

TIMOR-LESTE PUBLIC EXPENDITURE REVIEW

Changing Course:
Towards Better and More
Sustainable Spending



Timor-Leste has made **progress** on some **educational outcomes** in the past two decades

Adult literacy rate increased from about 38 percent in 2001 to 68 percent in 2018

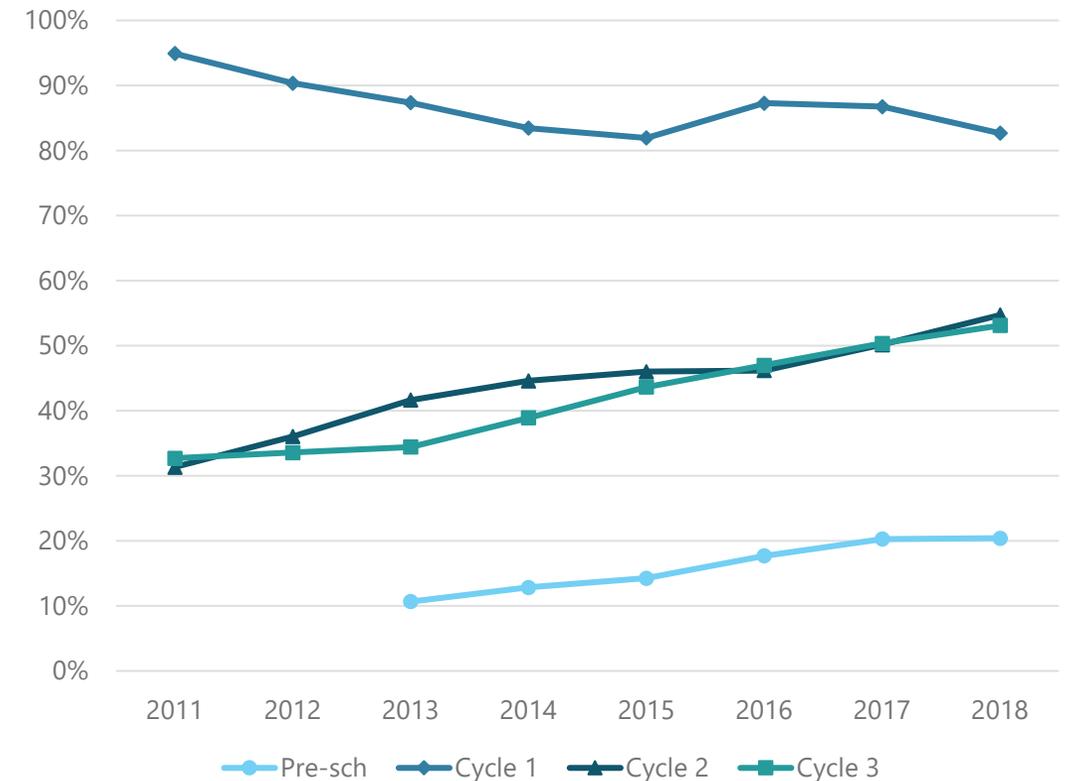
Youth literacy rate (ages 15-24 years) increased from 80 percent in 2010 to 84 percent in 2018

Pre-school net enrolment almost doubled from 10.7 percent in 2013 to 20.4 percent in 2018

Net enrolment in Cycle 1 and Cycle 3 showed steady increase throughout the 2011- 2018 period

Cycle 1 net enrolment remained high (relative to the country's level of economic development) throughout the period

NET ENROLMENT RATES



Although several key indicators have shown improvement, they remain inadequate...

PRE-SCHOOL EDUCATION

Enrolment rates in pre-school – a key foundation for later skills – are low (at 20.4 percent) and is among the lowest observed globally

This is partly owing to the lack of physical resources and well-trained teachers in many municipalities

BASIC EDUCATION

Enrolment in the first cycle (grades 1 to 4) is high, but learning outcomes are poor

