

At your service?
Using trademarks to capture
product and service innovation
capabilities of top R&D investors



Carolina Castaldi, Eindhoven University of Technology

Mafini Dosso, European Commission JRC-Sevilla



IPSDM Conference, EU IPO Alicante, 23-24 October 2018

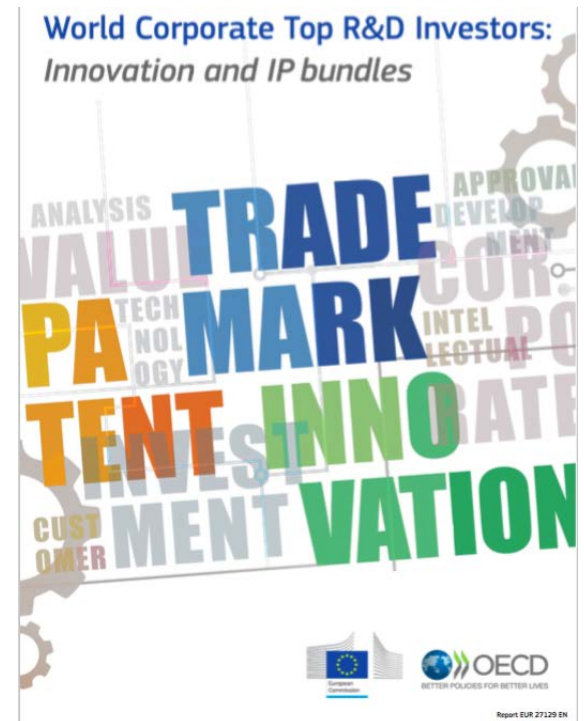


Dernis H., Dosso M., Hervás F., Millot V., Squicciarini M. and Vezzani A. (2015).
World Corporate Top R&D Investors: Innovation and IP bundles. A EC JRC and OECD common report.

<http://iri.jrc.ec.europa.eu/other-reports.html>

Matching & statistics of patents
& trademarks of Top R&D investors
(Ranking 2013)

Our take: what do qualities of the trademark portfolios tells us about the innovation capabilities of these companies and how do they link to their performance?



Trademarks, innovation and organizational capabilities

- Companies use trademarks and brands to appropriate rents from innovation and **signal the introduction of new products and services**
- Trademarks can flag **late-stage innovations** thanks to the 'use in commerce' requirement
- Evidence of a **TM-innovation** link at sectoral, firm and trademark level
- If firms register trademarks, they must possess **underlying capabilities** of commercializing innovation

See Mendonça et al. (2004), Flikkema et al. (2014, 2018), Castaldi (2018), SSRN 3255864



Source: Cover story World Trademark Review, based on my research with co-authors Meindert Flikkema and Ard-Pieter de Man

Firm-level studies using trademarks

Organizational construct	Studies
Assets: <ul style="list-style-type: none">- Brand equity- Reputational assets	Market value studies , such as Krasnikov et al. (2009), Sandner Block (2011),
Market strategies: <ul style="list-style-type: none">- Entry, international expansion- Competitive responses- Diversification	Studies exploiting information on timing, market coverage and text description of trademarks (work of Giarratana, Semadeni and others)
Capabilities <ul style="list-style-type: none">- Downstream and innovation capabilities- Start-up capabilities	Studies linking new trademark registrations to new product/service development capabilities (Gonzalez-Pedraz and Mayordomo, 2012, Gao and Hitt, 2012, plus star-tup studies of Block and others)

