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Korea's Primary and Secondary Education Budget in an Aging Population Era[+,*]

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+ A short summary of "H. Kim *ed.*, *Reforms in Primary and Secondary School Administration and Finance Suitable for a Population-Declining Society,* Research Monograph 2023-04, KDI"
* This presentation represents the author's personal opinion, rather than the official stance of KDI.

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Contents

How schools are funded in Korea

1. How schools are funded in Korea

(Local Governance) Two elected local bodies over the same administrative region.

- There are 17 large administrative regions in Korea.
- In each region, there are two elected bodies: Governor and Superintendent
- Local government Governor oversees most of local affaires beyond primary and secondary education.
- Local Education Office Superintendent, also elected directly, oversees primary and secondary education only.

(How to Fund) Tax Revenue-based Cash Transfers from Central and Local governments

- Education tax revenues and 20.79% of Internal Tax Revenues from central government
- Local Education Tax revenues and 3.6~10% of Local Tax Revenues from the local government of respective region
- Both Cash Transfers linked to tax revenues are mandated by current law.
- The Central Government bears 81.8%(average from 2018 to 2022) of 17 LEOs' total cash transfers

(Problem) Earmarked for Primary and Secondary Education, Hindering Rational Budget Allocation

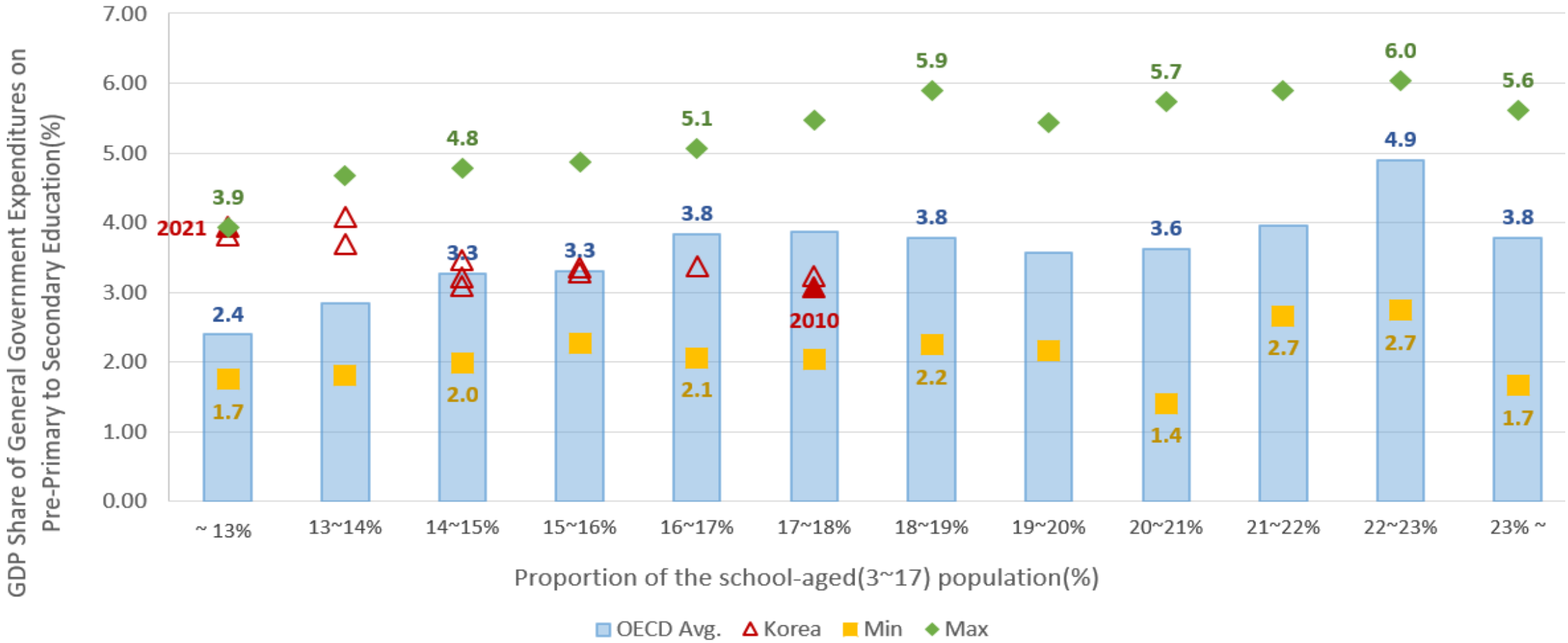
- The current tax revenue-based education budget determination rule fail to reflect changes in student numbers
- Education budget size rise with tax revenues despite declining student numbers

School-Aged Population Changes and Education Budget

2. School-Aged Population Changes and Education Budget

As the school-aged pop. proportion decreases, education spending grew more slowly than GDP.