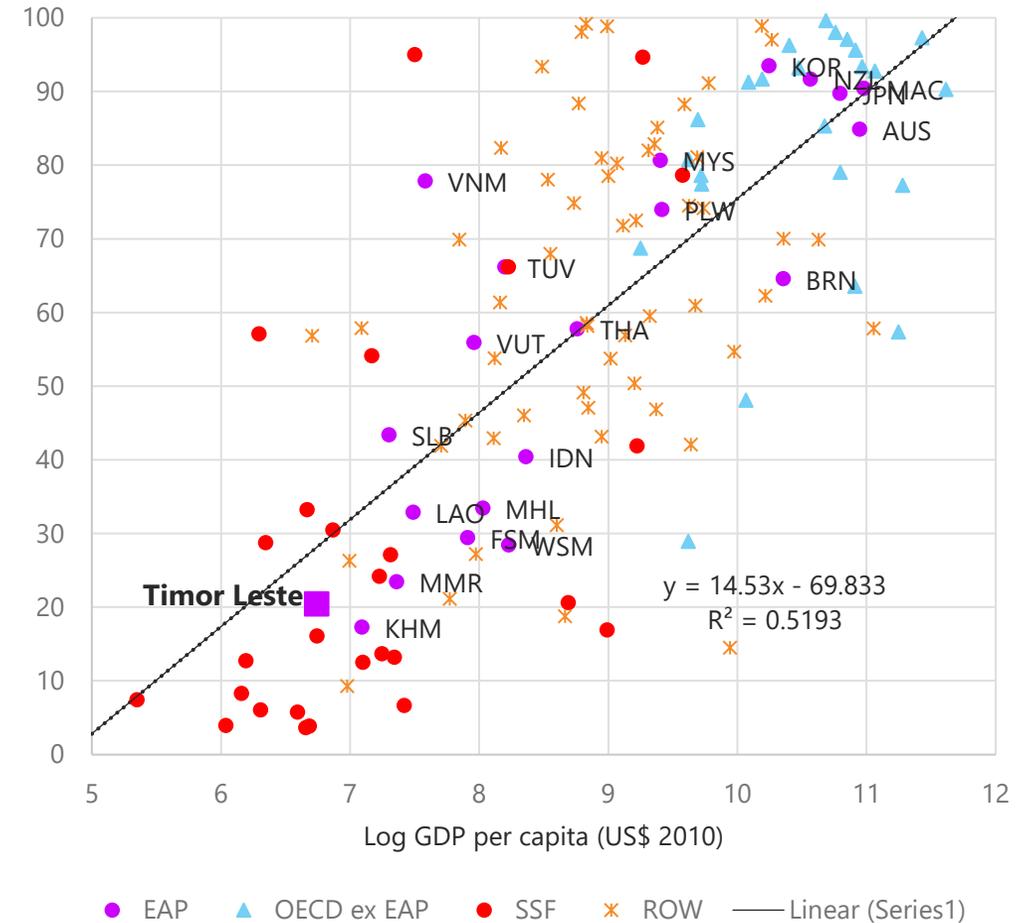
Comprehensive assessments in the early grades show low levels of student learning

An Early Grade Reading Assessment (EGRA) carried out in 2017 (albeit only in four municipalities) showed that 31 percent of the students were not able to identify a single word at the end of grade 2

Results from the 2011 Early Grade Mathematics Assessment (EGMA) were equally concerning

The curriculum-based assessment (CBA) showed that 50 percent of students had a very low command of the curriculum

