



Research Article

Estimation of Total Factor Productivity Growth of Agriculture Sector in Pakistan

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Supplementary Table 1: *Growth Rate in GDP Factor inputs and TFP of overall Pakistan's economy.*

| Years | GDPgr | Kgr | LFgr | TFP |
|-------|----------|----------|----------|----------|
| 1973 | - | - | - | - |
| 1974 | 3.540192 | 3.540192 | 12.84757 | -7.4459 |
| 1975 | 4.211416 | -0.36309 | 14.06006 | -6.96402 |
| 1976 | 5.15619 | -5.7568 | 8.553614 | -0.53534 |
| 1977 | 3.947698 | -12.2874 | 8.974353 | -0.7743 |
| 1978 | 8.048534 | -11.0851 | 13.45775 | -0.50066 |
| 1979 | 3.758436 | -16.4758 | 9.466182 | -0.51935 |
| 1980 | 10.2157 | -9.58557 | 10.53564 | 3.704306 |
| 1981 | 7.920764 | -9.1589 | 15.33299 | -2.51385 |
| 1982 | 6.537487 | -10.0429 | 9.892319 | 0.632206 |
| 1983 | 6.778378 | -4.4128 | 5.689966 | 3.108965 |
| 1984 | 5.065206 | -2.39858 | 5.124722 | 1.445144 |
| 1985 | 7.592115 | 3.027192 | 4.128221 | 3.6841 |
| 1986 | 5.501654 | 2.900679 | 4.431316 | 1.376465 |
| 1987 | 6.452343 | 5.336496 | 4.726748 | 1.603646 |
| 1988 | 7.625279 | 6.624505 | 5.938758 | 1.549371 |
| 1989 | 4.959769 | 2.257048 | 5.583467 | 0.041586 |
| 1990 | 4.458587 | 2.687682 | 5.323795 | -0.33799 |
| 1991 | 5.061568 | 4.191296 | 9.698773 | -3.53571 |
| 1992 | 7.705898 | 6.754093 | 3.973343 | 3.176405 |
| 1993 | 1.757748 | 0.772888 | 1.823144 | 0.144655 |
| 1994 | 3.737416 | 4.827609 | 5.685679 | -1.77665 |
| 1995 | 4.962609 | 5.199524 | 3.12093 | 1.42596 |
| 1996 | 4.846581 | 4.334827 | 5.749122 | -0.61968 |
| 1997 | 1.014396 | 0.481387 | 7.731457 | -5.26705 |
| 1998 | 2.550234 | 2.157931 | 2.157131 | 0.392944 |
| 1999 | 3.660133 | 2.121483 | 3.754299 | 0.232397 |
| 2000 | 4.260088 | 0.888223 | 6.162116 | -0.84725 |
| 2001 | 1.982484 | -1.68209 | 6.486016 | -2.86991 |
| 2002 | 3.22443 | 1.079213 | 4.391206 | -0.50438 |
| 2003 | 4.846321 | 2.633008 | 5.213071 | 0.149262 |
| 2004 | 7.368571 | 5.219174 | 6.464087 | 1.153467 |
| 2005 | 7.667304 | 2.633483 | 6.62463 | 1.840903 |
| 2006 | 6.177542 | 1.276752 | 7.929307 | -0.42125 |
| 2007 | 4.832817 | 4.458634 | 3.165292 | 1.408857 |
| 2008 | 1.701405 | 2.493819 | 3 | -1.19736 |
| 2009 | 2.831659 | 4.976778 | 3 | -0.5637 |
| 2010 | 1.606692 | 2.157888 | 3 | -1.22489 |
| 2011 | 2.748403 | 1.709437 | -2.9111 | 4.735393 |
| 2012 | 3.507033 | 0.184677 | 3 | 1.070098 |
| 2013 | 4.396457 | 0.193315 | -2.9111 | 6.686671 |
| 2014 | 4.674708 | 0.248856 | 3 | 2.224937 |
| 2015 | 4.712458 | -0.00431 | -2.9111 | 7.042197 |
| 2016 | 5.741025 | 3.637335 | 3 | 2.613558 |
| 2017 | -0.43565 | -1.35135 | 7.782516 | -6.39139 |
| 2018 | 2.926908 | 1.943928 | 1.959684 | 0.970375 |
| 2019 | 4.231087 | 2.843346 | 4.227211 | 0.280649 |
| 2020 | -0.38461 | -7.08322 | 0.956842 | 0.266564 |

