Regional differences in the advancement of students in basic education schools in the Republic of the Union of Myanmar - Analysis based on transition rates

Hiromitsu Muta

Institute of Human Culture Studies, Otsuma Women's University
12 Sanban-cho, Chiyoda-ku, Tokyo, 102-8357 Japan

Key words：Transition rate, Dropout rate, Repetition rate, Enrollment, Urban-rural disparity

Abstract

The transition rates were used to examine enrollment situation from 2018 to 2019, before the rapid deterioration in basic education enrollment due to the COVID-19 pandemic that started in 2020. Overall, the transition rate between two consecutive grades remained above 0.95 in the primary school course and slightly below it in the middle school course. But it dropped further to nearly 0.85 in the high school course, especially from Grade-10 to Grade-11. The reason why the transition rate dropped in the high school course was mainly because the passing rate of the matriculation examination was low, and students who thought they were unlikely to pass the examination may not have completed Grade-11. This trend may be greatly improved when students become familiar with the High School Completion Certification System, which was effective for students completing the high school course in 2020.

When the transition rates were compared by gender, girls were generally higher. In urban areas, the transition rate was higher than in rural areas, but it was extremely high in urban areas, especially when the school course changed from Grade-5 to Grade-6 and Grade-9 to Grade-10. This was because the distribution of schools with a middle school course was concentrated in urban areas compared to the distribution of schools with a primary school course, and the same was true for the relationship between schools with a middle school course and schools with a high school course. The disparity in transition rates, not only among townships but also among states/regions, may be more a matter of uneven distribution of various types of schools in urban and rural areas than differences in local socioeconomic situations. Appropriate allocation of schools with a middle school course and a high school course is required.

1. Purpose

Since the transfer to the civil administration from the military administration in 2011, the enrollment in basic education schools in Myanmar has improved remarkably [1]. However, from the 2020 academic year onwards, schools have continued to be closed for most of the period especially during the 2020 academic year due to COVID-19 pandemic and a political change, and there are concerns about what will happen to the enrollment situation in the future. Although it is unlikely that school enrollment will return to its previous level soon after the effect of COVID-19 pandemic has been controlled, an analysis of the school enrollment situation from the 2018 to the 2019 academic year, when the school enrollment seemed to be at its best, and the problems that existed at that time must be an important reference point when considering measures to improve the future of school enrollment once again.

In this paper, school enrollment was explained using the transition rate. Since the transition rate has been used as an analytical tool at various times in the past, it was easy to make a comparison with these analysis results. Muta [2][3] analyzed the transition rate from end of the 2010 academic year to the end of the 2012 academic year, and estimated the future number of

students based on the assumption that the transition rate would improve at a certain rate per year. Muta [4] compared the data of the 2011 academic year with the data of September 2012 and the end of the 2012 academic year to determine the transition rate, repetition rate, and dropout rate. Muta [5] found that the dropout rate from Grade-1 (hereinafter referred as G1) to G2 was 12.1%. In addition to the end of academic year data, Muta [5] used the July 2016 individual school data, which showed the explicit number of repeat students in school, and showed that the repetition rate, in reality, was large to a certain extent, although the comparison at the end of academic year data did not reveal this, and showed the possibility that repeat students would drop out before the end of academic year. Muta [1][6] showed the changes in transition rates in a time series. In this paper, based on the analysis of the latest available data, the results were compared with those of previous analyses, and also the results were analyzed by township, which has not been done adequately thus far.

2. Method

2.1 Data Used in The Analysis

At the end of each academic year, basic data on basic education schools as of March 31 are made available in an annual report. The available data are from the end of March 2007 to the end of March 2018 (2017 academic year). Muta's previous time-series analyses have mainly relied on these data. This is because similar kind of data can be obtained at the end of the academic year. However, the data for the 2018 academic year and later have not been made public.

The other available data is individual school data obtained around August-October. Data are not available for every year, but they are available for 2016, 2017, 2018, and 2019. Because the timing of data collection differs between the beginning and the end of the academic year statistics, it cannot be used together with the end of the academic year statistics, but it is possible to compare individual school data during the same time. Thus individual school data were used in this study.

2.2 Transition Rate

The individual school data are for enrollment and do not explicitly state the number of dropouts. However, it is possible to calculate the transition rate (gross advancement/ progression rate) for two consecutive academic years. If the percentage of repeat students within the enrollment percentage is known, the dropout rate can be calculated, but no such information was available in the 2018 and 2019 individual school data. In recent years, especially in the primary school course, automatic promotion has been the norm, and the number of repeat students has been drastically decreasing. Therefore, it is not a major mistake to estimate the dropout rate (1 - transition rate) based on the transition rate (the ratio of the number of students in one grade to the number of students in next grade in the next academic year) [1][2][3][4][5]. The transition rate calculated in this way was determined by a combination of factors, including promotion, dropout, and retention, as well as incoming and outgoing transfers. Its value may exceed 1.0 in some units of analysis, but it is a comprehensive indicator of how many students on average are retained in a year in the basic education system.

The transition rate for each grade can be calculated for each school if there is a relevant course. However, transition rates for G5 and above cannot be calculated for schools that only have a primary school course, such as primary schools, which consist of the largest number of schools. For example, transition rates can be obtained by comparing the number of students in each grade (KG (kindergarten course), G1, G2, and G4 (G3 did not exist in the 2018 academic year because it was in the middle of a school system reform) in the 2018 academic year with the number of students in G1, G2, G3, and G5 in the 2019 academic year. However, since the first grade in which children start school at the age of 5 is KG, and since KG is no longer compulsory since FY2016, some children enter G1 at the age of 6 without going through KG, only the transition rates of G1 to G2, G2 to G3, and G4 to G5 can be meaningful within the primary school course as compulsory education from 2018 to 2019. The G5 students in 2018 were expected to enter the middle school course as G 6 in 2019, but this cannot be calculated for schools with

only a primary school course.

If the school a student attends does not offer an advanced course of education, the student will go to a nearby school that does. Students may go to any school they wish, but in most cases, they will go to a school in the same township. However, some students, who live within the boundaries of townships, may choose to attend a school in a neighboring township. There are also cases of cross-state and cross-regional migration. Therefore, in order to compare the results with previous studies, the transition rate was calculated not only by township but also by state/region. The results were broken down by urban/rural area and by gender.

Since this paper is concerned only with the number of students, affiliate primary schools are included, but there was only one school with more than one student enrolled in each of the urban and rural areas. They were included in the branch-primary schools for analysis.

3. Analysis Results

3.1 Nationwide Situation

Figure 1 shows the changes in the national transition rates between 2016 and 2019. Looking at the transition rates by grade, it is known that the transition rate from KG to G1 has increased over the past three years, from 0.979 in 2016-2017 to 1.013 in 2018-2019, an increase of over 1.0. The reason for this is due to the increase in the number of children entering G1 without going through the KG. Before 2016, when the new KG was introduced, the smallest value in the transition rate by grade in the primary school course was from KG to G1 in the current grade classification (from G1 to G2 in the old grade classification), if we consider the year of entry as the standard. For example, the comparison between the end of the 2011 academic year and the end of the 2012 academic year was 0.860 (Muta 2014c). However, it is clear that schooling at the age of five changed to KG instead of G1, and the content of the education became preparatory education to acclimate students to school life rather than to learn subjects, which eliminated repeats and dropouts, and increased the number of children who entered G1 directly at the age of six. The next improvement was evident in the transition rate from G4 to G5 (0.933 from 2016 to 2017, and 0.957 from 2018 to 2019).

There has also been an increase in the number of students who advanced to a middle school course after completing a primary school course (0.945 from G5 in 2018 to G6 in 2019). However, the transition rate from the middle school to high school course, from G9 to G10, has conversely decreased. One interpretation was

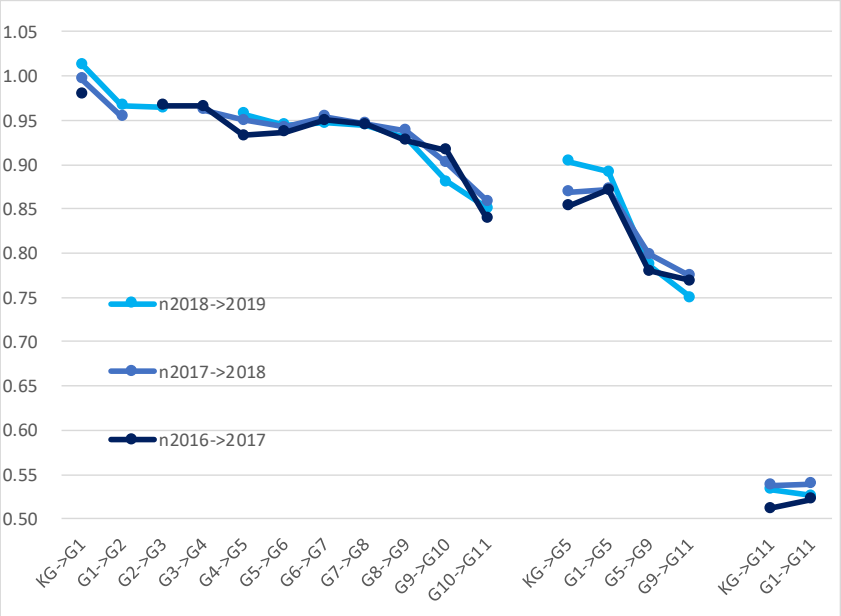


Figure 1: Changes in Transition Rates over 2016-2019

that students, who previously completed only the primary school course, were now completing the middle school course. Thus the number of students advancing from the middle school course to the high school course has decreased in the calculation.