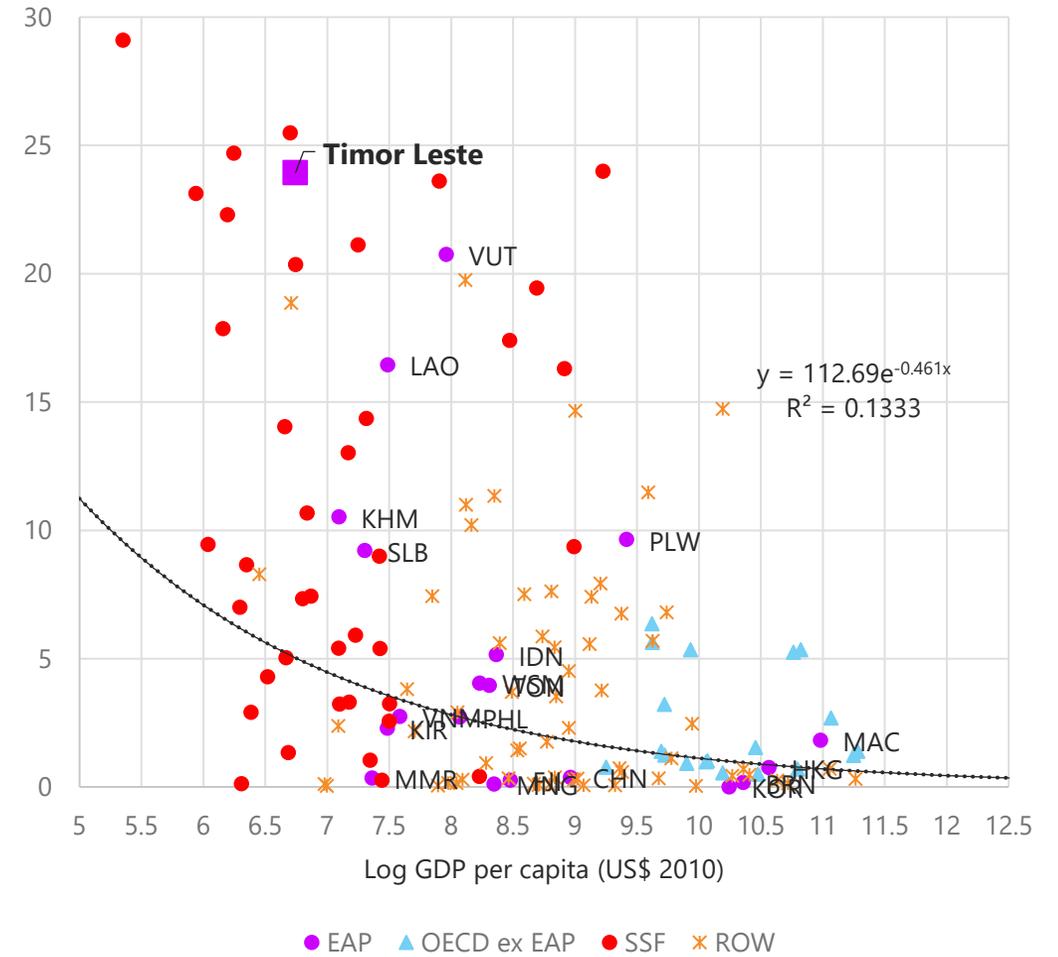
PRE-PRIMARY NET ENROLMENT RATE



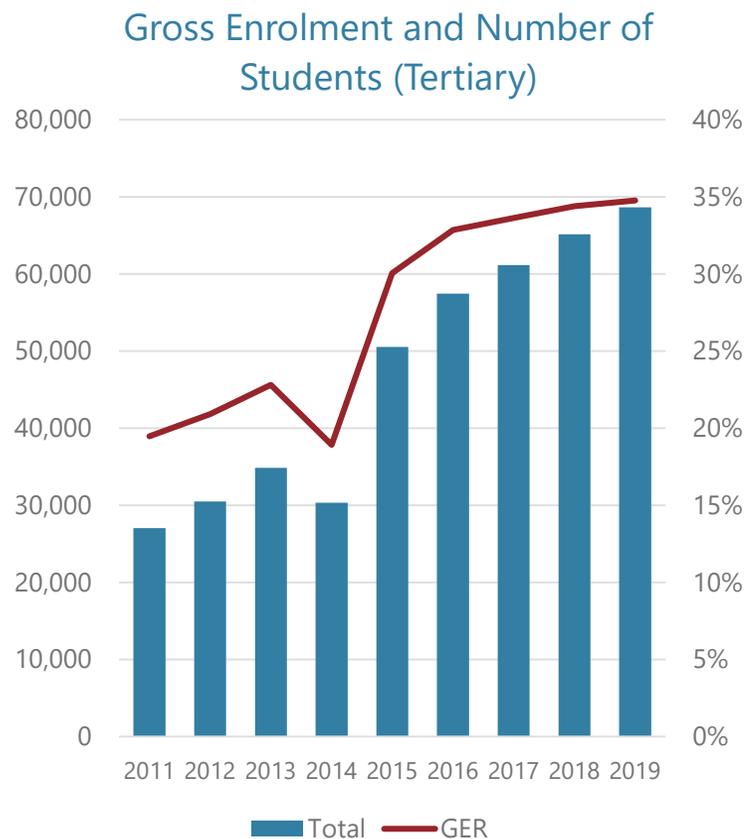
Repetition rates have been declining, but remains **extremely high** in the early grades

- The repetition rate in grade 1 dropped from 33 percent in 2010 to 24 percent in 2017
- Despite this improvement, repetition rates are still very high by international standards
- Dropout rates (cumulative G1-6 dropout rate was 17 percent in 2017) are also relatively high, although not too dissimilar from its income peers
- The very high repetition and dropout rates, the poor EGRA and EGMA results, and the relatively low youth literacy rate suggest that there may be deep-rooted problems
- One important reason why children are inadequately prepared from an early age could be the low pre-school net attendance rate
- Another key reason for high repetition rates seems to be student absenteeism
- Poverty is likely to have an impact on dropout, as well as demotivation (being overage or having no interest), illness, and opportunity costs (work)

PRIMARY GRADE 1 REPETITION RATE



Enrolments in secondary technical-vocational education and higher education institutions have expanded considerably, but there is concern over quality...



