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Migration, Ethnic Diversity, and Economic Growth: Towards an Empirical Understanding of Regional Development in Indonesia

Aris Ananta
Evi Nurvidya Arifin
Ari Purbowati
Paul J. Carnegie

Universiti Brunei Darussalam

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Professor Lian Kwen Fee, Institute of Asian Studies, Universiti Brunei Darussalam.

Associate Professor Paul J. Carnegie, Institute of Asian Studies, Universiti Brunei Darussalam

Authors

Aris Ananta is an economist-demographer with an inter-disciplinary perspective. He is Professor at the Faculty of Economics and Business, Universitas Indonesia and Visiting Professor at the Centre for Advanced Research (CARE), Universiti Brunei Darussalam. Aris is currently the President of Asian Population Association. His research interests include economics of ageing population, economics of population mobility, social protection, and ethnicity. He has published widely in his fields including *Demography of Indonesia's Ethnicity* (Singapore: Institute of Southeast Asian Studies) and *Indonesia's Population: Ethnicity and Religion in a Changing Political Landscape* (Singapore: Institute of Southeast Asian Studies)

Contact: arisananta@ui.ac.id

Evi Nurvidya Arifin is Senior Assistant Professor at the Centre for Advanced Research (CARE), Universiti Brunei Darussalam and Adjunct Researcher at the Demographic Institute Faculty of Economics and Business, Universitas Indonesia, Indonesia. She has published widely on various themes, for instance on quantifying Indonesia's Ethnic Diversity in *Asian Population Studies*, Chinese Indonesians in *Asian Ethnicity*, economic development in *Ageing in Asia: Contemporary Trends and Policy Issues* and elderly health status in Indonesia in *Journal of Population Ageing*.

Contact: evi.arifin@ubd.edu.bn

Ari Purbowati is a Statistician at Directorate of Population and Labor Statistics, Statistics-Indonesia. She earned her Masters degree in economics from Universitas Indonesia. Ari is involved in the management of surveys and censuses such as the Inter-Census Population Survey and the Population Census, with the most recent being the registration-based 2020 Population Census. Her publications include work on the declining dominance of Javanese in multi-ethnic Indonesia in *Population Review*.

Contact: purbowati@bps.go.id

Paul J. Carnegie is Associate Professor of Political Science at the Institute of Asian Studies, Universiti Brunei Darussalam. He has varied interests in Southeast Asia and Asia-Pacific especially comparative politics and human security with an enduring focus on Indonesia. Paul has published widely in his fields including *The Road from Authoritarianism to Democratization in Indonesia* (Palgrave Macmillan) and *Human Insecurities in Southeast Asia* (Springer).

Contact: paul.carnegie@ubd.edu.bn

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*Aris Ananta
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Ari Purbowati
Paul J. Carnegie*

Abstract:

It is a commonly held assumption that while migrants can contribute to economic growth, their impacts on population composition may also generate socio-cultural tensions and political instability. As such, ethnic diversity of a province or a community may have a positive or negative affect on regional development. This raises the question of whether impacts of migration on ethnic diversity correlate with economic growth. Taking Indonesia as the locus of the study, the following paper presents new empirical data in response to that question. By analysing statistics on ethnic groups and regional composition derived primarily from the Indonesia 2010 Population Census and cross referencing them with recent ethnic classifications and fractionalisation and polarisation indexes, a fuller overview of ethnic diversity across the archipelago and its relationship to migration and economic growth is gained. Based on the data, a mixed pattern emerges on the role ethnic diversity plays in intermediating the relationship between migration and economic growth. The findings suggest a correlation between indicators of ethnic diversity and economic regions but in less developed regions in particular, other variables also modulate the relation between migration and economic growth. While ethnic diversity appears to be a primary variable in more developed regions.

Keywords: Migration; Ethnic Diversity; Fractionalisation; Polarisation; Economic Growth

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Introduction

Various studies have shown a positive correlation between immigration and economic growth in destination countries (OECD, 2014; Ehrlich and Kim, 2015; Akbari and Haider, 2018). Coleman (2006) also highlights the significant role international migration has on changing demographic diversity in many developed countries. However, the latter changes can have potentially undesirable consequences. As Collier, Honohan, and Moene (2001), Ahlerup and Olsson (2012), and Soroka et al. (2016) all argue, public attitudes toward immigration is often negative which may result in social and political instability and a downturn in economic growth. According to Parachivescu (2013) and OECD (2014), immigration needs to be “managed” so that countries can obtain its economic benefits whilst minimizing potential negative social and political effects. However, these studies rarely consider levels of ethnic diversity as a mediating variable in relation to the impact of migration on economic growth.

Certainly, there is much debate and contestation over the relationship between changing ethnic diversity and economic growth. Driven by the seminal work of Easterly and Levine (1997) that indicated a negative economic impact of ethnic diversity among African countries, many studies have gone on to examine the link between ethnic diversity and economic growth (Alesina et al., 2003; Montalvo and Reynal-Querol, 2005; Dincer and Wang, 2011; Masela, 2013; Goren, 2014; Bove and Elia, 2017). In contrast, the work of Bleaney and Dimico (2009) suggests that an ethnically diverse region is not automatically more likely to suffer from internal conflicts. Although the likelihood of ethnic conflict can rise, the more polarized the region are. Recent research by Montalvo and Reynal-Querol (2017) indicates that this

relationship varies, depending on the unit of observation and other spatial variables. It shows that ethnic diversity may be beneficial to economic growth up to a certain threshold of ethnic diversity. Beyond such levels, rising ethnic diversity may begin to negatively correlate with development.

Significantly, much of the existing empirical evidence on the nexus between ethnic diversity and economic growth is mostly derived from cross country studies that often rely on cross-referencing country specific data with different concepts of ethnicity, different methods of data collection, and different data collecting time frames (Benschop et al., 2006). There are also limited studies examining the relationship between ethnic diversity and economic growth using intra-region ethnic diversity within a country (Dincer and Wang, 2011; Mavridis, 2015 and Alesina et al., 2019). Moreover, the work of Mavridis (2015) and Alesina et al. (2019) in Indonesia used cross-sectional data based on 2010 population census without the benefit of 100% coverage and recent more accurate classifications of Indonesian ethnic groups to capture levels of diversity. As a result, they largely fail to take into the consideration the mediating role of ethnic diversity in relation to internal migration and economic growth.