For the trend from 2018 to 2019, the percentage of students who reached G5 among the students enrolled in G1 (the survival rate) can be obtained by multiplying the transition rate for each grade level; and it was calculated as 0.892. The rate was 0.702 by G9, and 0.526 by G11. If these figures were compared in a time series, it was seen that the rate increased from G1 to G5, the period of compulsory education, remained the same during the middle school course, and decreased somewhat toward the final year of the high school course. This did not mean that the number of students going on to the high school course was decreasing, but rather that the capacity of G10 was not keeping pace with the continuing increase in G9.

The next step for improvement is to allow students who have completed the middle school course to continue on to the high school course. The matriculation examination passing rate is about 30%, and it was also used as high school completion certification. For those who did not take the examination, it did not make much sense to finish the high school course. However, for the March 2020 graduates, the completion of the high school course was certified based on normal grades, regardless of whether they passed or failed the matriculation examination. It was expected that the introduction of this high school completion certification system will increase the number of students entering the high school course, but it has been difficult to confirm how this effect will be reflected due to the disruption of the curriculum caused by the COVID-19 pandemic.

3.2 Transition Rate by Gender

Figure 2 shows the results of the analysis by gender. The individual school statistics in 2016 did not include information on gender, so only the transition rates from 2017 to 2018 and from 2018 to 2019 were analyzed. The transition rate from KG to G1 became higher for boys; it was 1.020 for boys and 1.006 for girls from 2018 to 2019, compared to 0.994 for boys and 0.999 for girls from 2017 to 2018, which meant that more boys were enrolling in G1 without going to KG. In other grades, especially in the middle school course,

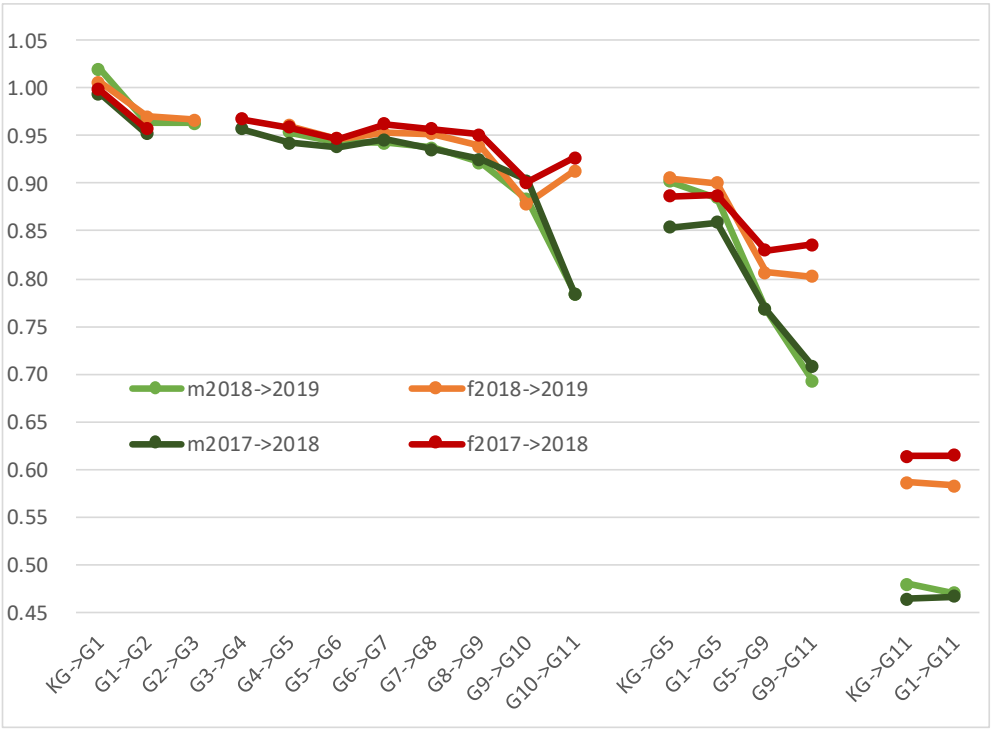


Figure 2: Transition Rate by Gender

the transition rate was lower for boys than girls. Muta (2016) pointed out that the repetition rate was higher for boys than girls, which led to a higher dropout rate, and the same was true from 2018 to 2019; the transition rate from G10 to G11 was 0.784 for boys and 0.913 for girls from 2018 to 2019, which was an extreme difference. Did this mean that if students were unlikely to pass the matriculation examination, boys were more likely either to repeat school or to leave school to find a job? As a result, the cumulative transition rate from G1 to G11 was 0.470 for boys and 0.582 for girls from 2018 to 2019, a difference of 0.112.

3.3 Transition Rate by Urban/Rural Area

Figure 3 shows a comparison between urban and rural areas. Although urban area showed higher transition rates, there was not much difference in the primary school course. However, it differed significantly from G5 to G6, which was from the primary school course to the middle school course, and from 2018 to 2019, the rate was 1.099 in urban areas, while the rate was 0.890 in rural areas. This was due to the fact that at the time of matriculating to the middle school course, students from rural areas were entering the middle school course in urban areas. This trend was even more pronounced from G9 to G10, when students moved up from the middle school course to the high school course.

The same was true for G8 to G9 in the middle school course. The post-primary schools, which were mostly located in rural areas included only up to G8. If the students in G8 at a post-primary school wished to proceed to G9, they had to move to a school with G9 and above in an urban area. The transition rate was lower in urban areas from G10 to G11, probably due to the higher repetition rate in urban areas. In order to pass the matriculation examination, students might repeat the same grade to improve their academic skills. Therefore, the number of G10 students was apparently inflated, and this might have affected the calculated transition rate from G9 to G10. Since the migration of students from urban to rural areas to enter an advanced education course was unlikely according to the cumulative transition rate from G1 to G11, the probability that a student enrolled in G1 in a rural area will go on to G11 in a rural area was calculated to be 0.399 based on the period from 2018 to2019.

3.4 Transition Rates by Gender and by Urban/Rural Area

Figure 4 shows the variation in transition rate values

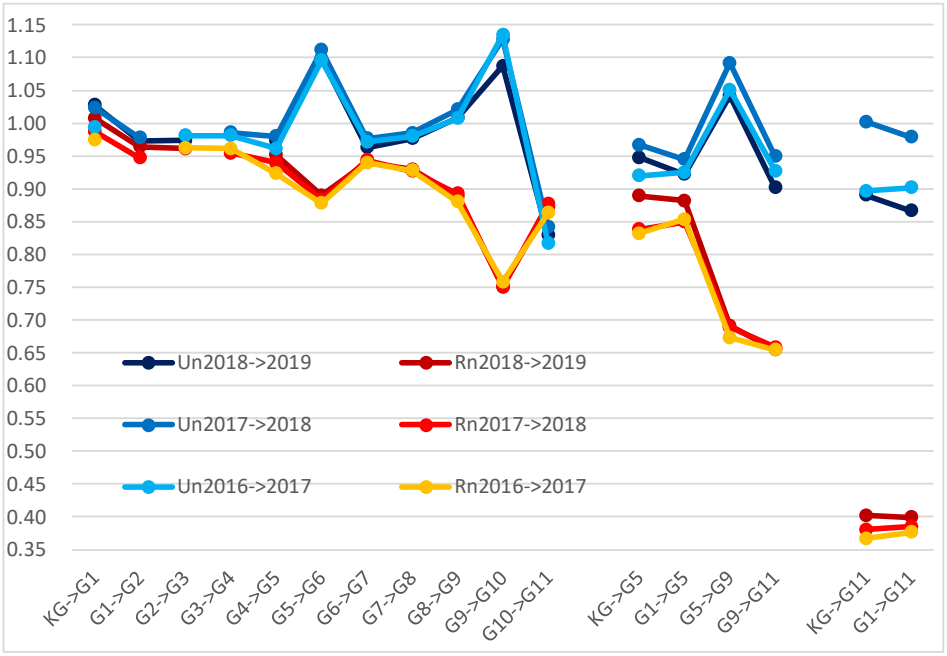


Figure 3: Transition Rate by Urban/Rural Area

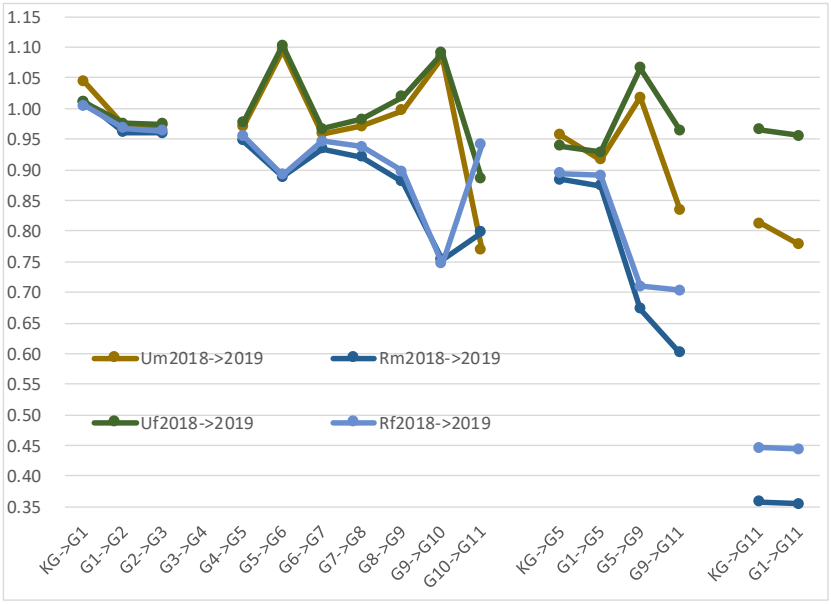


Figure 4: Transition Rate by Gender and Urban/Rural Area

both by gender and by urban/rural areas from 2018 to 2019. The trend of exceeding 1.0 from KG to G1 was greater for urban boys. There was little difference between the four categories in the primary school course, but in the middle school course, the descending order was urban girls, urban boys, rural girls, and rural boys. For transition to the final year of the high school course from G10 to G11, the highest value among the four categories was 0.941 for rural girls. This was followed by urban girls, rural boys, and urban boys (0.770). This might be an indication that the tendency was smaller for girls to repeat a grade compared to boys in rural areas, but it was greater in urban areas.