Secondary technical-vocational education

- The number of ESTV schools almost tripled between 2001/2002 and 2016, while the number of teachers increased from 117 to 447
- As of 2018, there were 783 technical-vocational teachers in 53 ESTV schools (40 were public schools)
- As of 2018 there were 66,234 secondary students, 14,120 of which in ESTV schools

Higher education

- In 2019, there were about 68,600 students enrolled in 14 accredited HEIs, and about 1,990 teachers
- TLS's gross enrolment rate in tertiary education (35 percent) is considerably above the LMIC average of 25 percent
- Given the rapid growth of tertiary enrolment, there are mounting concerns over the quality of education – especially in private institutions
- Improving the quality of higher education is paramount for enhancing public service delivery
- Many of the teachers, doctors and nurses are trained in national universities - It is crucial to ensure that a sufficient number of qualified personnel is trained

Physical resources (infrastructure and workforce)

Classrooms

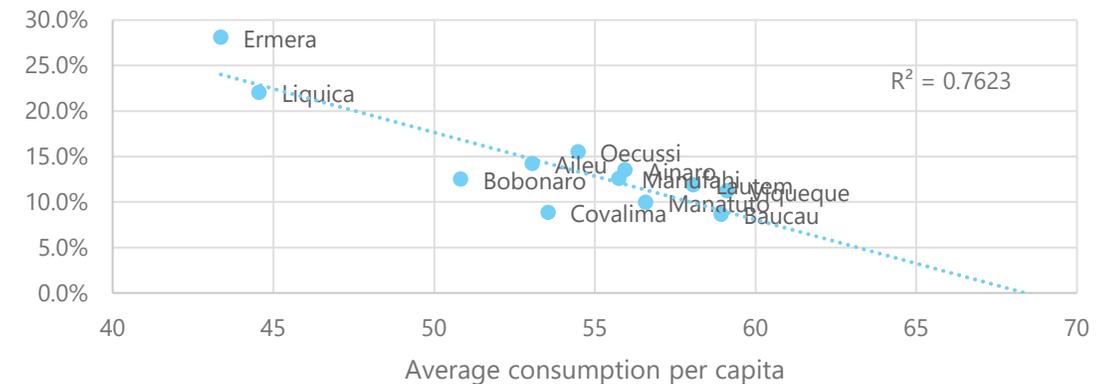
- Many classrooms in basic education schools are overcrowded, especially in cycle 3
- 18 percent of classes in basic education nationwide are overcrowded (see Table)
- These classes have an average class size of 52 students, and nearly a third of all students (98,602)
- Classroom shortage is more pronounced in poorer municipalities (see Chart)
- Moreover, few schools provide special programs from children with special needs
- Many existing classrooms (around 10 percent) are in poor condition and require rehabilitation
- Building standards and a lack of maintenance are a concern, which in some cases are compounded by the lack of electricity, water & sanitation, and a kitchen for school meals
- It is unclear how many school have complementary resources, such as computers and laboratories
- Regular and reliable data would enable a more accurate assessment of the condition of school facilities

Class size and overcrowded classrooms (basic education)

	Students	# Classes	Average class size	Classes > 40	Classes > 40 (%)
Cycle 1	142,440	5,758	24.7	692	12
Cycle 2	70,409	2,634	26.7	353	13
Cycle 3	89,598	2,404	37.3	864	36
Basic education	302,447	10,796	28.0	1,909	18

Note: an overcrowded classroom is defined as a classroom with more than 40 students

