Chile - South Korea



Own preparation. Source: USPTO Website (March 2015) http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_utlh.htm

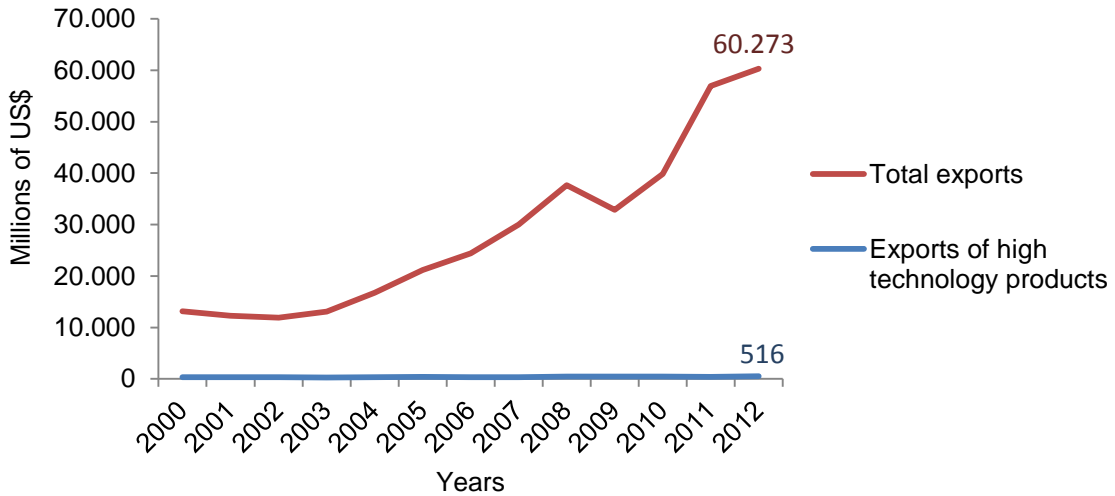
Graph 17. EPO patent concessions- Chile - South Korea



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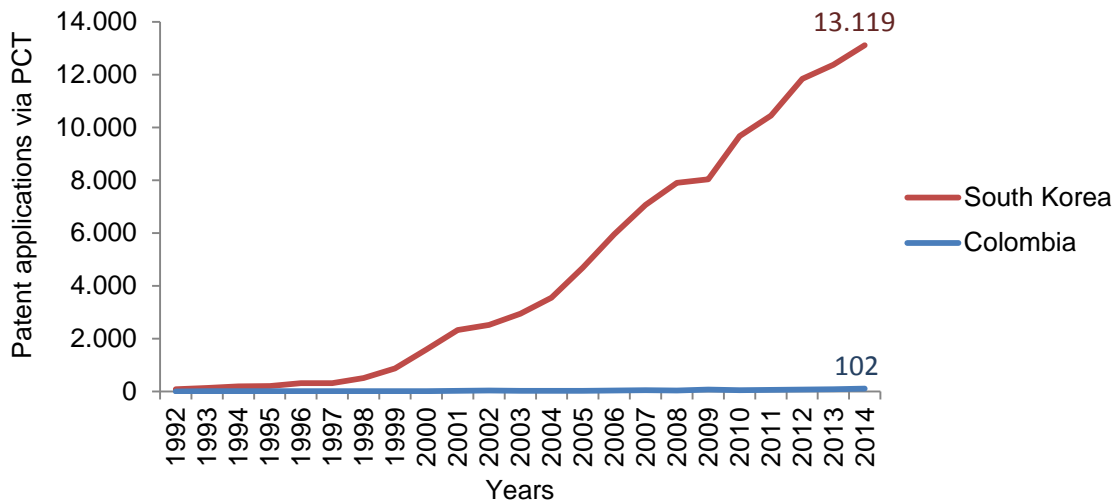
COLOMBIA

Graph 18. Total Exports vs Exports of high technology products- Colombia



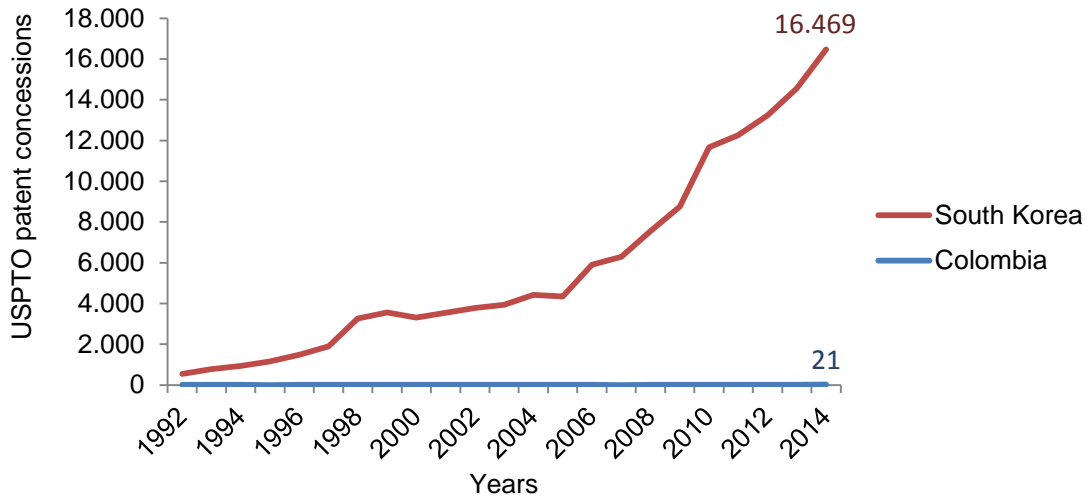
Own preparation. Source: United Nations Statistics Division (March 2015) <http://unstats.un.org/unsd/default.htm> and World Bank (March 2015) <http://datos.bancomundial.org/>

Graph 19. Patent applications via PCT- Colombia - South Korea



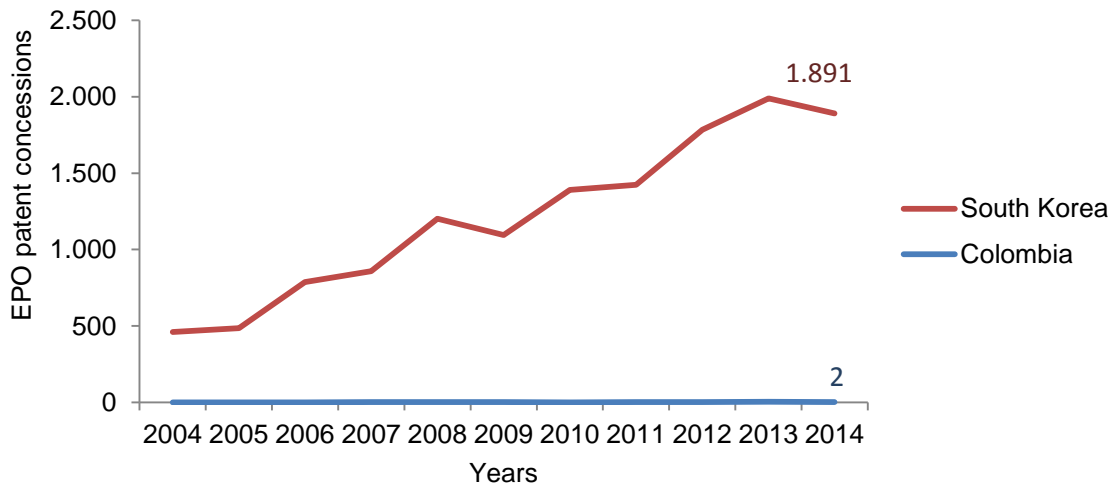
Own preparation. Source: WIPO Website (March 2015) (www.wipo.int)

Graph 20. USPTO patent concessions- Colombia - South Korea



Own preparation. Source: USPTO Website (March 2015) http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_utlh.htm

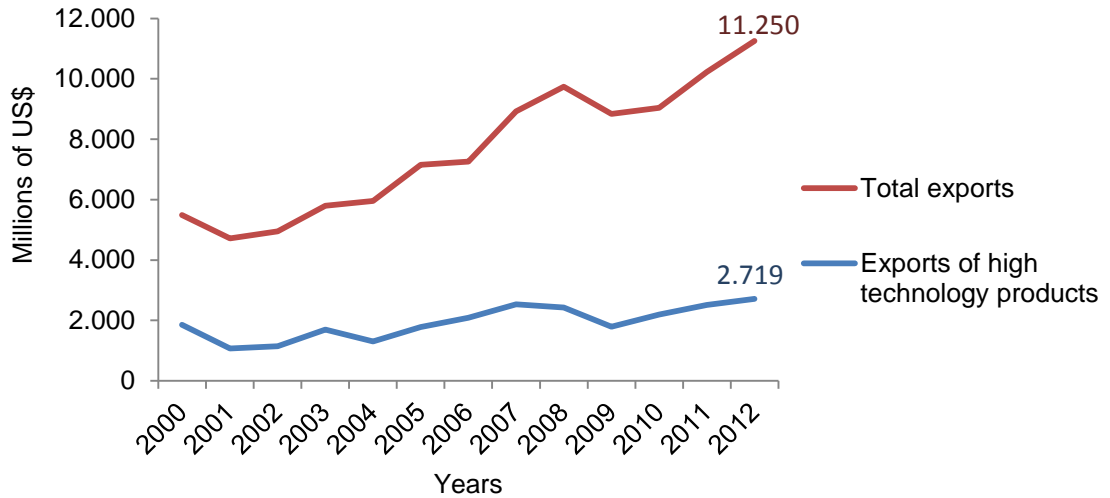
Graph 21. EPO patent concessions- Colombia - South Korea



Own preparation. Source: EPO Website (March 2015) <http://www.epo.org/about-us/annual-reports-statistics/statistics.html>

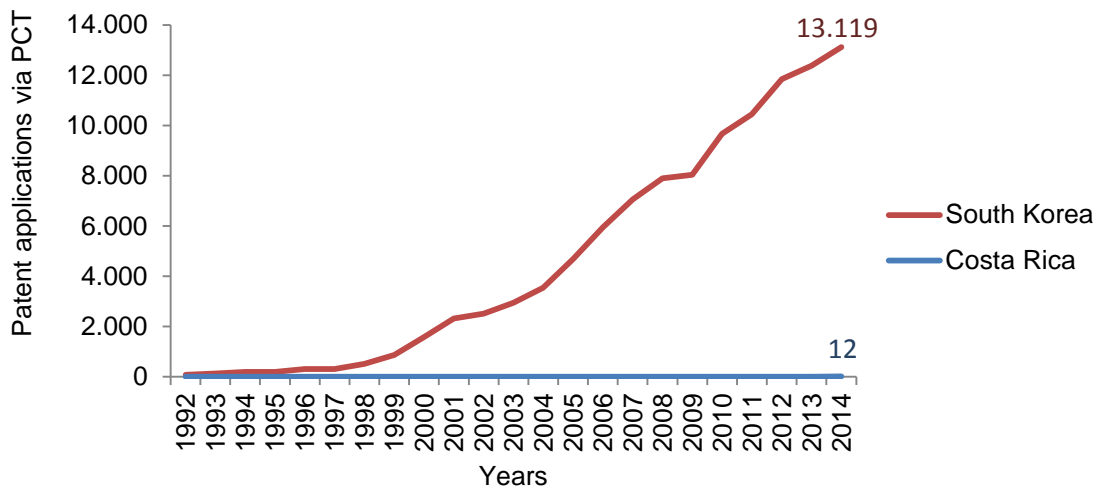
COSTA RICA

Graph 22. Total Exports vs Exports of high technology products- Costa Rica



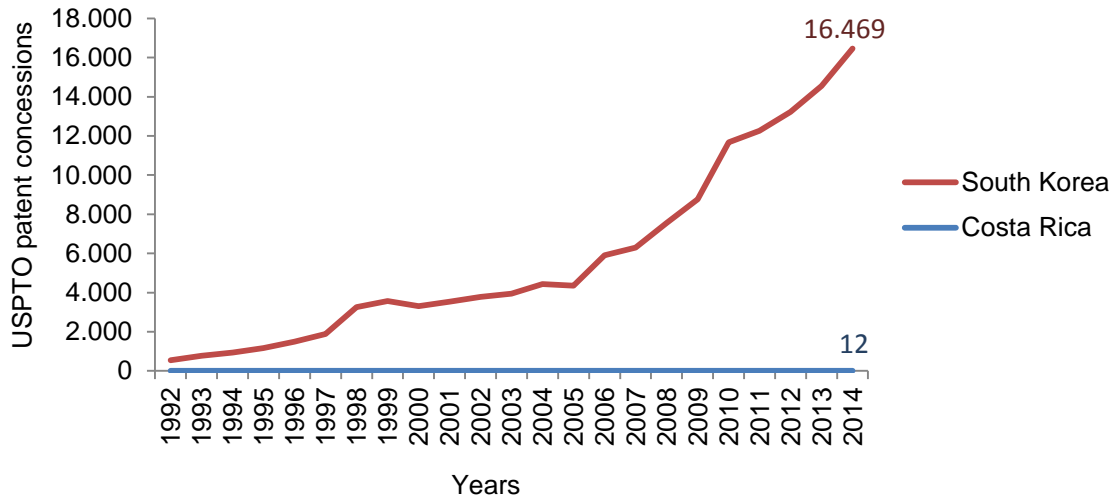
Own preparation. Source: United Nations Statistics Division (March 2015) <http://unstats.un.org/unsd/default.htm> and World Bank (March 2015) <http://datos.bancomundial.org/>