By multiplying the transition rates by grade, the expected probability that a student in one grade would proceed to another grade can be calculated. The probability that a student in G1 would continue until G11 was 0.956 for urban girls, but 0.354 for rural boys, which was computationally very low. Of course, the low probability did not mean that the rural boys left the basic education school system earlier, and many of them became urban boys. However, there were psychological, financial and other costs involved in moving to an advanced education course in urban areas. Those who cannot bear the cost would leave the basic education system at some stage, which is a problem from the viewpoint of equal educational opportunity.

3.5 Analysis by State/Region

Figure 5 shows the cumulative transition rates from 2018 to 2019 by gender for the primary school course (G1 through G5), primary to middle school course (G5 through G9), middle to high school course (G9 through G11), and the entire basic education courses (G1 through G11), in order to provide a broad picture of the differences in transition rates across states/regions. The degree of variation among states/regions was greater for the middle school course than for the primary school course, for the high school course than for the middle school course, and for all courses other than the high school course. In most cases, the values for girls were larger than for boys.

There were some states/regions where the cumulative transition rate value was above 1.0 such as from G1 to G5, boys in Nay Pyi Taw Capital Territory. This might be due to the influx of boys from other states/regions in Nay Pyi Taw Capital Territory. From G9 to G11, the values were high for girls in Kayah State and Ayeyarwady Region, but the values were especially higher from G10 to G11 instead of G9 to G10. This might be due to factors such as the large influx and/or number of girls repeating the high school course. In addition, the cumulative transition rates from G1 to G11 for both boys and girls were small in

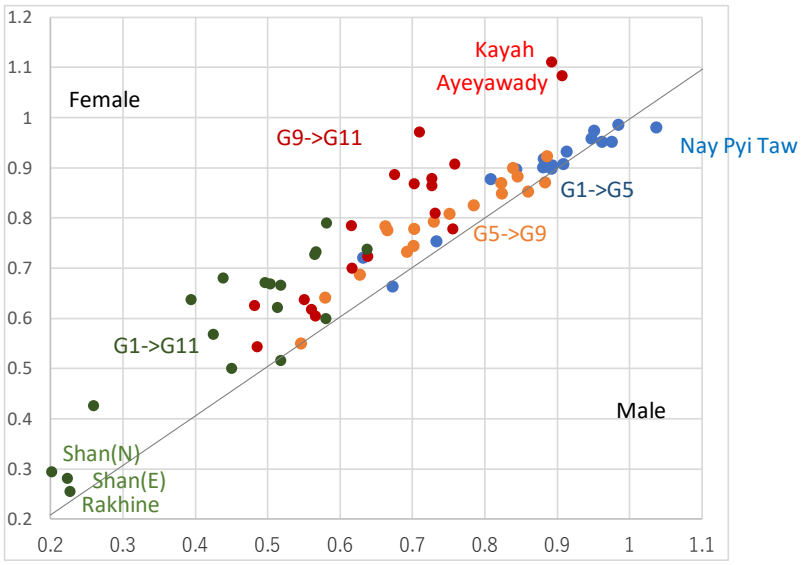


Figure 5: Cumulative Transition Rates by Gender and by State/Region

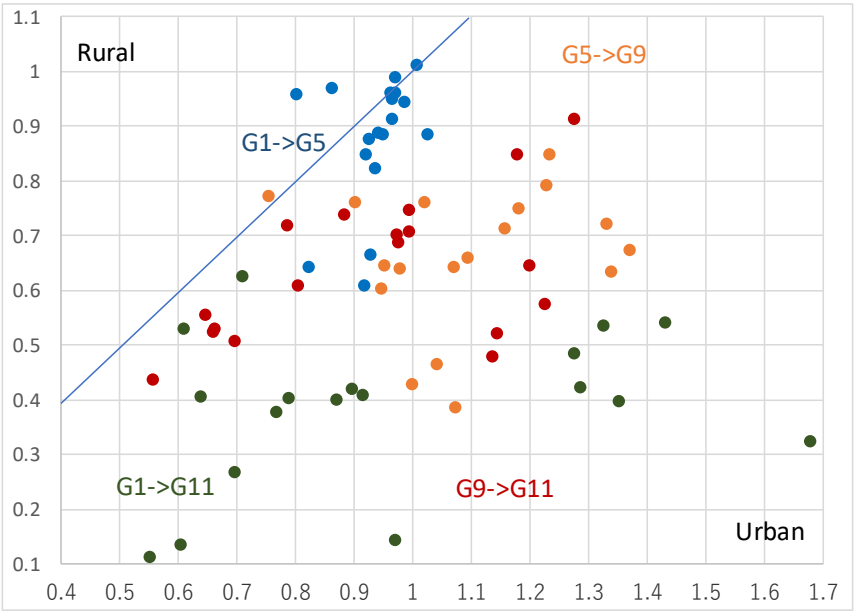


Figure 6: Cumulative Transition Rates by State/Region and by Urban/Rural Area

Rakhine, Shan (N), and Shan (E) States, where less than 30% of those who enrolled in G1 were expected to remain in G11.

Figure 6 shows the cumulative transition rates by state/region and by urban/rural area. The degree of variation across states/regions was greater for the middle school course than the primary school course, the high school course than the middle school course, and all courses other than the high school course. For most items, the values for urban areas were larger than those for rural areas. This may be because the difference between boys and girls was due to the difference in their behavior towards matriculation, while the difference between urban and rural areas indicated the difference in educational opportunities. Of course, there were exceptions: from G1 to G5, the cumulative transition rate was clearly higher in rural areas in the Yangon Region and Kayah State.

Table 1 shows a summary of the cumulative transition rates by state/region, by gender and by

Table 1: Transition Rate Disparities between States/Regions

		G1 -> G5			G5 -> G9			G9 -> G11			G1 -> G11		
		Min	Medium	Max	Min	Medium	Max	Min	Medium	Max	Min	Medium	Max
Total	Total	0.6681 Rakihine	0.8988	1.0093 NaiPyiTaw	0.5481 Rakihine	0.7699	0.9045 Magway	0.5185 Shan(E)	0.7694	1.0150 Kayah	0.2402 Rakihine	0.5641	0.6907 Kayah
	Male	0.6315 Shan(N)	0.8928	1.0368 NaiPyiTaw	0.5458 Rakihine	0.7404	0.8858 Magway	0.4810 Kayin	0.6881	0.9058 Ayeyawady	0.2014 Shan(N)	0.4994	0.6370 Magway
	Female	0.6634 Rakihine	0.9063	0.9861 Magway	0.5505 Rakihine	0.8009	0.9237 Magway	0.5441 Shan(E)	0.7977	1.1114 Kayah	0.2557 Rakihine	0.6301	0.7912 Kayah
Urban	Total	0.8004 Kayah	0.9454	1.0244 Chin	0.7529 Kayah	1.0705	1.3685 Bago(W)	0.5547 Shan(E)	0.9729	1.2751 Ayeyawady	0.5509 Shan(E)	0.8826	1.6785 Chin
	Male	0.7963 Rakihine	0.9335	1.0402 NaiPyiTaw	0.6865 Kayah	1.0220	1.3342 Bago(W)	0.5235 Shan(E)	0.8368	1.1763 Ayeyawady	0.4685 Shan(E)	0.7314	1.4624 Chin
	Female	0.7988 Kayah	0.9587	1.0509 Chin	0.8245 Kayah	1.1353	1.4062 Bago(W)	0.5786 Shan(E)	1.0750	1.3678 Ayeyawady	0.6228 Yangon	1.0530	1.9020 Chin
Rural	Total	0.6078 Shan(N)	0.9005	1.0106 NaiPyiTaw	0.3873 Shan(E)	0.6676	0.8481 Magway	0.4363 Shan(E)	0.6274	0.9135 Ayeyawady	0.1125 Shan(E)	0.4048	0.6273 Kayah
	Male	0.5515 Shan(N)	0.8987	1.0358 NaiPyiTaw	0.3642 Shan(E)	0.6483	0.8285 Magway	0.3814 Shan(E)	0.5619	0.8194 Ayeyawady	0.0915 Shan(E)	0.3544	0.5337 Kayah
	Female	0.6334 Rakihine	0.9138	0.9881 Magway	0.4065 Shan(E)	0.6984	0.8683 Magway	0.4788 Shan(E)	0.6725	1.0010 Ayeyawady	0.1308 Shan(E)	0.4519	0.7092 Kayah

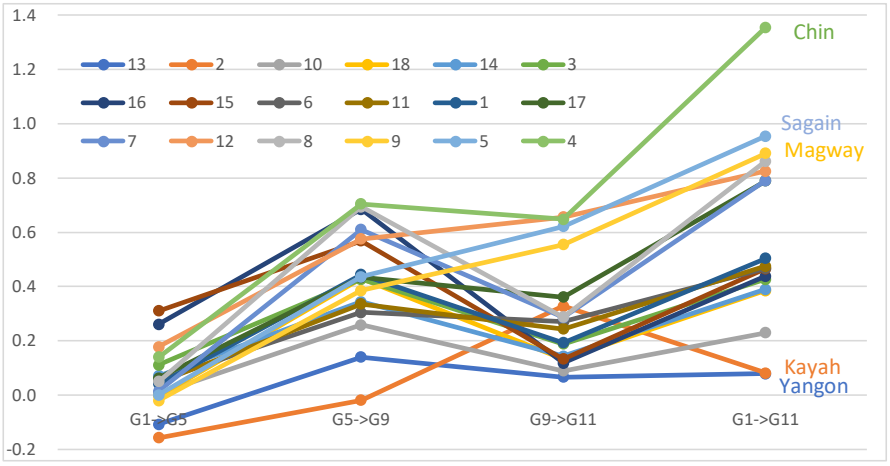


Figure 7: Urban-Rural Disparity in Cumulative Transition Rates by School Course

urban/rural area, as shown in Figures 5 and 6. Not only the median values but also the minimum and maximum values were shown, but the values varied by state/region, making it difficult to point out a general trend. Due to the synergistic effect of differences between boys and girls and differences between urban and rural areas, for example, there was a very large difference between boys and girls in urban areas. The reason why the maximum transition value was above 1.0 in any state/region was thought to be due to the migration between grades across the states/regions.

