

03

BUKTI KORESPONDENSI

Jurnal :

REGIONAL STATISTICS

(VOL. 11 No. 4 2021)

Judul Artikel :

“Total Factor Productivity Convergence of Indonesia Provincial Economies, 2011 - 2017”

Author :

Rudi Purwono (Corresponding Author)

Mohammad Zeqi Yasin

Nur Arifin

Ibnu Nur Hamzah

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Catatan : korespondensi dengan Editor Jurnal di awal dilakukan oleh Mohammad Zeqi Yasin kemudian dilanjutkan oleh Rudi Purwono



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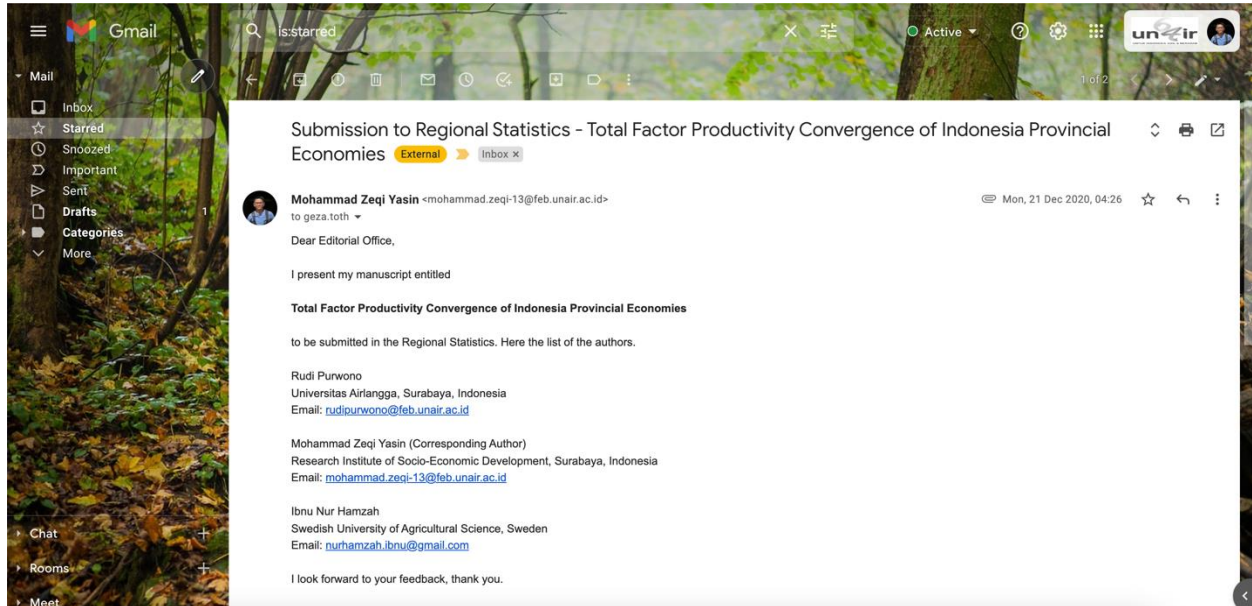
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- [Impact of provincial human capital on TFP growth through the FDI channel: The case of Indonesian manufacturing industries – Dadang Ramdhan](#) (pdf, 361 KB)
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- [The handling of the blockade against Qatar from the perspective of Qatar Airways' resilience – Emil Kucsera](#) (pdf, 2 748 KB)
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1. Article Submission

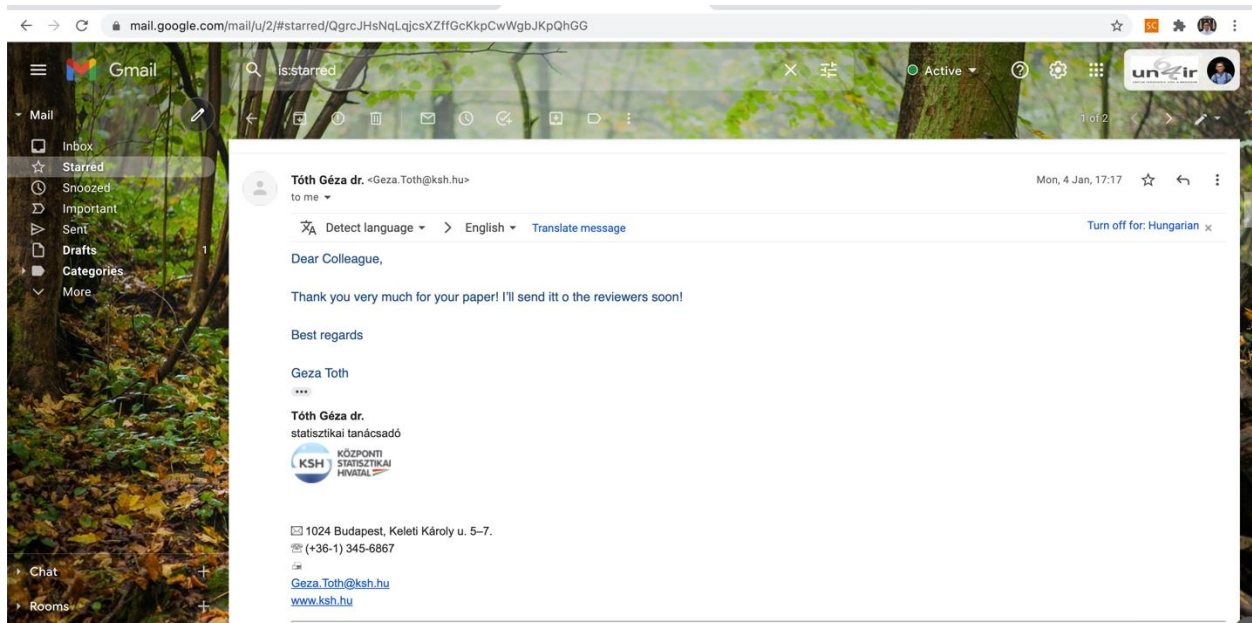
#21 Desember 2020

Submission awal dan submission revisi oleh Penulis dilakukan melalui email Regional Statistics. Respon Editor diberikan melalui email