With the above debates and considerations in mind, the following paper presents new empirical data on whether migration affects economic growth through changes in ethnic diversity and attempts to gauge the extent to which ethnic diversity plays a mediating role in the relationship between migration and economic growth. The paper utilizes the expanded and refined classifications of Indonesian ethnic groups by Ananta et al. (2015), which tabulated more accurately the raw Census data and then crossed references that with the ethnic fractionalization and polarization indexes of Arifin et al. (2015). Significantly, the work of Ananta et al. (2015) and Arifin et al. (2015) uses the full data set (100 percent census data), rather than the more usual 10 percent sample size of the census data in other studies.

Brief Background on Migration, Ethnicity and Development in Indonesia

Since 1920 Indonesia's ethnic diversity has been associated both negatively and positively with development, depending on the political and economic situation. Ethnicity has been a significant political and bureaucratic issue, sometimes accompanied by inter-ethnic conflict and even demands for secession from Indonesia, especially among regions Outside Java Island (OJI). The New Order era (1966-1998) placed political stability as a key pillar of economic growth over and above forms of representation, ethnic issues were perceived as a political liability. As a result, information on ethnicity in Indonesia was unavailable for 70 years since

1930. Only after the fall of the New Order Era in 1998 did the government permit *Badan Pusat Statistik* (Office of National Statistics) to collect and publish statistics on ethnicity from the 2000 Indonesia population census. The process of decentralization since the reform era (beginning in 1999) has also introduced more awareness of local contexts, including local languages and differences in ethnic identity (Goebel, 2013).

However, migrant issues have tested a democratising Indonesia. Internal migrations have led to emerging political discourses on “locality” in provinces between *putra daerah* (son of the soil) and *pendatang* (migratory newcomers). Political discourse prioritising locals has often become a decisive factor in winning local elections (*pilkada*) for governors, mayors, and members of parliament. (Gayatri, 2010 and Cote, 2014). To elaborate, following on from Dutch practice, the Suharto era witnessed extensive programmes of transmigration (*transmigrasi*) that were promoted as a way to deal with overcrowding and alleviate poverty (Carnegie et al. 2021). By the 1990s, more than 3.6 million Indonesians had been resettled primarily from Java and surrounding islands to outer islands (Badan Pusat Statistik 2012). Over the years, the scale of this transmigration has sometimes created tensions and animosity between *putra daerah* and *pendatang* over economic interests, land use and access to subsidies, particularly in resource rich regions such as Papua, Aceh, and Riau Archipelago or even the tourist magnet of Bali. Internal migrants often make convenient scapegoats for disruptive state and commercial activities. They are easily “othered” as the unwitting proxies of frustrations over underlying political, economic, environmental and scarcity issues (Carnegie et al. 2021).

Having said this, ethnic fractionalisation does not necessarily mean ethnic polarisation. Migrants to Papua in Eastern Indonesia, for example, may have increased ethnic fractionalisation but not levels of ethnic polarisation. Although migration to Papua has generated tensions and sometimes conflict between *putra daerah* and *pendatang*, it is not as severe as some other regions (Ananta et al., 2016). The severity of periodic conflicts in Papua especially in 2019 are indicative of a different set of political and disruptive resource extraction issues.

The Study: Empirical Methods

As there is limited panel data for this kind of study in Indonesia, our paper uses a cross-sectional regression analysis based on the 2010 Population Census data. In order to reduce the possibility of endogeneity between migration and economic growth, migration is here measured for the period of 2005-2010, and economic growth for 2009-2010. As such, the paper adopts a recursive model (one-way relationship) applied to the district level data as the unit of analysis to examine whether the impact of migration on ethnic diversity influences economic growth.

We use three statistical equations to empirically test the relationships among migration, ethnic diversity and economic growth. Equation 1 regresses real economic growth on migration (*MIG*) and two indicators of ethnic diversity with control variables of fertility, urbanisation level and per capita income. Ethnic diversity is commonly measured with two common metrics, firstly ethnic fractionalization index / *EFI* (Easterly and Levine, 1997; Alesina and Le Ferrara, 2005; Alesina, Gennaioli and Lovo, 2019) and second, ethnic polarization index / *EPOI* (Esteban and Ray, 2008; Esteban and Ray, 2011). Ethnic fractionalization measures diversity as a function of the number of ethnic groups in a district whilst ethnic polarization indicates the existence of two or more large ethnic groups in a district.¹ A higher ethnic fractionalization index usually indicates a higher probability of a conflict to occur, although the conflict in question may not be intense. On the other hand, a higher polarization index may indicate a higher probability of severe conflict.

The coefficient of *MIG*, α_3 , in Equation 1 (Eq. 1) shows the ‘direct’ effect of migration on economic growth. This ‘direct’ effect, α_3 , indicates that migration affects economic growth through channels other than ethnic diversity, such as the quantity and quality of labour force (Ehrlick and Kim, 2015; Akbari and Haider, 2016; Borsch-Supan, Leite, and Rausch, 2019), tax revenue (Soroka et al., 2016), and aggregate demand in the host regions (Borjas, 2014; Card and Peri, 2016). The empirical testing for these variables is beyond the scope of this paper.

$$\text{Eq. 1: } G_PCRGDP_i = \alpha_0 + \alpha_1 EFI_i + \alpha_2 EPOI_i + \alpha_3 MIG_i + \alpha_4 Fer_i + \alpha_5 Urb_i + \alpha_6 PCRGDP_i + e_i \dots$$

Where G_PCRGDP_i is per capita real GDP growth at district i . EFI_i is Ethnic Fractionalization Index () and $EPOI_i$ is Ethnic Polarization Index (), which are measured at district i . MIG_i refers to rate of recent in-migration to district i . As mentioned, this model has a

¹ See Arifin et. al (2015) for the formula in calculating the indexes.

set of control variables: Fertility (Fer_i), Urbanization (Urb_i), and Per Capita Income ($PCRGDP_i$). Urb_i refers to urbanization level at district i . $PCRGDP_i$ is per capita real GDP at district i .

Fertility is used as a control variable, because its differential may result in rising ethnic diversity. Fertility may also correlate to economic growth and impact future labour force without affecting ethnic diversity. A more urbanised population may display greater willingness to accept difference and therefore may lessen the association between ethnic diversity and conflict and influence economic growth. Per capita income may affect economic growth, as a region with a lower per capita income may be more likely to have a higher economic growth rate.

Equation 2 (Eq. 2) examines the relationship between migration and ethnic fractionalization. EFI_i is regressed on Migration (MIG_i), controlled by Fertility (Fer_i) and Urbanization level (Urb_i).

$$\text{Eq. 2: } EFI_i = \beta_0 + \beta_1 MIG_i + \beta_2 Fer_i + \beta_3 Urb_i + e_i \dots$$

Eq. 2 enables the calculation of indirect association between migration and economic growth intermediated by ethnic fractionalisation. The indirect association is calculated from the multiplication of α_1 in Equation 1 and β_1 in Equation 2.