Figure 7 shows where urban and rural differences were found by state/region through the primary school course (G1 through G5), primary to middle school course (G5 through G9), middle to high school course (G9 through G11), and the entire basic education course (G1 through G11). Overall, the state/regional differences increased from the range between -0.157 and 0.310 from G1 to G5, to the range between -0.019 and 0.694 from G5 to G9. In general, the urban/rural difference from G5 to G9 was larger than the difference from G1 to G5 in all states/regions without exception, because the schools with a middle school course were skewed toward urban areas. However, from G9 to G11, there was a split between states/regions where the difference between urban and rural areas was smaller for G5 to G9 and states/regions where the difference was even larger. The difference

may be due to whether schools with a high school course were further skewed toward urban areas.

Taken together, the differences between urban and rural areas in the cumulative transition rates from G1 to G11 ranged from 0.079 to 1.355. The difference was very small in the Yangon Region and Kayah State, and very large in Chin State. It was also quite large in Sagaing and Magway Regions. However, the difference was largely due to the middle school course in Chin State and the high school course in Sagaing and Magway Regions.

3.6 Analysis by Township

Figure 8 shows the values of cumulative transition rates from G1 to G5, from G5 to G9, from G9 to G11, and from G1 to G11 for each township, and plotted for urban and rural area since the central area was crowded and indistinct, only the central part was enlarged in Figure 9. In most cases, the values of the four indicators were higher in urban areas than in rural areas, although there were exceptions; and it was clear that they were better off in terms of educational opportunities in urban areas. On the whole, the transition rate from G1 to G5 had relatively small variation, followed by the transition rates from G9 to G11, from G5 to G9, and from G1 to G11. The reason why there were zero values on the X and Y axes was that there were schools with a middle school course or higher in urban areas only, or in some townships there were only urban or rural areas. The variation of the cumulative transition rate in Figure 8 and Figure 9 indicated the importance of equal opportunity in education, because the transition rate varied greatly depending on the distribution of schools with middle and high school courses compared to schools with a primary school course, which were established relatively evenly in townships.

There may be various reasons for such a large variation across townships. Figure 10 shows the coefficients of variation (standard deviations divided by the mean) for each township and urban and rural area. It was better to compare the coefficient of variation because the larger the mean, the larger the standard deviation. In both urban and rural areas, the coefficient of variation was large from G5 to G6 and from G9 to G10, when students moved from the primary school course to the middle school course, and from the middle school course to the high school course. Especially from G5 to G6, the coefficient of variation was larger in urban areas than in rural areas. While there might be socio-economic differences that made it possible for students to go on to advanced education courses, this was not only that the location of schools with advanced education courses within commuting distance differed between urban and rural areas, but also that the situation of students going on to advanced education courses varied greatly by township, whether in urban or rural areas.

Suggestions as to which townships have higher transition rates can be obtained by comparing transition rates with indicators available for each township. While appropriate indicators for each township were not readily available in Myanmar, the data from the 2014 census provided a useful set of

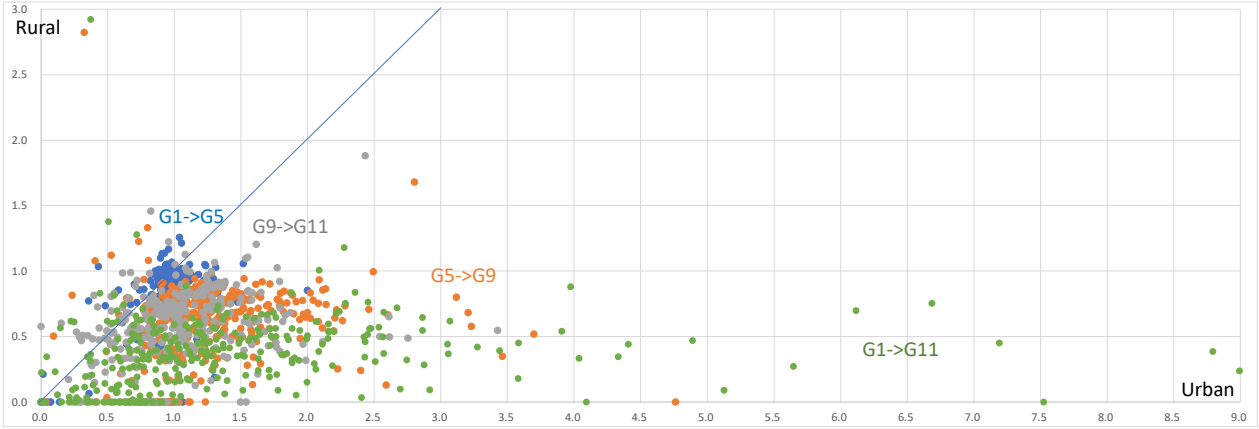
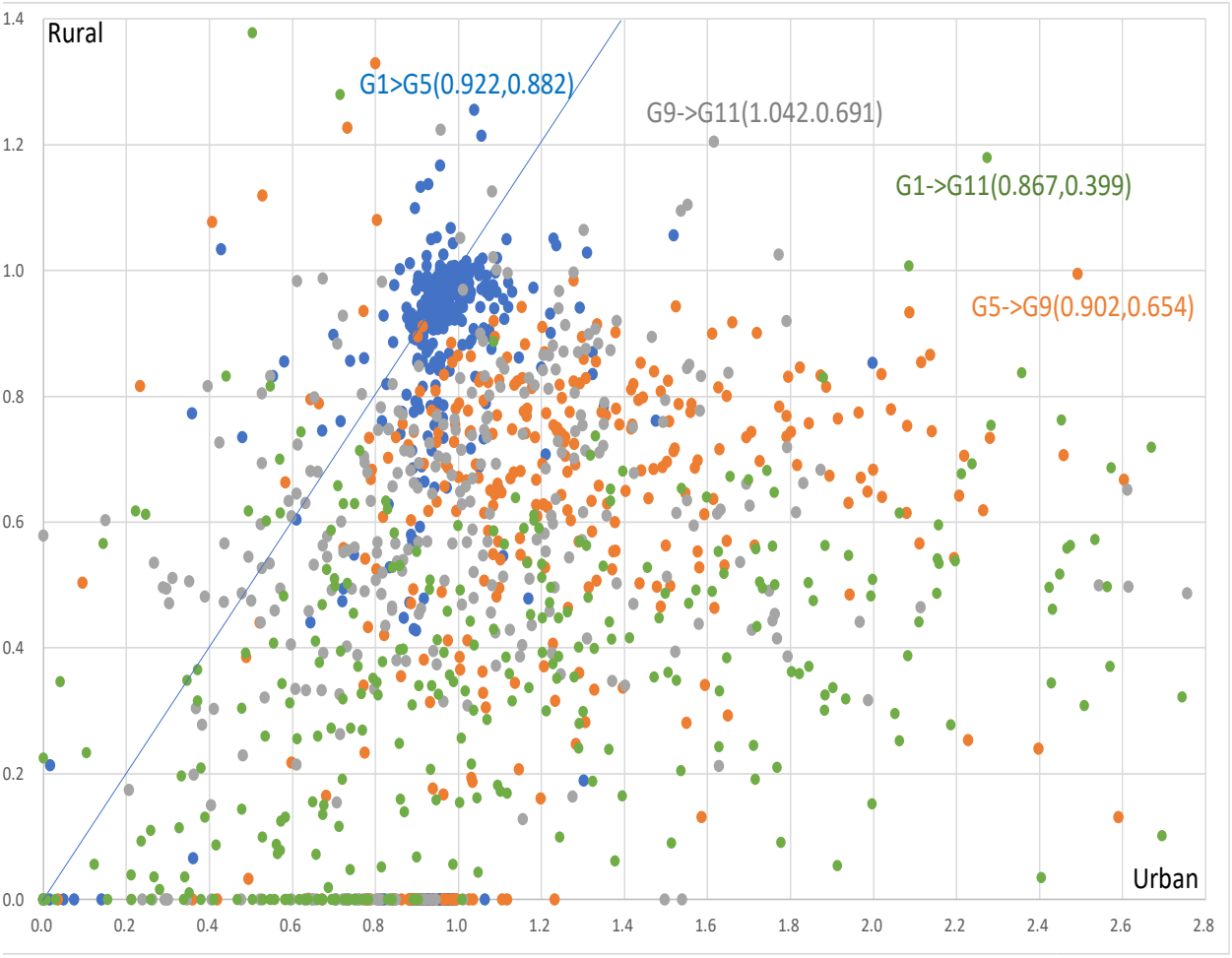