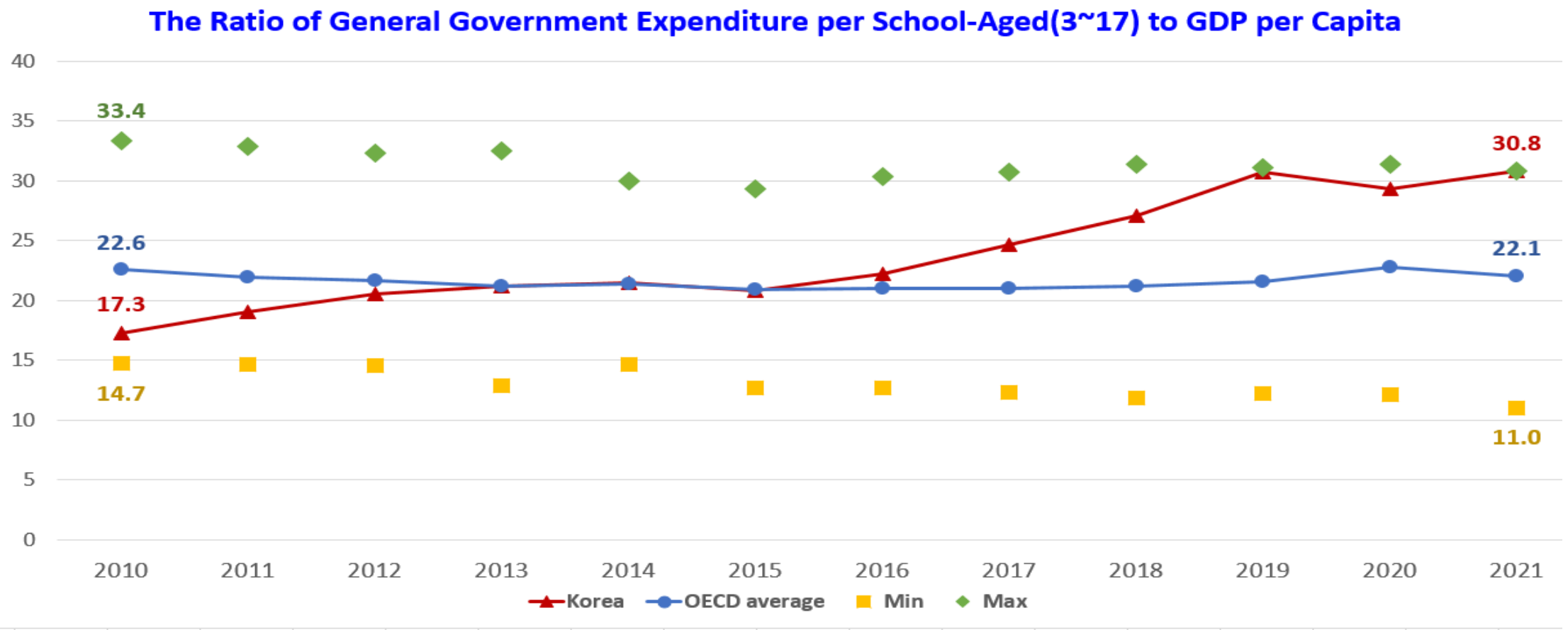
- The opposite trend is observed in Korea.



2. School-Aged Population Changes and Education Budget

OECD Average has remained at about 22% of GDP per capita since 2010.

- The Ratio for Korea went up to 30.8% in 2021 from 17.3% in 2010
  - ✓ Due to both the decrease in the number of students and the increase in tax revenues.



2. School-Aged Population Changes and Education Budget

Education Budget size and priority are positively related to the Change in Student Numbers.

- Korea's education budget size is mechanically determined by tax revenues without reflecting changes in student numbers.
  - ✓ As the economy grows, tax revenues continue to increase and the education budget also does in Korea.
- In Korea, the education budget must be prioritized over other spending due to revenue-based education budget determination rules mandated by the current law.