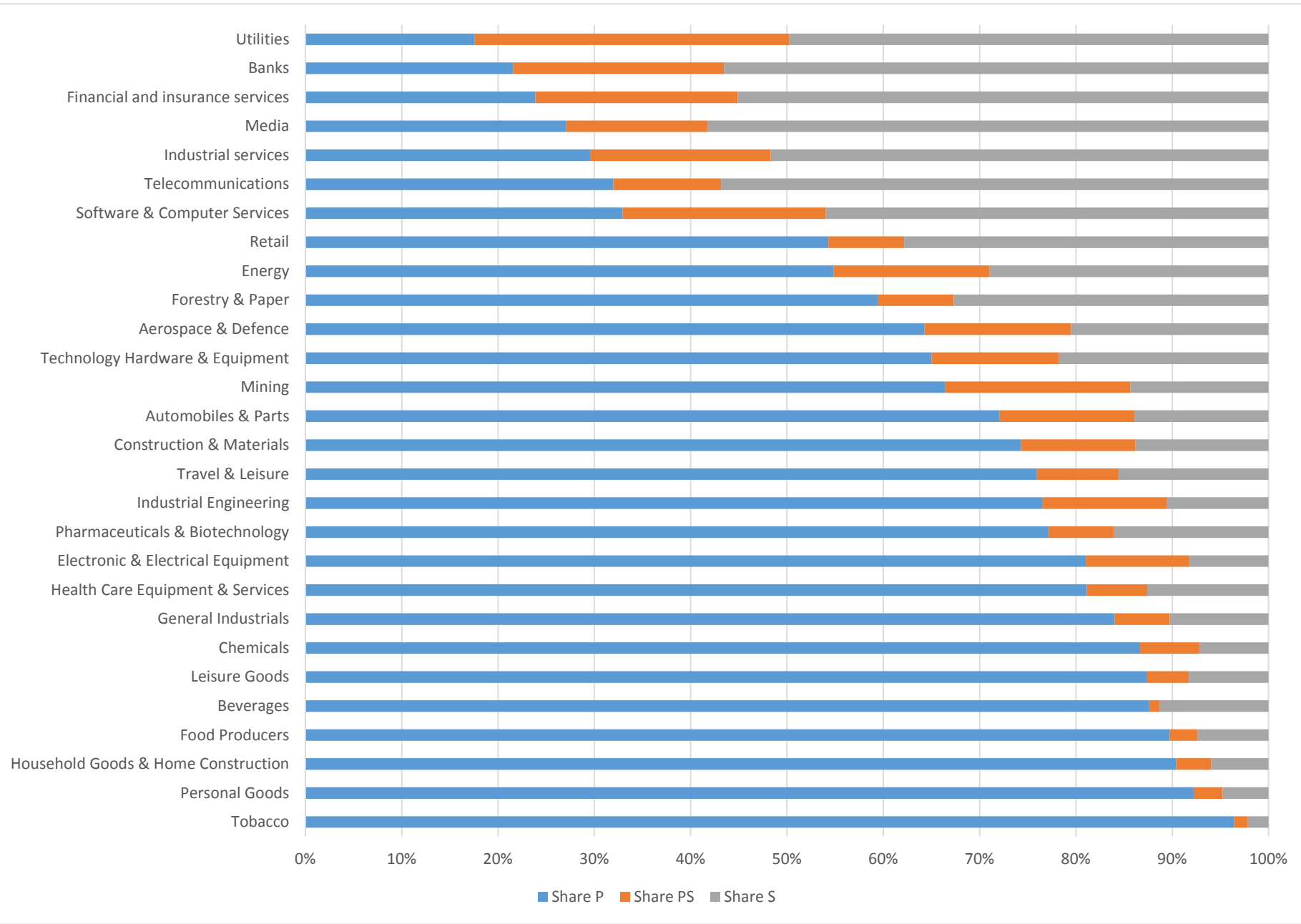
Source: adapted from Castaldi (2018), "On the Market: Using Trademarks to Reveal Organizational Assets, Strategies and Capabilities", SSRN working paper 3255864

Focus of this paper

- Stocks of new trademarks can proxy for the innovation capability of top R&D investors, ie. turning their R&D into actual new products AND services
- Product and service **Nice classes** capture the actual **markets**
- Link R&D => patents => trademarks for **product innovations** can be expected (trademark-based indicators *complement* R&D and patents)
- Less clear link from R&D for **service innovations and product-service combinations** (trademark-based indicators *substitute* R&D and patents)

Question: *How do differential innovation capabilities in product, service and product-service innovation matter for top R&D investors sales growth?*

S
e
r
v
i
c
e
s



Sectoral distribution of all new trademark registrations by product (P), product-service (PS) and service (S) marks, by sector, 2008-2010.