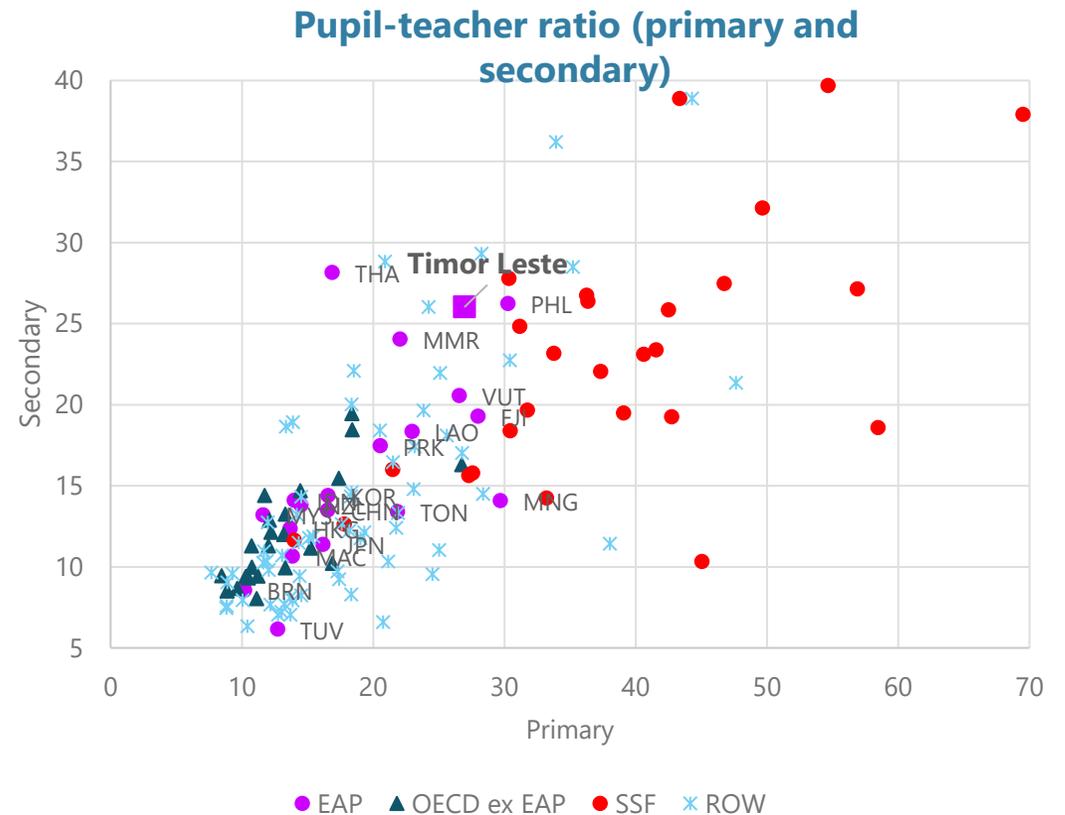
Share of overcrowded classes (>40 students)



There is a need to recruit new teachers and improve their distribution

Teachers

- There are teacher shortages, particularly in preschools and cycle 1& 2 schools
- In schools that only cover cycles 1 and 2, the national average teacher-to-class ratio is as low as 0.87
- The pupil-teacher ratios are high for all education levels (27 for primary and secondary levels and 35 for tertiary), despite recent increases in the teacher workforce
- Understaffed classrooms have negative implications on the quality of teaching and student learning



Teacher allocation ratios

District	Pre-schools (374)	Cycle 1 & 2 Only (934)		Cycle 1, 2 & 3 (221)		Cycle 3 Only (117)	
	Student-Teacher Ratio	Student-Teacher Ratio	Teacher-Class Ratio	Student-Teacher Ratio	Teacher-Class Ratio	Student-Teacher Ratio	Teacher-Class Ratio
Aileu	36	29	0.78	36	1.13	26	1.35
Ainaro	22	27	1.00	26	1.27	23	1.61
Baucau	40	27	0.96	31	1.02	30	1.30
Bobonaro	37	30	0.85	31	1.15	30	1.37
Cova Lima	24	24	0.90	24	1.29	20	1.86
Dili	33	42	0.90	49	0.96	47	1.04
Ermera	45	35	0.84	41	0.90	35	1.08
Lautem	37	28	0.89	38	0.94	26	1.39
Liquica	31	34	0.82	30	1.04	29	1.32
Manatuto	41	29	0.79	42	0.84	25	1.44
Manufahi	16	24	0.90	27	1.14	17	2.11
Oecusse	43	39	0.79	41	1.16	25	1.43
Viqueque	37	36	0.77	28	1.07	19	1.86
National	32	33	0.87	35	1.07	33	1.30

Teacher competencies are low, which affects learning outcomes

- Teachers are required to hold a 'Bacharelato' to teach in basic education schools and a 'Licenciatura' to teach in secondary schools
- 56 percent of teachers only had secondary education or lower in 2011 and had limited teaching experience
- Although teachers receive a significant amount of training during the year, this does not seem effective or sufficient
- **An equivalence program enabled a significant increase in (official) teacher numbers**
- The national equivalence program, jointly implemented by UNTL and INFORDEPE, provided a 'Bacharelato' qualification to thousands of teachers
- Many were volunteer teachers, who had lower levels of education and experience than existing contract teachers
- Less than 30 percent of teachers with Bacharelato in 2018 had obtained the degree from a university – as most teachers obtained it through the equivalency program, which provided limited pedagogic training
- **Teacher absenteeism also presents a challenge to improving learning outcomes**
- In 2012, about 13 percent of primary school teachers and 25 percent of secondary school teachers were absent on the day of the school census (even though it was previously announced)
- **Challenges in curriculum implementation and lack of learning materials are also a concern**
- There has been a considerable effort in revising the school curriculum and providing students with textbooks and workbooks reflecting the latest curriculum
- Nevertheless, textbook shortages have been cited by school directors as the biggest obstacle to effective learning
- Even in schools where textbooks and workbooks were available in adequate quantities, they were not being used by students and/or teachers either because teachers were unwilling to teach the revised curriculum or because they did not want students to damage the books