<Primary and Secondary Education>	Budget Size	Budget Priority
1%p decrease in the Proportion of School-Aged(3~17) Population	- 0.1%p	- 0.26%p

Notes:

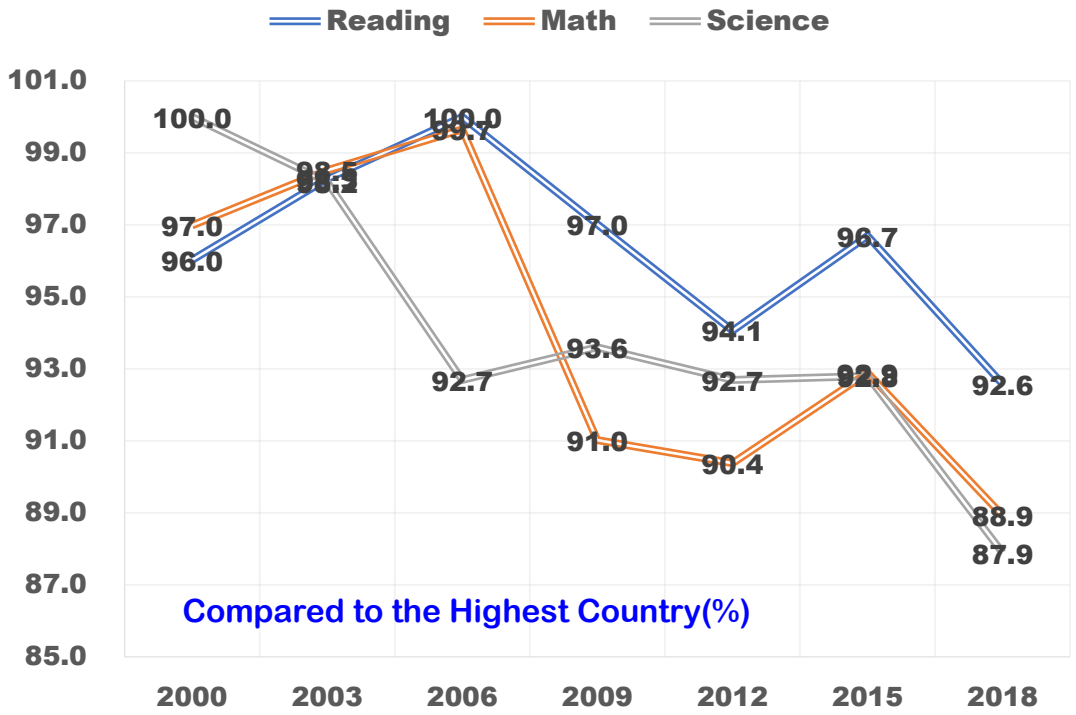
1. **The budget size is measured as the ratio of general government expenditure on primary and secondary education to GDP. Budget priority is the ratio of general government expenditure on primary and secondary education to total government expenditure.**
2. **The regression results presented above show the average impact of changes in the school-aged population on budget size and budget priority after controlling for factors such as GDP per capita, government size, economy size, etc.**
3. **These results are based on 31 OECD countries data statistically significant at the 1% level.**