Graph 23. Patent applications via PCT- Costa Rica - South Korea



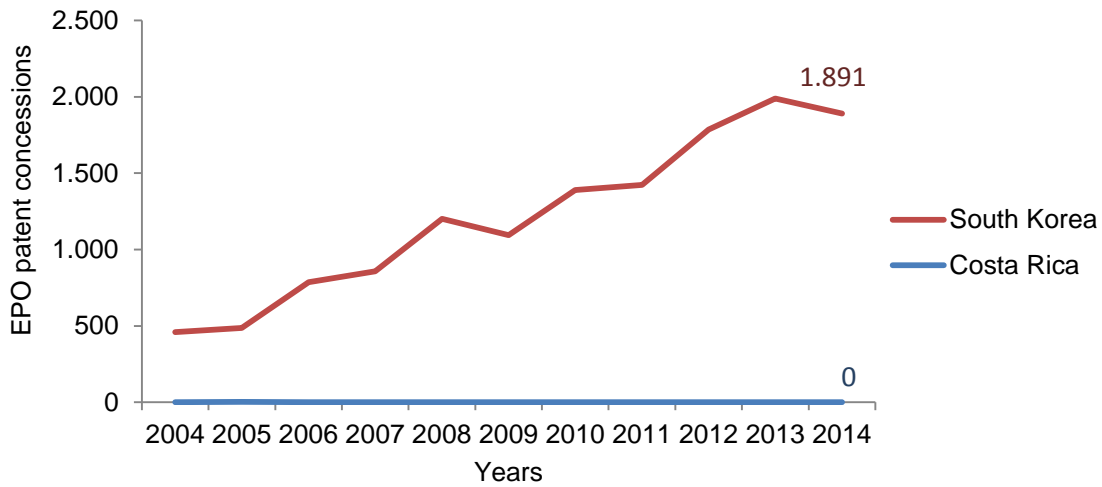
Own preparation. Source: WIPO Website (March 2015) (www.wipo.int)

Graph 24. USPTO patent concessions- Costa Rica - South Korea



Own preparation. Source: USPTO Website (March 2015) http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_utlh.htm

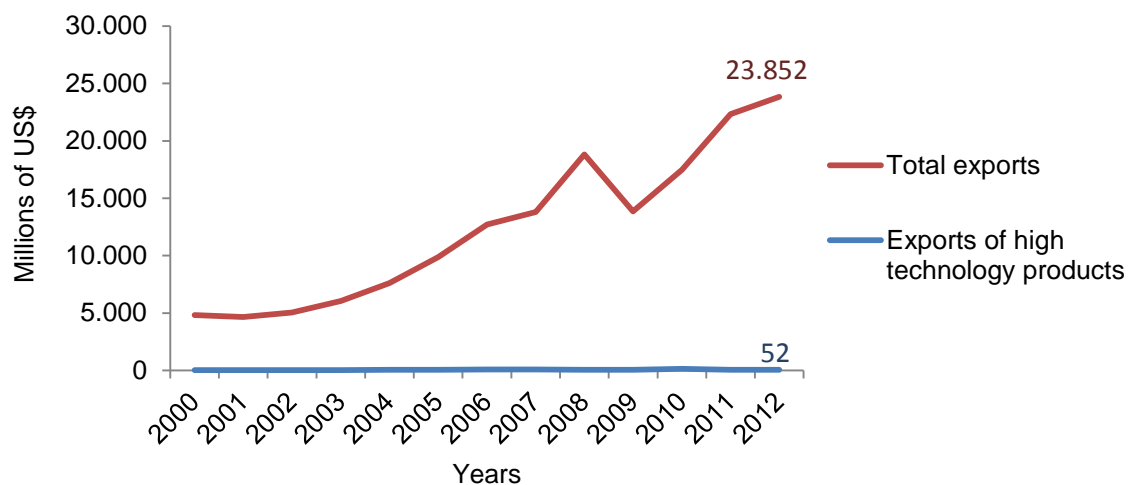
Graph 25. EPO patent concessions- Costa Rica - South Korea



Own preparation. Source: EPO Website (March 2015) <http://www.epo.org/about-us/annual-reports-statistics/statistics.html>

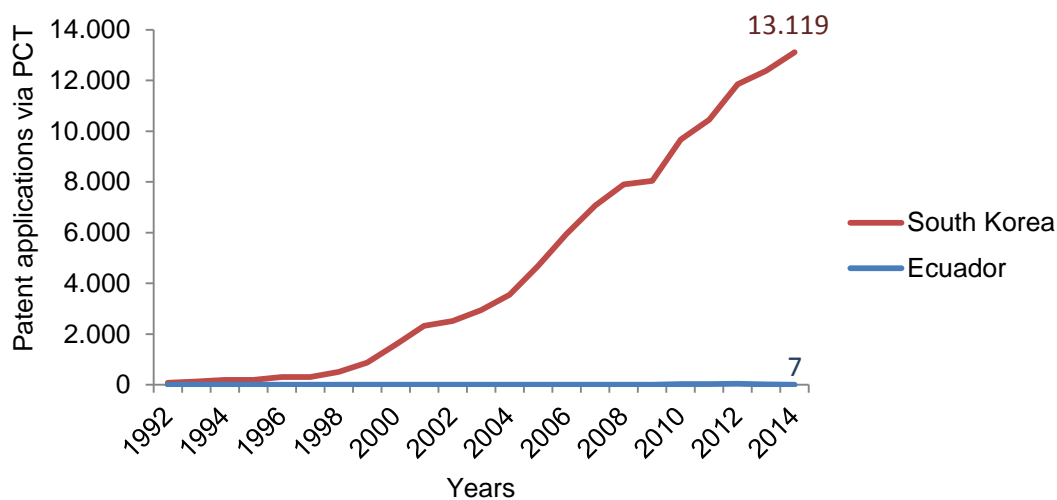
ECUADOR

Graph 26. Total Exports vs Exports of high technology products- Ecuador



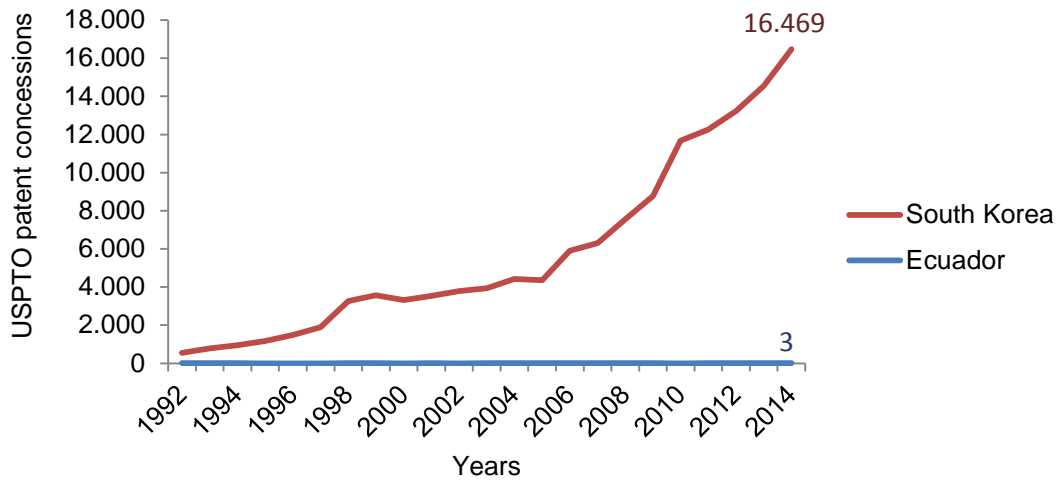
Own preparation. Source: United Nations Statistics Division (March 2015) <http://unstats.un.org/unsd/default.htm> and World Bank (March 2015) <http://datos.bancomundial.org/>

Graph 27. Patent applications via PCT- Ecuador - South Korea



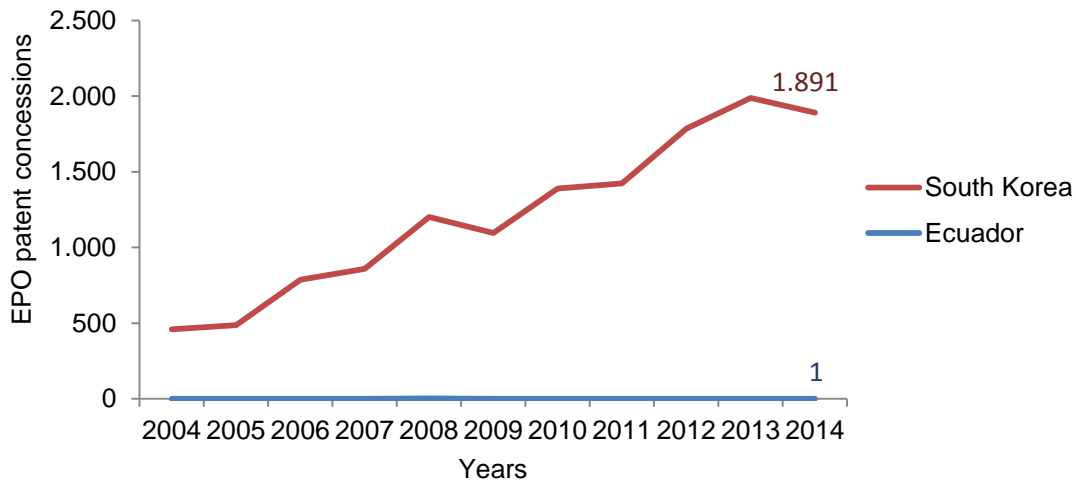
Own preparation. Source: WIPO Website (March 2015) (www.wipo.int)

Graph 28. USPTO patent concessions- Ecuador - South Korea



Own preparation. Source: USPTO Website (March 2015) http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_utlh.htm

