**Online Appendix**

**Table A1.** Correlation matrix between the ARWU research indicator and different THE research indicators

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Pub | RS | CS | RCS |
| Pub | 1 |  |  |  |
| RS | 0.968 | 1 |  |  |
| CS | 0.940 | 0.983 | 1 |  |
| RCS | 0.954 | 0.993 | 0.998 | 1 |

***Notes*:** and are citation scores, research scores (volume, income and reputation), and sum of both research and citation scores computed using THE data respectively. is publication scores from ARWU data.

**Table A2.** OLS regression results using THE published university rankings data (two-way fixed effects, 18 countries, 2011-2017)

|  |  |
| --- | --- |
|  | Dependent variable:  |
|  | (A2.1) | (A2.2) | (A2.3) | (A2.4) | (A2.5) | (A2.6) | (A2.7) |
|  |  |  |  | 0.017(0.013) | 0.010(0.026) | 0.006(0.025) | 0.007(0.025) |
|  | 0.001\*\*\*(0.000) |  |  |  | 0.001\*(0.000) |  |  |
|  |  | 0.000(0.000) |  |  |  | 0.000(0.000) |  |
|  |  |  | 0.000\*(0.000) |  |  |  | 0.000(0.000) |
|  | -0.021(0.132) | -0.011(0.132) | -0.014(0.132) | -0.118(0.110) | -0.024(0.138) | -0.012(0.136) | -0.015(0.137) |
|  | -0.040\*\*\*(0.013) | -0.040\*\*\*(0.013) | -0.040\*\*\*(0.013) | -0.030\*\*(0.014) | -0.040\*\*\*(0.013) | -0.040\*\*\*(0.013) | -0.040\*\*\*(0.013) |
|  | 0.798 | 0.798 | 0.798 | 0.624 | 0.795 | 0.795 | 0.795 |
| Observations | 90 | 90 | 90 | 126 | 90 | 90 | 90 |

***Notes*:**  is log of ; , and are TFP index, industrial R&D, citation scores, research scores (volume, income and reputation), sum of both research and citation scores, human capital and trade openness respectively. Robust standard errors are in parentheses. \*, \*\*, \*\*\* indicate parameters that are significant at 10%, 5%, and 1% levels of significance respectively. All regressions include unreported country-specific and time-specific constants.

**Table A3.** Impact of Nature and Science scores (DOLS, two-way fixed effects, 18 countries, 2003-2017)

|  |  |  |
| --- | --- | --- |
|  | Dependent variable:  | Dependent variable:  |
|  | (A3.1) | (A3.2)  | (A3.3) | (A3.4) |
|  |  | 0.051\*\*\*(0.017) | 0.040(0.035) |  |
|  | 0.022\*(0.013) |  | 0.004(0.021) | 0.316\*\*\*(0.023) |
|  | -0.058(0.067) | 0.016(0.032) | -0.061(0.061) |  |
|  | 0.032(0.020) | 0.014(0.024) | 0.030\*(0.017) |  |
| Country FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes |
| Adjusted  | 0.563 | 0.574 | 0.575 | 0.999 |
| Observations | 198 | 216 | 198 | 216 |

***Notes*:**  is log of ; , and are TFP index, industrial R&D, research scores in terms of publications in *Nature* and *Science*, human capital and trade openness respectively. Robust standard errors are in parentheses. \*, \*\*, \*\*\* indicate parameters that are significant at 10%, 5%, and 1% levels of significance respectively. All regressions include unreported country-specific and time-specific constants.

**Table A4.** Impact of STEM publication scores (DOLS, two-way fixed effects, 18 countries, 2007-2017)

|  |  |  |
| --- | --- | --- |
|  | Dependent variable:  | Dependent variable:  |
|  | (A4.1) | (A4.2)  | (A4.3) | (A4.4) |
|  |  | 0.051\*\*\*(0.017) | 0.008(0.035) |  |
|  | 0.003\*\*\*(0.000) |  | 0.004\*\*\*(0.001) | -0.002\*\*\*(0.000) |
|  | -0.100(0.083) | 0.016(0.032) | -0.015(0.106) |  |
|  | -0.065\*(0.036) | 0.014(0.024) | -0.047(0.030) |  |
| Country FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes |
| Adjusted  | 0.645 | 0.574 | 0.642 | 0.999 |
| Observations | 126 | 216 | 126 | 126 |

***Notes*:**  is log of ; , and are TFP index, industrial R&D, research scores in science, technology, engineering and mathematics, human capital and trade openness respectively. Robust standard errors are in parentheses. \*, \*\*, \*\*\* indicate parameters that are significant at 10%, 5%, and 1% levels of significance respectively. All regressions include unreported country-specific and time-specific constants.