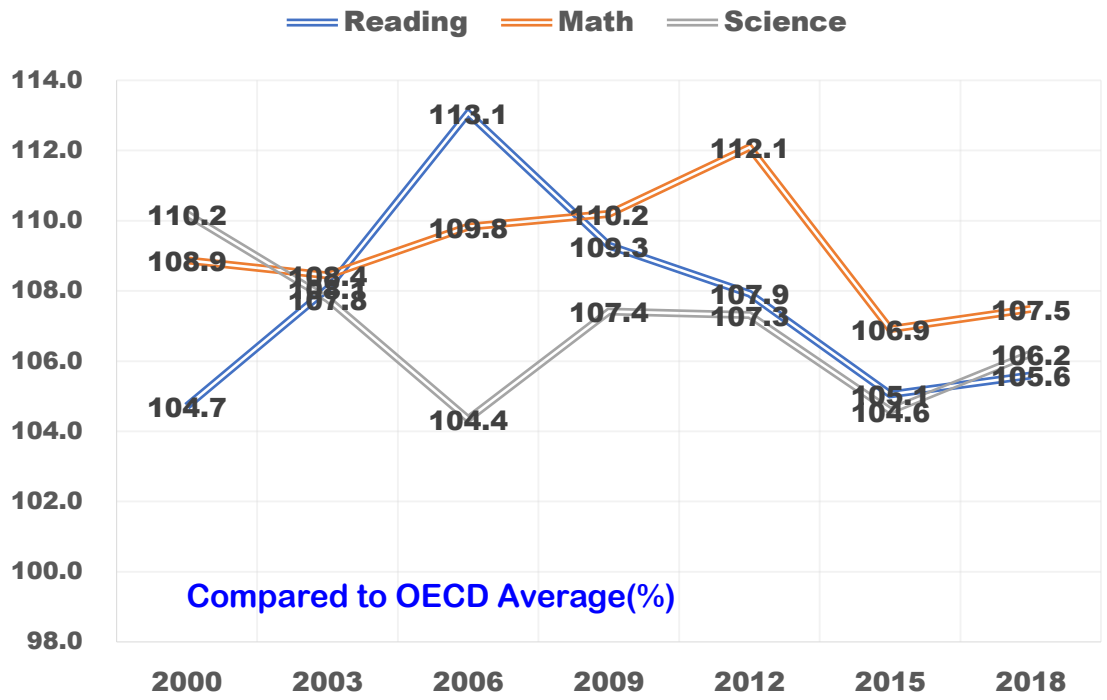
Educational Achievements

3. Educational Achievements

Trends in Korea's PISA Scores

- The gap between the highest-scoring countries and Korea in PISA has been widening.
- Although still above the OECD average, the gap between Korea and the OECD average has been narrowing.
- Remember that the GDP share of Korea's education budget has increased over time.





3. Educational Achievements

Education Inputs and PISA Scores

- (Student-to-Teacher Ratio) Lower Student Numbers per Teacher, Higher Achievements in Total Sample.
  - ✓ No evidence in Korean Student Sample
- (Total Student Body Size) Larger the School size, Higher Achievements in both samples.
- (Government Support) Higher Government Support, Higher Achievements in Total Sample.
  - ✓ Opposite Result in Korean Student Sample, implying skeptical academic performance in Korean Public Schools.

<PISA Scores>	Total Sample			Korean Student Sample		
	Language	Math	Science	Language	Math	Science
Student-to-Teacher Ratio	-0.0278**	-0.0559***	-0.0425***	0.0102	-0.0005	0.0408***
Number of Student per Class	0.0028	-0.0065	0.0044	0.0092	0.0117	-0.0015
Total Student Body Size	0.0288***	0.0437***	0.0387***	0.0269***	0.0333***	0.0307***
Proportion of Government Support in School Budget	0.0003**	0.0004**	0.0003**	-0.0007***	-0.0005***	-0.0005***

Notes:
1. *, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.**
2. Year fixed effects are controlled for, and the country cluster-robust VCE estimation method is used. More detailed analysis results, including school, student, and regional characteristics, can be found in Table 2-4 of Kim ed. (2023).
3. The results of this analysis are based on Plausible Value 5 of the 10 possible student achievement scores provided by the OECD as the dependent variable, and are similar to the results of analyses using the other 9 plausible achievement scores. Detailed estimation results are provided in the appendix of Kim ed.(2023).

3. Educational Achievements

No Evidence for Educational Improvement from The Direct Election System for Superintendents

- (Academic) The proportion of CSAT top grades has decreased while the proportion of mid-to-low grades has decreased right after introducing the direct election system for superintendents: Evidence for downward leveling.
  - ✓ Heterogeneity-Robust DID analysis utilizing the differences in the timing of the introduction of direct elections in 16 Metropolitan and provincial regions(excluding Sejong) between 2007 and 2010
- (Non Academic) No empirical evidence was found to suggest that the system of directly elected superintendents had any positive effects on non academic educational Achievements such as students' stress levels, happiness, subjective health, alcohol consumption, and smoking
  - ✓ Using data from the Youth Health Behavior Survey from 2005 to 2019

Evidence for the potential compromise of political neutrality

- Article 6, Clause 1 of the Framework Act on Education clearly stipulates the political neutrality of education.
- Empirical evidence shows that the discretionary spending of superintendents is allocated according to both voting shares by district and election schedules.
  - ✓ In districts where the voting share is 1%p higher(1 std. dev.=8%), discretionary spending per student is 2.3%(18.5%) higher.
  - ✓ Right after the election, allocate greater discretionary spending to students in districts with high vote shares. Conversely, just before the next election, allocate more to students in districts with low vote shares from the previous election
  - ✓ This Tendency was found to be stronger among more progressive superintendents.