#4 Januari 2021

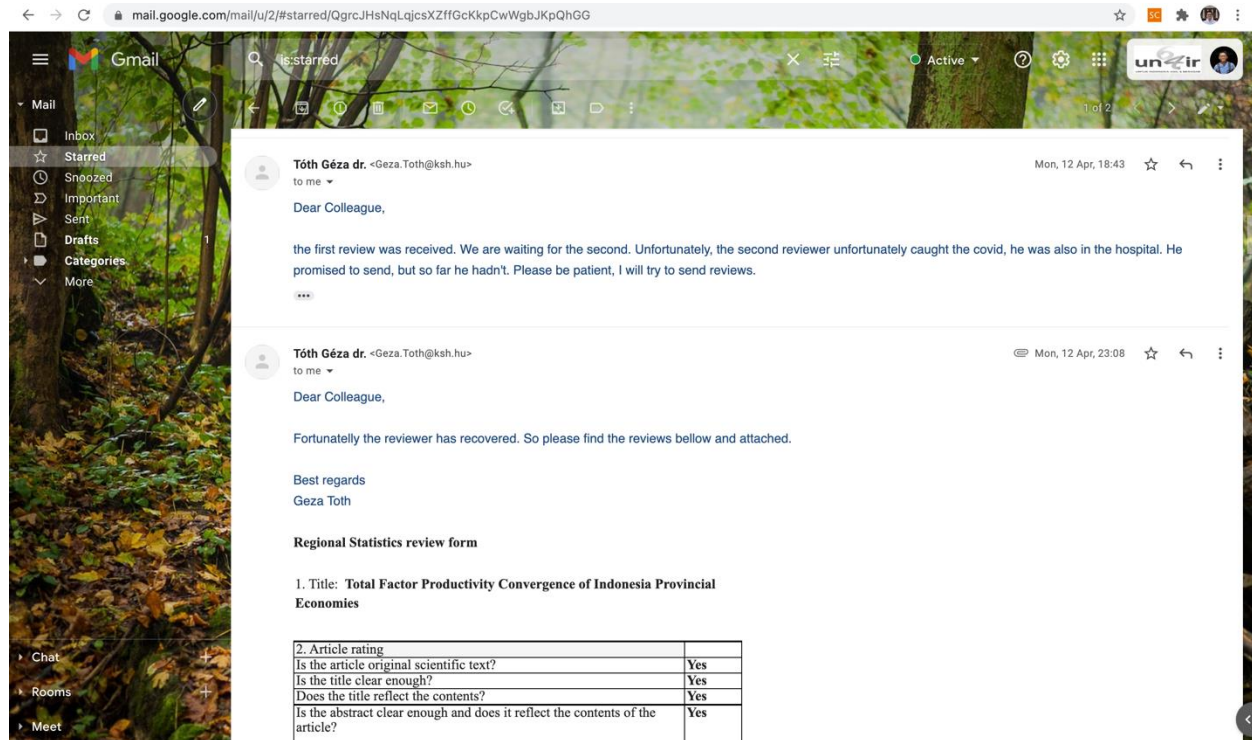
Konfirmasi Submission oleh Editor Jurnal



2. Review Article Process

#12 April 2021

Hasil Review dari Editor dan Reviewer, Deadline penyerahan revisi 12 Mei 2021



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1 of 2

Tóth Géza dr. <Geza.Toth@ksh.hu> to me Mon, 12 Apr, 18:43

Dear Colleague,

the first review was received. We are waiting for the second. Unfortunately, the second reviewer unfortunately caught the covid, he was also in the hospital. He promised to send, but so far he hadn't. Please be patient, I will try to send reviews.

Tóth Géza dr. <Geza.Toth@ksh.hu> to me Mon, 12 Apr, 23:08

Dear Colleague,

Fortunately the reviewer has recovered. So please find the reviews below and attached.

Best regards
Geza Toth

Regional Statistics review form

1. Title: **Total Factor Productivity Convergence of Indonesia Provincial Economies**

2. Article rating	
Is the article original scientific text?	Yes
Is the title clear enough?	Yes
Does the title reflect the contents?	Yes
Is the abstract clear enough and does it reflect the contents of the article?	Yes

mail.google.com/mail/u/2/#starred/QgrcJHsNqLqjcsXZffGcKkpCwWgbJKpQhGG

is:starred

Regional Statistics review form

1. Title: **Total Factor Productivity Convergence of Indonesia Provincial Economies**

2. Article rating	
Is the article original scientific text?	Yes
Is the title clear enough?	Yes
Does the title reflect the contents?	Yes
Is the abstract clear enough and does it reflect the contents of the article?	Yes
Are the key words suitable?	No
Are the methods presented in a clear and punctual way?	Yes
What is the level of novelty of the research?	-
The paper investigates whether intra- and inter-regional trade affects convergence process between Indonesian regions.	
Is the conclusion chapter clear in presenting the conclusions?	Yes
What is the level of the novelty of the results?	Fairly new
What is the level of text used in the article?	Good
Are the references adequate?	Yes
Which tables are not necessary?	-
Which figures are not necessary?	-
3. Final evaluation:	
Article may be published with no corrections:	-
Article may be published with minor corrections:	Yes
Article may be published with moderate corrections:	-
Article is not suitable for publishing:	-

Summary

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Summary

The paper examines beta- and sigma-convergence of total factor productivity (TFP) among Indonesian regions for the period 2011-2017. Using various econometric methods, the authors find that inter-trade promotes catching up in regional productivity while intra-trade reduces productivity disparities amongst provinces. The paper is well-written. The topic is interesting and original: the paper contributes to the literature about the impact of trade on regional productivity. Nevertheless, there are some econometric concerns regarding model selection and robustness issues that deteriorate the reliability of the analysis. Moreover, I encourage the authors to check the document with a digital writing assistance tool or a native speaker.

Suggestions

- 1) Arellano-Bond
 - Summary statistics in Table 3 suggest that the temporal variation in TFP is only moderate. The Arellano-Bond estimator has been found to have poor finite sample properties if the series are highly persistent. In such cases lagged levels of the dependent variable are weak instruments. I would recommend using system-GMM estimation and experimenting with lagged first-differences of the series at least for robustness checks (see e.g. Blundell and Bond 1998).
- 2) Trade
 - Although the paper aims to examine the effects of inter- and interregional trade on the convergence of TFP, the authors do not address the issues concerning the identification of the effects of trade. Probably the most daunting issue is the endogeneity of the TRADE variable. I wonder whether the authors made any attempts to address this problem.
 - The authors use a quite complex measure to assess the relative role of intra- and inter trade on regional convergence. Separate variables for the intensity of inter- and intraregional trade would be more informative about the absolute and relative role of trade types.
- 3) Robustness

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Meet

3) Robustness

- As it is well known, the *within-estimator* is inconsistent in panel dynamic settings, especially when the time span is short. The authors are aware of this (they point this out at page 6) but for some reason they still use this method for robustness checks. I do not think using FE or even pooled OLS would be an adequate way to check for robustness. Even if the Nickell-bias (which is the inverse of T) would be small enough, the endogeneity of level variables would still be an issue. As mentioned above, system-GMM might be a good choice to check whether the results are robust to the choice of methods and instrument sets.

4) Components of TFP

- It would be interesting to examine convergence in efficiency and the effects of trade.

Regional Statistics review form

1. Title:

2. Article rating

Is the article original scientific text?	Yes
Is the title clear enough?	Yes
Does the title reflect the contents?	Yes
Is the abstract clear enough and does it reflect the contents of the article?	Partly
Are the key words suitable?	Partly
Are the methods presented in a clear and punctual way?	Partly
What is the level of novelty of the research	Low/unclear
Is the conclusion chapter clear in presenting the conclusions?	Yes
What is the level of the novelty of the results?	Low/unclear
What is the level of text used in the article?	Medium
Are the references adequate?	Yes

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- It would be interesting to examine convergence in efficiency and the effects of trade.

Regional Statistics review form

1. Title:

2. Article rating

Is the article original scientific text?	Yes
Is the title clear enough?	Yes
Does the title reflect the contents?	Yes
Is the abstract clear enough and does it reflect the contents of the article?	Partly
Are the key words suitable?	Partly
Are the methods presented in a clear and punctual way?	Partly
What is the level of novelty of the research	Low/unclear
Is the conclusion chapter clear in presenting the conclusions?	Yes
What is the level of the novelty of the results?	Low/unclear
What is the level of text used in the article?	Medium
Are the references adequate?	Yes
Which tables are not necessary?	-
Which figures are not necessary?	-

3. Final evaluation:

Article may be published with no corrections:	
Article may be published with minor corrections:	
Article may be published with moderate corrections:	Yes
Article is not suitable for publishing:	

4. Short notes:

I would recommend major corrections, if possible. If not, reject. See my comments in a separate file

...