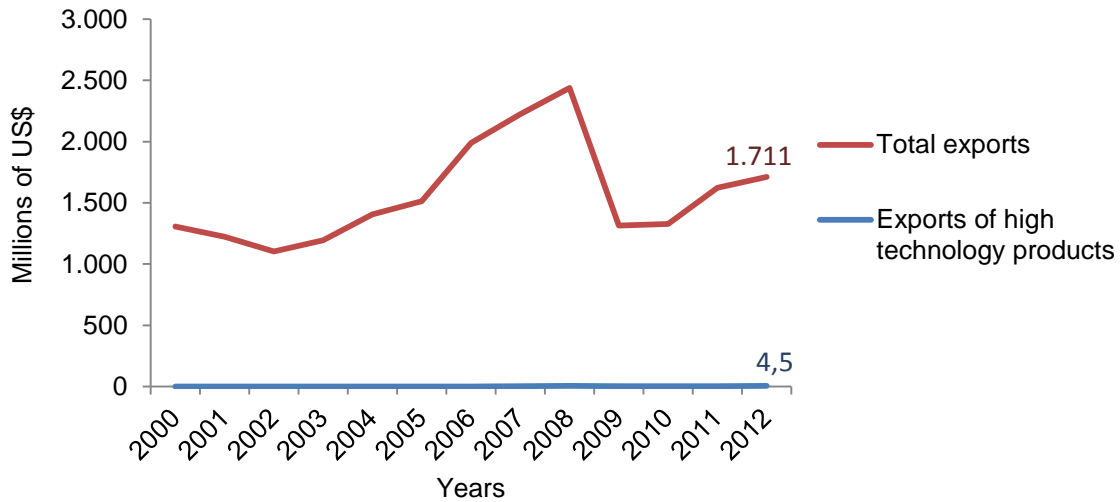
Graph 29. EPO patent concessions- Ecuador - South Korea



Own preparation. Source: EPO Website (March 2015) <http://www.epo.org/about-us/annual-reports-statistics/statistics.html>

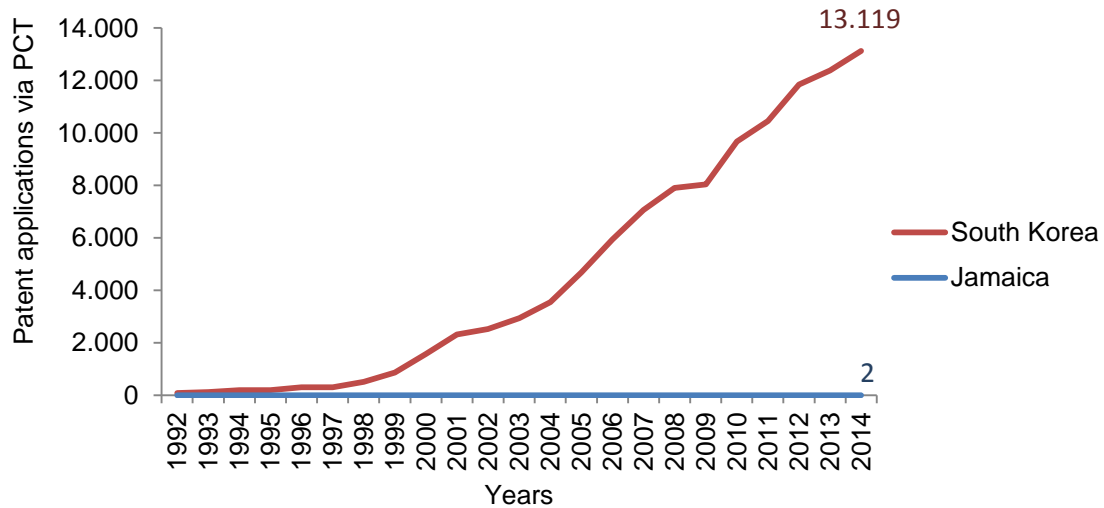
JAMAICA

Graph 30. Total Exports vs Exports of high technology products- Jamaica



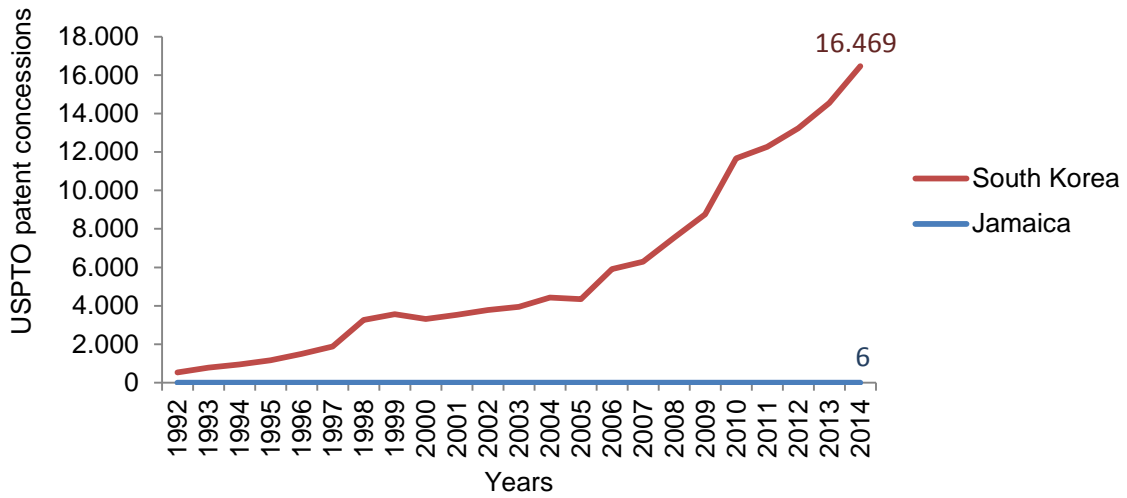
Own preparation. Source: United Nations Statistics Division (March 2015) <http://unstats.un.org/unsd/default.htm> and World Bank (March 2015) <http://datos.bancomundial.org/>

Graph 31. Patent applications via PCT- Jamaica - South Korea



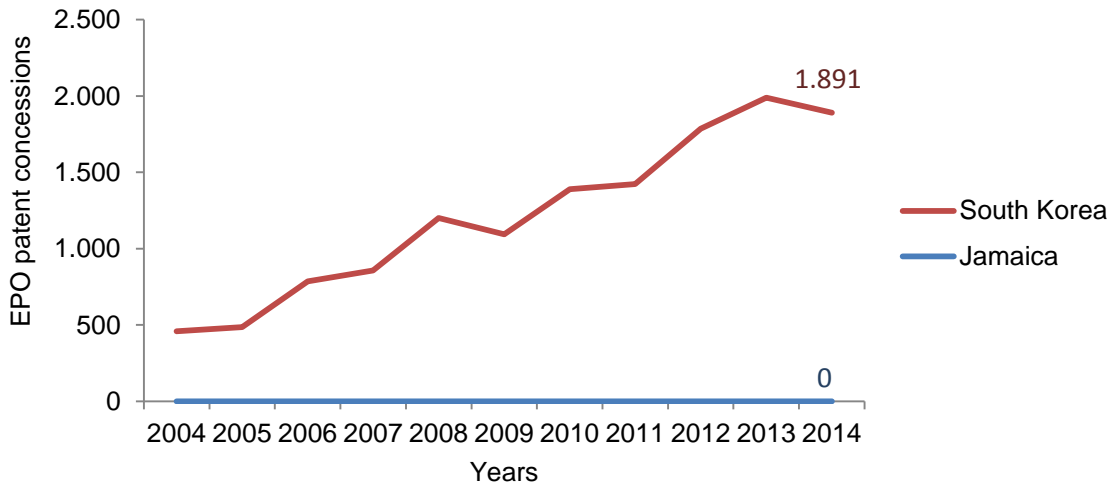
Own preparation. Source: WIPO Website (March 2015) (www.wipo.int)

Graph 32. USPTO patent concessions- Jamaica - South Korea



Own preparation. Source: USPTO Website (March 2015) http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_utlh.htm

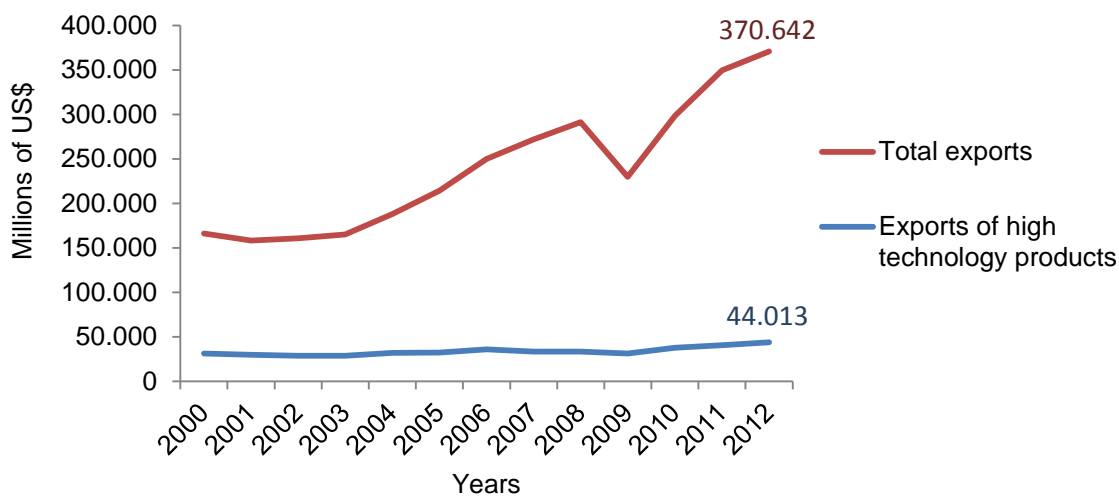
Graph 33. EPO patent concessions- Jamaica - South Korea



Own preparation. Source: EPO Website (March 2015) <http://www.epo.org/about-us/annual-reports-statistics/statistics.html>

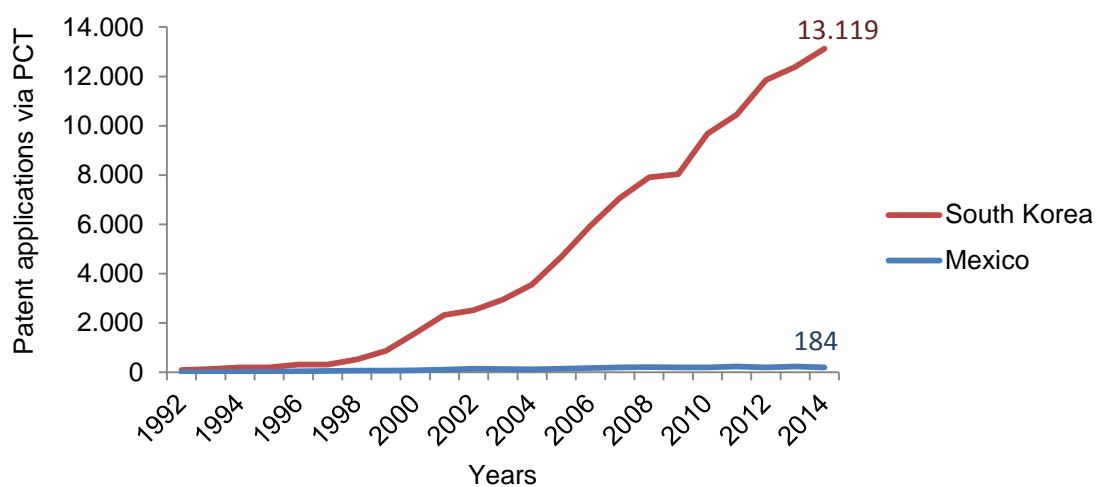
MEXICO

Graph 34. Total Exports vs Exports of high technology products- Mexico



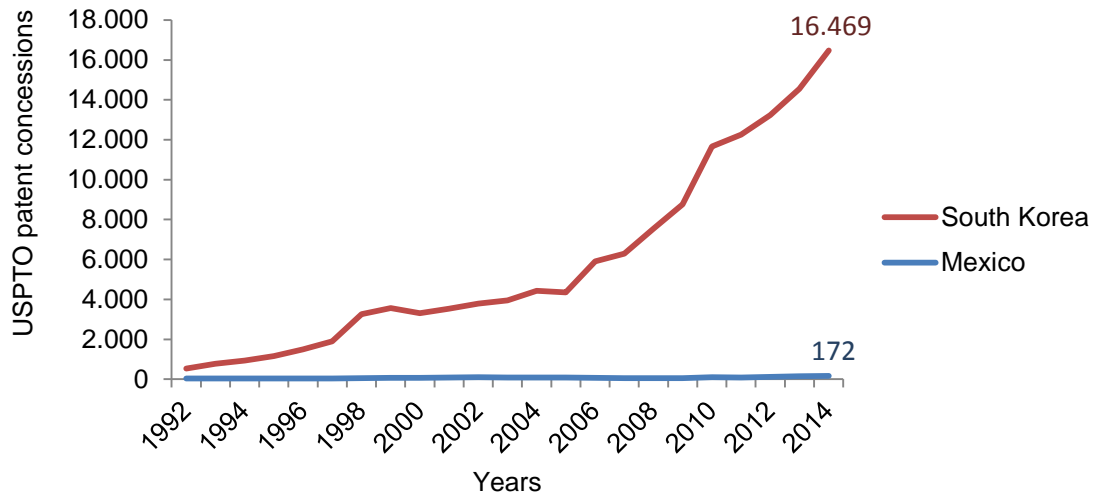
Own preparation. Source: United Nations Statistics Division (March 2015) <http://unstats.un.org/unsd/default.htm> and World Bank (March 2015) <http://datos.bancomundial.org/>