The Future of Education Budget in Korea

4. Future of Education Budget in Korea

Losing Economies of Scale in Public Schools

- In 2022, the per-student cost for schools with less than 500 students in all school levels is above the overall average.
- From 2040 onwards, schools with 300 students or fewer are projected to incur education costs per student that exceeds the average for the entire student population.
  - ✓ The long-term projection result based on median population scenario and the 2022 standards for Teacher and Class placement.
- Due to the drastic decline in the school-aged population, the proportion of schools with 300 students or fewer is projected to increase sharply to 78%(62.7%) in 2070(2040) from 39.9% in 2022.
  - ✓ The school-aged(3-17) population in 2070 is projected to be only 42.3%(28.9%) of that in 2022 for median(low) population scenario.

Education Cost per student by School Size

(2022 constant price, mil. KRW)

Total Student Body Size	2022			2040 Projection			2070 Projection		
	P	M	H	P	M	H	P	M	H
1~50	50.5	53.4	58.2	59.4	67.0	66.3	70.0	70.2	64.2
51~300	16.6	16.7	27.1	15.4	16.7	26.9	15.6	17.8	27.2
301~500	9.9	11.0	18.0	10.2	11.6	18.9	10.5	11.9	19.4
501~	7.2	7.9	12.2	7.7	8.5	13.3	8.2	9.0	13.7
Overall Average	9.1	10.0	14.3	11.0	13.6	20.7	14.5	16.4	22.2

The Proportion of Schools with 300 students or fewer (%)

	2022	2040 Projection	2070 Projection
Primary	46.3	60.5	80.0
Middle	40.2	70.0	83.4
High	24.1	60.9	68.5
Total	39.9	62.7	78.0

4. Future of Education Budget in Korea

Decline in School-Aged Population and Adjustment in School Numbers: Comparison with Japan

- Since 2020, Korea has expanded access to education, while Japan has improved the efficiency of its education expenditures.
- What caused this difference?
  - ✓ In the early 2000s, the Koizumi government's Trinity Reform: Reducing the central government's burden for primary and secondary education expenditures and Expanding the autonomy of local governments.
  - ✓ For fostering active school consolidation, relaxation of commuting distance standard(from 4-6 km to "within 1 hour by transportation") in 2015 and central government incentives(support for costs related to new school construction and expansion, for purchasing school buses, etc)
- How about Korea? Maintain a school with 1 student, 5 teachers, and 4 staffs even if larger schools are within 10km.

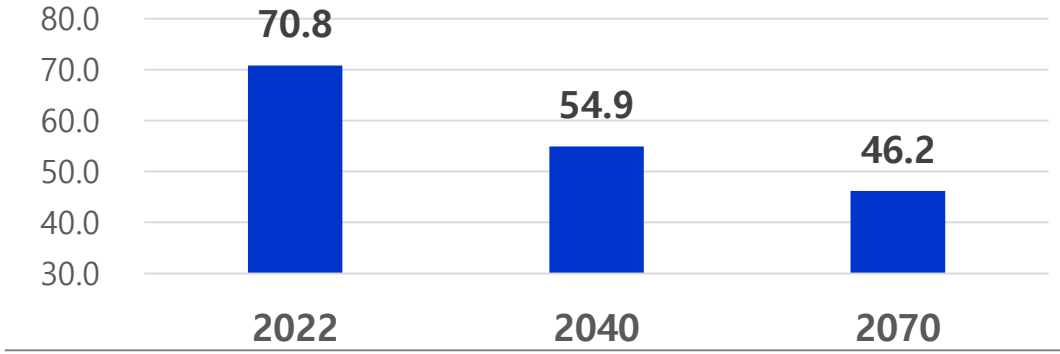
	Period	Annual Growth Rate of Schools (%)				Annual Growth Rate of Students(%)			
		P	M	H	Total	P	M	H	Total
Korea	1970~1985	0.60	2.62	4.00	1.45	-1.12	5.10	9.01	1.65
	1985~2000	-1.41	0.95	1.34	-0.35	-1.25	-2.65	-0.26	-1.38
	2000~2022	0.71	0.81	0.87	0.77	-1.86	-1.45	-2.23	-1.84
Japan	1970~1985	0.07	0.05	0.86	0.16	1.04	1.61	1.35	1.26
	1985~2000	-0.25	0.05	0.03	-0.13	-2.69	-2.49	-1.44	-2.33
	2000~2022	-1.03	-0.51	-0.62	-0.83	-0.82	-1.11	-1.55	-1.08