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Review
Total Factor Productivity Convergence of Indonesia Provincial Economies

Summary

The paper has two main parts. First, it estimates two concepts of productivity: a frontier level, and a relative inefficiency. The dataset is a panel of 33 Indonesian provinces over 7 years. After recovering total factor productivity and its two components, the study estimates models of beta and sigma convergence, and the possible role of intra- and inter-regional trade in the convergence process.

Main comments

I think the research question and the first step in the procedure make sense and are reasonably executed (but see my detailed comments below as well). I have more problems with the second step, and in particular with the identification of the impact of trade. I also think that exposition can be improved significantly.

With regards to trade, I do not understand why the measure used is the ratio of intra- and interregional trade is the ratio of the two. This way, even if both have a positive impact on convergence, we will find a negative coefficient if inter-regional trade contributes more to convergence than intra-regional trade. Why not include both measures in the regression separately?

In terms of the exposition, I find some of the description unclear. In particular, there should be a much more detailed data section explaining the variables. For example, are the main variables nominal or real? If the former, how do the authors handle inflation? English is ok, but could be improved, especially in the Abstract.

Finally, it is unclear what ultimately the paper's contribution is. Is it the productivity estimation, the trade variable in the convergence regressions, or something else? Please be very clear what is new relative to the literature.

Detailed comments

13 Apr 2021, 09:49
add another author? T

13 Apr 2021, 12:17
Moh Felado, Mohammad Zeq Y

mail.google.com/mail/u/2/#starred/QgrcJHsNqLajcsXZffGcKkpCwWgbJKpQhGG?projector=1&messagePartId=0.1

Detailed comments Open with Google Docs

1. Page 1: I find the intra- and interregional trade terminology a bit confusing. To me the former suggests trade within provinces, and the latter trade within provinces. My understanding is that the authors use them differently, the first being trade among provinces and the latter meaning international trade. I suggest interprovincial and international trade as

1

alternatives. I would also not use the shortcuts "intra" and "inter" - it is more professional to write out the full terms.

2. Page 3: I do not see a definition of the term "AFTA". This might be obvious to you, but not to the general reader. There are other examples in the text where definitions should be more clear or more prominent.

3. Page 5: I do not understand why inefficiency should be a function of time alone (eq. [2]). Why not geography, institutions, or trade? Explain why this assumption makes sense.

4. Page 5: Define the function $f(\cdot)$. If I understand that is the non-stochastic part of the translog production function, but you have to say so.

5. Page 5: I do not understand what Z_{it} means in eq. [2d] - I guess this is just a shortcut for eq. [2]?

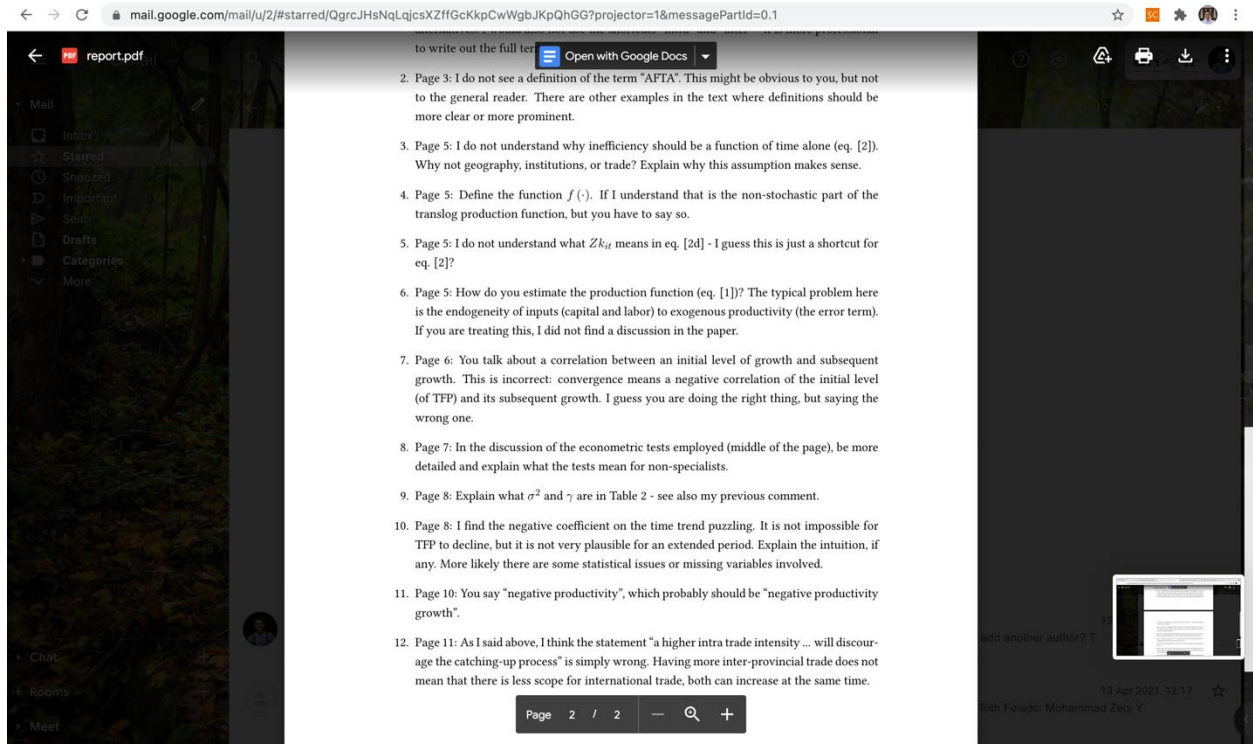
6. Page 5: How do you estimate the production function (eq. [1])? The typical problem here is the endogeneity of inputs (capital and labor) to exogenous productivity (the error term). If you are treating this, I did not find a discussion in the paper.