Two trends:

1. *Servitization*
2. *Commoditization*

I
n
d
u
s
t
r
y

PHILIPS

INTELLIPOWER

Word Mark INTELLIPOWER
Goods and Services IC 009. US 021 023 026 036 038. G & S: Electronic devices, namely, a digital power processor used in lighting systems for power control and data management via pov 20120600. FIRST USE IN COMMERCE: 20120928
 IC 011. US 013 021 023 031 034. G & S: Electric lighting fixtures. FIRST USE: 20120600. FIRST USE IN COMMERCE: 20120928

Product mark (P)

Standard Characters Claimed
Mark Drawing Code (4) STANDARD CHARACTER MARK
Serial Number 86012732
Filing Date July 17, 2013
Current Basis 1A
Original Filing Basis 1B
Published for Opposition May 6, 2014
Registration Number 4786400
Registration Date August 4, 2015
Owner (REGISTRANT) KONINKLIJKE PHILIPS N.V. A public limited liability company NETHERLANDS High Tech Campus 5 5656 AE Eindhoven NETHERLANDS

Service mark (S)

(LAST LISTED OWNER) PHILIPS LIGHTING HOLDING B.V. CORPORATION NETHERLANDS HIGH TECH CAMPUS 45 EINDHOVEN NETHERLANDS 5656 AE

CITYTOUCH

Word Mark CITYTOUCH
Goods and Services IC 035. US 100 101 102. G & S: Collection and compilation of data into computer databases in the field of energy consumption
 IC 039. US 100 105. G & S: Distribution and storage of electricity
 IC 042. US 100 101. G & S: Consultancy and professional advice in the field of energy-saving

Standard Characters Claimed
Mark Drawing Code (4) STANDARD CHARACTER MARK
Serial Number 79093001
Filing Date December 9, 2010
Current Basis 66A
Original Filing Basis 66A
Published for Opposition June 12, 2012
Registration Number 4196337
International Registration Number 1066334
Registration Date August 28, 2012
Owner (REGISTRANT) Koninklijke Philips N.V. a public limited liability company NETHERLANDS High Tech Campus 5 NL-5656 AE Eindhoven NETHERLANDS
 (LAST LISTED OWNER) Philips Lighting Holding B.V. UNKNOWN High Tech Campus 45 NL-5656 AE Eindhoven NETHERLANDS

Source: USPTO
Tess database



Deutsche Bank

carboncurve

Word Mark CARBONCURVE

Goods and Services IC 009. US 021 023 026 036 038. G & S: computer software tool to administer carbon and energy savings, namely, assessing energy and carbon savings for standard property energy savings measures and tracking & reporting the benefits of these measures on a global scale; computer software used to promote investment projects in cooperation with diverse partners

IC 035. US 100 101 102. G & S: Advertising; business management; business administration; office functions; collecting and compiling data and information in computer databases; the aforementioned services in the financial services and securities trading

IC 036. US 100 101 102. G & S: Insurance services, namely, insurance agencies, insurance brokerage, insurance underwriting services for all types of insurance; financial affairs, namely, financial information, management and analysis services, banking services, financial consultation; monetary affairs, namely, monetary information, management and analysis services; real estate affairs, namely, real estate brokerage, real estate consulting, real estate escrow services, real estate investment services, establishing and administration of real estate investment funds and selling of shares of such funds for others, consulting in acquisition, financing, investment administration and selling of real estate investment portfolios for others, investment analysis and investment administration of real estate portfolios, consulting regarding leasing real estate; providing information about and handling of foreign exchange, interest rate and monetary transactions, securities, investments and other monetary affairs; financial services via an electronic information network, featuring pricing, trading, execution, clearing and settlement of securities; providing securities information; securities and securities markets research; financial records management, namely, coordination of an investment portfolio's maintenance, trading, rebalancing and tax management needs and financial portfolio management; providing data and information online and on the internet for trading in and handling foreign exchange, interest rate, and monetary transactions, securities, investments and other financial transactions online and on the internet