4. Future of Education Budget in Korea

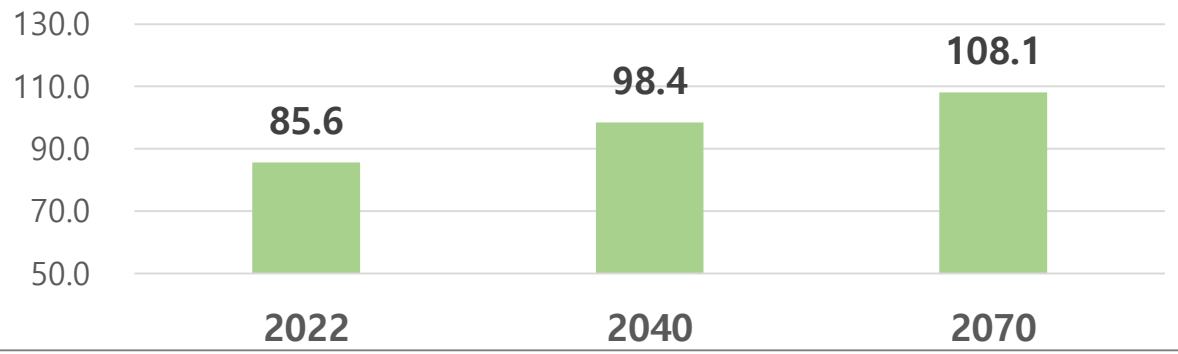
Intensifying Soft Budget Constraints: Hard to expect to improve the fiscal efficiency

- In 2022, 70.8% of the central government's cash transfers were needed to cover the budget allocated to schools (including personnel costs and superintendent discretionary spending). By 2070, 46.2% is expected to be needed.
  - ✓ Assuming that the number of existing schools in 2022 and the 2022 standards for teacher and class placement will be maintained until 2070.
- The central government's total budget burden ratio is projected to increase from 85.6% in 2022 to 108.1%in 2070.
  - ✓ Assuming the budget spent by LEOs in 2022(excluding school personnel costs and discretionary spending) will increase at the rate of inflation until 2070.
- Implying that the local responsibility for education will be entirely shifted to the central gov't.
  - ✓ LEOs, without the responsibility for resource procurement, will enjoy and abundance of funds, while the central and local governments will struggle with deficits due to population aging.

The Ratio of Budget Allocated to Schools to Cash Transfers by Central Government (%)



The Ratio of Total Budget for Primary and Secondary Education to Cash Transfers by Central Government (%)



Proposal for Fundamental Reform

5. Proposal for Fundamental Reforms

Separate Management of School Education Budgets and LEOs' Expenditures

- The education budget allocated to schools seeks stable growth, maintain economies of scale in public education.
- LEOs' expenditures could be adjusted according to fiscal status of the Central and Local governments.

Complete Abolition of Cash Transfers Based on Central and Local Government Tax Revenues

- The central government determines the standard cost per student, reflecting inflation and quality improvements.
- The central government funds 80% of the standard cost, but for small schools with 300 students or fewer, the local governments fund 80% to mitigate the issue of soft budget constraint.
  - ✓ LEO and local government should consult on maintaining small schools and obtain local Council approval.
- Recovering economies of scale through school merges restores the central government's burden to 80% and provides additional fiscal incentives to spend in non-education expenditure areas.
  - ✓ The central government provides additional incentives for school mergers such as new school building and buses.

Introducing a Lum-Sum Allocation and Autonomous Budgeting Framework for Individual Schools

- Gradual expansion of autonomy for individual schools, including teacher and staff recruitment
- Enhancing accountability through budget feedback via regular assessment of financial transparency and educational outcomes.
- Central government provides incentives for educational excellence based on the results of regular assessments.

5. Proposal for Fundamental Reforms

Need for Evidence-Based Policy in Managing LOEs' Projects and Personnel

- The central government should establish a Long-Term Management Plan for LOEs' personnel through job analysis, reflecting declining school-aged population.
- Comprehensive effectiveness evaluations of LOEs' projects should be conducted through various pilot programs before implementing the main project.

Is Primary and Secondary Education Free? Need Entrepreneurship in the Public Sector!

- The Ratio of Debt to GDP is projected to increase to around 100% by 2045 and to 145~170% by 2060 if the current persists, according to a long-term fiscal projection by Kim(2021)
- The students currently in classrooms will face a tremendous fiscal burden when they are actively participating in the workforce.
- Free education is just one of the bright promises if the current educational administration and funding system are sustained without improvements in educational and labor market outcomes.
- The public sector needs an entrepreneurial spirit to achieve the same outcomes at lower costs or greater outcomes with the same costs.

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– Thanks –