7. Page 6: You talk about a correlation between an initial level of growth and subsequent

Page 2 / 2

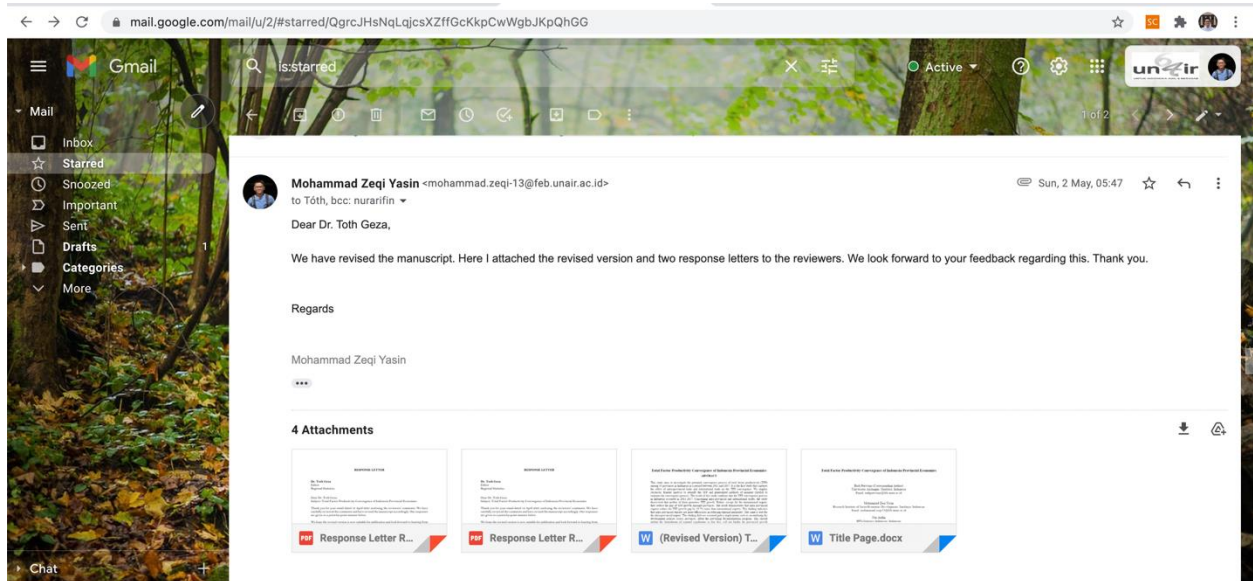
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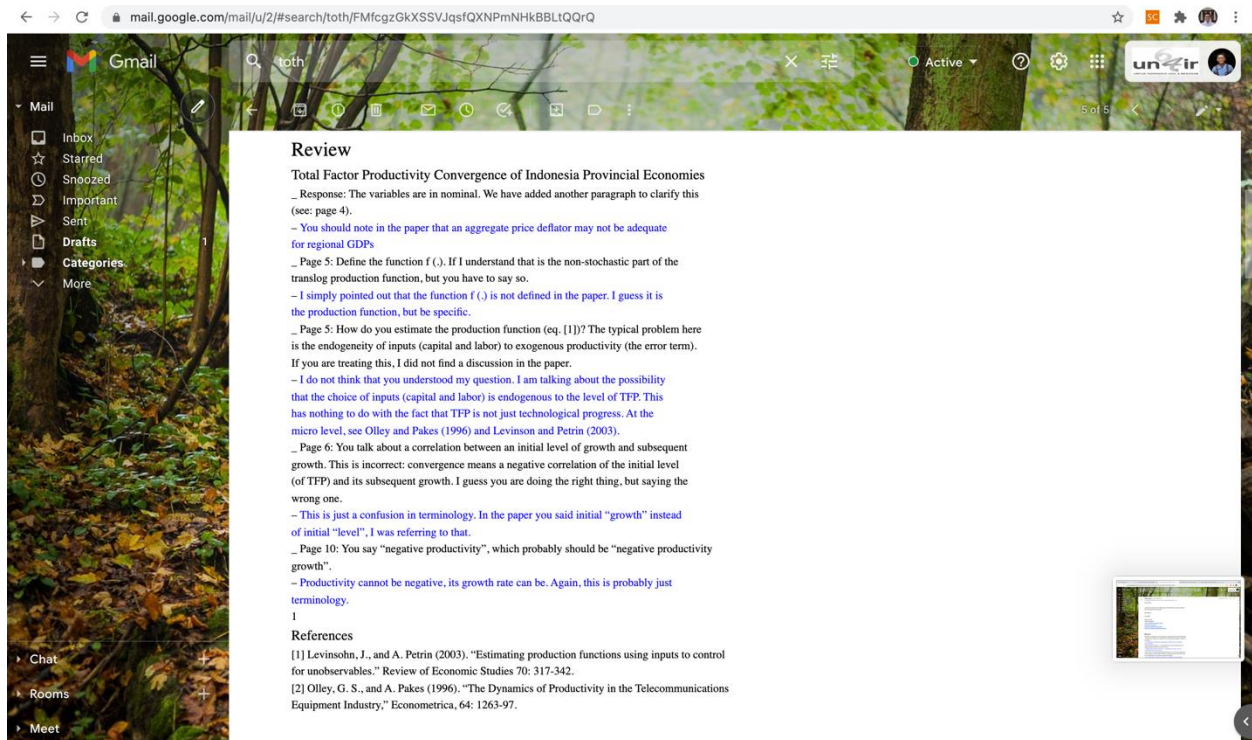
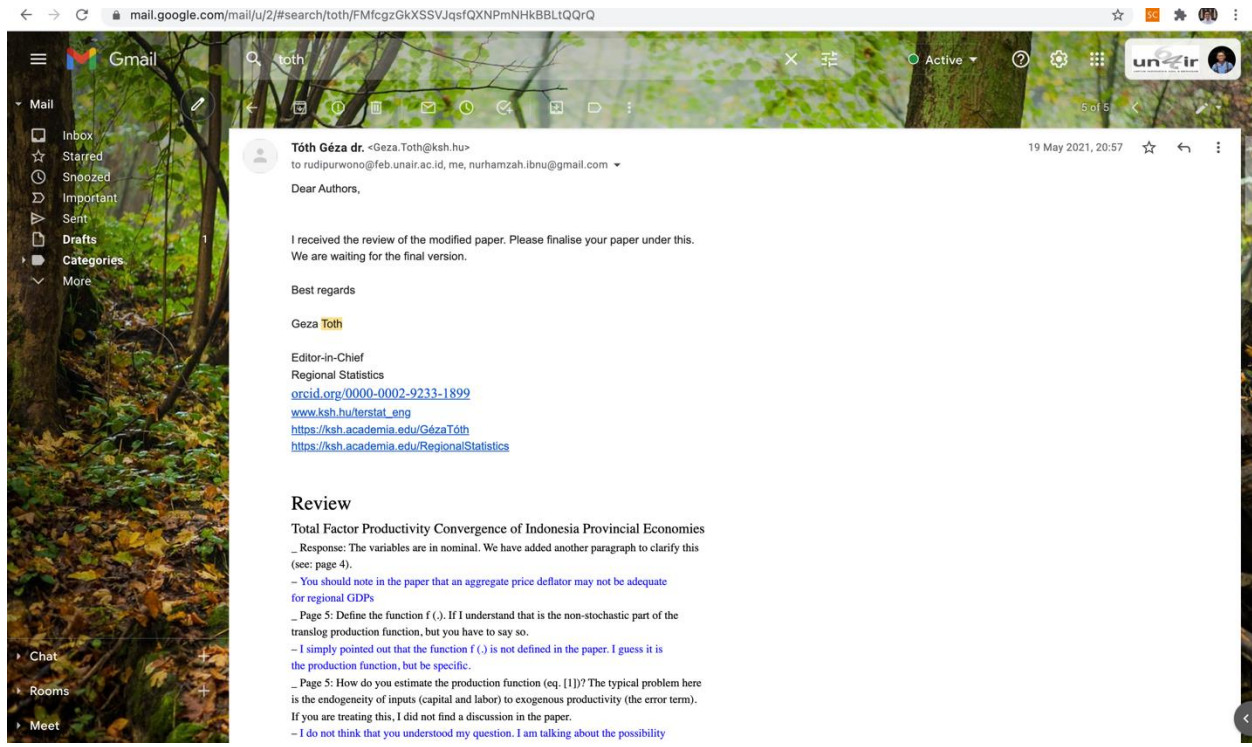
#2 Mei 2021