Graph 35. Patent applications via PCT- Mexico - South Korea



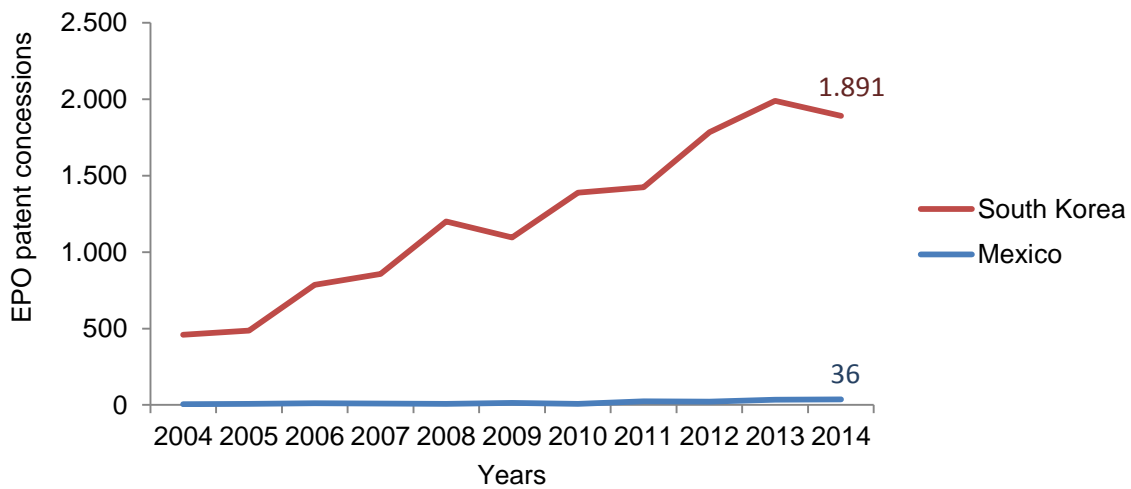
Own preparation. Source: WIPO Website (March 2015) (www.wipo.int)

Graph 36. USPTO patent concessions- Mexico - South Korea



Own preparation. Source: USPTO Website (March 2015) http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_utlh.htm

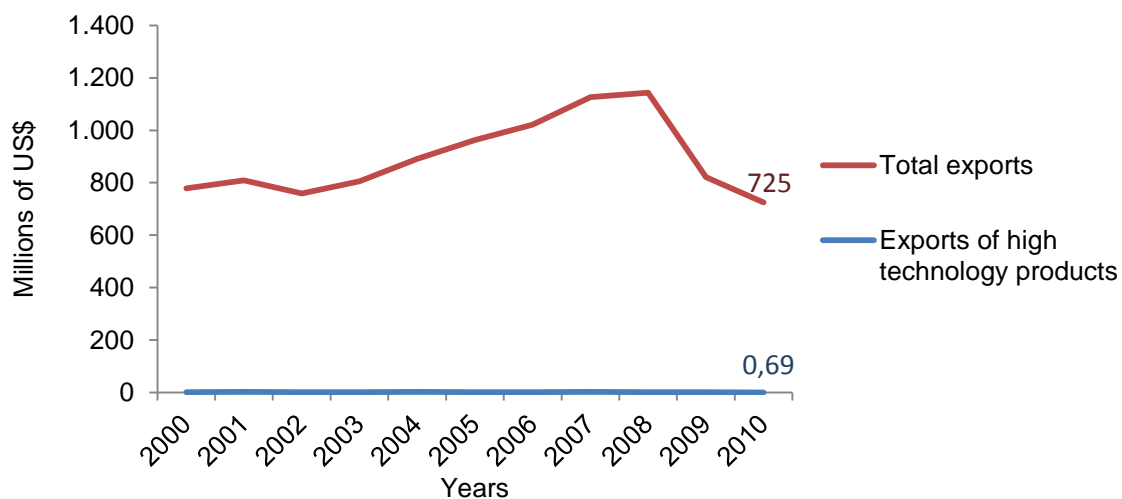
Graph 37. EPO patent concessions- Mexico - South Korea



Own preparation. Source: EPO Website (March 2015) <http://www.epo.org/about-us/annual-reports-statistics/statistics.html>

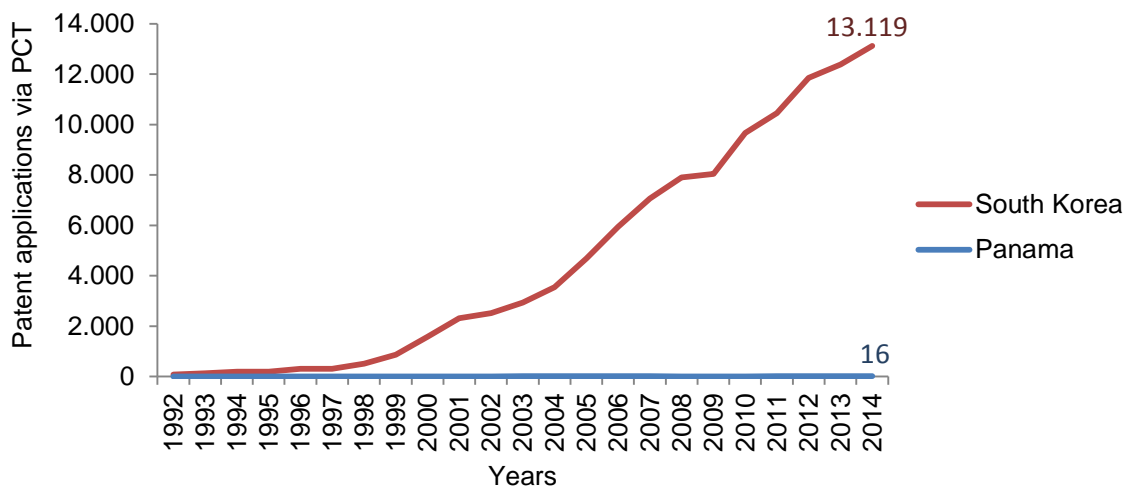
PANAMA

Graph 38. Total Exports vs Exports of high technology products- Panama



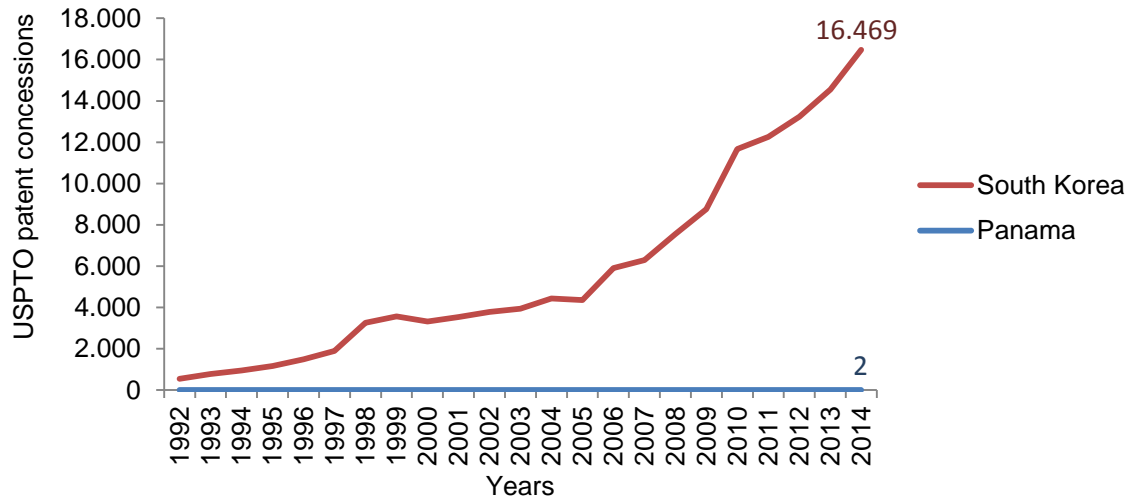
Own preparation. Source: Instituto Nacional de Estadística and Censo (INEC) (March 2015) <http://contraloria.gob.pa/inec/> and World Bank (March 2015) <http://datos.bancomundial.org/>

Graph 39. Patent applications via PCT- Panama - South Korea



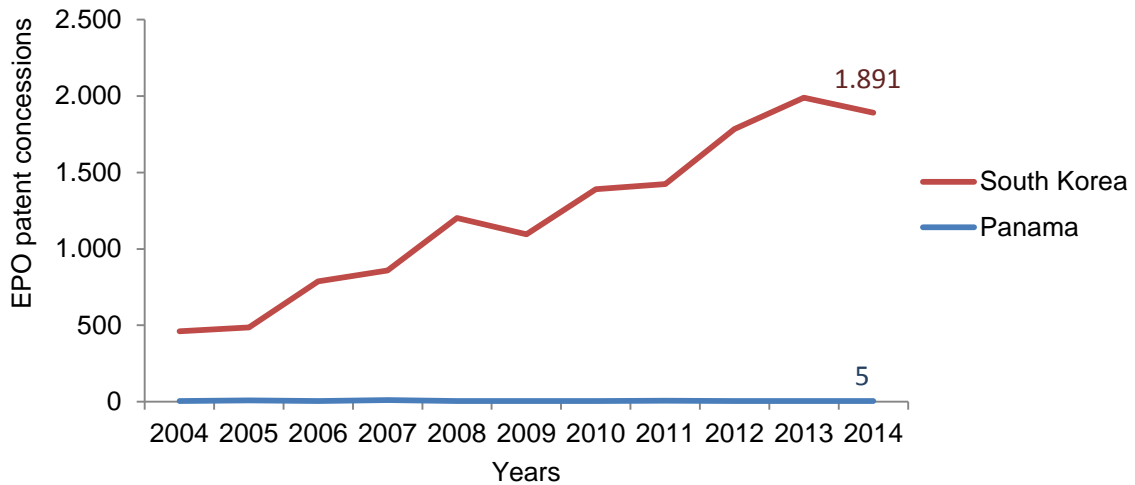
Own preparation. Source: WIPO Website (March 2015) (www.wipo.int)

Graph 40. USPTO patent concessions- Panama - South Korea



Own preparation. Source: USPTO Website (March 2015) http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_utlh.htm