The EMIS is well managed, but there are concerns regarding data quality and lack of capacity to utilize the data

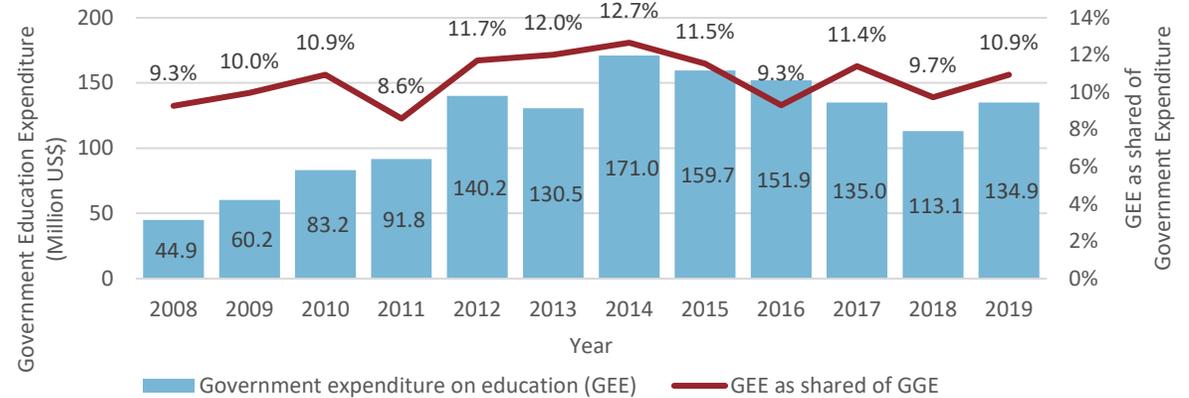
- The current education management information system (EMIS was established in 2003) is operational, but it is not integrated with other sources of information
- Much of the data collection is delegated to teachers, many of whom have not attended training and do not have access to supporting guidelines
- School directors often check the forms for completeness, rather than accuracy
- Data entry occurs only at the central level, resulting in delays and affecting the efficiency and accuracy of the paper-based verification process
- No data specialist was tasked with conducting in-depth data analysis, which undermines the ability of using the data for evidence-based policymaking
- Data were not shared with national entities, municipal offices, or schools – which restricted the utilization of data at all levels
- **A key shortcoming of the EMIS is that it does not collect data on learning achievements**
- Such data are vitally important as they allow teachers, schools, policymakers, and other stakeholders to obtain important information about student learning, curriculum effectiveness, school performance, as well as the performance of the entire education system
- They are also crucial for early identification of children at risk of dropping out and are important for establishing accountability at all levels throughout the system

Education Financing

Overall education expenditure

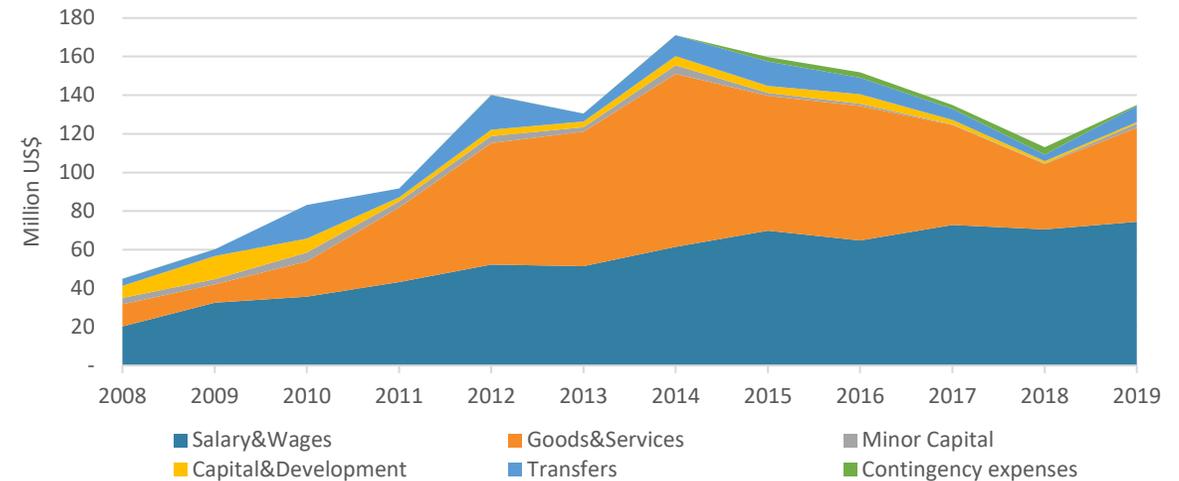
- In 2019, public spending on education represented about 7 percent of GDP, which is among the highest globally
- However, this level of spending does not necessarily suggest that education is being prioritized, as total public spending is very high – supported by the country’s ample resources
- The share of government spending allocated to education (10.9 percent) is lower than most peer countries – which reflects low prioritization of the sector among competing budget demands
- Salary & wages account for a large (and growing) proportion of education spending, increasing from \$20 million in 2008 to \$73 million (around two-thirds of total) in 2019 – due largely to the growing number of teachers
- A fast-growing wage bill is a concern, particularly if it is not accompanied by improvements in service delivery and learning outcomes