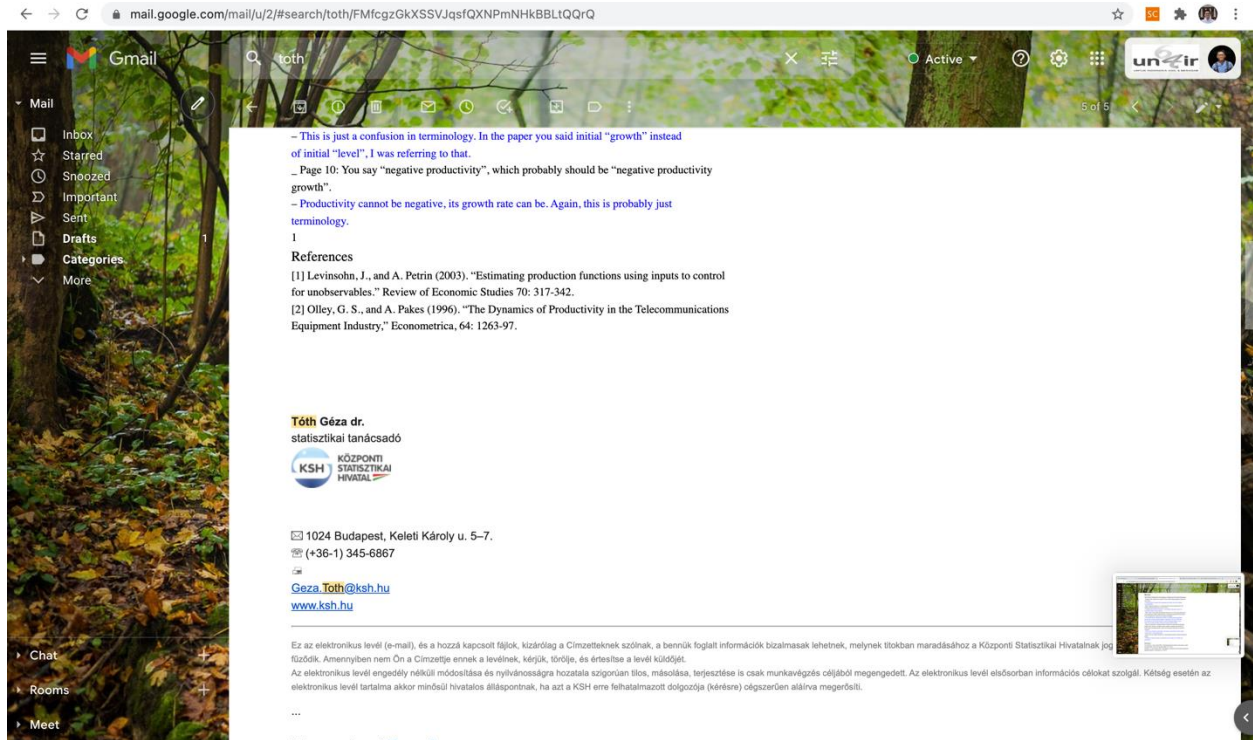
Pengumpulan revisi.



