**Original data table**

|  |  |  |  |
| --- | --- | --- | --- |
| **Years** | **Cooperative innovation** | **Independent innovation** | **Technology output** |
| **External expenditure of R&D expenditure(Ten thousand yuan)** | **Internal expenditure of R&D expenses(Ten thousand yuan)** | **Number of valid invention patents(Piece)** |
| 2000 | 67591  | 134669  | 414  |
| 2001 | 79583  | 192544  | 308  |
| 2002 | 113084  | 216359  | 484  |
| 2003 | 130091  | 276684  | 459  |
| 2004 | 142094  | 281812  | 902  |
| 2005 | 156537  | 399510  | 1134  |
| 2006 | 155178  | 525856  | 1965  |
| 2007 | 182210  | 658836  | 2482  |
| 2008 | 180419  | 790879  | 3170  |
| 2009 | 199598  | 1345385  | 6017  |
| 2010 | 177211  | 1226262  | 5672  |
| 2011 | 452929  | 2112462  | 10506  |
| 2012 | 338593  | 2833055  | 15058  |
| 2013 | 408187  | 3476553  | 19558  |
| 2014 | 482786  | 3903161  | 24799  |
| 2015 | 528596  | 4414567  | 31259  |
| 2016 | 600517  | 4884712  | 37463  |
| 2017 | 688622  | 5341769  | 41673  |
| 2018 | 979936  | 5808857  | 45766  |
| 2019 | 1106219  | 6095605  | 47910  |

**Corresponding variables are taken as logarithms**

|  |  |  |  |
| --- | --- | --- | --- |
| **Years** | **Cooperative innovation** | **Independent innovation** | **Technology output** |
| **LnCOOP** | **LnINDE** | **LnPAT** |
| 2000 | 4.8299  | 5.1293  | 2.6170  |
| 2001 | 4.9008  | 5.2845  | 2.4886  |
| 2002 | 5.0534  | 5.3352  | 2.6848  |
| 2003 | 5.1142  | 5.4420  | 2.6618  |
| 2004 | 5.1526  | 5.4500  | 2.9552  |
| 2005 | 5.1946  | 5.6015  | 3.0546  |
| 2006 | 5.1908  | 5.7209  | 3.2934  |
| 2007 | 5.2606  | 5.8188  | 3.3948  |
| 2008 | 5.2563  | 5.8981  | 3.5011  |
| 2009 | 5.3002  | 6.1288  | 3.7794  |
| 2010 | 5.2485  | 6.0886  | 3.7537  |
| 2011 | 5.6560  | 6.3248  | 4.0214  |
| 2012 | 5.5297  | 6.4523  | 4.1778  |
| 2013 | 5.6109  | 6.5411  | 4.2913  |
| 2014 | 5.6838  | 6.5914  | 4.3944  |
| 2015 | 5.7231  | 6.6449  | 4.4950  |
| 2016 | 5.7785  | 6.6888  | 4.5736  |
| 2017 | 5.8380  | 6.7277  | 4.6199  |
| 2018 | 5.9912  | 6.7641  | 4.6605  |
| 2019 | 6.0438  | 6.7850  | 4.6804  |