Supplementary Table 2: *Growth rate in GDP inputs and TFP of the agriculture sector.*

| Years | GDPgr | Kgr | LFgr | TFP |
|-------|----------|----------|----------|----------|
| 1973 | | | | |
| 1974 | 0.581901 | 0.581901 | 11.69555 | -6.66819 |
| 1975 | -1.91867 | -1.95901 | 9.188689 | -6.64828 |
| 1976 | 5.15619 | 5.090065 | 10.23795 | -3.0226 |
| 1977 | 3.947698 | 3.731822 | 7.488878 | -2.03836 |
| 1978 | 8.048534 | 7.67089 | 7.894902 | 0.243236 |
| 1979 | -2.72647 | -3.29389 | 12.32264 | -8.8025 |
| 1980 | 10.2157 | 9.658658 | 8.359943 | 1.336275 |
| 1981 | 11.51812 | 10.29888 | 10.60912 | 1.0331 |
| 1982 | 9.97418 | 8.410849 | 15.40961 | -2.63593 |
| 1983 | 0.10473 | -1.90582 | 9.902741 | -5.07459 |
| 1984 | -1.93914 | -4.13555 | 5.699988 | -3.70491 |
| 1985 | 11.43469 | 9.329483 | 2.961621 | 5.925924 |
| 1986 | 1.863666 | -0.2972 | 1.94061 | 0.818179 |
| 1987 | -1.1514 | -3.24249 | 11.55727 | -6.78876 |
| 1988 | 7.625279 | 5.76363 | -4.5224 | 8.033268 |
| 1989 | 8.996683 | 6.933077 | 10.04808 | 0.194604 |
| 1990 | 0.58975 | -1.88996 | 3.674088 | -0.85872 |
| 1991 | 5.061568 | 2.971724 | 2.414153 | 2.424386 |
| 1992 | 7.705898 | 5.88854 | 6.582171 | 1.401179 |
| 1993 | -2.15601 | -4.15418 | 5.770142 | -3.95642 |
| 1994 | 3.737416 | 1.897549 | 0.30434 | 2.795792 |
| 1995 | 9.161114 | 7.074465 | 11.22001 | -0.40068 |
| 1996 | 0.81402 | -1.14751 | -3.76204 | 3.530251 |
| 1997 | 9.095548 | 7.533555 | 2.861968 | 4.364945 |
| 1998 | 2.550234 | 0.800561 | 4.707624 | -0.59456 |
| 1999 | 3.660133 | 1.563764 | 9.330111 | -2.56344 |
| 2000 | 0.398603 | -3.61418 | 5.038876 | -1.17905 |
| 2001 | -5.86232 | -8.9062 | 7.460429 | -6.7761 |
| 2002 | -1.07659 | -3.35838 | -0.4745 | 0.551463 |
| 2003 | 4.846321 | 2.727212 | -2.9096 | 5.501198 |
| 2004 | 2.700373 | 0.884128 | 6.412935 | -1.50104 |
| 2005 | 2.773336 | 0.284747 | 7.664528 | -1.93928 |
| 2006 | 6.177542 | 4.27771 | 7.020912 | 0.25391 |
| 2007 | 4.832817 | 3.08616 | 8.328952 | -1.39902 |
| 2008 | 1.701405 | 0.188376 | 3.736186 | -0.61566 |
| 2009 | 7.728404 | 6.243597 | 5.456317 | 1.957175 |
| 2010 | 1.606692 | -0.09176 | 3.991937 | -0.75176 |
| 2011 | 2.748403 | 1.069753 | 5.102041 | -0.74072 |
| 2012 | 3.507033 | 1.958476 | 0.466264 | 2.443884 |
| 2013 | -0.34884 | -1.96858 | 1.391618 | -0.39638 |
| 2014 | 4.674708 | 3.337335 | 3.375447 | 1.314506 |
| 2015 | 4.712458 | 2.730935 | 0.957924 | 3.045329 |
| 2016 | -9.36484 | -10.7705 | 7.091542 | -9.31155 |
| 2017 | 5.095706 | 4.599655 | 2.964681 | 1.477035 |
| 2018 | 2.926908 | 2.384093 | 0.584461 | 1.622594 |
| 2019 | 4.231087 | 3.49443 | 5.437842 | -0.42939 |
| 2020 | -0.38461 | -1.28591 | 2.609299 | -1.43582 |