#19 Mei 2021

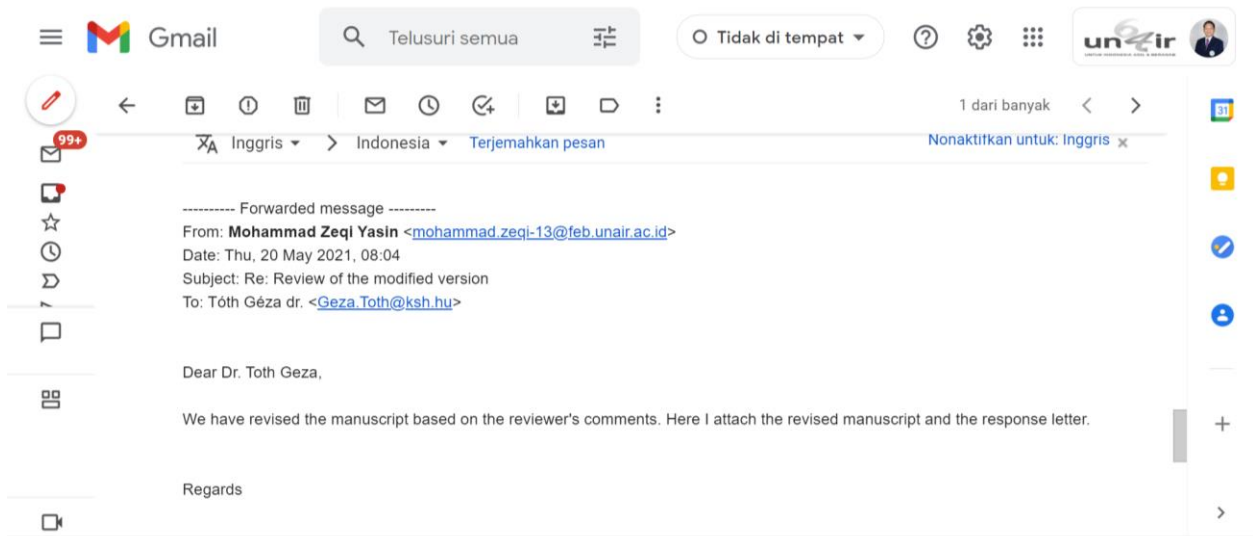
Hasil review tahap 2





#20 Mei 2021

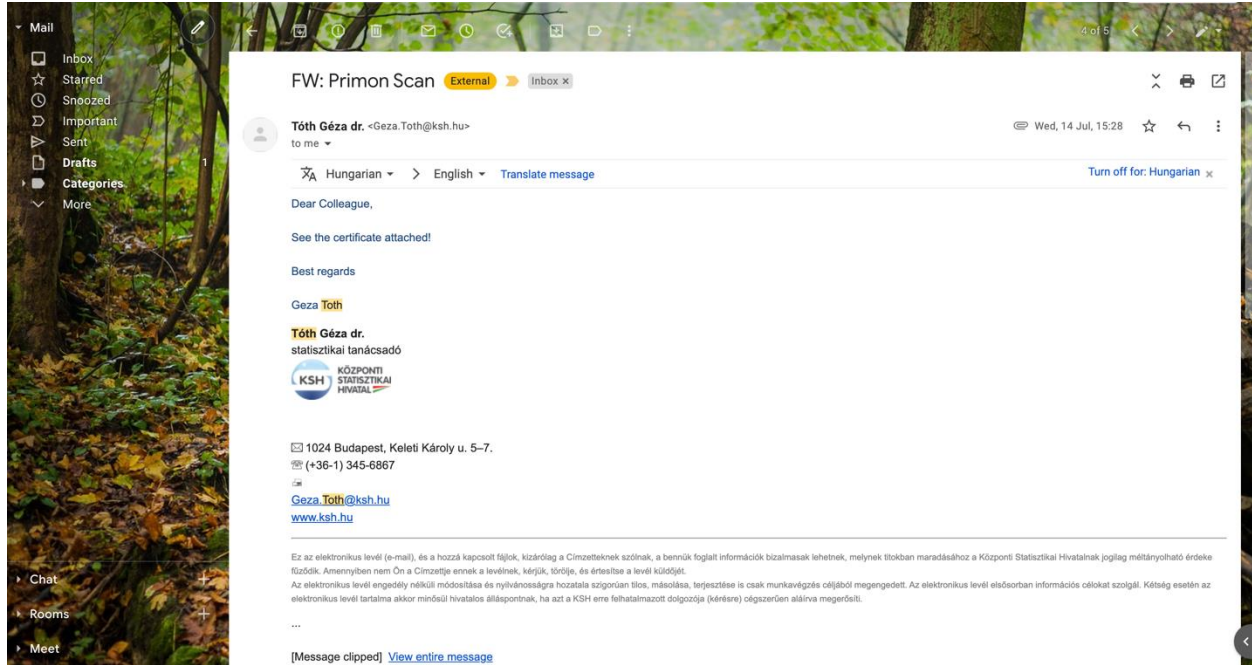
Revisi kedua dikirim



3. Accepted Journal Publication

#14 Juli 2021

Pemberitahuan dari Editor bahwa artikel **diterima**.



Editorial board of
Regional Statistics

1024 Budapest Keleti Károly u. 5-7.
Post: 1525. Bp. Pf. 51.
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Editor in chief: Dr. Géza Tóth
E-mail: geza.toth@ksh.hu

CERTIFICATE

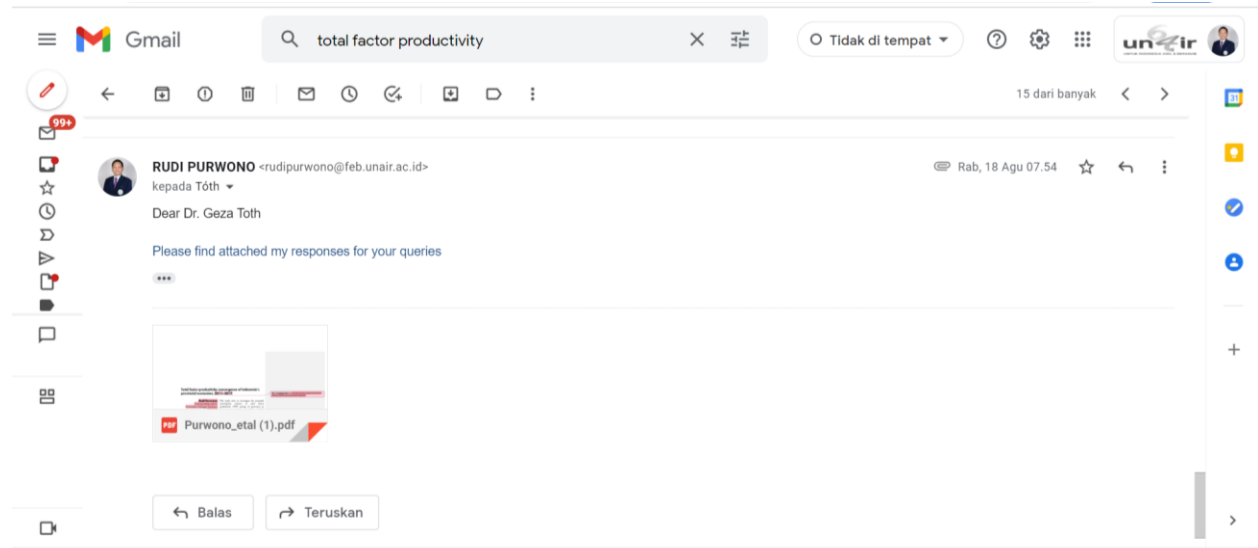
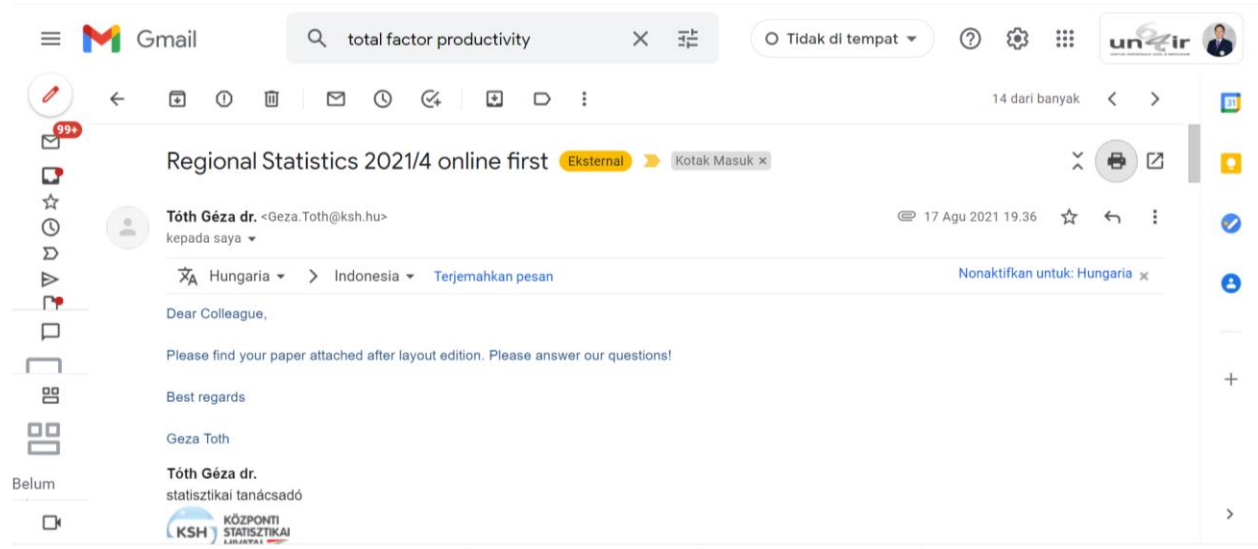
The Editorial Board of *Regional Statistics* has accepted the study of Rudi Purwono, Mohammad Zeqi Yasin, Ibnu Nur Hamzah (Total Factor Productivity Convergence of Indonesia Provincial Economies). The study will be published in one of the 2021 issues. The journal is indexed in Scopus (Q2), WoS ESCI, EBSCO, Google Scholar, Current Geographical Publications (CGP), CEEOL, Index Copernicus International.


Géza Tóth
Editor-in-Chief

Budapest
14 July 2021

#17 Agustus 2021

Tim Produksi memberitahukan bahwa sedang dilakukan tahap layout dan terdapat beberapa poin yang perlu diklarifikasi dari manuskrip.



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Total factor productivity convergence of Indonesia's provincial economies, 2011–2017

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This study aims to investigate the potential convergence process of total factor productivity (TFP) among 33 provinces in Indonesia in a period between 2011 and 2017. It is the first study that captures the effect of intra-provincial trade and international trade on the TFP convergence. The authors employ stochastic frontier analysis to identify the TFP and generalized methods of moment (GMM) to examine the convergence process. The result of this study confirms that the TFP convergence process in Indonesia occurred in 2011–2017. Concerning intra-provincial and international trades, the study discovered that neither of them promotes TFP growth. Rather, except for the international import, they reduce the gap of TFP growth amongst provinces. The result demonstrates that intra-provincial exports reduce the TFP growth gap by 19.7% more than international exports. This finding indicates that intra-provincial exports are more efficacious in reducing regional inequality. The same is true for the intra-provincial import. This finding delivers

[S1] megjegyzést írt: The title has been supplemented with a reference period and would require approval.