Figure 8: Urban-Rural Disparity in Cumulative Transition Rates by School Course and by Township



Note: Figures in parentheses are averages

Figure 9: Detailed Urban-Rural Disparity in Cumulative Transition Rates by School Course and by Township

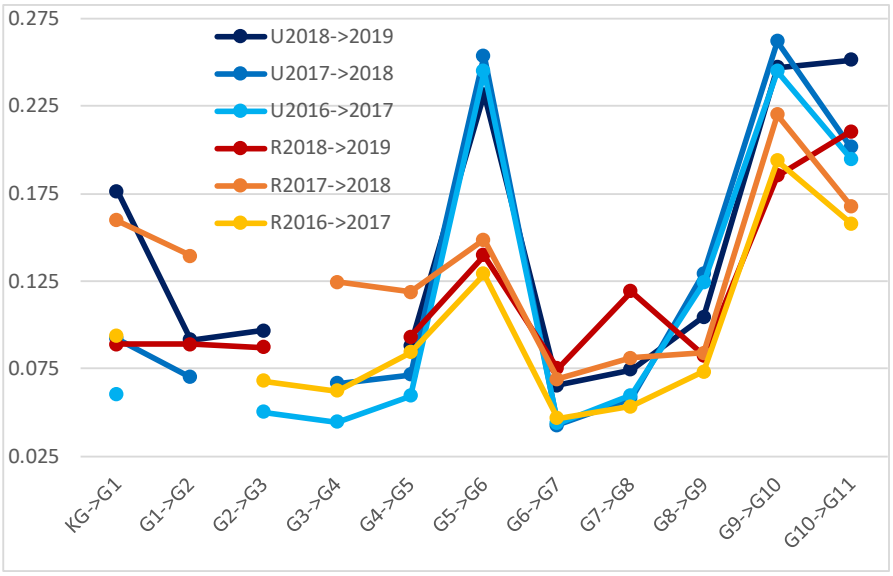


Figure 10: Coefficients of Variation in the Transition Rate between Grades by Township

indicators; although there were some time gaps between the 2014 indicators and the transition rates from 2018 to 2019, it was unlikely that the socioeconomic conditions of townships changed significantly during these few years.

Based on the analysis thus far, it was better to divide the transition rates into several groups for analysis. They were: the cumulative transition rate from G1 to G5, which indicated the degree of advancement within the primary school course; the transition rate from G5 to G6, which indicated the degree of advancement from the primary school course to the middle school course; the cumulative transition rate from G6 to G9, which indicated the degree of advancement within the middle school course; the transition rate from G9 to G10, which indicated the degree of advancement from the middle school course to the high school course; and the transition rate from G10 to G11, which indicated the degree of advancement within the high school course. In contrast, the variables that explained these transition rates were the logarithm of the population, which indicated the size of the township, the rate of urban population, which indicated the relative population size of the urban area, the dependency ratio, which indicated the percentage of the population that was under 15 and over 64, the literacy rate of 15 years and over, the unemployment rate of 10 years and over, and the Gender Parity Index (GPI) of the population under the age of 15. Furthermore, with regard to the transition rates from G5 to G6 and G9 to G10, the ratio of number of schools with G6 to those with G5 and the ratio of number of schools with G10 to those with G9 were added respectively, as indicators of the ease of entering an advanced school course.

Table 2 shows the magnitude of the factors that explained the transition rates by grade classification. The literacy and GPI best explained the transition rates from G1 to G5. The higher the level of education in the township and the more committed to education as a whole, the transition rate was higher. When the percentage of girls compared to boys was higher, the transition rate was higher. While the transition rate

Table 2: Factors Explaining the Transition Rate

Explained	G1->G5		G5->G6		G6->G9		G9->G10		G10->G11	
Explaining Factors	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t
	Std. Err.	P>|t|	Std. Err.	P>|t|	Std. Err.	P>|t|	Std. Err.	P>|t|	Std. Err.	P>|t|
ln(Population)	-0.0095	-1.04	0.0215	1.88	-0.0070	-0.69	-0.0075	-0.67	-0.0072	-0.52
	0.0091		0.0115	+	0.0102		0.0112		0.0140	
% of Urban population	-0.0002	-0.56	0.0000	0.01	0.0003	0.76	0.0005	1.28	-0.0012	-2.45
	0.0003		0.0004		0.0004		0.0004		0.0005	*
Rate of dependency	0.2648	1.26	-0.1474	-0.56	-0.3364	-1.44	0.4993	1.94	0.2155	0.67
	0.2098		0.2654		0.2337		0.2575	+	0.3213	
% of Literacy (15+)	0.0061	12.76	0.0012	1.95	0.0043	7.92	0.0032	5.07	0.0008	1.07
	0.0005	**	0.0006	+	0.0005	**	0.0006	**	0.0008	
Unemployment rate (10+)	-0.2390	-0.79	0.6091	1.61	-0.2646	-0.78	-0.2905	-0.78	0.1081	0.23
	0.3022		0.3792		0.3371		0.3706		0.4653	
Gender parity Index (0-14)	0.1988	2.07	0.0983	0.81	0.0992	0.93	0.0294	0.25	0.4632	3.15
	0.0958	*	0.1210		0.1070		0.1174		0.1472	**
# of School(G6)/ # of School(G5)			0.2462	5.05						
			0.0488	**						
# of School(G10)/ # of School(G9)							0.2579	4.20		
							0.0614	**		
Constant	0.2283	1.54	0.4140	2.23	0.5606	3.39	0.3419	1.80	0.4075	1.79
	0.1482		0.1857	*	0.1652	**	0.1895	+	0.2274	+
Number of Sample	329	**	329	**	328	**	325	**	324	**
F	(6, 322)	33.51	(7, 321)	7.87	(6, 321)	19.17	(7, 317)	7.38	(6, 317)	5.66
Adj R-squared		0.3729		0.1278		0.2501		0.1212		0.0796

Note: 1% ** 5% * 10% +

from G5 to G6 was explained in part by the literacy rate, as well as the size of the township, the ratio of the number of schools with G6 to the number of schools with G5, the relative allocation of middle school courses to primary school courses, explained the transition rate. The transition rate from G6 to G9 was also explained by the literacy rate. The transition rate from G9 to G10 was explained by the literacy rate as well as the ratio of the number of schools with G10 to the number of schools with G9, the relative available allocation of high school courses to middle school courses. From G10 to G11, the GPI and the urban population ratio was a powerful defining factor. The urban population ratio had a negative effect, but this may be because the larger the urban population ratio, the more competitive were the examinations, and the more students who were unlikely to pass the matriculation examinations either repeated or dropped out.

3.7 Relationship between Grade Level and School Type

In order to interpret the analysis results on transition rates, a good understanding of the actual situation of basic education schools in Myanmar is essential. This section follows the specific figures by school type. There are various types of basic education schools in Myanmar, classified according to the highest grade level and size of the school. Schools with primary school courses only from KG to G5 are classified as “primary schools,” while those smaller than a certain number of students are classified as “branch-primary schools.” Schools with middle school courses from G6 to G9 are “middle schools” and are classified as “branch-middle schools” if their size is smaller. Schools with high school courses from G10 to G11 are “high schools” and are classified as “branch-high schools” if their size is smaller. In general, schools with middle school courses have primary school courses, and schools with high school courses have middle school courses. However, some schools with high school courses do not have primary school courses, especially in urban areas. In order to encourage students to enter middle school courses, an increasing number of primary schools, especially in rural areas, have been offering part of a middle school course up to G8, in addition to the primary school course. These are the “post-primary schools.” Thus there are high schools, branch-high schools, middle schools, branch-middle schools, post-primary schools, primary schools, branch-primary schools, in order of their highest social reputation.

These are basic education schools established by the Ministry of Education, and teachers are dispatched to these schools. However, in some cases, local communities have established their own schools when the government did not establish schools for various reasons such as a small population, despite local requests. The cost of teachers is borne by the community, and no teachers are dispatched by the government. However, without the recognition as a “formal school” by the Ministry of Education, students may not be able to advance to the next level of schooling. The recognized schools are known as affiliate schools. In the past, a few affiliate schools existed at the high school level, but they have been gradually converted to public schools; and as of FY2019, there were only two affiliate schools with primary school courses that enrolled students.

Figure 11 shows the number of students by grade level, school type, and urban/rural area. Among urban schools, primary schools had the largest number of students in the primary school course, followed by high schools and post-primary schools. In the middle school course, high schools accounted for more than 60% of the students, and the percentage rose to nearly 80% in G9. In G6, post-primary schools had the second largest number of students, but in G7 and above, branch-high schools were second. In the high school course, high schools accounted for more than 90% of the student population. In other words, in the primary school course, branch-primary schools, primary schools, and post-primary schools in total accounted for just under 50% of the students, while in the middle school course, high schools and branch-high schools accounted for over 70% of the students in G6 and G7, and over 80% of the students in G8 and G9.

