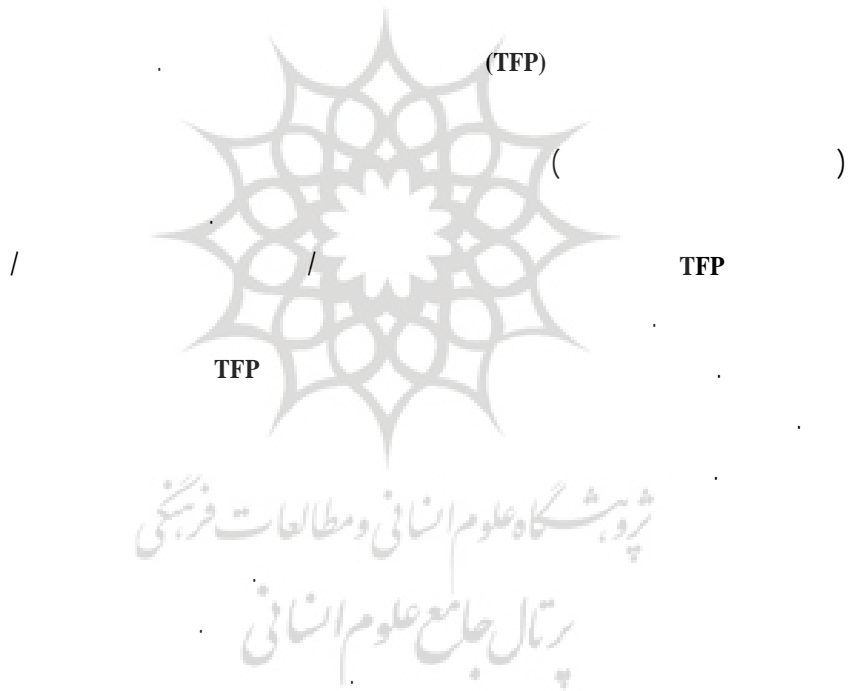


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(Yazdani & Durandish, 2003)

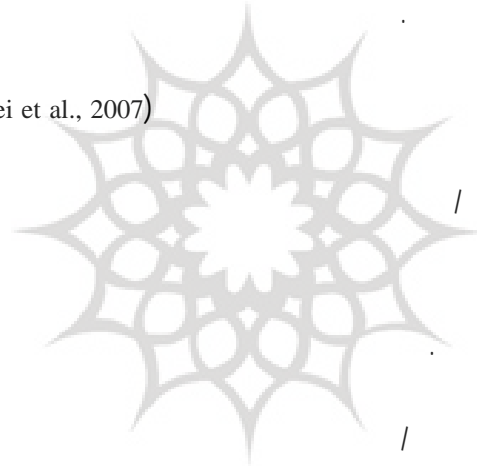
(Akbari & Ranjkesh, 2003)

(Akbari & Ranjkesh, 2003)

(Yazdani &

.Durandish, 2003)

(Alirezaei et al., 2007)



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(Tahami Pour

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& Shahmoradi, 2007)

(Hayami & Ruttan, 1970;

.Coelli & Rao, 2003)

(Gutierrez, 2000; McErlean,

.2003)

(Wiebe et al., 2000; Hayami & Ruttan, 1970)

(Heidari, 1999; Mukherjee & Kuroda, 2003)

(Coelli & Rao,

2003; Ludena et al., 2005)

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(Ludena et al., 2005)

(Islam, 2003;

Mukherjee & Kuroda, 2003; Nahar & Inder, 2003;

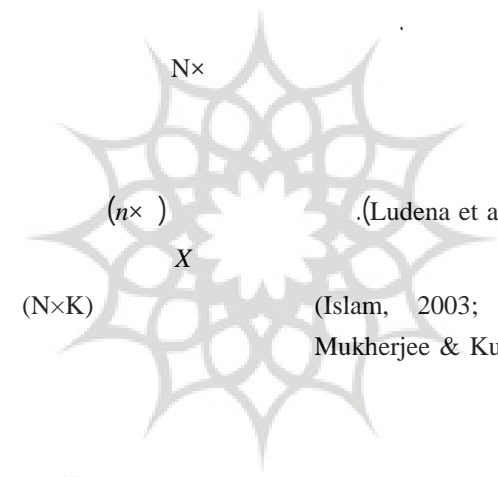
Thirtle, 2003)