Equation 3 (Eq. 3) examines the relationship between migration and ethnic polarization ($EPOI$), in which $EPOI_i$ is regressed on Migration, controlled by Fertility (Fer_i) and Urbanisation level (Urb_i).

$$\text{Eq. 3: } EPOI_i = \gamma_0 + \gamma_1 MIG_i + \gamma_2 Fer_i + \gamma_3 Urb_i + e_i \dots$$

With this equation, the indirect association between migration and economic growth is intermediated by ethnic polarisation. This association is estimated by multiplying α_2 in Equation 1 and γ_1 in Eq. 3.

The relationships shown in Eq. 1, 2, and 3 are first applied to all districts to represent the analysis at the national level, which is called “Indonesia” in Tables 3-5 under the section of findings. The relationships are then differentiated by economic regions, following Sharma (2016) and Montalvo and Reynal-Querol (2021), who stress the importance of spatial variables on ethnicity analysis and the distinction Bove and Elia (2017) make between developed and

developing. Proceeding on this basis, the three questions were tested separately according to the stages of economic development. Districts located in Java belong to the group of more developed regions, while districts located OJI are relatively less developed regions.

Java comprises only 6.8 percent of the country's land area but is the most densely populated area. More than half (57.5 percent) of the 2010 population inhabit the island. At the same time, more than half (57.8 percent) of Indonesia's GDP is generated from Java. It is the centre of development, hosts the capital city (for now) and enjoys more advanced transportation networks, business and trade infrastructure as well as industries and levels of health and education.

The statistical model is also conducted separately based on the type of districts: City and Regency. City is grouped under more developed region; and Regency, less developed region.

Data and Variables

Eq. 1 to 3 are analysed using refined and representative statistics on ethnicity and ethnic diversity in Indonesia to date (August 2021) with reference to ethnic groups refined and reclassified by Ananta et al. (2015) that were generated from the raw information of the 2010 population census. The refined and reclassified ethnic groups are expected to provide a more accurate picture of Indonesia's ethnic groups. Ananta et al. reclassified more than 1,300 ethnic categories into 630 ethnic groups. Arifin et al. (2015) then applied these ethnic groupings to calculate ethnic fractionalization index and polarization index at district level.

It is worth emphasising that Ananta et al. and Arifin et al. worked on the full data set, 100 percent enumeration, of the 2010 population census, which contained 237.6 million individuals, instead of only 10 percent sample. At least until 2021, the 2010 population census is the best census for providing comprehensive and high-quality data on ethnicity in Indonesia.

The 2010 census was the second large-scale undertaking after the 2000 census. The 2010 census is also the second census collecting information on ethnicity since Indonesia gained its independence in 1945. However, the 2000 census suffered from missing information in several areas due to internal conflicts during the census period. In addition, the ethnic categories are also not comparable. Moreover, due to the Covid-19 pandemic, the 2020 population census is no longer a full enumeration, instead it is a sample census.²

² For more detailed explanations about the 2010 census see Hull (2010) and Ananta et al. (2015).

As district is the unit of analysis in this paper, all variables are measured accordingly. In Indonesia, districts are the administrative level below province. They have become more important in the decentralisation era with a say in formulation and implementation of development policies. Districts (kabupaten) can encompass a city (kota) or regency. The difference between the two lies mostly on its stage of economic development. A city is not necessarily 100 percent urbanised. There are many cities with low urbanisation levels. For example, the urbanisation level of Subulussalam city in the Province of Aceh is only 19.0 percent. The 2010 census covered 497 districts.

However, 15 districts are excluded mostly because of an unavailability of data in the wake of administrative boundary proliferation under decentralisation. Information on the growth of per capita real GDP is unavailable for eight newly established districts, originating from six districts. As a result, these 14 districts are excluded from the analysis. The regency of Mimika in the Province of Papua is also excluded because it is an outlier. Mimika is the only regency experiencing contraction with negative economic growth (-14.6 percent) during 2009-2010.³ In total, 482 districts, consisting of 98 cities and 384 regencies, were selected in the analysis.

Other variables used in the paper are compiled from the Statistics-Indonesia publications data. The 2010 population census measured migration in two ways: one is based on the place of birth and the other one is place of residence in the past 5 years before the census. This paper uses the latter, instead of the former, to capture recent migration. Migration is here expressed as migration rate, that is the ratio between the number of in-migrants divided by the population aged 5 years and above times 100. The boundary of places of residence is the district's boundary. Migrants coming into a district are therefore defined as people whose places of residence in 2005 are different from the districts they lived in 2010 and migration rate refers to period of 2005-2010.

The concept of ethnicity in Indonesia's population censuses is adopted, where ethnicity is defined by a self-identification approach. This confers a level of fluidity whereby respondents are free to identify themselves with whatever ethnic group they want. The chosen ethnic groups can include those which were not previously listed by the BPS-Statistics Indonesia. If they cannot decide their ethnic groups, they can indicate the ethnic groups of their fathers. Interestingly, respondents can change their ethnic identification at their own will over time for many reasons such as evolving self-identity, costs and benefits associated with being

³ Mimika is the most fractionalised district with EFI of 0.93.

identified with a certain ethnic group, migration trajectory and inter-ethnic marriage. In the population census, the question on ethnicity was only asked to Indonesian citizens living in Indonesia.

Fertility is measured as the ratio between the total number of children born to women aged 45-49 and the number of the women themselves, measuring completed or past fertility. The use of past fertility may capture the possible lag effect of fertility on economic growth. Urbanisation level (Urb_i) refers to the percentage of population living in urban areas of a particular district in 2010.

Statistics on economic growth and per capita income are not collected from the population census but from published data by Badan Pusat Statistik (2012). Economic growth refers to the growth of per capita real GDP without oil and gas at the 2000 constant price at each district between 2009 and 2010.

The Indonesia Case: Empirical Results

Before moving on to discuss findings in this section, we begin with a description of the selected variables in the analysis, namely inter-district migration, economic growth, and ethnic diversity at the district level. The findings are then presented from regression models to assess the direct impact of migration on economic growth, the impact of ethnic diversity on economic growth, and the indirect impacts of migration on economic growth through ethnic diversity.