In contrast, primary schools had the largest number of students in the primary school course, followed by post-primary schools in rural areas. These two types of

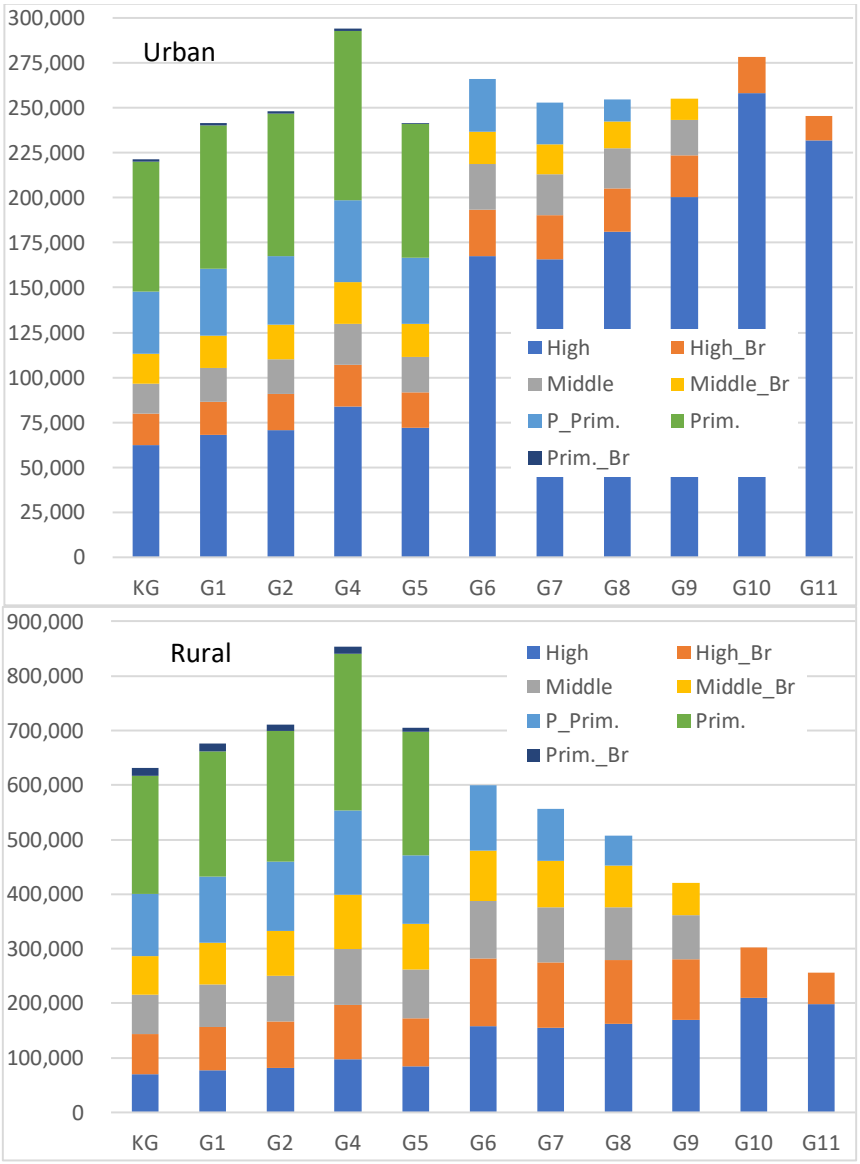


Figure 11: Number of Students by Grade Level, School Type, and Urban/Rural Area

schools shared about half of the total, while the remainder of the students were nearly evenly distributed among branch-middle schools, middle schools, branch-high schools, and high schools. Branch-primary schools had the smallest number of students. In the middle school course, high schools had the highest percentage, followed by branch-high schools. Thus in urban areas, high schools had the second largest proportion of students after primary schools, while in rural areas students were distributed among various types of schools.

Although the range among students who can walk to school is likely to vary by grade level, the large population in the catchment area of a particular school in a densely populated urban area can make it possible to establish larger sized schools. Therefore, it was not only necessary to look at the distribution of the number of students by school type, but also the distribution of the number of schools to understand the current situation.

Figure 12 shows the number of schools by grade level, school type, and urban/rural area. In this figure, the number of schools was counted if there was at least one student enrolled in each grade. In urban areas, primary schools were the most common in the primary school course, and together with the small number of branch-primary schools, they accounted for about 55% of the total. Post-primary schools were the next most

Figure 12: Number of Schools by Grade Level, School Type, and Urban/Rural Area

numerous, comprising about 70% of the total. High schools, which had the second largest number of students, accounted for only 14% of the total number of schools. In the middle school course, high schools had the highest percentage, followed by post-primary schools in G6. For the G8 level, however, there were roughly equal numbers of post-primary schools, branch-middle schools, and middle schools.

The rural areas had a larger percentage of branch-primary schools than in urban areas, but the percentage at about 55% was about the same as urban areas, including primary schools. However, from G6 to G8, the order of increasing numbers consisted of post-primary schools, branch-middle schools, middle schools, branch-high schools, and high schools, in contrast to urban areas, which had a large percentage of high schools.

The most significant difference between the urban and rural areas was the overall number of schools with advanced education courses in urban areas. Moreover, the number increased rapidly from G6. One factor contributing to this was the large number of schools in urban areas that did not have a primary school course but only middle school and high school courses. These schools served as a means for students to enter middle school and high school courses. Out of the 268 such

high schools and branch-high schools nationwide with at least one confirmed enrollment, 224 of them were located in urban areas. Thus 17.6% of the high schools and branch-high schools in urban areas were these types of schools with only middle school and high school courses, while in rural areas the percentage was only 1.0% and 6.2% nationally. This was why the number of schools with G6 in urban areas in Figure 12 was suddenly larger than those with G5.

From Figures 11 and 12, the number of students per school by school type and grade level can be calculated. This is shown in Table 3. In comparing the urban and rural areas, there was no significant difference in branch-primary schools, perhaps due to the small number of children in the catchment area, but the differences were 2-3 times greater for other school types. In general, rural middle schools were smaller than urban branch-middle schools and rural high schools were smaller than urban branch-high schools on average.

3.8 Analysis by School Type

If school enrollment data by grade level for two consecutive fiscal years is available, the transition rate can be calculated for each individual school as well. However, since the number of individual schools is extremely large and it is difficult to extract significant information from the distribution of transition rates by viewing them as they are, the analysis below was grouped by school type. Since it is important to analyze by urban/rural area and by gender based on the previous analyses, the following analyses were also conducted by urban/rural area and by gender.

Figure 13 shows the transition rates within the primary school course, calculated by school type, urban/rural area, and gender. Although the overall transition rate was higher in urban areas, the difference between urban and rural areas was small compared to

Table 3: Average Number of Students by Grade by School Type

Category		KG	G1	G2	G4	G5	G6	G7	G8	G9	G10	G11
Urban	High	78.19	84.63	88.44	104.60	90.06	164.87	163.31	178.08	196.68	252.95	229.30
	High_Br	69.18	74.90	79.86	93.14	78.92	101.08	95.70	94.27	90.61	79.03	59.56
	Middle	50.32	56.98	58.89	69.71	58.97	73.36	65.83	64.34	57.49		
	Middle_Br	45.00	48.99	51.15	62.31	50.67	48.92	45.19	40.76	34.65		
	P_Prim.	37.95	40.91	41.94	50.22	40.31	34.61	31.39	27.30			
	Prim.	22.97	25.26	25.21	29.82	23.66						
	Prim._Br	9.86	10.66	10.65	10.01	5.84						
	Total	37.31	40.71	41.83	49.63	41.12	93.86	92.80	104.89	130.29	218.52	198.29
Rural	High	39.60	43.46	45.95	54.26	47.56	87.31	85.37	89.02	93.77	115.36	111.54
	High_Br	28.87	31.73	33.67	40.10	35.24	49.33	48.13	47.26	44.18	36.92	37.27
	Middle	21.50	23.28	25.28	30.55	26.46	31.45	30.08	28.81	24.41		
	Middle_Br	19.87	21.35	22.93	27.91	23.54	25.84	23.76	21.33	17.77		
	P_Prim.	16.88	17.96	18.81	22.78	18.65	18.04	16.70	14.79			
	Prim.	10.69	11.40	11.87	14.17	11.33						
	Prim._Br	7.61	7.65	7.21	7.45	5.30						
	Total	15.76	16.93	17.84	21.36	17.94	33.52	32.83	33.89	38.32	70.01	76.85
Urban+Rural	High	51.55	56.23	59.12	69.83	60.69	115.11	113.32	121.00	130.81	164.85	154.23
	High_Br	32.50	35.65	37.87	44.92	39.21	54.10	52.51	51.59	48.46	40.79	40.09
	Middle	24.08	26.25	28.28	34.01	29.38	35.37	33.43	32.14	27.53		
	Middle_Br	22.23	23.96	25.59	31.16	26.09	28.01	25.78	23.13	19.31		
	P_Prim.	19.39	20.70	21.57	26.05	21.23	19.91	18.38	16.10			
	Prim.	12.34	13.27	13.67	16.27	13.01						
	Prim._Br	7.75	7.84	7.43	7.60	5.33						
	Total	18.55	20.01	20.95	25.01	20.96	41.77	41.14	43.77	52.23	103.87	109.69