Recent Trends in Expenditure on Education



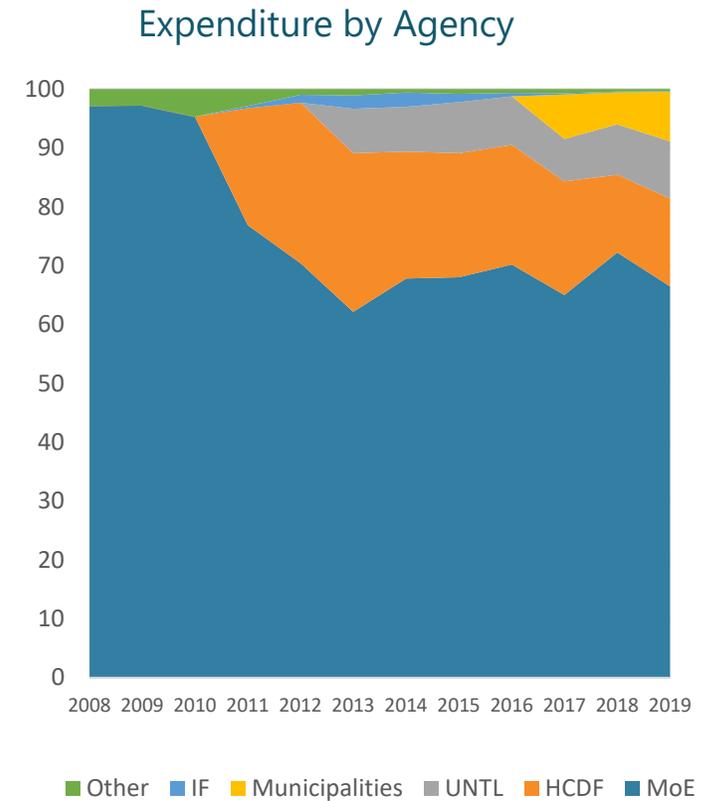
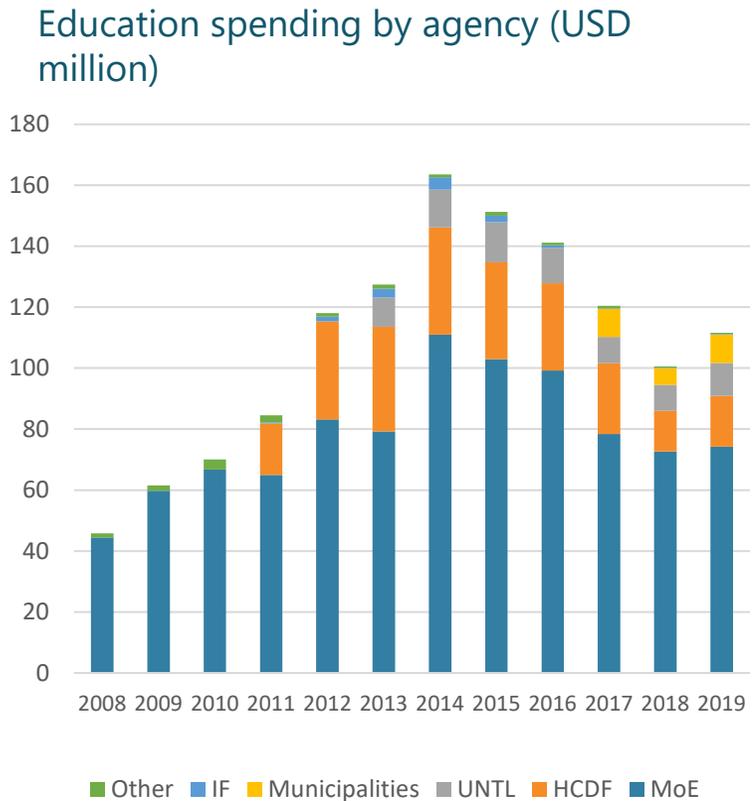
Source : Timor Leste - Ministry of Finance Database