Inter-district Migration and Economic Growth in Indonesia

Inter-district migration (a move to any other district) between 2005 and 2010 equated to 9.8 million or 4.6 percent of the Indonesian population aged 5 years and above. The migration rate varied among districts from as low as 0.24 percent to as high as 26.2 percent with the mean at 5.2 percent. The lowest percentage of migrants in Lanny Jaya regency, province of Papua, might be related to its challenging topography as a hilly and mountainous inland area for settlement, while the highest migration rate in Tana Tidung regency, province of North Kalimantan, could reflect it being a least populous district with only about 15 thousand people in 2010. The highest migration rate in this regency might not reflect a truly high inflow of migration, instead it was due to merely the change in its administrative boundary. Tana Tidung was separated from Bulungan regency in 2007 to become its own district. These two districts are OJI. The lowest migration rate in Java Island was 0.3 percent, observed in Sumenep Regency, Madura Island. The highest migration rate was 17.4 percent in the city of Yogyakarta.

On average, the migration rate into districts in Java Island was lower than OJI. The mean of migration rate in City is higher than in Regency (Table 1).

Furthermore, districts in Java Island are more urbanised with more than half of the population living in urban areas, in contrast to population living OJI where urbanization levels are 31.3 percent on average. The urbanisation level in Indonesia ranges from 0 to 100 percent with 20 fully rural districts and 10 fully urban districts. The mean of urbanisation level among districts was 31.6 percent, with higher rate in Java Island than in OJI, and much higher rate in City than in Regency. Fertility rates were lower in Java than elsewhere, 2.9 vs 3.6 mean of children born per woman aged 45-49. Yet, the fertility rate is not much different between City and Regency.

Table 1. Statistics of the Selected Variables by Island and District

Variable	Minimum	Maximum	Mean	Std. Deviation	Minimum	Maximum	Mean	Std. Deviation
	Java Island				Outside Java Island			
PCRGDP	0.168	102.86	10.90	18.06	0.018	35.82	1.98	3.24
G_PCRGDP	1.73	12.22	5.63	1.18	2.04	28.13	6.93	3.11
Fertility	1.91	4.45	2.88	0.52	1.96	5.53	3.62	0.58
Migration	0.30	17.41	4.03	3.57	0.24	26.16	5.60	4.15
Urbanization	9.28	100.00	58.09	30.78	0.00	100.00	31.31	29.08
	City				Regency			
PCRGDP	0.148	102.86	9.49	19.75	0.018	54.25	2.80	4.50
G_PCRGDP	3.81	9.89	6.55	1.17	1.73	28.13	6.62	3.11
Fertility	2.17	5.08	3.14	0.54	1.91	5.53	3.51	0.65
Migration	2.53	23.14	8.90	3.92	0.24	26.16	4.27	3.53
Urbanization	19.03	100.00	89.13	16.48	0.00	100.00	24.78	18.57

Note: exchange rate USD to rupiah in 2000: 1 USD about 8,374 rupiah

Source: Authors' calculation.

Per capita real GDP (PCRGDP) among districts ranged widely from 0.02 million rupiah to 102.9 million rupiah in 2010. The economy grew at diverse speeds during 2009-2010 with the growth rate ranging from the slowest, 1.7 percent, to the highest of 28.1 percent. The average economic growth (G_PCRGDP) was 6.6 percent. City economies grew slightly slower than in Regencies but with the level of City income much higher than that in Regency, 9.5 million rupiah vs 2.8 million rupiah. Java is more advanced economically than elsewhere. Per capita real GDP in Java was about five times higher than that of OJI (10.9 million versus almost 2.0 million rupiah, respectively). However, the economies among districts in Java grew slower than that OJI, 5.6 percent vs 6.9 percent, respectively.

Ethnic Fractionalisation and Polarisation Indices

As shown in Arifin et al. (2015), Indonesia is ethnically highly fractionalised but less polarised than sometimes assumed. However, ethnic diversity does vary depending on the province. Central Java is almost a “completely” homogenous province, with a very small ethnic fractionalization index, but West Papua is a “completely” heterogeneous province with a high fractionalization index. Central Java is also the least polarised province, and North Sumatera is the most polarised province.

Moreover, Table 2 shows that ethnic fractionalization index (EFI) among districts ranged from fully homogenous (EFI = 0.01) to almost fully heterogeneous districts (EFI = 0.94), with the mean of EFI at 0.40. Geographically, the districts in the most densely populated and advanced economy of Java are less ethnically fractionalised than those located OJI. Furthermore, City is more fractionalised than Regency.

Table 2.
Summary Statistics of EFI and EPOI by Region and Type of District: Indonesia, 2010

Variables	N	Minimum	Maximum	Mean	Std. Deviation
EFI (ethnic fractionalization index)					
Indonesia	482	0.01	0.94	0.40	0.29
Java Island	118	0.01	0.78	0.18	0.23
Outside Java Island	364	0.01	0.94	0.48	0.28
City	98	0.06	0.94	0.50	0.28
Regency	384	0.01	0.94	0.38	0.30
EPOI (ethnic polarization index)					
Indonesia	482	0.01	0.97	0.45	0.27
Java Island	118	0.01	0.94	0.25	0.26
Outside Java Island	364	0.02	0.97	0.52	0.24
City	98	0.11	0.86	0.52	0.21
Regency	384	0.01	0.97	0.44	0.29

Source: Authors' Calculation.

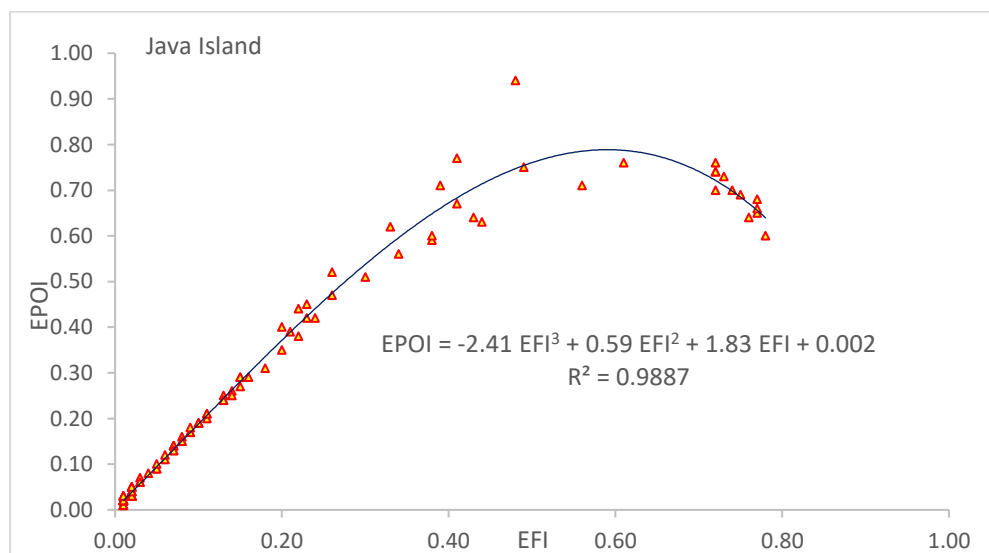
The population in the provinces of East Java, Central Java, and Yogyakarta are homogeneously Javanese, while that in West Java are mostly homogeneously Sundanese. In these largely ethnically homogeneous provinces, inter-district migration within a province may not significantly change ethnic diversity in the districts of destinations. For example, inter-district migration within the Province of Central Java will not have significant impact on ethnic composition in the district as all districts in this province are homogeneously Javanese.