IC 038. US 100 101 104. G & S: Telecommunications in financial affairs, namely, electronic funds transfer by telecommunications; computer-aided transmission of programs and information for trading in and handling foreign exchange, interest rate and monetary transactions, securities, investments and other monetary affairs; transmitting data and information online and on the internet; transmitting information to third parties; providing internet access for use by third parties in obtaining information on trade and business matters

IC 042. US 100 101. G & S: Scientific and technological services, namely, scientific research in the field of software programming, economics, finance and statistics; industrial analysis, namely, consulting services in the field of industrial design and engineering to achieve energy and carbon savings; technical consulting in the field of industrial design and engineering to achieve energy and carbon savings; industrial research in the field of industrial design and engineering to achieve energy and carbon savings; design and development of computer hardware and software; Hosting and maintaining a server on a global computer network for the purpose of facilitating e-commerce and e-business via such a server; rental of a database server to third parties for electronic data storage; recording data for others on optical, digital and magnetic media for electronic storage

Standard

Source: U.S. Reg. No. 4348528, USPTO Tess database

	Product marks	Product-service marks		Service marks
sectorname	Most common product class	Most common product class	Most common service class	Most common service class
Energy	1-Chemicals	9-Instruments and computers	42-R&D services and software design	42-R&D services and software design
Chemicals	1-Chemicals	1-Chemicals	42-R&D services and software design	42-R&D services and software design
Mining	6-Metals	6-Metals	42-R&D services and software design	40-Treatment of materials
Forestry & Paper	16-Paper and packaging	16-Paper and packaging	36-Insurance and finance	37-Building, repair and installation services
Construction & Materials	19-Building materials	19-Building materials	42-R&D services and software design	37-Building, repair and installation services
Industrial services	9-Instruments and computers	9-Instruments and computers	42-R&D services and software design	42-R&D services and software design
Aerospace & Defence	9-Instruments and computers	9-Instruments and computers	42-R&D services and software design	42-R&D services and software design
General Industrials	9-Instruments and computers	9-Instruments and computers	42-R&D services and software design	42-R&D services and software design
Electronic & Electrical Equipment	9-Instruments and computers	9-Instruments and computers	42-R&D services and software design	42-R&D services and software design
Industrial Engineering	7-Machineries	7-Machineries	37-Building, repair and installation services	35-Business and advertising
Automobiles & Parts	12-Vehicles	12-Vehicles	37-Building, repair and installation services	35-Business and advertising
Beverages	32-Drinks	30-Condiments and cereal	41- Education and training	41- Education and training
Food Producers	30-Condiments and cereal	30-Condiments and cereal	35-Business and advertising	35-Business and advertising
Household Goods & Home Construction	3-Cleaning products	3-Cleaning products	35-Business and advertising	41- Education and training
Leisure Goods	28-Games	9-Instruments and computers	41- Education and training	41- Education and training
Personal Goods	3-Cleaning products	3-Cleaning products	35-Business and advertising	35-Business and advertising
Tobacco	34-Tobacco	5-Pharmaceutical products	44-Medical and hygiene services	35-Business and advertising
Health Care Equipment & Services	10-Medical instruments	10-Medical instruments	42-R&D services and software design	35-Business and advertising
Pharmaceuticals & Biotechnology	5-Pharmaceutical products	5-Pharmaceutical products	44-Medical and hygiene services	44-Medical and hygiene services
Retail	14-Precious goods	9-Instruments and computers	35-Business and advertising	35-Business and advertising
Media	9-Instruments and computers	9-Instruments and computers	41- Education and training	41- Education and training
Travel & Leisure	9-Instruments and computers	9-Instruments and computers	41- Education and training	43-Hotels, restaurants, catering
Telecommunications	9-Instruments and computers	9-Instruments and computers	38-Telecommunications	38-Telecommunications
Utilities	9-Instruments and computers	9-Instruments and computers	42-R&D services and software design	35-Business and advertising
Banks	9-Instruments and computers	9-Instruments and computers	36-Insurance and finance	36-Insurance and finance
Financial and insurance services	9-Instruments and computers	9-Instruments and computers	36-Insurance and finance	36-Insurance and finance
Software & Computer Services	9-Instruments and computers	9-Instruments and computers	42-R&D services and software design	42-R&D services and software design
Technology Hardware & Equipment	9-Instruments and computers	9-Instruments and computers	42-R&D services and software design	42-R&D services and software design

