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Beyond GDP: Advancing Societal Well-Being, Inclusive Growth and Achieving
Shared Prosperity

INTERREGIONAL GRADUATE MIGRATION AND KNOWLEDGE FLOW
ACROSS STATES IN MALAYSIA

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Abstract:

Several regional studies in Malaysia point to the uneven economic development across regions. This paper aims to explain the interregional migration among high-skilled workers in Malaysia from geographical perspective, considering that high-skilled workers are the catalyst for further economic growth and that they are more likely to migrate. Data used in this study is from the 2019 Tracer Study survey conducted by the Ministry of Higher Education Malaysia involving 69,715 employed graduates. We show evidence of a huge influx of graduates toward Selangor and Kuala Lumpur. Compared to remaining in the state of origin, all migration patterns are associated with higher remuneration and reduced job-education mismatch, except graduates who remain in their state of origin in the central region. We show evidence that migration patterns are associated with economic sectors, where graduates who migrated toward the central region are associated with economic sectors with the highest income. A better understanding of the migration patterns among the young high-skilled workers in the country should have critical implications for public policies that seek to provide a remedy for unequal economic distribution across the states in Malaysia.

Keywords:

Interregional Migration; High-Skilled Workers; Economic Development; Malaysia; Unequal Distribution

1. Introduction:

Geographic balance for regional growth has been the major focus area among policymakers in Malaysia. Since Independence, the central region has been growing more rapidly compared to the rest of the country both in terms of population and economic growth. To redirect employment opportunities outside of the central regions, the government has created five regional economic corridors i.e., Iskandar Malaysia in Johor, Northern Corridor Economic Region (NCER), East Coast Economic Region (ECER), Sabah Development Corridor (SDC), and Sarawak Corridor of Renewable Energy (SCORE) as engines for growth. However, the monthly household income in the

central region such as Kuala Lumpur has been consistent at the top of the distribution, leaving at the bottom of the distribution Kelantan which has been the poorest state in the country. The median monthly household income in Kuala Lumpur was RM10,549 in 2019, while Kelantan was RM3,563 (DOSM, 2019).

Several regional studies in Malaysia point to the uneven economic development across regions. The governments have been successful at reducing poverty through their many initiatives for economic development, however, the regional inequality continues to increase in the long run (Abdullah, Doucouliagos, & Manning, 2015). Despite all the states in Malaysia recording growth in economics, the regional disparity remains wide due to the concentration of certain economic activities between the relatively rich and poor states. The richer states of Selangor and Penang are characterized by the manufacturing sectors while the poorer states of Kedah and Kelantan in agriculture (Ali & Ahmad, 2009). Another reason for unequal development across states is due to the disproportionate inflows of capital investment where the foreign direct investment inflows were more focused on developed states, in particular, Selangor, Johor, Penang, Perak, Negeri Sembilan, and Melaka, impeding the development in the less developed (Arshad & Ghani, 2015). Most of Malaysia's plans' strategies and policies are also found to have been benefiting Selangor in terms of attracting investments to the state further proliferating its growth (Habibullah, Sanusi, Abdullah, Kusairi, Hassan, & Ghazali, 2018). Looking at one example of a less developed state, a regional income inequality study in Kelantan shows that the state has been narrowing its income gap with other states in Malaysia, but government intervention is still very much needed to provide a stable economic environment for investment and productive economic activities (Habibullah, Smith, & Dayang-Afizzah, 2008; Hooi, Nguyen, & Jen, 2011).

This study aims to provide explanations for the migrations of high skilled workers in Malaysia i.e., tertiary educated graduates. Abdul Wahab (2017) provides a comprehensive analysis of the employment and income among tertiary-educated young workers in Malaysia. The study also showed the patterns of interregional migration among high skilled workers and how their decision to work in another state increases their earnings at the same time reducing their qualification mismatch (Abdul Wahab, 2017)(Abdul Wahab et al., 2020). However, the two studies were focused on the determinants of the labor market characteristics rather than a regional one. This paper further enhances these previous studies to focus more on the geographical aspect of migration among Malaysian graduates.