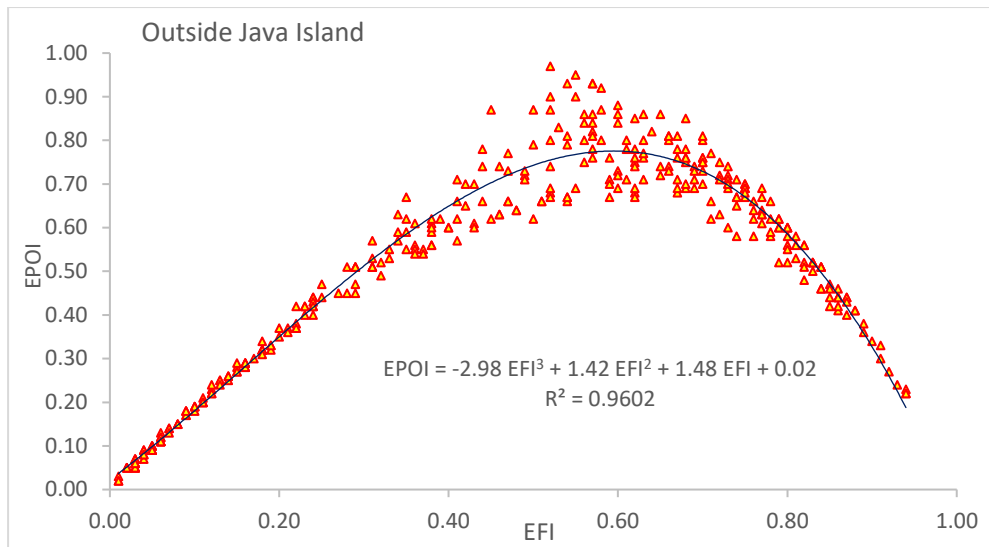
However, given the ubiquity of Javanese as an ethnic group, the migratory trajectories of Javanese may change ethnic composition in districts outside their home provinces (Ananta et al., 2015).

The ethnic polarisation index (EPOI) among selected districts ranged widely from not polarised (EPOI = 0.01) to highly polarised districts (EPOI = 0.97). The overall mean of EPOI is 0.45. Districts in Java are less polarised than that of districts located OJI. Furthermore, with similarities in language, religion, and culture among ethnic groups in Java, especially among Javanese, Sundanese, Madurese and Bantenese, a polarised district there may have low risk of conflict. This can differ for a polarised district located OJI. Table 2 above shows City as more polarised than Regency. However, the variation of EPOI in Regency is wider than that in City.

Arifin et al. (2015) drew the conclusion that EFI and EPOI among all districts in Indonesia had a cubic relationship, but the plot is closer to an inverted U-curve. The findings of this paper indicate similar patterns of relationships between EFI and EPOI in City, Regency, and OJI. However, the pattern is not fully an inverted U-curve in Java, as shown in Figure 2.

Figure 2. Scatter Plot between EFI and EPOI by Region





Source: Graphs plotted by the authors, based on data from Arifin et al. (2015).

Impact of Migration and Ethnic Diversity on Economic Growth

The main question posed by this paper is how ethnic diversity intermediates the impact of migration on economic growth. However, migration may also affect economic growth “directly”, not through ethnic diversity. As such, the following sub-section applies Eq. 1 to examine how migration affects economic growth, given the level of ethnic diversity and the impact of ethnic diversity on economic growth.

Without controlling the analysis with ethnicity, the result from OLS model (results not shown in Table 3), indicates that migration is significantly associated with economic growth. The relationship takes a quadratic model forming an inverted U-curve with economic growth as the vertical axis. However, it is a rather weak relationship as the coefficient of its quadratic term falls in *p-value* of 0.065. However, this non-linear relationship becomes stronger when per capita GDP, fertility rate and urbanisation rate are added into the model. The coefficients of migration and migration squared are significant at *p-value* < 0.001, thus the inverted-U curve became stronger. An increase in migration rate appears to increase economic growth up to its peak, and then turns to decrease. The peak economic growth occurred when migration rate reached 13.8 percent. Here, the impact of migration on economic growth can be through ethnic diversity and/or other channels.

To determine which channel, Eq. 1 is performed by adding ethnic diversity as one of the control variables, and the inverted-U curve between migration and economic growth in Indonesia remained the same, with the *p-value* < 0.01 for α_{31} (Migration) = 0.301 and α_{32} (Migration square) = -0.012 (Table 3, column on Indonesia). This result indicates a significant

impact of migration on economic growth through channels other than ethnic diversity. In other words, given ethnic diversity, migration initially benefits economic growth up to the migration rate of 12.4 percent.

Table 3. Impact of Migration and Ethnic Diversity on Economic Growth

Independent Variables	Indonesia	City	Regency	Java Island	Outside Java Island
(Constant)	8.83257***	4.34560	9.26939***	5.90689	10.66719***
Migration	0.30114***	0.16475	0.32182**	0.05672	0.35771**
Migration square	-0.01218**	-0.00525	-0.01400**	-0.00294	-0.01453**
EFI	3.13294***	2.32818***	3.47719***	-1.30762	3.04769***
EPOI	-2.31809***	-1.47747*	-2.62659***	2.28558*	-3.13047***
Fertility	-0.47649*	-0.26656	-0.55163*	-0.29063	-0.82740**
Urbanization level	-0.08969***	0.05697	-0.11079***	-0.00031	-0.10885***
Urbanization level square	0.00065***	-0.00041	0.00085***	-0.000001	0.00081***
Per capita Real GDP	-0.00340	-0.00188	0.03900	0.00896	0.03262
R square	0.147	0.291	0.153	0.150	0.144
N	482	98	384	118	364

Note: *** = p -value < 0.001, ** = p -value < 0.01 and * = p -value < 0.05. per capita real GDP in million rupiah.