Insights from the innovation management literature

- Most focus on **servitization** of manufacturing companies:
 - Shift to services allows firms to better respond to customers' needs and to enjoy higher profit margins (**Vargo and Lusch, 2004**)
 - **Progression** from product-service combinations to stand-alone services (Cusumano et al, 2015)
 - Performance effects differ in short vs long run (Visnijn et al., 2014)
 - Empirical evidence relying on subjective measures and/or small samples
- Hardly no quantitative study on the performance effects of **commoditization** of services:
 - for an exception Castaldi and Giarratana (2018) for management consulting firms: offering products **cannibalizes** existing services
 - Research on changing identity of professionals and **resistance to digitalization** (Susskind and Susskind, 2015)

Empirical analysis

- EU Industrial R&D Investment Scoreboard: top 2,000 corporate R&D investors from the EU & abroad (<http://iri.jrc.ec.europa.eu>)
- R&D investment consolidated at parent level (> 550,000 subsidiaries)
- **USPTO TM applications** + Nice classes, 2005-10 (Dernis et al 2015), registration information recovered through USPTO TM Case Files db
- DepVar: **Net Sales growth** = $\ln(\text{NET SALES}_{2012}) - \ln(\text{NET SALES}_{2010})$
- Model specification: baseline is Gibrat model, we opt for quantile regressions

Variables

P/S/PS innovation capabilities measured by respective **TM stocks**

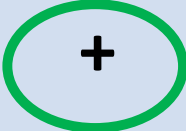
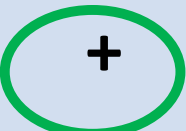

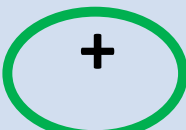
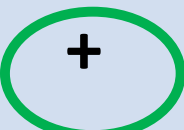

$$TM\ stock_{2010} = new\ TMs_{2009} + (1 - depreciation\ rate) * TM\ stock_{2009}$$

Depreciation rate= 15% (abandonment and loss of relevance)

Only **registered** trademarks (should have provided evidence of use in commerce)

Controls: R&D stock in 2008, firm size (employment), age, diversification (average TM breadth) in 2010, sectoral dummies, US dummy

Some preliminary results

Innovation capabilities	ALL FIRMS (n=1,429)	MANUFACTURING (n=859)	SERVICES (n=246)
Overall Innovation capabilities			+ NOT SIG
Product innovation capabilities		+ NOT SIG	
Service innovation capabilities		-	
Product-service innovation capabilities	+ NOT SIG		- NOT SIG

Next: opportunities and challenges

- **Conceptual work:**
 - Synergies between P, S and PS capabilities likely to depend on the phase of the servitization process, different per sector/firm
 - Need of theorizing commodization processes in services: no understanding yet
- **Validation of trademark-based measures:**
 - Branding strategies might confound results, for ex. Choice for PS marks vs separate S marks.
 - Strategic trademarking and cluttering are an issue
 - Propensity to trademark innovation? New work with Morales and Flikkema
- **Get even more out of the trademark data:**
 - Schmoch, Neuhäusler and Mendonça (2018) distinguish ‘sophistication’ of service Nice classes
 - One could exploit G&S description (keyword analysis) to construct taxonomies of servitization/commoditization patterns
- **Longer time-series:**
 - Short-run vs long-run effects
 - Capturing dynamic capabilities

Announcing a new special issue on trademarks



2017 IF: 3.147

The aim of this thematic issue is to stimulate and synchronize efforts towards the employment of trademark evidence in empirical work on the geography of innovation.

Topics cover:

1. Regional change and competitiveness
2. Regional strategies of differentiation and soft innovation
3. Reputation and notoriety in global value chains

Guest editors: **Carolina Castaldi and Sandro Mendonça**

Timeline: extended abstract submission by **Feb 1st, 2019**, full paper by **July 1st 2019**