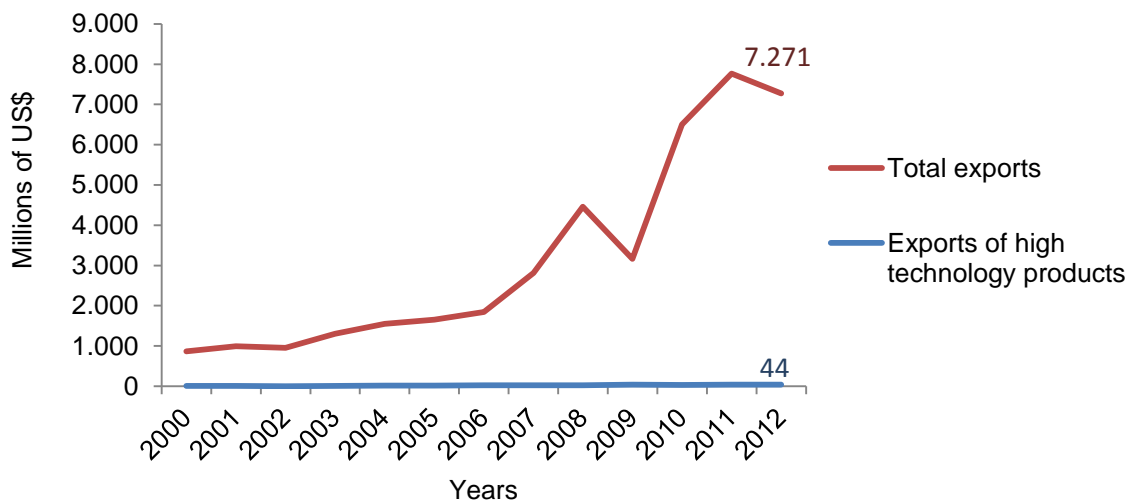
Graph 41. EPO patent concessions- Panama - South Korea



Own preparation. Source: EPO Website (March 2015) <http://www.epo.org/about-us/annual-reports-statistics/statistics.html>

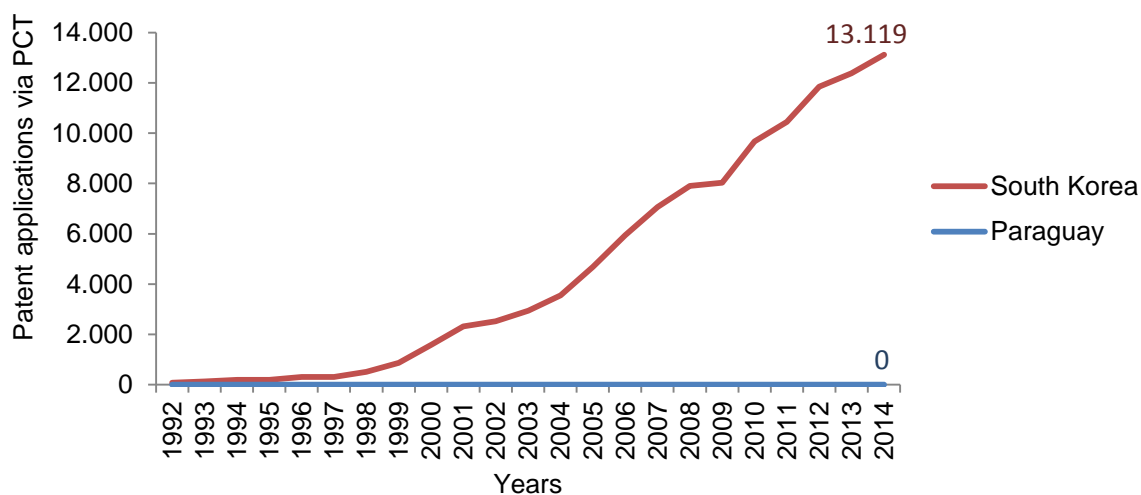
PARAGUAY

Graph 42. Total Exports vs Exports of high technology products- Paraguay



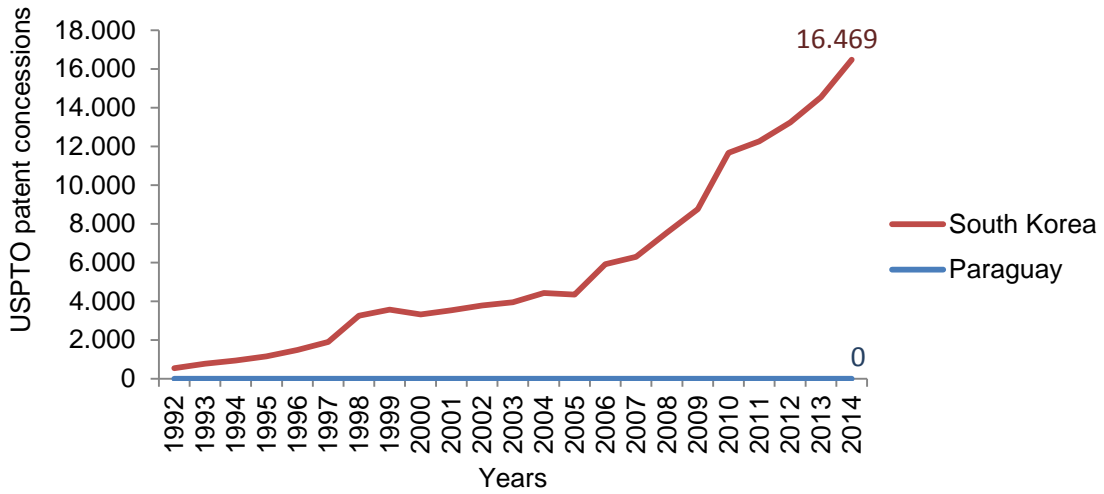
Own preparation. Source: United Nations Statistics Division (March 2015) <http://unstats.un.org/unsd/default.htm> and World Bank (March 2015) <http://datos.bancomundial.org/>

Graph 43. Patent applications via PCT- Paraguay - South Korea



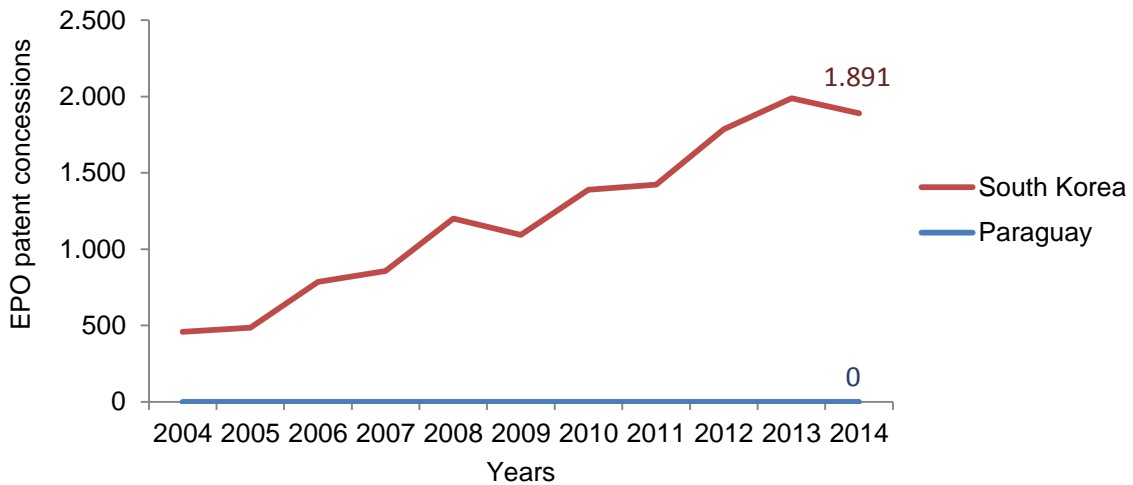
Own preparation. Source: WIPO Website (March 2015) (www.wipo.int)

Graph 44. USPTO patent concessions- Paraguay - South Korea



Own preparation. Source: USPTO Website (March 2015) http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_utlh.htm

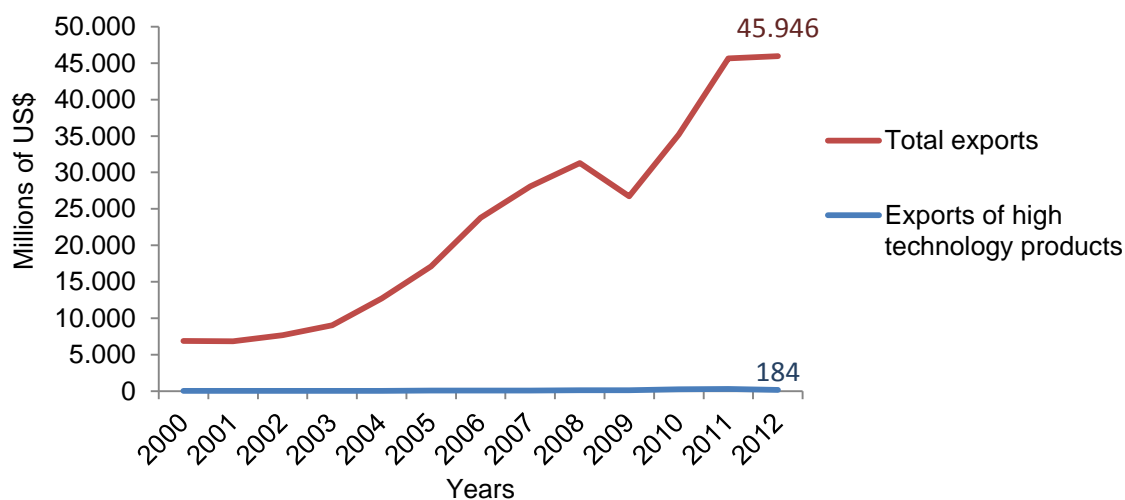
Graph 45. EPO patent concessions- Paraguay - South Korea



Own preparation. Source: EPO Website (March 2015) <http://www.epo.org/about-us/annual-reports-statistics/statistics.html>

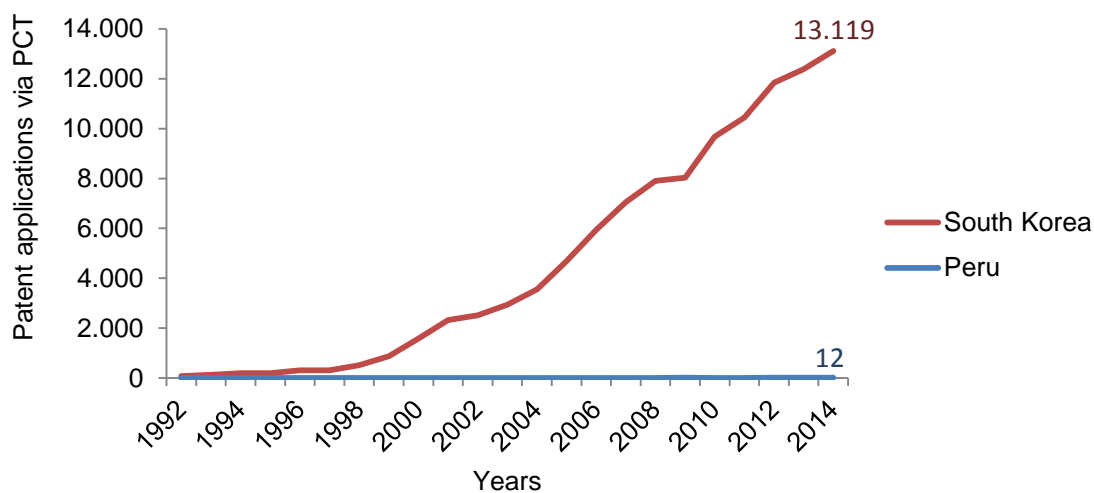
PERU

Graph 46. Total Exports vs Exports of high technology products- Peru



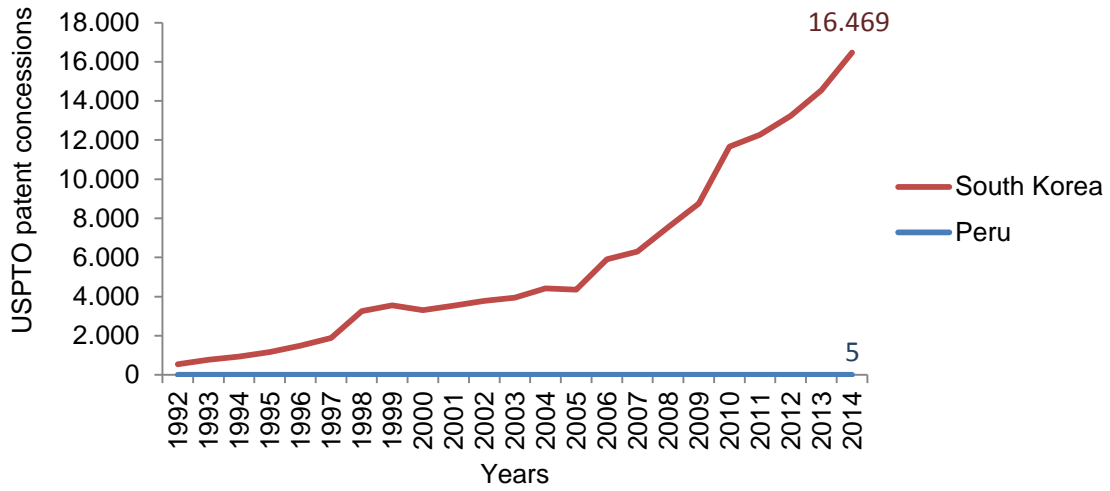
Own preparation. Source: United Nations Statistics Division (March 2015) <http://unstats.un.org/unsd/default.htm> and World Bank (March 2015) <http://datos.bancomundial.org/>