Source: Authors' calculation

However, the pattern is not necessarily the same among different economic regions. As shown in Table 3, an inverted-U curve seen in Indonesia as a whole is only visible in less developed regions: Regency and OJI where the coefficients for Migration and Migration square are significant at p -value < 0.01. The peaks of economic growth are achieved at different migration rates, 11.5 percent and 12.3 percent for the respective regions. On the other hand, the relationship between migration and economic growth is not significant in the more developed regions: City and Java Island. In more developed regions, ethnic diversity mediates the relationship between migration and economic growth. In less developed regions, migration may affect economic growth both indirectly through ethnic diversity and “directly” (through factors other than ethnic diversity).

Furthermore, Table 3 shows that ethnic diversity matters for economic growth in Indonesia. Ethnic fractionalisation index (EFI) is positively related to economic growth, but ethnic polarisation index (EPOI) is negatively related to economic growth. This pattern is seen in almost all economic regions. An exception is seen in Java, a more developed region, where EFI does not have significant relationship with economic growth, but EPOI is positively related to economic growth. As mentioned, districts in Java are relatively more homogeneous with similar ethnic groups such as Javanese, Madurese, Bantenese, and Sundanese. Consequently,

ethnic polarisation may not result in violent conflicts here, but may even be good for economic growth.

Impact of Migration on Ethnic Diversity

This sub-section details the impacts of migration on ethnic diversity, measured by ethnic fractionalisation index or EFI (Table 4, from Equation 2) and ethnic polarisation index or EPOI (Table 5, from Eq. 3), followed by an examination on indirect impact of migration on economic growth through ethnic diversity. First, the analysis is conducted for Indonesia as a whole and less developed regions. The second is on the more developed regions.

Indonesia and less developed regions

Table 4 shows that migration is significantly associated with ethnic fractionalisation in Indonesia. The relationship forms an inverted U-curve with β_{11} (migration) = 0.073 and β_{12} (migration square) = -0.002 at p -value < 0.001. The peak of ethnic fractionalisation is found at migration rate of 15.9 percent. Above 15.9 percent, an increase in migration is likely to be accompanied by declining ethnic fractionalization as the migrants are sufficiently large in size.

The same pattern is observed in less developed regions: Regency and OJI. However, the peaks of EFI are reached at higher migration rates: 16.4 percent in OJI and 17.3 percent in Regency. As EFI is positively related to economic growth (Table 3), therefore, the indirect impact of migration on economic growth intermediated by EFI also follows an inverted U-curve, with the peaks of economic growth at the same migration rates for the respective regions.

Table 4. Impact of Migration on Ethnic Fractionalization Index (EFI)

Variable	Indonesia	City	Regency	Java Island	Outside Java Island
(Constant)	-1.7311***	-1.1157	-1.8295***	-0.378***	-1.4695***
Migration	0.0730***	0.051*	0.0728***	0.028***	0.05892***
Migration square	-0.0023***	-0.002	-0.0021***	ns	-0.0018***
Fertility	1.0777***	0.118*	1.1134***	0.117**	0.9814***
Fertility square	-0.1441***	ns	-0.1486***	ns	-0.1352***
Urbanization level	-0.0044**	-0.002	-0.0022**	0.002*	-0.0019
Urbanization level square	0.00003*	cv	ns	ns	cv
R square	0.364	0.102	0.410	0.425	0.239
N	482	98	384	118	364

Note: *** = p -value < 0.001, ** = p -value < 0.01 and * = p -value < 0.05.

ns = not significant, the model is then reduced to linier model.

cv = not significant and neither linier nor quadratic model, it remains in the model as a control variable.

Source: Authors' calculation.

On the other hand, as shown in Table 5, the impact of migration on EPOI indicates a cubic curve, with a peak followed with a bottom, for Indonesia and less developed regions. However, the peaks for Indonesia and Regency are estimated to occur at the migration rate higher than 26.2 percent, which is very close to the maximum migration rate in the sample of Indonesia and Regency (see Table 1). This means that the relationship between migration and EPOI in Indonesia and Regency is positive.

Having said that, the cubic curve is also seen in OJI with the peak of EPOI at migration rate of 8.0 percent, and the bottom at migration rate of 19.0 percent. That is, in OJI, migration affects EPOI positively until migration rate at 8.0 percent, negatively at migration rates at the range of 8.0 percent and 19.0 percent, and positive again after 19.0 percent.

Table 5. Impact of Migration on Ethnic Polarisation Index (EPOI)

Variable	Indonesia	City	Regency	Java	Outside Java Island
(Constant)	-1.4653***	-0.0743	-1.6771***	1.0697	-1.077***
Fertility	0.9611***	0.087	1.0627***	-0.7683*	0.800***
Fertility square	-0.1285***	cv	-0.1421***	0.1458*	-0.113***
Migration	0.0979***	0.003	0.0972***	-0.0659	0.090***
Migration square	-0.0076***	cv	-0.0073**	0.0148*	-0.008***
Migration cubic	0.0002**	cv	0.0002*	-0.0006*	0.0002***
Urbanization level	-0.0045**	0.001	-0.0020**	0.0029*	-0.00006
Urbanization level square	0.00004**	cv	ns	ns	cv
R square	0.256	0.050	0.282	0.428	0.133
N	482	98	384	118	364

Note: *** = p-value < 0.001, ** = p-value < 0.01 and * = p-value < 0.05.

cv = not significant and neither linier nor quadratic model, it remains in the model as a control variable.

F statistics for City is insignificant.

Source: Authors' calculation.

As EPOI is negatively related to economic growth in Indonesia and less developed regions (see Table 3), the impact of migration on economic growth intermediated by EPOI is negative for Indonesia and Regency; and a cubic curve with minimum economic growth at migration of 8.0 percent, a maximum economic growth at migration of 19.0 percent in OJI.

More developed regions

The impact of migration on EFI is significantly positive in both economically more developed regions: City and Java with its coefficient of 0.05 and 0.03, respectively (see Table 4). As discussed earlier, EFI does not affect economic growth in Java, but promotes economic growth in City. Therefore, migration affects economic growth positively through ethnic fractionalisation in City settings, but does not have any impact on economic growth in Java as a whole.

On the other hand, the impact of migration on EPOI differs between City and Java. There is no relationship between migration and EPOI in City (see Table 5). As a result, migration does not affect economic growth through EPOI in City settings.

