

The Assignment of Intellectual Property Rights and Innovation

Christopher Armstrong
carmstro@stanford.edu
Stanford Graduate School of Business

Stephen Glaeser
Stephen_Glaeser@kenan-flagler.unc.edu
The University of North Carolina at Chapel Hill

Stella Park
yeayeunpark@sogang.ac.kr
Sogang University

Oscar Timmermans
o.timmermans@lse.ac.uk
London School of Economics

To be provided upon initial submission on a separate data description sheet:

1. *A description of which author(s) handled the data and conducted the analyses.*

Timmermans and Park handled and analyzed the data.

2. *A detailed description of how the raw data were obtained or generated, including data sources, the specific date(s) on which data were downloaded or obtained, and the instrument used to generate the data (e.g., for surveys or experiments). We recommend that more than one author can vouch for the stated source of the raw data.*

The sample begins with all successful patent applications filed with the USPTO between January 1, 2003, and December 31, 2006. We identify assignees, inventors, locations, and successful patent applications—including patent assignments, disclosure timing, and citations—using data from patentsview.org, the USPTO patent database, and Stoffman et al. (2022). We consider patents of domestic public and private firms, individuals, and nonprofits. We remove inventors living in Texas—whose judiciary decided *Alcatel v. Brown* and Brown’s appeal—from the analysis to avoid any potential endogeneity concerns.

After merging all data, our final sample contains 8,877 observations for all firms in ISS Incentive Lab from 2006 to 2017. We perform one untabulated analysis using this “full sample” (see Table OA1 in the Online Appendix), but focus our primary attention on the sample of firms using RPE with self-selected peer groups. This final sample contains 1,623 firm year observations with non-missing values for all required variables.

We wrote our code that generates this sample over a multi-week period in the first quarter of 2020. Before tabulating our results, we re-ran our complete code in the beginning of November 2025 to ensure our tests incorporate the most recent data.

3. *If the data are obtained from an organization on a proprietary basis, the authors should privately provide the editors with contact information for a representative of the organization who can confirm data were obtained by the authors. The editors would not make this information publicly available. The authors should also provide information to the editors about the data sharing agreement with the organization (e.g., non-disclosure agreements, and any restrictions imposed by the organization on the authors). In particular, the authors should indicate if an organization or data provider imposes restrictions on the publication of the results, has not given the authors full control of the relevant data, requires that the results must be reviewed or approved prior to public release of the paper or publication.*

All of the source data for this project are available with subscription to Wharton Research Data Services, access to patentsview.org, and the USPTO Transactions History Data.

To be provided in the paper or the online appendix:

4. *A complete description of the steps necessary to download, obtain or collect as well as process the data used in the final analyses reported in the paper. For experimental and survey papers, we require information about the instructions and instruments used to generate the data, subject eligibility and/or selection, as well as any exclusion criteria. The full set of instructions and instruments can be provided in the online appendix.*

We describe our data in Sections 3 and 4 of the paper. For further details, see Table 1 below.

5. *After downloading or obtaining the raw data, all manipulations of the data should be done via computer programs. The code for these manipulations should be included in the code submitted upon acceptance (see below). No manipulations of raw data can take place manually or outside the computer code provided. If compliance with this requirement is not feasible, the authors need to explain and disclose any manipulations of the raw data (e.g., manually created variables or file conversions). When feasible, we also encourage the authors to share the code that downloads the data.*

The “AGPT-create-data” and “AGPT-logfile-tables” files contain R code to generate the variables and sample and tables, respectively. Please cite the paper if you use any of the code or data.

To be provided upon acceptance of the paper and prior to publication:

6. *The computer programs (i.e., code) used to (1) convert the raw data into the final dataset used in the analysis, (2) to execute the statistical or econometric analysis, and (3) to generate the tables or to produce the output used in constructing tables of the manuscript. A brief description that enables other researchers to understand and run the code should be provided. The purpose of this requirement is to facilitate replication and to help other researchers understand in detail how the raw data were processed, the final sample was formed, variables were defined, outliers were treated, and which commands were used in the analysis, etc. This code or programming is in most circumstances not proprietary. However, we recognize that some parts of the code or data generation process may be proprietary, including from the*

authors' perspective. Therefore, instead of disclosing the proprietary portion of the code or program, researchers can provide a detailed step-by-step description of the code or the relevant parts of the code such that it enables other researchers to arrive at the same results that the authors obtained and presented in their manuscript. In such cases, the authors should inform the editors upon initial submission, so that the editors can consider an exemption allowing the step-by-step description. Whenever feasible, authors are required to provide the identifiers (e.g., CIK, CUSIP) for their final sample. Authors should consult our FAQ Sheet on the JAR website for further details.

The “AGPT-create-data” and “AGPT-logfile-tables” files contain R code to generate the variables and sample and tables, respectively. The accompanying “AGPT-identifiers.csv” file contains the inventor-patent identifiers of all observations in our sample. Please cite the paper if you use any of the code or data.

- 7. A comprehensive log file that shows the execution of the entire code. This log file should cover all the steps that convert the raw data into a final dataset and the execution of all statistical and econometric analyses presented in the tables of the manuscript. The portion of the log file that shows proprietary code or data may be masked. In this case, the reader should be referred to the step-by-step description provided as per the requirements in Item 6.*

The “AGPT-create-data” and “AGPT-logfile-tables” files contain R code to generate the variables and sample and tables, respectively.