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hypothesis for C.D. A null hypothesis (H0) that is ($\beta_1 = \beta_2 = \beta_3 = 0$) or the coefficients of time, interacting input with time, and time-squared are equal to zero, is the hypothesis for NTP. A null hypothesis (H0) that is ($\beta_4 = 0$) or the coefficients of interacting input with time is equal to zero, is the hypothesis for HN. Test of OLS is also considered to ensure that the utilization of SFA is valid.

The log-likelihood ratio test is conducted by comparing the likelihood ratio statistic obtained from each model. The log-likelihood statistic is obtained from $\lambda = -2[\ln(L_0) - \ln(L_1)]$ where $\ln(L_0)$ is the log-likelihood statistic of CD, NTP, HN, and OLS, while $\ln(L_1)$ is the log-likelihood value of Translog. The null hypothesis is rejected if the λ statistic is less than the χ^2 table with degrees of freedom equal to the number of parameters involved in the restrictions.

Total factor productivity

This study adopts the method of Arazmuradov et al. (2014) to estimate TFP which is a geometric approach that decomposes TFP into two components: technical efficiency change (TEC) and technical change (TC). The formulas to attain those components are shown below:

$$TFP_{it} = TEC_{it} \times TC_{it} \quad (4)$$

$$TEC_{it} = \frac{TE_{it}}{TE_{it-1}} \quad (5)$$

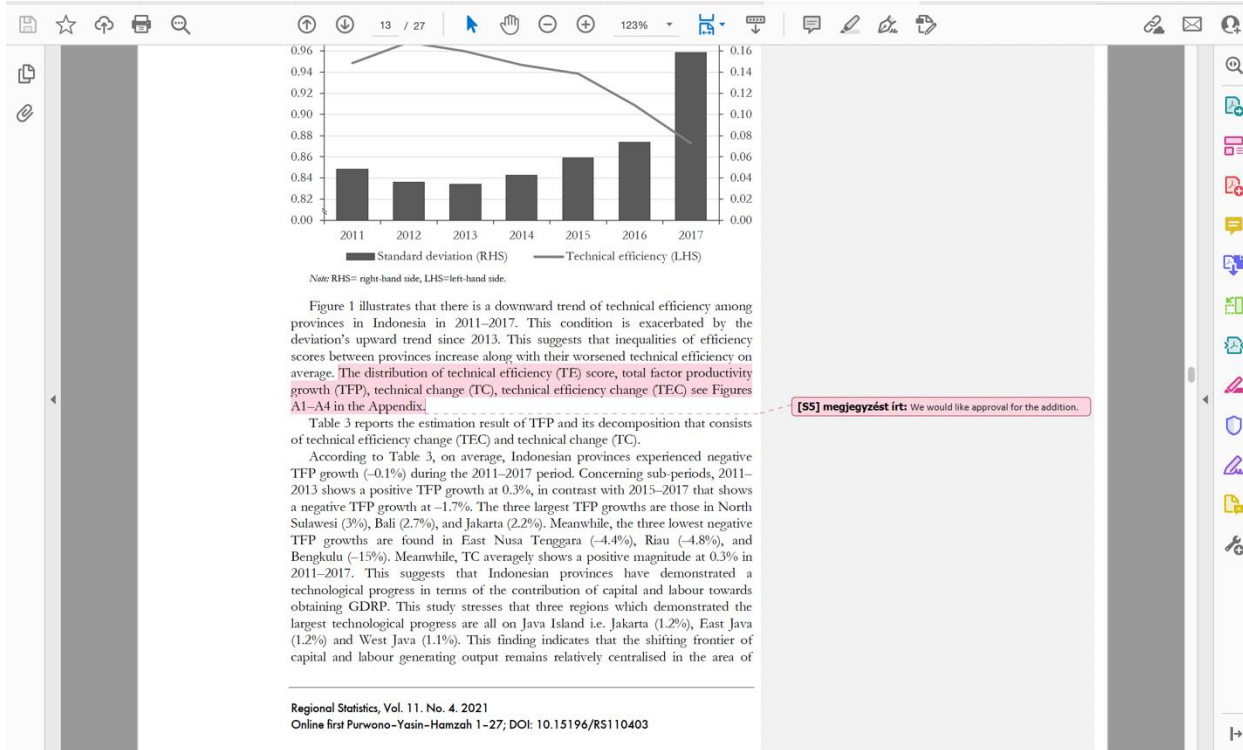
$$TC_{it} = \exp(-u_{it}) \quad (6)$$

$$TC_{it} = \sqrt{\left[\left(1 + f_1(Y_{it}, L_{it}, K_{it}, t, \beta_0, \beta) \right) \times \left(1 + f_2(Y_{i,t-1}, L_{i,t-1}, K_{i,t-1}, t, \beta_0, \beta) \right) \right]} \quad (7)$$

where TFP_{it} is total factor productivity, TEC_{it} is technical efficiency change, TE_{it} is technical efficiency obtained from (2) and (2a)–(2d). TC_{it} is technical change. As this approach is a geometric mean, $TFP > 1$, $TEC > 1$, $TC > 1$ imply positive magnitudes.

[S3] megjegyzést írt: Kindly approve (β instead of [k])

Regional Statistics, Vol. 11. No. 4. 2021
Online first: Purwono–Yasin–Hamzah 1–27; DOI: 10.15196/RS110403



[S5] megjegyzést írt: We would like approval for the addition.

instrument sets.

This study employs two concepts of convergence: Beta convergence and Sigma convergence. We set four different models to robustly capture intra-provincial trade and international trade impact on convergence of TFP growth and TFP growth dispersion. Beta convergence is specified in Model 1 and Model 2, which refer to 11a–11b respectively to capture the impact of intra-provincial export and international export (11a) and intra-provincial import and international import (11b), on the TFP growth. Sigma convergence is specified in Model 3 and Model 4, which refer to 12a–12b respectively to capture the impact of intra-provincial export and international export (12a) and intra-provincial import and international import (12b), on the dispersion of TFP growth. These equations are specified as follows:

$$\ln TFP_{it} - \ln TFP_{it-1} = \tau_0 + \tau_1 \ln TFP_{it-1} + \tau_2 \text{Intra Export}_{it} + \tau_3 \text{Inter Export}_{it} + \epsilon_{it} \quad (11a)$$

$$\ln TFP_{it} - \ln TFP_{it-1} = \alpha_0 + \alpha_1 \ln TFP_{it-1} + \alpha_2 \text{Intra Import}_{it} + \alpha_3 \text{Inter Import}_{it} + \phi_{it} \quad (11b)$$

$$\Delta W_{it} = \zeta_0 + \zeta_1 W_{it-1} + \zeta_2 \text{Intra Export}_{it} + \zeta_3 \text{Inter Export}_{it} + \epsilon_{it} \quad (12a)$$

$$\Delta W_{it} = \xi_0 + \xi_1 W_{it-1} + \xi_2 \text{Intra Import}_{it} + \xi_3 \text{Inter Import}_{it} + \epsilon_{it} \quad (12b)$$