The impact of migration on EPOI in Java follows a cubic curve, but closer to an inverted U-curve, with maximum EPOI reached at migration of 16.0 percent. Yet, the maximum migration rate in Java Island sample is only 17.4 percent. Therefore, the relationship of migration and EPOI in Java is mostly positive. As EPOI is positively related to economic growth in Java, migration affects economic growth positively through ethnic polarisation there.

Discussion and Concluding Remarks

This paper presented new empirical evidence on understanding the role played by ethnic diversity in Indonesia's regional economic development. Statistical data indicate ethnic diversity is an intermediate variable in the relationship between migration and economic growth but with mixed results depending on the indicators of ethnic diversity and economic region. In developed regions, ethnic diversity is a primary intermediating variable between migration and economic growth. However, in Indonesia as a whole and less developed regions, other variables also intermediate the relation between migration and economic growth. As such, further study is required to gauge the significance of other intermediate variables.

Having said that, our findings indicate a clear relationship between ethnic diversity and economic growth. Measured with ethnic fractionalisation, ethnic diversity is favourable to economic growth. The more diverse is the ethnic mix in a district, the higher the economic growth in the district. On the other hand, the data suggests that heightened ethnic polarisation is harmful to economic growth. An ethnically polarised district is less likely to have higher economic growth.

One exception in the data is Java, it indicates that ethnic fractionalisation there does not matter for economic growth, but counter-factually to other regions, levels of ethnic polarisation can have a favourable impact on it. As mentioned, the relatively similar ethnic grouping composition on Java including Javanese, Sundanese, Madurese, and Bantenese means that forms of ethnic polarisation there do not necessarily result in severe conflict.

Nevertheless, the impact of migration on ethnic diversity does vary by region. As our findings show, the relationship between migration and ethnic fractionalisation follows an inverted U-curve in Indonesia and the two less developed regions (Regency and OJI). At a low level of migration, a higher migration is associated with a higher ethnic fractionalisation. A peak is then reached when a further increase in migration is likely to be accompanied by lower ethnic fractionalisation. On the other hand, the relationship is positive in the two developed regions (City and Java), a higher migration is accompanied by higher ethnic fractionalisation.

The relationship is more complex with regard to ethnic polarisation as an indicator of ethnic diversity. For regency (a less developed region) and Java Island (a more developed region) the relationship is positive. Rising migration is accompanied by higher ethnic polarisation. In OJI (a less developed region), it is close to an inverted curve, where initially rising migration is accompanied by higher ethnic polarisation. A threshold is then reached. After that, further increases in migration are accompanied by declining ethnic polarisation. In City (a more developed region), there is little to no relationship between migration and ethnic polarisation.

Combining the relationships between migration and ethnic diversity on one hand and between ethnic diversity on economic growth on the other hand, we can conclude the following on the intermediate role of ethnic diversity in the relationship between migration and economic growth. The impact of migration on economic growth through ethnic fractionalisation follows an inverted U curve in Indonesia and two less developed regions. Initially, rising migration is accompanied by higher economic growth. A peak is reached at migration rate about 16.0 percent and a further increase in migration is associated with lower economic growth. Measured through ethnic fractionalisation, migration promotes economic growth in City, but remains relatively insignificant for economic growth in Java. On the other hand, the impact of migration on economic growth through ethnic polarisation is more complex. It is negative in regency (a less developed region), Java Island (a more developed region) and negligible in City (a more developed region). It is a cubic relationship in OJI (a less developed region). Initially, rising migration is associated with lower economic growth until migration rate hits about 8.0

percent. It is then associated with higher economic growth until migration rate reaches about 19.0 percent. It is then again associated with lower economic growth.

In sum, migration may not necessarily harm, and in certain instances even promote economic growth through increased ethnic diversity. Our paper's empirical findings suggest that the impact is largely dependent on the economic region, the indicator of ethnic diversity, and the rate of migration. It further underscores the complex character of Indonesian regional development.

References

- Ahsan, Ahmad, Manelo Abella, Andrew Beath, Yuhon Huang, Manjula Luthria, and Trang Van Nguyen. 2014. *International Migration and Development*. Washington, D.C.: World Bank.
- Ahlerup, Pelle and Ola Ollson. 2012. 'The Root of Ethnic Diversity'. *Journal of Economic Growth*, vol. 17, no. 2 (June): 71 – 102.
- Akbari, Ather H. and Azad Haider. 2018. "Impact of Immigration on Economic Growth in Canada and its Smaller Provinces", *International Migration & Integration*, vol. 19, pp. 129-142.
- Alesina, Alberto and Eliana La Ferrara. 2005. 'Ethnic Diversity and Economic Performance'. *Journal of Economic Literature*, Vol XLIII (September): 762 - 800.
- Alesina, Alberto, Caterina Gennaioli, and Stefania Lovo. 2019. 'Public Goods and Ethnic Diversity: Evidence from Deforestation in Indonesia'. *Economica* 86: 32–66.
- Ananta, Aris, Evi Nurvidya Arifin, Sairi M. Hasbullah, Nur Budi Handayani, and Agus Pramono. 2015. *Demography of Indonesia's Ethnicity*. Singapore: Institute of Southeast Asian Studies.
- Ananta, Aris, Dwi Retno Wilujeng Wahyu Utami, and Nur Budi Handayani. 2016. "Statistics on Ethnic Diversity in the Land of Papua, Indonesia". *Asia & Pacific Population Studies*, Volume 3, Issue 3: 458-474.
- Arifin, Evi Nurvidya, Aris Ananta, Dwi Retno Wilujeng Wahyu Utami, Nur Budi Handayani, and Agus Pramono. 2015. 'Quantifying Indonesia's Ethnic Diversity: Statistics at National, Provincial, and District levels'. *Asian Population Studies*, 11 (3): 233-256.