2. Methodology:

Data

Data used in this study is from the 2019 Tracer Study survey conducted by the Ministry of Higher Education Malaysia. The data consists of information such as graduates' ability (Cumulative Grade Point Average (CGPA), English proficiency through standard examinations such as Malaysian University English Test (MUET), and courses of study following National Education Code (NEC) code), graduate's background (family income, state of origin) and job information (employment status, job level, job group, and location). The 2019 wave consists of 124,919 first degree graduates from public and private universities in Malaysia. We remove the unemployed, disabled graduates, international students (who mostly went back to their respective countries), or Malaysian

graduates who work abroad. Further data cleaning to remove outliers and missing values leaves our sample for this study at 69,715.

Methods

We observe graduate's state of origin and state where they found their job. To reduce the complications of reporting that would involve 256 intersections¹, we categorize the states into a "high-income state" and "low-income state". We choose the three states and called it "high-income state" not only based on median income where W.P. Kuala Lumpur recorded the highest median income with RM10,549 followed by W.P. Putrajaya (RM9,983), Selangor (RM8,210) (DOSM, 2019), but also because they are geographically close to each other that would facilitate the spill over of skills in nearby locations. The choice is also due to the fact that most research public university and private universities are located in these states. The urbanization rate for WP Kuala Lumpur and WP Putrajaya is 100% while Selangor 94.5%.

First, we show graduate interregional migration patterns across the states to highlight the fact of a huge influx of graduates moving toward high-income states. Then we map each state with the monthly household income and the graduate's income to provide a proposition that graduate's migration might be motivated by income. To test the proposition, we used a regression model to examine the impact of migration on graduate's income. We fit the model

$$y = \beta_0 + \beta_1 migration + \beta_j x_j + \varepsilon$$

where x_j consists of migration pattern and control variables such as CGPA, MUET qualification, job status, job level, and socio-demographic variables such as being a male, age, and family income.

3. Result:

Table 1 in this study reveals migration trends among Malaysian graduates. From a pool of 124,919 first-degree graduates in the 2019 Tracer Study, 69,715 are considered. The table presents the number of graduates originating from a state, those working in that state, residents migrating out for jobs, and graduates migrating in. Notably, 36.8% (25,703) of graduates chose to migrate. For instance, from 7,690 Johor graduates, 2,088 moved out while 994 entered, making 6,596 working in Johor.

Selangor and Kuala Lumpur experience significant graduate influx but also significant outflow. By comparing migrant graduate workers with total graduate workers, Putrajaya has the highest migrant percentage (713 out of 931 workers), followed by Kuala Lumpur (66%), Labuan (52%), and Selangor (40%). States with high out-migration include Negeri Sembilan (59%), Kelantan, Pahang, Perak, and Kedah (all around 54%).

Table 1: Graduate interregional migration pattern

¹ 16 states of origin x 16 states for job

(1) State	(2) Origin	(3) Work	(4) Migrate d out	(5) Migrate d in
Johor	7690	6596	2088	994
Kedah	4497	2686	2257	446
Kelantan	3184	1513	1793	122
Melaka	2324	1834	905	415
Negeri Sembilan	2935	1757	1734	556
Pahang	3118	1779	1699	360
Pulau Pinang	4564	5760	933	2129
Perak	5090	2718	2774	402
Perlis	473	291	253	71
Selangor	19292	21899	6187	8794
Terengganu	2441	1539	1144	242
Sabah	2752	2121	748	117
Sarawak	3386	2794	688	96
WPKL	7408	15317	2243	10152
WPL	118	180	32	94
WPP	443	931	225	713
N	69715	69715	25703	25703

Table 2 ranks graduate mean and median salaries by state. The correlation between our graduate's median income and official data is strong at 0.734. Highest median incomes are in WP Kuala Lumpur, WP Putrajaya, and Selangor. Lowest is in Kelantan, with correspondingly low mean and median incomes.

Table 2: Graduate's employment and migration pattern sorted by the monthly gross salary by states.