Graph 47. Patent applications via PCT- Peru - South Korea



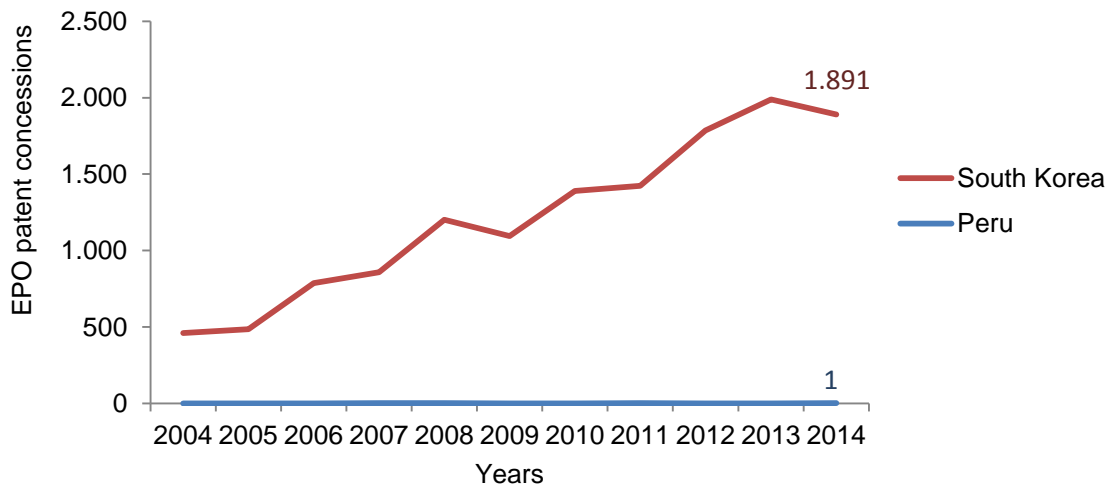
Own preparation. Source: WIPO Website (March 2015) (www.wipo.int)

Graph 48. USPTO patent concessions- Peru - South Korea



Own preparation. Source: USPTO Website (March 2015) http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_utlh.htm

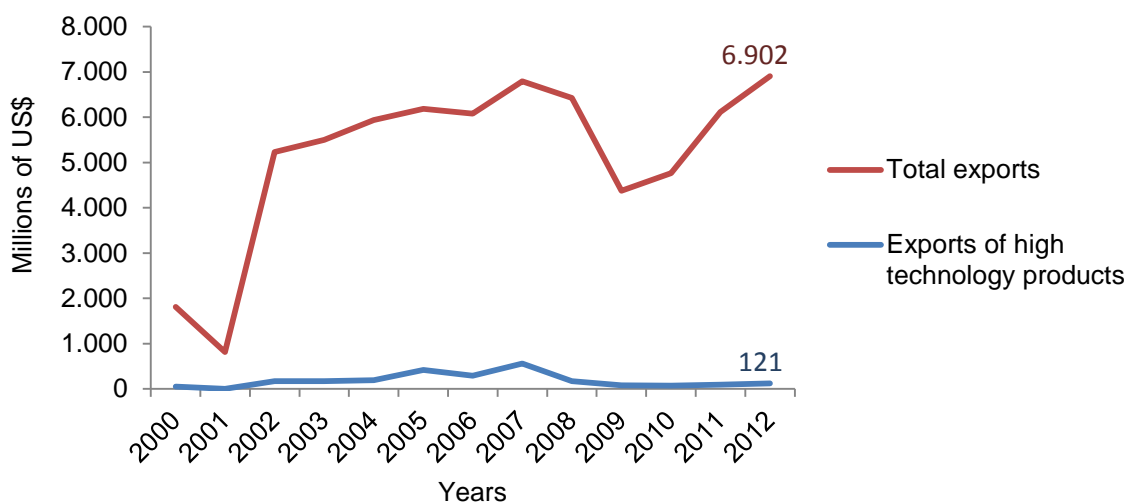
Graph 49. EPO patent concessions- Peru- South Korea



Own preparation. Source: EPO Website (March 2015) <http://www.epo.org/about-us/annual-reports-statistics/statistics.html>

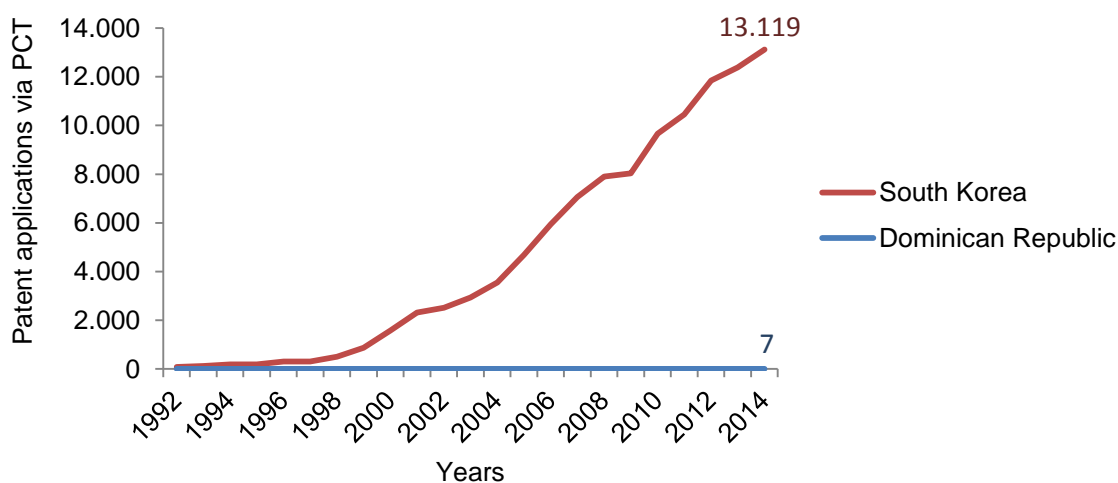
DOMINICAN REPUBLIC

Graph 50. Total Exports vs Exports of high technology products- Dominican Republic



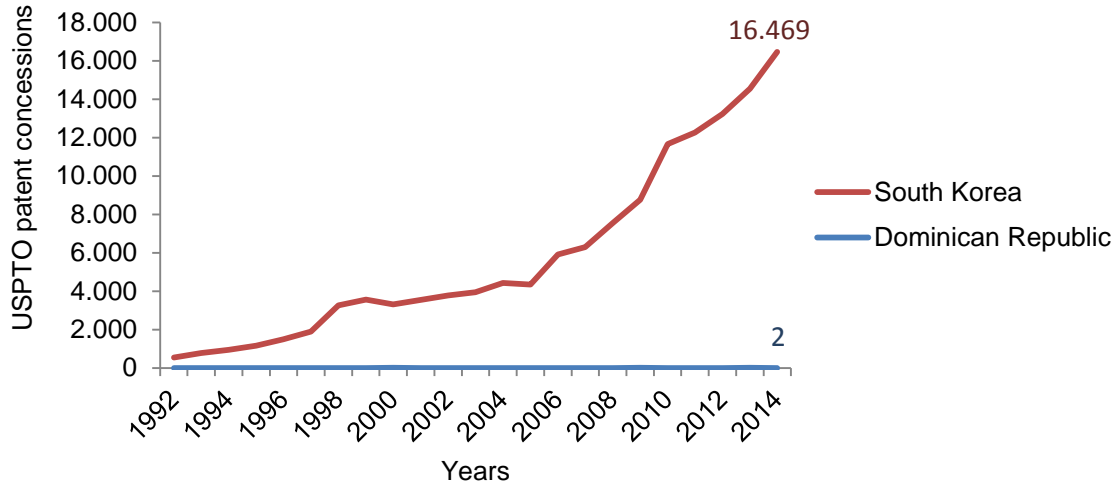
Own preparation. Source: United Nations Statistics Division (March 2015) <http://unstats.un.org/unsd/default.htm> and World Bank (March 2015) <http://datos.bancomundial.org/>

Graph 51. Patent applications via PCT- Dominican Republic - South Korea



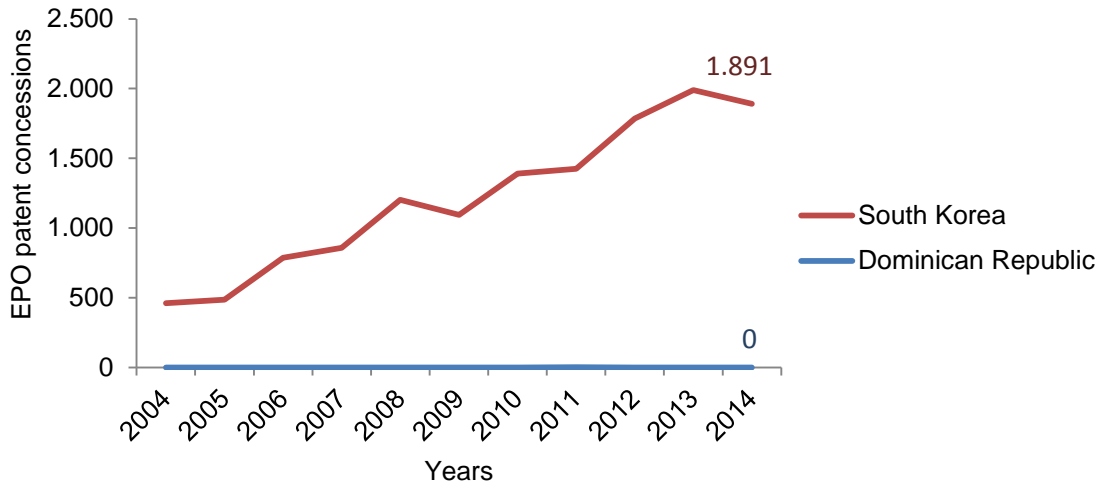
Own preparation. Source: WIPO Website (March 2015) (www.wipo.int)

Graph 52. USPTO patent concessions- Dominican Republic - South Korea



Own preparation. Source: USPTO Website (March 2015) http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_utlh.htm