- Asharaf, Quamrul H., David N. Weil, and Joshua Wilde 2013. "The Effect of Fertility Reduction on Economic Growth". *Population and Development Review*, March, 39(1): 97-130.
- Aspinall, Edward. 2010. 'The Taming of Ethnic Conflict in Indonesia'. *East Asia Forum*, 5 August 2010.
- Aspinall, Edward. 2011. 'Democratization and Ethnic Politics in Indonesia: Nine Theses', *Journal of East Asian Studies*, Vol. 11 (2): 289 – 319.
- Badan Pusat Statistik. 2012. *Statistical Yearbook of Indonesia. 2012*. Jakarta: Badan Pusat Statistik.
- Benchop, Annemieke, Harrison, Lana D., Dirk J. Korfi, and Patricia G. Erickso. 2006. "Different Concepts of Ethnicity in a Cross-Atlantic Study of Violence and Drug Use among Deviant Youth", *Eur J Crim Policy Res* 12: 61-78.
- Bleaney, Michael and Arcangelo Dimico. 2009. 'Ethnic Diversity and Local Conflicts', *Discussion Paper in Economics*, University of Nottingham.
- Borjas, George. 2014. *Immigration Economics*. Harvard University Press.
- Borsch-Supan, Axel; Duarte Nuno Leite; and Johannes Rausch. 2019. "Demographic Changes, Migration and Economic Growth in Euro Area" Munich Center for the Economics of Aging (MEA). ECB Forum on Central Banking, Sintra, Portugal, 17-19 June.
- Bove, Vincenzo and Leandro Elia. 2017. "Migration, Diversity, and Economic Growth", *World Development*, vol. 89: 227-239.
- Card, David and Goovanni Peri. 2016. "Immigration Economics by George J. Borjas: a Review Essay", *Journal of Economic Literature*, vol. 54, no. 4: 1333 - 49.
- Carnegie, P. J., King, V. T. and Knudsen, M. 2021. Human security, marginality and precariousness in Southeast Asia. *International Journal of Asia Pacific Studies*, 17(1): 1–28.
- Coleman, David. 2006. 'Immigration and Ethnic Change in Low-Fertility Countries: A Third Demographic Transition'. *Population and Development Review* 32 (3): 401–446.
- Coleman, David. 2013. *BRIEFING: Immigration, Population and Ethnicity: The UK in International Perspective*. www.migrationobservatory.ox.ac.uk
- Collier, Paul, Patrick Honohan, and Karl Ove Moene. 2001. "Implication of Ethnic Diversity". *Economic Policy*, Vol. 16(32): 127-166.
- Cote, Isabelle. 2014. "Internal Migration and the Politics of Place: a comparison analysis of China and Indonesia", *Asian Ethnicity*, vol. 15, no. 1:111-129.

- Dadush, Uri. 2014. "The Effect of Low-Skilled Labor Migration on the Host Economy", *KNOMAD Working Paper*, no. 1, April.
- Dincer, Oguzhan and Fan Wang. 2011. "Ethnic Diversity and Economic Growth in China", *Journal of Economic Policy Reforms*, vol.14, no. 1.
- Dennison, James and Lenka Dražanová. 2018. *Public Attitude on Migration: Rethinking How People Perceive Migration. An analysis of existing opinion polls in the Euro-Mediterranean Region*. Florence: Observation of Public Attitude to Migration – Migration Policy Centre, European University Institute.
- Easterly W. and R. Levine. 1997. 'Africa's Growth Tragedy: Policies and Ethnic Divisions'. *Quarterly Journal of Economics*, Vol. 111(4): 1203 - 1250
- Ehrlich, Isaac and Jinyoung Kim. 2015. "Immigration, Human Capital, and Endogenous Economic Growth", *Journal of Human Capital*, vol. 9, no. 4: 518-563.
- Esteban, Joan and Debraj Ray. 2008. 'Polarization, Fractionalization and Conflicts'. *Journal of Peace Research*, Vol. 45(2): 163 - 182.
- Esteban, Joan and Debraj Ray. 2011. 'Linking Conflict to Inequality and Polarization'. *The American Economic Review*, 110(1): 1345 – 1374.
- Gayatri, IH. 2010. "Nationalism, democratization and primordial sentiment in Indonesia: problems of ethnicity versus Indonesianess. (The cases of Riau, Aceh, Papua, and Bali)". *Journal of Indonesian Sciences in Humanity*. 3, 189–203.
- Goebel, Zane. 2013. 'The Idea of Ethnicity in Indonesia'. *Working Paper 71*. Tilburg University, Tilburg Papers in Culture Studies.
- Gören, Arken. 2014. 'How Ethnic Diversity Affects Economic Growth'. *World Development* 59: 275–297.
- Henley, David. 2015. 'Indonesia'. In *The Wiley-Blackwell Encyclopaedia of Race, Ethnicity, and Nationalism*. Edited by John Stones, Rutledge M. Dennis, Polly Rizova and Anthony D. Smith. London: The Wiley-Blackwell.
- Kim, Chong-Sup and Eunsuk Lee. 2016. "Growth and Migration to a Third Country: The Case of Korean Migrants in Latin America", *Journal of International and Area Studies*, vol. 23, no. 2: 77-87.
- Klinken, Gerry van. 2007. *Communal Violence and Democratization in Indonesia. Small Town Wars*. London, United Kingdom: Routledge.
- Mavridis, Dimitris. 2015. "Ethnic Diversity and Social Capital in Indonesia", *World Development*, vol. 67: 376-395.

- May, John F. 2012. *World Population Policies: Their Origin, Evolution, and Impact*. New York: Springer.
- Montalvo, Jose and Marta Reynal-Querol. 2021. ‘Ethnic Diversity and Growth: Revisiting the Evidence’. *The Review of Economics and Statistics*, July 2021, 103(3): 521–532.
- OECD. 2014. “Is Migration Good for the Economy?”, *Migration and Policy Debate*, May.
- Paraschivescu, Claudia. 2013. “Is Migration a Problem for EU Welfare States? What Role Can the EU Play in Managing Migration?”, *Revista Romana de Sociologie*, XXIV, nos. 5-6: 402-409.
- Rizvi, Fazal. 2005. “Rethinking “Brain Drain” in the Era of Globalisation”. *Asia Pacific Journal of Education*, 25(2): 175-192.
- Schuler, Dana and Juliam Weisbord. 2010. “Ethnic Fractionalization, Migration and Growth”, *Empir Econ* 39: 457-486.
- Sharma, Madhuri. 2016. “Spatial Perspective on Diversity and Economic Growth in Alabama, 1990 – 2011” *Southeastern Geographer*, Vo. 56, No. 3 (Fall): 320 – 345.
- Soroka, Stuart N., Richard Johnston, Anthony Kevins, Keith Banting, and Will Kymlicka. 2016. “Migration and Welfare State Spending”, *European Political Science Review*, vol. 8, no. 2:173-194.
- Tadjoeddin, Mohammad Zulfan, 2013. “Educated but Poor: Explaining Ethnic Violence during Indonesia’s Democratic Transition”, *International Area Studies Review*, volume 16, no. 1: 24-49.
- Tai, Quiqing and Rory Truex. 2015. “Public Opinion toward Return Migration: a Survey Experiment of Chinese Citizens”, *The China Quarterly*, August.
- Wang, Huiyao. no date. “China's Return Migration and its Impact on Home Development”. UN Chronicle. <https://www.un.org/en/chronicle/article/chinas-return-migration-and-its-impact-home-development>