State	Monthl y gross salary	Graduate' s mean income	Graduate' s median income	Rank
WPKL	10549	3600.63	2438.43	1
WPP	9983	2004.89	1840.17	2
Selangor	8210	2690.16	2200.27	3
WPL	6726	2125.84	2025.28	4
Johor	6427	2162.87	1961.12	5
Pulau Pinang	6169	2625.39	2303.85	6
Melaka	6054	2060.76	1805.35	7
Terengganu	5545	2200.83	1332.84	8
Kedah	5522	1895.73	1447.92	9
Negeri Sembilan	5055	1985.69	1779.13	10
Perlis	4594	4387.61	1352.00	11
Sarawak	4544	2793.55	1744.52	12
Pahang	4440	1809.90	1454.10	13
Perak	4273	1979.88	1651.35	14

State	Monthly gross salary	Graduates' mean income	Graduates' median income	Rank
Sabah	4235	2316.85	1463.21	15
Kelantan	3563	1461.24	1206.57	16
Malaysia	5873	2671.75	2093.81	

The study designates WP Kuala Lumpur, WP Putrajaya, and Selangor as "high-income states" due to their advanced economies. Graduates' mobility leads to four migration patterns: high-to-high, high-to-low, low-to-high, and low-to-low income states. Graduates remaining in their states are also considered. Most graduates stay in their states, with the largest migration pattern towards high-income states (28.2%) compared to low-income states (8.7%).

Table 3: Major migration patterns.

Mobility	N	Percentage
high-high	7,677	11.0%
high-low	978	1.4%
low-high	11,982	17.2%
low-low	5,066	7.3%
remain high	18,488	26.5%
remain low	25,524	36.6%
	69,711	
N	5	

To gain a better understanding of the migration toward certain states, we map the interregional migration patterns with the economic activities. Figure 1 correlates migration with economic sectors. High-income state migration centres around Finance, Insurance/Takaful, and Information & Communication. Graduates from low-income states moving to high-income ones also engage in Construction. Low-income state migration involves Civil Administration, Mining, Quarrying, and Electricity sectors. High-to-low migration is low (1.4%) but offers the highest remuneration due to specific high-income sectors.

The most common economic activities among those who remain in high-income states are Information and Communication, Transportation and Storage, Arts, Entertainment and Recreation, and Financial and Insurance/Takaful activities. Among those who remain in a low-income state: Agriculture, Forestry and Fisheries, Wholesale and Retail Trade, Repair of Motor Vehicles and Motorcycles, Household Activities as Employers, Activities of Producing Goods and Services, and Education.

Table 4 illustrates migration's impact on earnings. All migration patterns increase earnings, with high-to-low migration showing the highest coefficient. Although only 1.4% move high-to-low, they earn more due to high-income sector concentration. The study

also considers control variables (CGPA, English proficiency, gender, age, job characteristics) not shown.