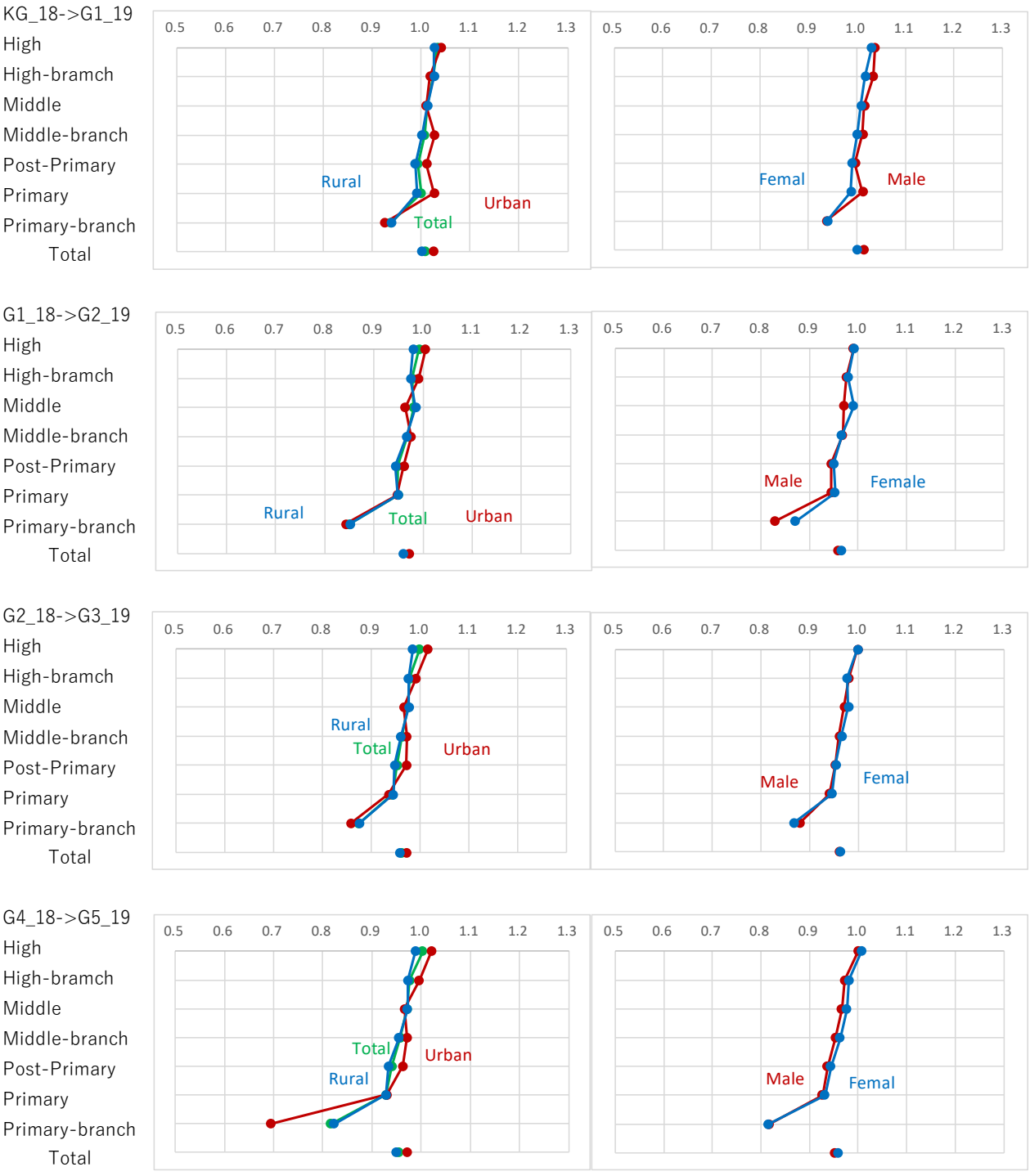


Figure 13: Transition Rates in the Primary School Course by Type of School, Urban/Rural Area, and Gender

the magnitude of the difference by school type. In general, the higher the rating status of the school type, the higher the transition rate. Of course, this may be due to the fact that many students moved up to the next grade in schools with higher status by transferring from other schools although many students moved up to the next grade within the same school. As evidence of this, the transition rate exceeded 1.0 in all four categories in high schools: urban, rural, boys, and girls. Conversely, the higher the grade level, the smaller the transition rate for branch-primary schools, especially in urban areas. As children grow older and are able to commute

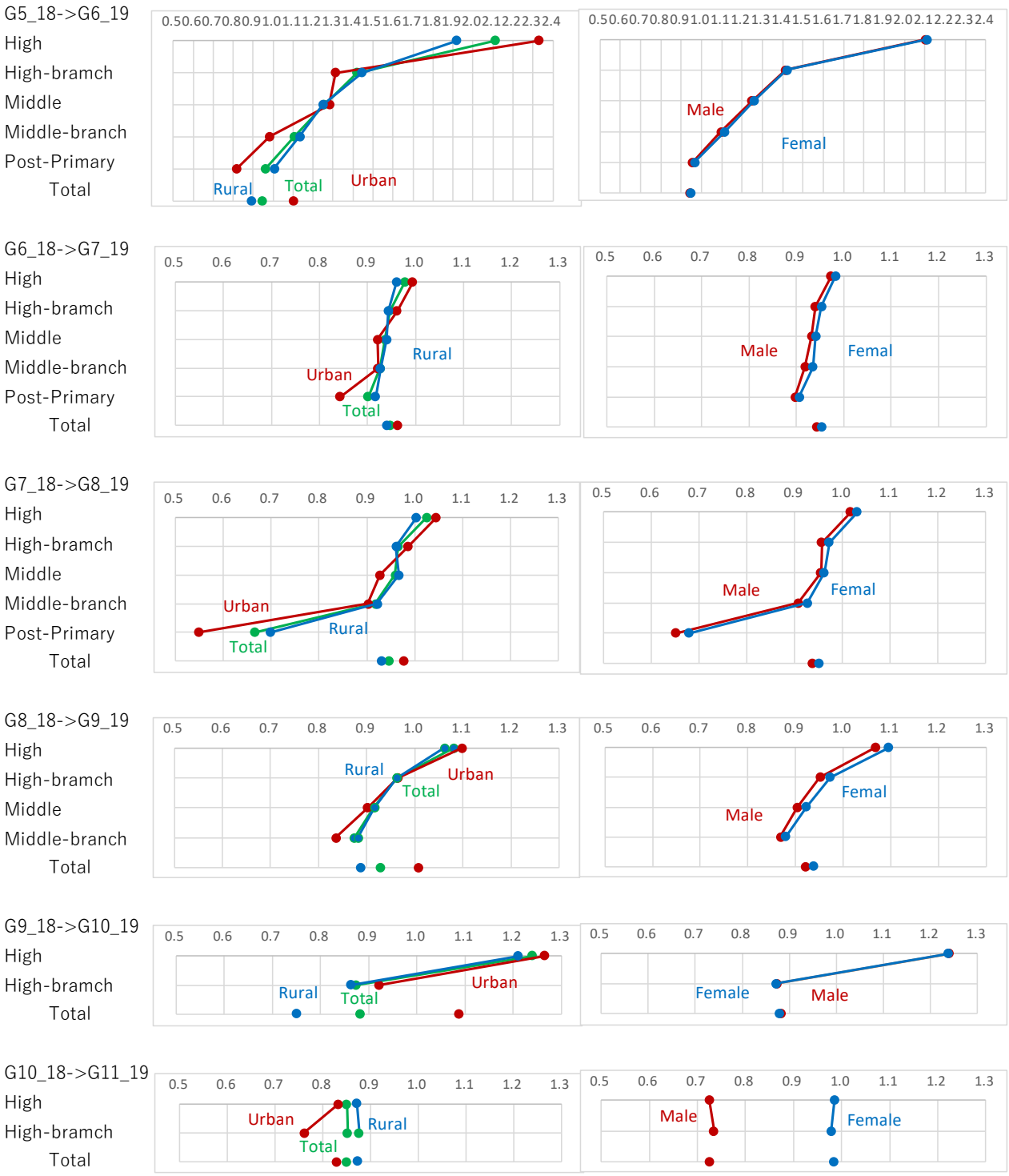


Figure 14: Transition Rates in the Middle School Course and Above, by School Type, Urban/Rural Area, and Gender

to school for longer distances or to stay with relatives, they are expected to move to higher rated schools with middle school and high school courses without having to complete their primary school course.

The fact that the transition rate from KG to G1 exceeded 1.0 overall, especially in urban areas, suggested that many students entered G1 directly without going through the KG level, given that there

were few retentions. The higher transition rate from KG to G1 for boys was because more boys entered G1 directly without undergoing KG education.

Figure 14 shows the transition rate in the middle school course and above. The transition rate from G5 to G6 were completely different from the previous figures. This was because primary schools and branch-primary schools, which accounted for more than half of the total number of schools, did not offer the middle school course. Hence students had to enter a school with a middle school course, in order to move on to an advanced level of education. The national average value was 0.95, but it rose to 2.11 in high schools. The higher the school's rating, the more pronounced the transition rate tended to be. According to urban and rural areas, the national average transition rate was higher for students in urban areas, but when the transition rates were seen by school type, the transition rates of lower rated rural schools were higher than urban schools. This may be due to the fact that there were fewer schools with higher ratings in rural areas, leading to a higher concentration of students, while there were more schools with higher ratings in urban areas that were not as concentrated as those in rural areas. The lower transition rate for post-primary schools in urban areas was probably due to the fact that many students moved up to G6 in the higher-rated schools nearby.

The transition rate from G6 to G7 was within the middle school course and showed the expected pattern of transition rates. However, the transition rate from G7 to G8 differed from this with a much lower transition rate for post-primary schools. Post-primary schools can have courses up to G9, but it was not uncommon for recently established post-primary schools to not have a G8 course. In addition, students must eventually transfer to a school with complete middle school grades in order to complete the middle school course; and many students may move to a high school or other schools when they reach G8, as evidenced by an average high school transition rate of 1.02.