where TFP_{it} is the total factor productivity in ratio, $\ln TFP_{it} - \ln TFP_{it-1}$ is total factor productivity growth. τ_1, α_1 are scalars that are negative if Beta convergence occurs. W_{it} is the natural logarithmic of TFP of province i in year t ($\ln TFP_{it}$) subtracted from the average natural logarithmic TFP in year t ($\ln TFP_{it}$). ΔW_{it} is the W_{it} subtracted from W_{it-1} . ζ_0, ξ_0, ξ_1 are scalars that are negative if Sigma convergence exists. $\epsilon_{it}, \phi_{it}, \epsilon_{it}, \epsilon_{it}$ are the error terms. τ_2 and τ_3 are the coefficients of intra-provincial export and international export respectively, which are expected to be positive for Beta convergence (Model 1). ζ_2 and ζ_3 are the coefficients of intra-provincial export and international export, which are expected to be negative for Sigma convergence (Model 3). α_2 and α_3 are the coefficients of intra-provincial import and international import, which are expected to be positive for Beta convergence (Model 2). ξ_2 and ξ_3 are the coefficients of intra-provincial import and international import that are expected to be negative for Sigma convergence (Model 4). The positive signs of $\tau_2, \tau_3, \alpha_2, \alpha_3$ of Beta convergence

Regional Statistics, Vol. 11, No. 4, 2021
Online first: Purwono-Yasin-Hamzah 1–27; DOI: 10.15196/RS110403

[S4] megjegyzést írt: Kindly approve (ζ_2, ξ_2 instead of ζ_0, ξ_1).

14 Rudi Purwono - Mohammad Zeqi Yasin - Ibnu Nur Hamzah

Java. With regards to technical efficiency change, the result demonstrates a negative growth of technical efficiency in 2011–2017, by –1.3%. This result confirms the previous conclusion that, on average, efficiency scores relatively worsened.

Table 3
Total factor productivity (TFP), technical change (TC), and technical efficiency change (TEC) of 33 provinces in Indonesia

Province	TFP			TC			TEC		
	2012–2013	2015–2017	2011–2017	2012–2013	2015–2017	2011–2017	2012–2013	2015–2017	2011–2017
Aceh	1.002	0.984	0.984	0.995	1.009	1.003	1.007	0.975	0.981
North Sumatra	0.986	1.005	1.003	1.000	1.014	1.008	0.987	0.991	0.996
West Sumatra	1.029	1.002	1.008	0.996	1.010	1.004	1.034	0.993	1.005
Riau	1.008	0.906	0.952	0.999	1.013	1.007	1.009	0.894	0.945
Jambi	0.955	1.031	1.005	0.994	1.008	1.002	0.960	1.023	1.003
South Sumatra	1.005	1.023	1.012	0.999	1.012	1.006	1.006	1.010	1.006
Bengkulu	1.006	0.701	0.850	0.992	1.006	1.000	1.014	0.698	0.852
Lampung	1.003	0.996	1.005	0.997	1.011	1.005	1.006	0.985	1.000
Bangka Belitung	0.990	0.943	0.965	0.991	1.005	0.999	0.999	0.939	0.966
Riau Islands	1.004	0.979	0.986	0.996	1.010	1.004	1.008	0.969	0.982
Jakarta	1.013	1.018	1.022	1.004	1.018	1.012	1.009	1.000	1.011
West Java	1.033	1.014	1.011	1.003	1.017	1.011	1.030	0.997	1.000
Central Java	1.011	0.991	1.000	1.002	1.016	1.010	1.009	0.975	0.990
Yogyakarta	0.995	0.988	0.986	0.994	1.008	1.002	1.001	0.980	0.984
East Java	1.023	0.997	1.010	1.003	1.018	1.012	1.020	0.980	0.999
Banten	1.045	0.986	1.008	0.999	1.013	1.007	1.047	0.973	1.001
Bali	1.017	1.015	1.027	0.996	1.010	1.004	1.022	1.005	1.023
West Nusa Tenggara	0.925	1.036	0.994	0.994	1.008	1.002	0.930	1.028	0.992
East Nusa Tenggara	1.013	0.941	0.956	0.993	1.008	1.002	1.020	0.933	0.955
West Kalimantan	0.997	1.005	1.003	0.995	1.009	1.003	1.001	0.995	1.000
Central Kalimantan	0.995	1.012	1.001	0.994	1.009	1.002	1.000	1.003	0.999
South Kalimantan	0.994	0.995	0.996	0.994	1.008	1.002	1.000	0.988	0.994
East Kalimantan	0.981	1.008	0.988	0.998	1.012	1.006	0.983	0.997	0.982
North Sulawesi	1.099	0.973	1.030	0.993	1.008	1.001	1.107	0.965	1.029
Central Sulawesi	0.997	1.022	0.993	0.994	1.009	1.002	1.003	1.013	0.990
South Sulawesi	0.986	1.002	0.993	0.998	1.012	1.006	0.988	0.990	0.987
Southeast Sulawesi	1.071	0.991	1.003	0.993	1.008	1.002	1.079	0.984	1.002
Gorontalo	1.022	1.006	1.008	0.989	1.003	0.997	1.033	1.003	1.011
West Sulawesi	0.993	0.988	0.985	0.990	1.004	0.998	1.003	0.984	0.987
Maluku	0.975	0.970	0.981	0.990	1.004	0.998	0.985	0.966	0.984

[S6] megjegyzést írt: We would like approval for the addition.

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AR(1) – p value	0.000	0.000	0.000	0.000
AR(2) – p value	0.167	0.355	0.321	0.550
Sargan – p value	0.247	0.604	0.550	0.895
Number of instruments	6	6	6	6
Number of provinces	33	33	33	33
Number of observations	132	132	132	132

Note: ***, **, * represent significance at alpha 1%, 5%, and 10%. Standard errors are in parentheses. AR(1) and AR(2) are Arellano–Bond (1991) tests for auto correlation in differences. Sargan is a test for over identification restrictions.

According to Table 4, our model specifications for both Beta and Sigma convergences are valid since they satisfied the specification tests at a 10% significance level. According to the result, the serially uncorrelated error assumption is satisfied since the null hypothesis stating no autocorrelation is rejected at order 1 (AR (1)) but not at higher orders (AR (2)). Sargan overidentifying restriction test meant to justify the validity of the instrument sets provides no evidence to reject the null hypothesis that population moment conditions are correct. See Table A1 in the Appendix for a statistical description of the variables. Our model is also robust according to robustness checks, whose results are provided in the Table A2 and

[S7] megjegyzést írt: We would like approval for the addition.

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Figure A1
Distribution of technical efficiency (TE) score of 33 provinces in Indonesia

Legend:
■ 25% upper TE score
■ 25% upper-middle TE score
■ 25% lower-middle TE score
■ 25% lower TE score
□ Not included in the analysis

Source: Authors (created with www.mapchart.net).

Figure A2
Distribution of total factor productivity growth (TFP) of 33 provinces in Indonesia

Legend:
■ 25% upper TFP
■ 25% upper-middle TFP
■ 25% lower-middle TFP
■ 25% lower TFP
□ Not included in the analysis

Source: Authors (created with www.mapchart.net).

[58] megjegyzést írt: We would like approval for the addition.

[59] megjegyzést írt: We would like approval for the addition.

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