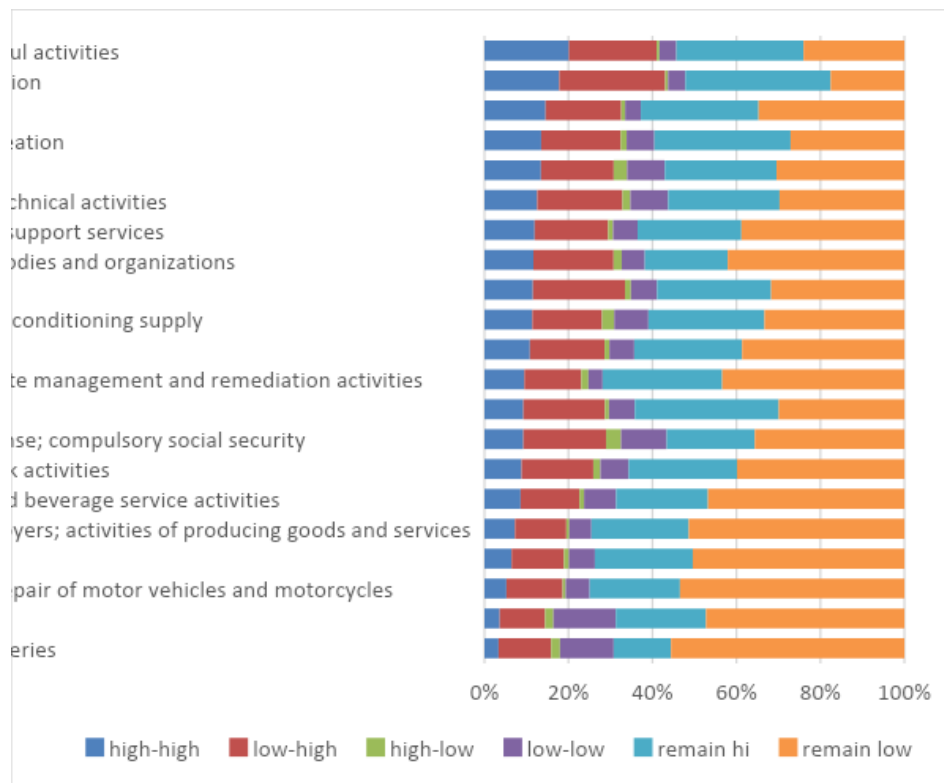


Figure 1: Major migration patterns across economic sectors.

Table 4: The estimated regression model on the impact of different migration patterns on income.

	Coef	SE
Constant	-12422.3* **	(1011.5)
high-high	860.6***	(236.4)
high-low	1284.3*	(588.1)
low-high	474.9*	(191.8)
low-low	294.9	(258.3)
remain high	500.2**	(170.9)
N	53262	

Standard errors in parentheses

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Literature review confirms migration boosts earnings and reduces job mismatch. Table 5's probit model indicates that all migration patterns raise job qualification matches, especially for high-to-low income state migrants. Graduates who stay in high-income states have a better chance of job alignment due to more opportunities. Even within low-income state migrants, job-qualification alignment is feasible. High-to-low income migrants have the highest job match likelihood.

Table 5: The estimated probit model on the impact of migration on job-education match.

	Coef	SE
high-high	0.121** *	(0.0207)
high-low	0.195** *	(0.0521)
low-high	0.172** *	(0.0167)
low-low	0.185** *	(0.0227)
remain high	0.112** *	(0.0149)
N	53243	

Standard errors in parentheses

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

4. Discussion and Conclusion:

This paper delves into interregional migration among young, high-skilled workers in Malaysia, particularly focusing on the influx of graduates into high-income states such as WP Kuala Lumpur, Selangor, and WP Putrajaya. The main drivers of migration are remuneration and job qualification match, resulting in increased earnings and reduced job mismatches. However, this trend leads to regional imbalances, contributing to issues like high living costs, reduced quality of life, overdevelopment, and overpopulation. Migration towards high-income states exacerbates traffic congestion and wastage of resources due to inadequate public transportation. Meanwhile, the departure of high-skilled workers from their home states triggers brain drain, hindering economic growth and exacerbating social problems.

Central region universities amplify this migration pattern. Graduates from low-income states move to high-income states, with few reversals. Sectoral preference is also evident, as migration corresponds with above-average income sectors like finance and ICT. Few move to low-income states, only if offered high-paying jobs aligned with their qualifications. Remaining in low-income states is tied to low-paying sectors like agriculture and retail.

Understanding these migration trends is pivotal for addressing economic disparities across Malaysian states. The labor market's overreliance on low-skilled foreign workers suppresses wages and productivity. Policies should focus on generating high-skilled employment opportunities to match the surplus of graduates. The imbalance between graduates and available jobs highlights the need for more high-skilled positions in Malaysia's labor market.

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References:

1. Abdul Wahab, D. (2017). *Graduate labour market analysis in Malaysia* (Doctoral dissertation, University of Leeds).
2. Abdul Wahab, D., Tey, N. P., & Jani, R. (2020). Interregional Migration and Graduate Earning in Malaysia. *Institutions and Economies*, 107-128.
3. Abdullah, A. J., Doucouliagos, H., & Manning, E. (2015). Are regional incomes in Malaysia converging?. *Papers in Regional Science*, 94, S69-S94.
4. Ali, H., & Ahmad, S. (2009). Why poor regions remain poor? Evidence from Malaysia. *International Review of Business Research Papers*, 5(1), 340-351.
5. Arshad, M. N. M., & Ghani, G. M. (2015). Returns to education and wage differentials in Malaysia. *The Journal of Developing Areas*, 49(5), 213-223.
6. Ciccone, A., & Peri, G. (2005). Long-run substitutability between more and less educated workers: Evidence from U.S. States 1950–1990. *Review of Economics and Statistics*, 87(4), 652–663.
7. Ciriaci, D. (2014). Does university quality influence the interregional mobility of students and graduates? The case of Italy. *Regional Studies*, 48(10), 1592-1608.
8. DOSM. (2019). *Household income and basic amenities survey report 2019*. Putrajaya.
9. Dustmann, C., & Glitz, A. (2011). Migration and education. In *Handbook of the Economics of Education* (Vol. 4, pp. 327-439). Elsevier.
10. Faggian, A., & McCann, P. (2009). Higher education, graduate migration and regional dynamism in Great Britain.
11. Faggian, A., Corcoran, J., & Partridge, M. (2015). Interregional migration analysis. In *Handbook of research methods and applications in economic geography*. Edward Elgar Publishing.
12. Faggian, A., McCann, P., & Sheppard, S. (2006). An analysis of ethnic differences in UK graduate migration behaviour. *The Annals of Regional Science*, 40(2), 461-471.
13. Faggian, A., McCann, P., & Sheppard, S. (2007). Human capital, higher education and graduate migration: an analysis of Scottish and Welsh students. *Urban Studies*, 44(13), 2511-2528.
14. Faggian, A., McCann, P., & Sheppard, S. (2007). Some evidence that women are more mobile than men: Gender differences in UK graduate migration behavior. *Journal of Regional Science*, 47(3), 517-539.
15. Faggian, A., Rajbhandari, I., & Dotzel, K. R. (2017). The interregional migration of human capital and its regional consequences: a review. *Regional Studies*, 51(1), 128-143.
16. Greenwood, M. J. (1975). Research on internal migration in the United States: A survey. *Journal of Economic Literature*, 13(2), 397–433.
17. Habibullah, M. S., Sanusi, N. A., Abdullah, L., Kusairi, S., Hassan, A. A. G., & Ghazali, N. A. (2018). How Long Does It Takes for a Poor State to Catch-Up to a Richer State in Malaysia? A Note. *International Journal of Business and Society*, 19(2), 269-280.
18. Habibullah, M. S., Smith, P., & Dayang-Afizzah, A. M. (2008). Has Kelantan Grown Faster than Other States in Malaysia? A Panel Data Analysis. *Jurnal Ekonomi Malaysia*, 45, 53-59.
19. Haussen, T., & Uebelmesser, S. (2018). Job changes and interregional migration of graduates. *Regional Studies*, 52(10), 1346-1359.
20. Iammarino, S., & Marinelli, E. (2015). Education–job (mis) match and interregional migration: Italian university graduates' transition to work. *Regional Studies*, 49(5), 866-882.
21. Ismail, R., & Jajri, I. (2012). Gender wage differentials and discrimination in Malaysian labour market. *World Applied Sciences Journal*, 19(5), 719-728.
22. Jewell, S., & Faggian, A. (2014). Interregional migration 'Wage Premia': the case of creative and science and technology graduates in the UK. In *Applied Regional Growth and Innovation Models* (pp. 197-214). Springer, Berlin, Heidelberg.
23. Jones, B. F. (2009). The burden of knowledge and the 'Death of the renaissance man': Is innovation getting harder? *Review of Economic Studies*, 76(1), 283–317.
24. Kashnitsky, I., Mkrtychyan, N., & Leshukov, O. (2016). Interregional youth migration in Russia: a comprehensive analysis of demographic statistical data. *Вопросы образования*, (3 (eng)), 126-149.
25. Marinelli, E. (2013). Sub-national graduate mobility and knowledge flows: An exploratory analysis of onward- and return-migrants in Italy. *Regional Studies*, 47(10), 1618–1633.
26. Nathan, M. (2015). After Florida: Towards an economics of diversity. *European Urban and Regional Studies*, 22(1), 3–19.
27. Shen, J., & Liu, Y. (2016). Skilled and less-skilled interregional migration in China: A comparative analysis of spatial patterns and the decision to migrate in 2000–2005. *Habitat International*, 57, 1-10.
28. Tey, N. P., Lai, S. L., Ng, S. T., Goh, K. L., & Osman, A. F. (2019). Income inequality across states in Malaysia. *Planning Malaysia*, 17.