At the transition stage from G8 to G9, post-primary school students can only move to another school or stop going to school. For the middle school course and above, the gap in the transition rate between urban and rural areas became larger, 1.01:0.89, due to the particularly strong maldistribution to urban areas. For high schools in urban areas, it rose to 1.10.

From G9 to G10, students moved from the middle school course to the high school course and they became increasingly concentrated in urban areas. The difference in transition rates between the urban and rural areas was 1.09:0.75. In high schools, the average was as high as 1.24, as many students came from schools that provided up to the middle school course. The reason why the national average transition rate in rural areas had a smaller value than the transition rate at branch-high schools was that many students stopped without going through the high school course.

The picture was different for G10 to G11. The national average was 0.85, but it was somewhat higher in rural areas. The G10, G11 level had the highest retention rate compared to the other grades, probably because students, who were unlikely to pass the matriculation examination, stayed in the same grade to improve their academic performance, which was thought to lower the transition rate in urban areas. G10 was bloated with repeat students, which in turn boosted the transition rate from G9 to G10 in terms of calculation. The difference between boys and girls was also evident in this transition rate from G10 to G11, where the transition rate for boys was 0.26 points lower. It was likely that girls did not like to repeat a grade. This transition rate from G10 to G11 was expected to change dramatically once the high school graduation certification system, which was institutionalized for the 2020 graduating class, is put into effect. This is because the main reason for a declining transition rate will disappear.

From Figure 14, it is expected that if G9 is added to the post-primary schools to make them branch-middle schools, the overall transition rate from G5 to G6, G6 to G7, and G7 to G8 will be greatly improved.

4. Conclusions and Policy Implications

4.1 Summary and Conclusion

The transition rates were used to examine the enrollment situation from 2018 to 2019, before the rapid deterioration in basic education enrollment

caused by the COVID-19 pandemic from 2020. This was because even if the situation in the country returned to normal and the educational situation improved, it was realistic to assume that it will return to the levels around 2018 and 2019; and that these levels will be used as a benchmark for further improvement. Looking at the transition rate nationally, the transition rates between two consecutive grades has been above 0.95 for the primary school course. In particular, from KG to G1, the rate exceeded 1.0. This was a dramatic improvement from the previous rate of 0.85 (Muta 2019) from G1 to G2 under the old grade classification, because the new KG course was not made compulsory. Therefore, more students entered the basic education system from G1, the start of compulsory education, without going through KG.

The fact that the transition rate remained slightly below 0.95 in the middle school course suggested there was a strong possibility that the period of compulsory education from the current 5th grade in the primary school course to the 9th grade in the middle school course would be extended to achieve the goal of free and compulsory education up to the middle school course in SDGs 4.1. There is no doubt that the spread of post-primary schooling has contributed to the improvement of middle school course enrollment. Adding G9 to the post-primary school to make it a branch-middle school would give great impetus to making the middle school course compulsory.

However, the transition rate dropped further in the high school course, especially from G10 to G11, to nearly 0.85. The reason why the transition rate dropped in the high school course was mainly because the matriculation examination passing rate was low, and students, who thought they were unlikely to pass the examination, may not have completed Grade11. It is expected that this trend will greatly improve when the High School Completion Certification System, which has been effective for students completing the high school course in 2020, becomes well known.

When the transition rates were compared by gender, the rate for girls were generally higher. In urban areas, the transition rate was higher than in rural areas, but it was extremely high in urban areas especially when the school course changed from G5 to G6 and from G9 to G10. This was because the distribution of schools with a middle school course was concentrated in urban areas compared to the distribution of schools with a primary school course; and the same was true for the relationship between schools with a middle school course and schools with a high school course.

Disparities in transition rates were found not only between townships, but also between states/regions. Differences in regional socioeconomic indicators may be the primary reason for the disparity, but more importantly, the uneven distribution of schools between urban and rural areas may be a problem. There was a clear migration movement from rural to urban areas when students moved on to the advanced education course. If the move was within commuting range, it was not a major problem because it only increased the commuting time to some extent. However, if it was beyond the commuting range, only those students who were able to afford the economic and psychological costs were able to enter the advanced education course. The difficulty of moving from a primary school course to a middle school course and from a middle school course to a high school course was an obstacle to advancing further education.

The transition rate, which indicates the degree of advancement in both the primary and middle school courses, was explained by the literacy rate of the township. The higher the level of education in the township as a whole, the higher was the transition rate over the long run.

Regarding the transition rate from primary to middle school courses and from middle school to high school courses, the ratio of the number of schools with primary school courses to those with middle school courses, and the ratio of schools with middle school courses to those with high school courses were important. If many small-scale schools were built, the overall cost would increase [7]. From the perspective of equal opportunity in education, a policy that will reconsider the proper allocation of various types of schools while maintaining the appropriate scale will be needed.

4.2 Policy Implications

From the above analysis, the following policy implications can be derived.

1. Appropriate Allocation of Various Types of Schools

In moving from the primary school course to the middle school course, and from the middle school course to the high school course, there was a clear migration of students from rural to urban areas, and this was a major factor in reducing the survival rate from G1 to G11. Appropriate allocation of schools with a middle school course and a high school course is required. As part of this process, it would be helpful to actively consider converting post-primary schools into branch-middle schools.

2. Establishment of the High School Completion Certification System

Myanmar offers free education for the primary school course to the high school course, and there are no entrance examinations. It is not difficult to finish the high school course for students. However, the matriculation examination system is believed to be the reason why students advance to a certain extent in the middle school course, but not in the high school course. Since the matriculation examination is basically a university entrance qualification examination, it is unlikely that the passing rate will increase above the current 30%. Therefore, for those who were unlikely to pass the matriculation examination, there was little point in advancing to G11 of the high school course. That is why the new High School Completion Certification System was introduced for students who finished the G11 in March 2020. However, the confusion caused by the COVID-19 pandemic has made us wonder if this system will take root. It is believed that the transition rate to complete the high school course will only improve if there is hope that students can be certified as high school graduates with normal study.

Acknowledgments

This study was based on the work of the mission for “Advisor for Educational Policy” in the Republic of the Union of Myanmar funded by JICA (Japan International Cooperation Agency) and it was supported by the Grant-in-Aid for Scientific Research (C) Grant Number 21K02299 for publication. The author owes all the responsibility of the results of the study, and the results were not reflected by the opinion of JICA nor the Government of the Republic of the Union of Myanmar.

References

[1] Muta, Hiromitsu. *Study on the Trend in the Number of Students and Teachers in 2017/18 - Impact of NESP and the Deployment of Teachers -.* Unpublished Research Paper. 2018. P.1-18.

[2] Muta, Hiromitsu. *Regional Difference on Expansion of Education and Estimation of Total Cost Necessary in Future.* Unpublished Research Paper. 2014. P.1-18.

[3] Muta, Hiromitsu. *Trend Analysis on the Number of Students in Basic Education.* Unpublished Research Paper. 2014. P.1-21.

[4] Muta, Hiromitsu. *In-depth Analysis on Promotion, Repetition and Dropout of Basic Education in Myanmar.* Unpublished Research Paper. 2014. P.1-19.

[5] Muta, Hiromitsu. *Study on the Conditions of Education under New Regime - Issues on Enrollment in 2016 and Upgrading of Schools* -. Unpublished Research Paper. 2016. P.1-25.

[6] Muta, Hiromitsu. Structural analysis of Dropouts and Repeaters in basic education schools in the Republic of the Union of Myanmar. *International Journal of Human Culture Studies.* 2020, 30, p. 40-59.

[7] Muta, Hiromitsu. *A Study on Appropriate Size and Configuration of Basic Education Schools Using Geographical Positioning Information.* Unpublished Research Paper. 2017. P.1-24.

Abstract (Japanese)

2000 年度から新型コロナ感染症禍の影響で基礎教育の就学状況が急速に悪化する前の 2018 年度から 2019 年度にかけての就学状況を推移率を用いて検証した．全国的には，小学校課程では学年間の推移率は 0.95 を上回る値で推移し，中学校課程でもそれを少し下回る値で推移するものの，高校課程ではさらに下がり，特に Grade-10 から Grade-11 にかけては，0.85 近くにまで下がる．高校課程で推移率が下がるのは主にはマトリキュレーション試験の合格率が低く，合格する可能性が少ないと考える生徒は Grade-11 を終了しないのではないかと思われるが，この傾向は 2020 年の高校課程修了生より適用された，高校修了認定制度が周知されれば大きく改善されるのではないかと期待される．

推移率を男・女別に比較すると一般的に女子が高い．市部・郡部別では市部が高いが，特に Grade-5 から Grade-6，Grade-9 から Grade-10 と学校課程が変わるところで市部が極端に高くなる．小学校課程がある学校の分布に比較して，中学校課程のある学校の分布が市部に集中しているからで，中学校課程のある学校と高校課程のある学校の関係も同様である．推移率の格差はタウンシップ間はもとより，州・管区間でも見られるが，地域の社会経済指標の違い以上に，各種の学校の配置が市部や郡部など地域によって不均等であるという問題ではないかと思われる．さらなる進級進学率の向上のためには，中学校課程，高校課程を持つ学校の適正配置が欠かせない．

Key words (Japanese)：推移率，退学率，留年率，在籍者数，市部郡部格差

(Received March 8, 2023; accepted March 29, 2023)

Hiromitsu Muta
Present post: Senior Chief Researcher, Institute of Human Culture Studies, Otsuma Women's University

Education: Graduate School of Education, The University of Tokyo，Ph.D.（Tokyo Institute of Technology）.
Major: Evaluation studies, Comparative and Sociology of Education.
Current interest: Studies related to the Educational Reform in the Republic of the Union of Myanmar.