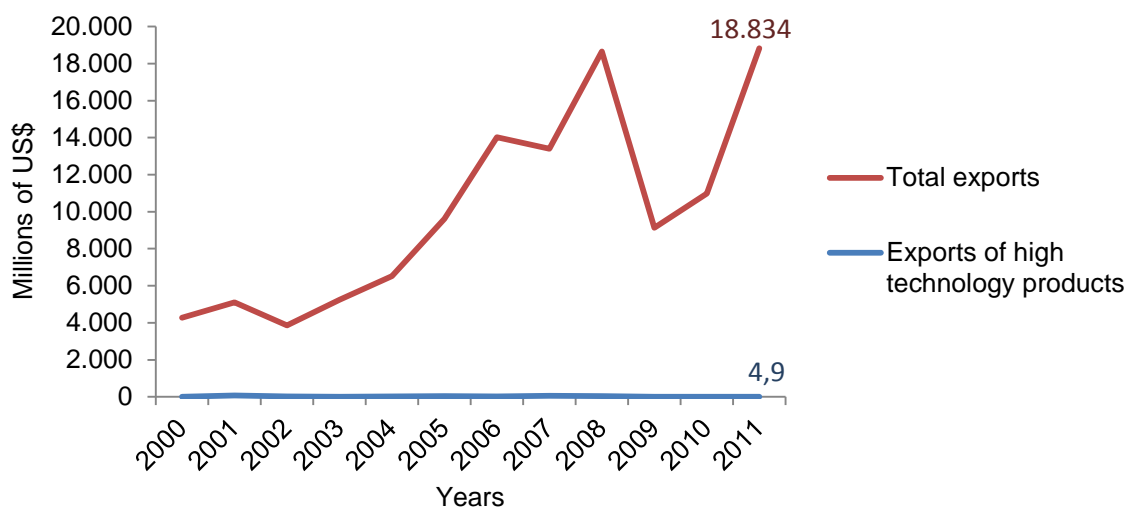
Graph 53. EPO patent concessions- Dominican Republic - South Korea



Own preparation. Source: EPO Website (March 2015) <http://www.epo.org/about-us/annual-reports-statistics/statistics.html>

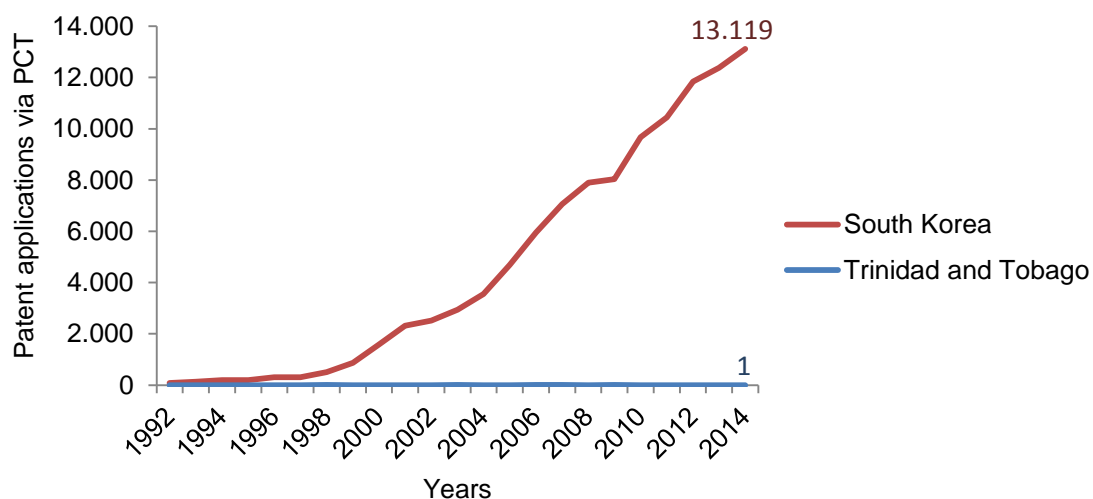
TRINIDAD AND TOBAGO

Graph 54. Total Exports vs Exports of high technology products- Trinidad and Tobago



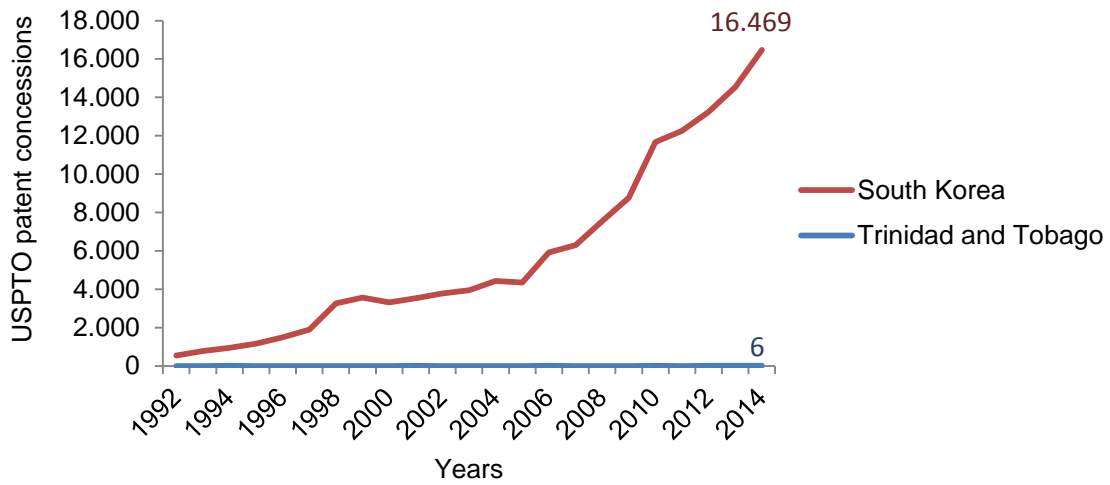
Own preparation. Source: United Nations Statistics Division (March 2015) <http://unstats.un.org/unsd/default.htm> and World Bank (March 2015) <http://datos.bancomundial.org/>

Graph 55. Patent applications via PCT- Trinidad and Tobago - South Korea



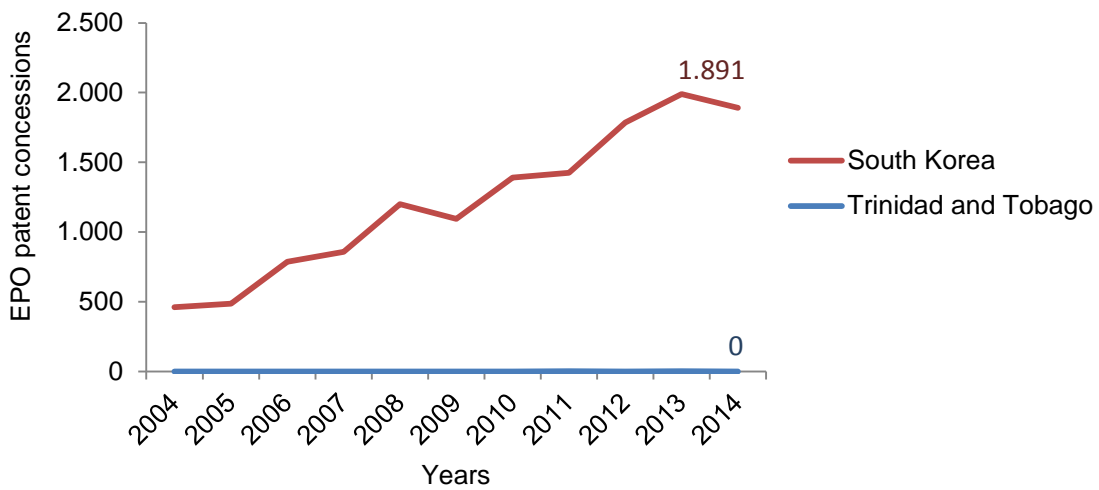
Own preparation. Source: WIPO Website (March 2015) (www.wipo.int)

Graph 56. USPTO patent concessions- Trinidad and Tobago - South Korea



Own preparation. Source: USPTO Website (March 2015) http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_utlh.htm

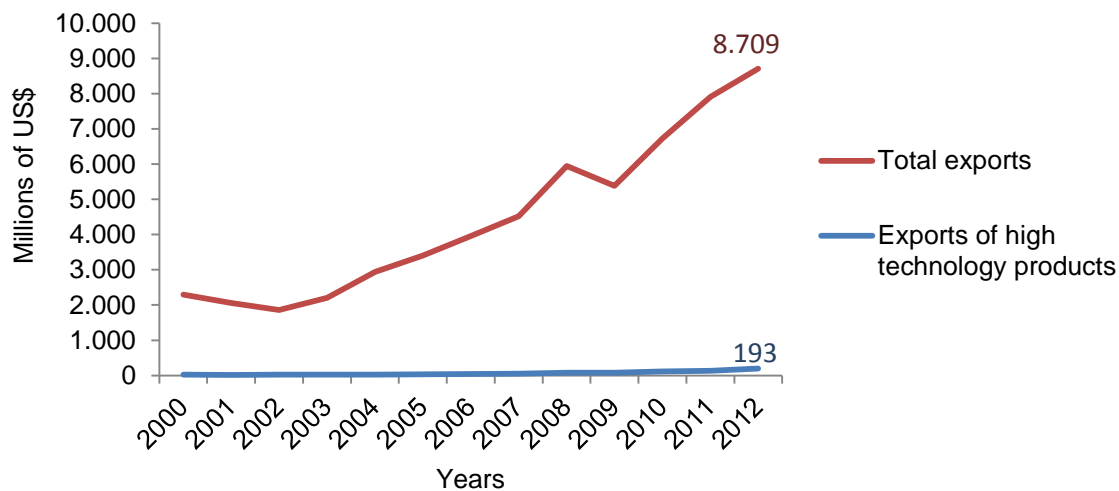
Graph 57. EPO patent concessions- Trinidad and Tobago - South Korea



Own preparation. Source: EPO Website (March 2015) <http://www.epo.org/about-us/annual-reports-statistics/statistics.html>

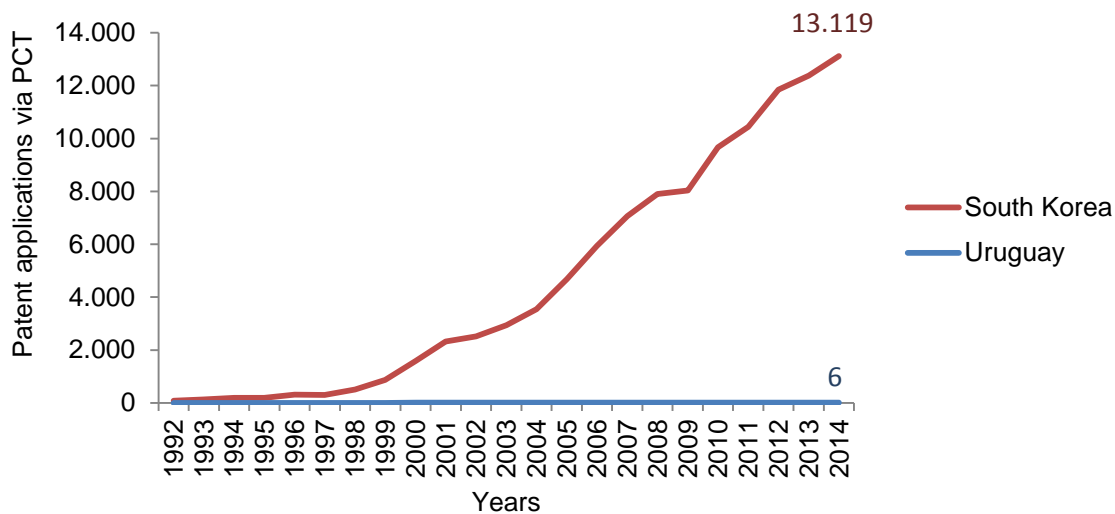
URUGUAY

Graph 58. Total Exports vs Exports of high technology products- Uruguay



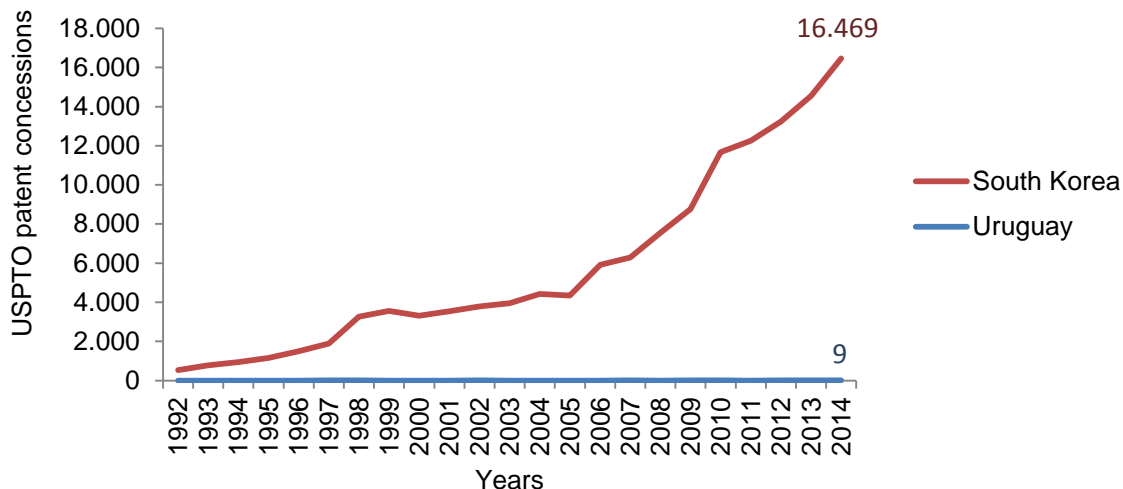
Own preparation. Source: United Nations Statistics Division (March 2015) <http://unstats.un.org/unsd/default.htm> and World Bank (March 2015) <http://datos.bancomundial.org/>