- 8. An assurance that the data and programs will be maintained by at least one author (usually the corresponding author) for at least six years, consistent with National Science Foundation guidelines.*

Timmermans will retain all original data and programs for the required six years.

Table 1. Variable definitions

This table defines the variables used in the empirical tests and details their data sources. Variables are categorized into patent-level, inventor-level, and employer-level.

<i>Panel A. Patent-level variables</i>		
Variable	Description	Data source(s)
<i>Patent Retained by Inventor</i>	An indicator equal to one if the patent is retained by an individual, rather than assigned to a company, government, hospital, or research institute.	Assignee table on patentsview.org
<i>Patent Assigned to New Employer</i>	An indicator equal to one if an inventor on the patent files for patent within the following year under the name of an employer that is different from the inventor's current employer.	Assignee and inventor tables on patentsview.org
<i>Request for Early Patent Publication</i>	An indicator equal to one if the patent is published early due to an early publication request.	USPTO Transactions History Data
<i>Early Publication Request Timing</i>	The number of days between the patent's first priority date and the date of the early publication request, conditional on a request.	USPTO Transactions History Data
<i>Patent Breadth</i>	The breadth index of the patent, following the intuition of Trajtenberg et al. (1997) and Hall et al. (2001), based on the diversity of employers cited by the patent (i.e., backward citations). One minus the Herfindahl-Hirschman concentration index of cited employers in the patent's backward citations.	Citations table on patentsview.org , and Stoffman et al. (2022)
<i>Patent Spread</i>	The spread index of the patent, following the intuition of Trajtenberg et al. (1997) and Hall et al. (2001), based on the diversity of employers that cite the patent in the future (i.e., forward citations). One minus the Herfindahl-Hirschman concentration index of citing employers in the patent's forward citations.	Citations table on patentsview.org , and Stoffman et al. (2022)
<i>Total Inventors on Patent</i>	The total number of inventors listed on the patent.	Inventor table on patentsview.org

(continued on next page)

Panel B. Inventor-level variables

Variable	Description	Data source(s)
<i>Affected by Alcatel v. Brown</i>	An indicator equal to one if the inventor is affected by the final decision in <i>Alcatel v. Brown</i> . This indicator equals one after 2004 if the inventor resides outside the nine states that limit the enforceability of intellectual property assignment agreements through employee invention legislation. The nine states are California, Delaware, Illinois, Kansas, Minnesota, North Carolina, Nevada, Utah, and Washington.	Assignee and inventor tables on patentsview.org , and Stoffman et al. (2022)
<i>Inventor Switches Employer</i>	An indicator equal to one if the inventor switches employer within the next five years.	Assignee and inventor tables on patentsview.org , and Stoffman et al. (2022)
<i>Inventor Relocates to Unaffected State</i>	An indicator equal to one if the inventor relocates to an unaffected state within the next five years. The nine unaffected states are California, Delaware, Illinois, Kansas, Minnesota, North Carolina, Nevada, Utah, and Washington.	Inventor table on patentsview.org
<i>Inventor Agglomeration</i>	The annual change in the total number of inventors conducting patenting activity in a given state compared to the previous year (in thousands).	Inventor table on patentsview.org
<i>Employer Agglomeration</i>	The annual change in the total number of employers engaged in patenting activity in a given state compared to the previous year (in thousands).	Assignee and inventor tables on patentsview.org
<i>Total Patents by Inventor</i>	The total number of patents filed by the inventor within a given year.	Inventor table on patentsview.org
<i>Inventor and Employer in Same State</i>	An indicator equal to one if the inventor is located in the same state as the employer's headquarters. For inventors who are not associated with an employer, we code this variable as 1, treating the inventor as their own employer.	Assignee and inventor tables on patentsview.org

(continued on next page)

Panel C. Employer-level variables

Variable	Description	Data source(s)
<i>Exposure to Alcatel v. Brown</i>	The firm's <i>ex ante</i> exposure to <i>Alcatel v. Brown</i> , based on their 2003 distribution of operations across states. We use this value for 2005 and 2006 and set it to zero for 2003 and 2004.	Assignee and inventor tables on patentsview.org
<i>Total Patents by Firm</i>	The total number of patents filed by the firm within a given year.	Assignee and inventor tables on patentsview.org , and Stoffman et al. (2022)
<i>Total Inventors in Firm</i>	The total number of inventors that file a patent for the firm within a given year.	Assignee and inventor tables on patentsview.org , and Stoffman et al. (2022)
<i>Inventors in Same State as Firm</i>	The average value of <i>Inventor and Employer in Same State</i> for a given firm-year observation.	Assignee and inventor tables on patentsview.org , and Stoffman et al. (2022)
<i>%Affected-State Patents</i>	The fraction of a firm's patents that list at least one inventor located in a state ultimately affected by <i>Alcatel v. Brown</i> .	Assignee and inventor tables on patentsview.org
<i>%Mixed-State Patents</i>	The fraction of a firm's patents that list at least: (i) one inventor located in a state ultimately affected by <i>Alcatel v. Brown</i> ; and (ii) one inventor located in a state ultimately unaffected by <i>Alcatel v. Brown</i> .	Assignee and inventor tables on patentsview.org
<i>Employer Early Publication Requests</i>	The average value of <i>Request for Early Patent Publication</i> for a given firm-year observation.	Assignee table on patentsview.org , combined with USPTO Transactions History Data
<i>Firm Innovation Diversity</i>	One minus the technology class concentration, for a given firm-year observation.	Assignee and application tables on patentsview.org