(Fare et al., 1992)

$$\begin{aligned}
 [d_0^t(y_{it}, x_{it})]^{-1} &= \max_{\phi, \lambda} \phi \\
 st \quad & -\phi y_{it} + Y_t \lambda \geq 0 \\
 & x_{it} - X_t \lambda \geq 0 \\
 & \lambda \geq 0
 \end{aligned}$$

$$\begin{aligned}
 [d_0^s(y_{is}, x_{is})]^{-1} &= \max_{\phi, \lambda} \phi \\
 st \quad & -\phi y_{is} + Y_s \lambda \geq 0 \\
 & x_{is} - X_s \lambda \geq 0 \\
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 \end{aligned}$$

$$\begin{aligned}
 [d_0^t(y_{is}, x_{is})]^{-1} &= \max_{\phi, \lambda} \phi \\
 st \quad & -\phi y_{is} + Y_t \lambda \geq 0 \\
 & x_{is} - X_t \lambda \geq 0 \\
 & \lambda \geq 0
 \end{aligned}$$



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$$w_{it} = \theta + \theta_1 t + \theta_2 t^2 + \dots + \theta_{k-1} t^{k-1} + \theta_k t^k + u_{it} \quad ($$

$$w_{it} = (y_{it} - \bar{y}_t)^2$$

$$[d_0^s(y_{it}, x_{it})]^{-1} = \max_{\phi, \lambda} \phi \quad ($$

$$st \quad -\phi y_{it} + Y_s \lambda \geq 0$$

$$x_{it} - X_s \lambda \geq 0$$

$$\lambda \geq 0$$

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 TFP \bar{y}_t t i

$$\frac{1}{T} \sum_{t=1}^T \frac{\partial w_{it}}{\partial t} = \theta_1 + \theta_2 r_2 + \dots + \theta_k r_k < 0 \quad ($$

$$r_k = \frac{k}{T} \sum_{t=1}^T t^{k-1} \quad ($$

$$\frac{1}{T} \sum_{t=1}^T \frac{\partial w_{it}}{\partial t} \quad ($$

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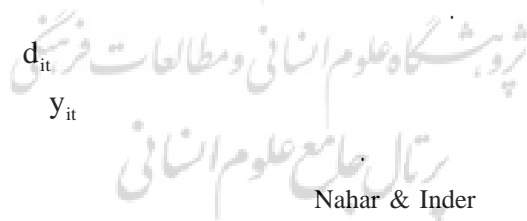
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$$d_{it} = y_{it} - y_{ut}$$

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Nahar & Inder

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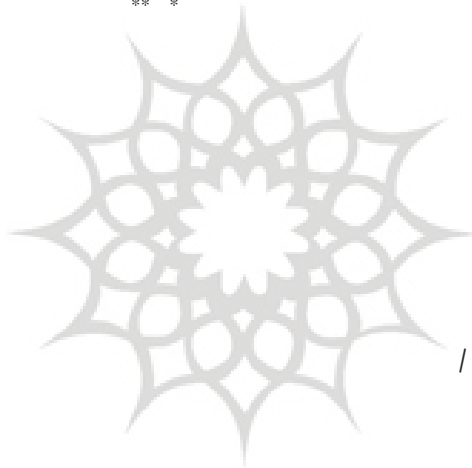
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Investigating productivity gaps of industrial crops in the Iranian provinces

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ABSTRACT

The issue of convergence or divergence of productivity has important policy for regional poverty reduction and increasing standards of living. If productivity converges to a common level without intervention, there will be little need for explicit policies in lagging regions to promote catch up. On the other hand, if productivity has divergence trend, then explicit policies would be needed to prevent further lagging of TFP and standard of living. Considering the importance of this subject, this paper tries to find out whether the different provinces in Iran have been well managed in industrial crop production (irrigation cotton, dry-fed cotton and sugar beet) to narrow their productivity gaps? The results showed that average TFP growth of irrigated cotton lies between -0.3 percent in Semnan province and 8.2 percent in Fars province. All sugar beet producer provinces, except to Ardebil, showed positive productivity changes, and Isfahan province exhibited highest TFP growth rates in the last two periods. Also, two provinces – Mazandaran and Golestan- experienced positive and negative growth rates in dry cotton production respectively. The results of convergence test indicate that, out of 14 provinces of under consideration only five provinces, i.e. Ardebil, Kerman, Kermanshah, Khorasan and Yazd converge to the mean of irrigated cotton production and four provinces, Isfahan, Khorasan, Ardebil and Hamedan converge to the mean of sugar beet production. Therefore, these provinces have been managed to make better use of new available technologies, thus reaching far greater productivity levels than others. On the opposite, convergence cannot be accepted for the dry-fed cotton producer provinces.

Keywords: productivity, convergence, Malmquist index, cotton, sugar beet

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