Graph 59. Patent applications via PCT- Uruguay - South Korea



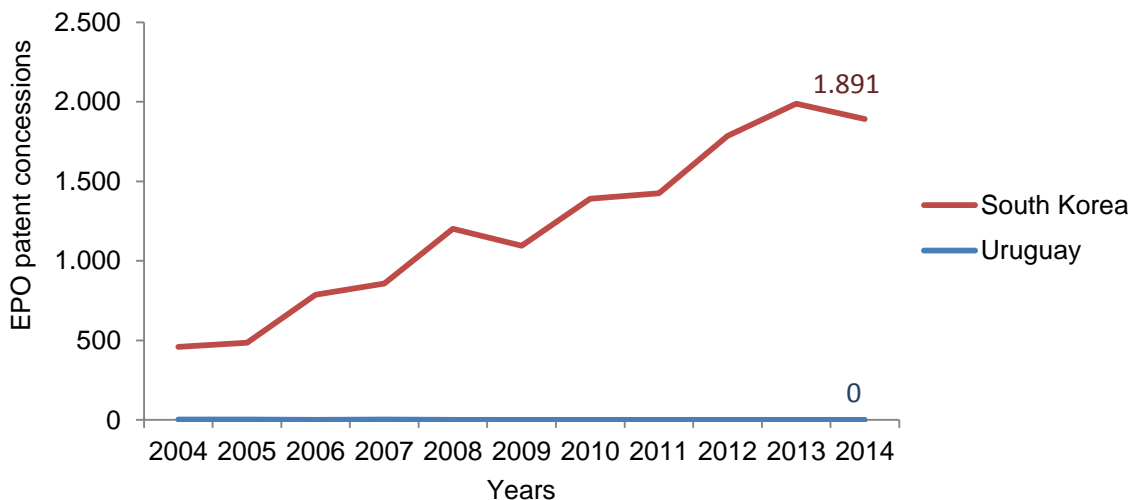
Own preparation. Source: WIPO Website (March 2015) (www.wipo.int)

Graph 60. USPTO patent concessions- Uruguay - South Korea



Own preparation. Source: USPTO Website (March 2015) http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_utlh.htm

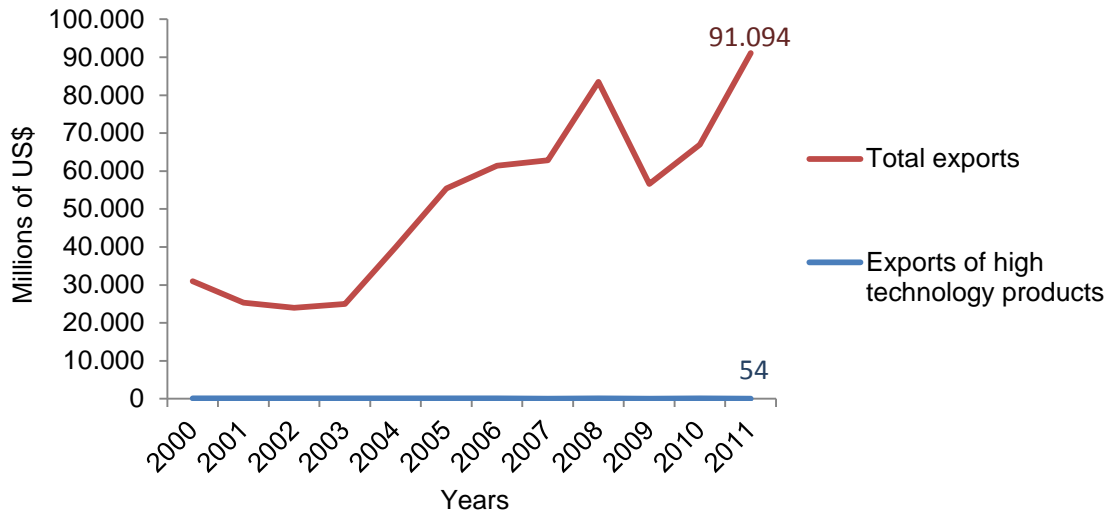
Graph 61. EPO patent concessions- Uruguay - South Korea



Own preparation. Source: EPO Website (March 2015) <http://www.epo.org/about-us/annual-reports-statistics/statistics.html>

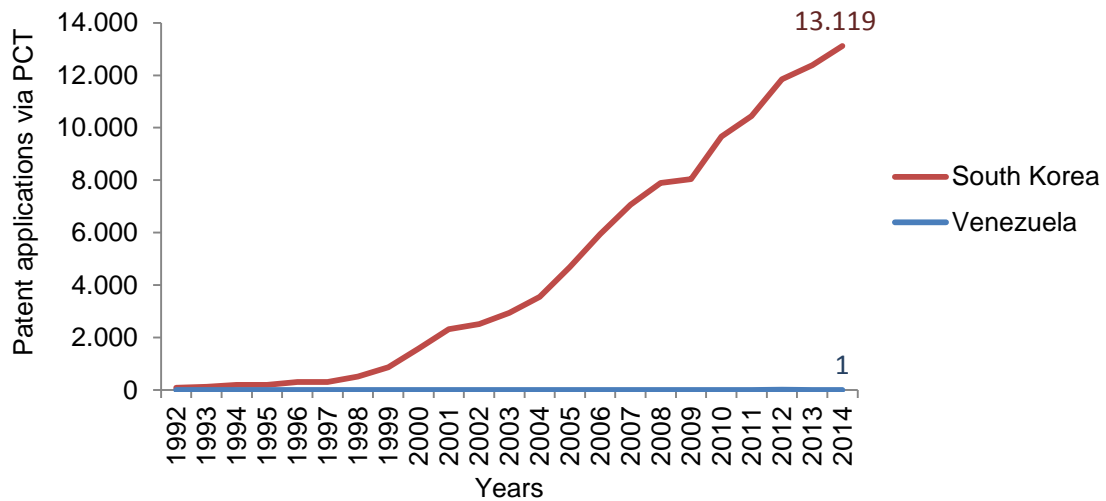
VENEZUELA

Graph 62. Total Exports vs Exports of high technology products- Venezuela



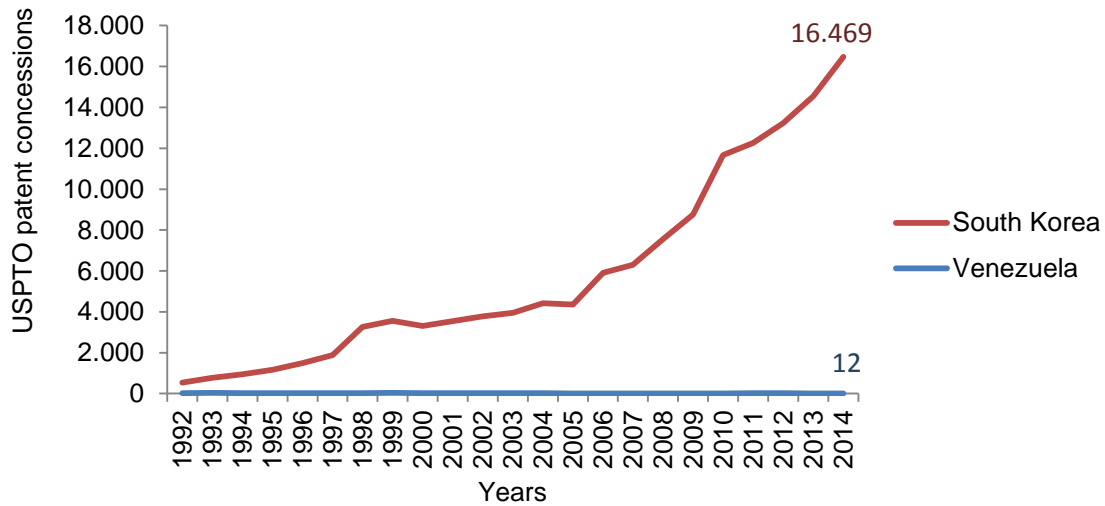
Own preparation. Source: United Nations Statistics Division (March 2015) <http://unstats.un.org/unsd/default.htm> and World Bank (March 2015) <http://datos.bancomundial.org/>

Graph 63. Patent applications via PCT- Venezuela - South Korea



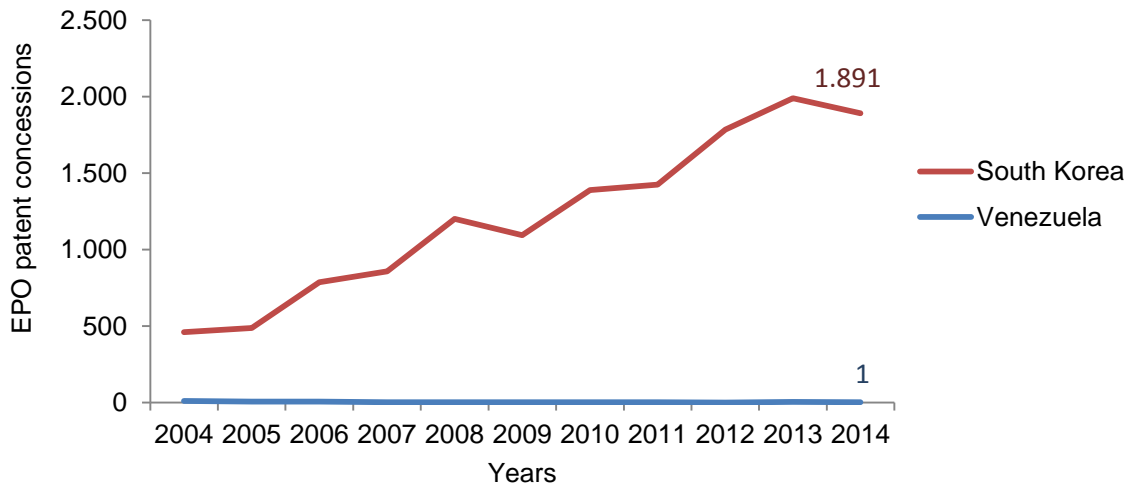
Own preparation. Source: WIPO Website (March 2015) (www.wipo.int)

Graph 64. USPTO patent concessions- Venezuela - South Korea



Own preparation. Source: USPTO Website (March 2015) http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_utlh.htm

Graph 65. EPO patent concessions- Venezuela - South Korea



Own preparation. Source: EPO Website (March 2015) <http://www.epo.org/about-us/annual-reports-statistics/statistics.html>