Expenditure by Economic Classification



The recent **declines in spending** have been observed in the Ministries and the Human Capital Development Fund

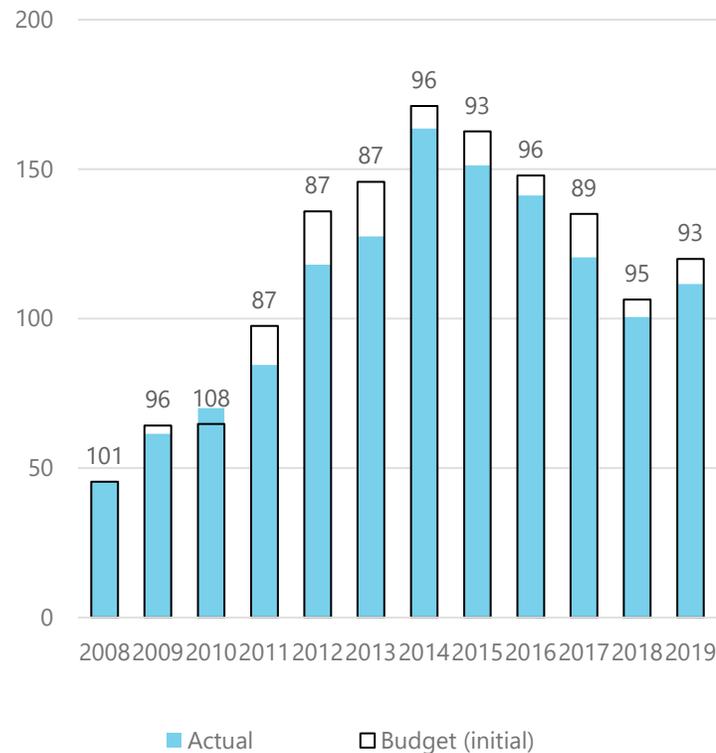
- The MOE (MEYS and MHEC combined) share in total sector spending has also declined strongly, owing to the creation of the creation of the Human Capital Development Fund (HCDF) in 2011
- Spending by the HCDF declined by one-third between 2014 and 2018
- Municipalities are playing an increasing role in education spending after they have started receiving their own education budget in 2017 (account for around 8 percent of total spending)
- Furthermore, the political situation in 2017-2018 caused a drop in overall public spending, which may have contributed to some of these recent trends



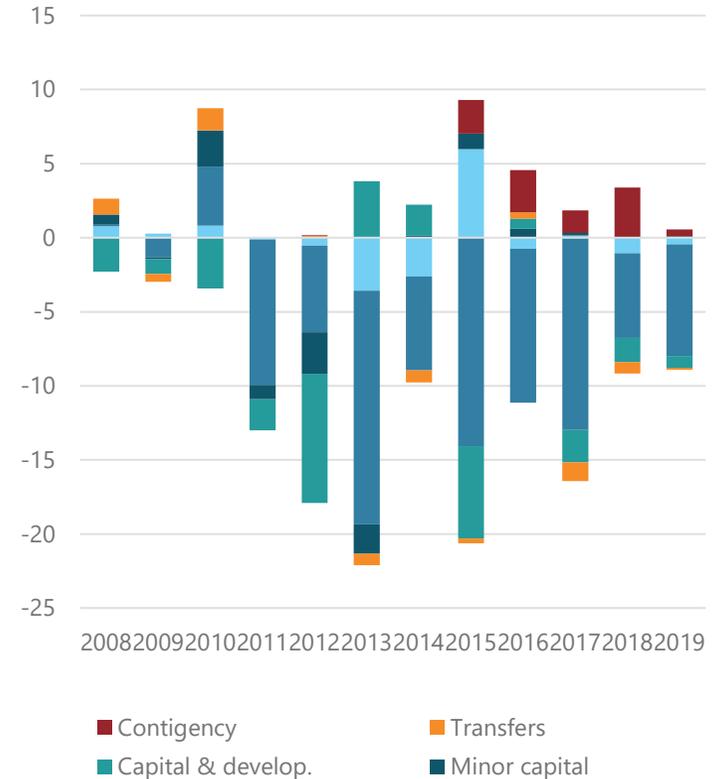
The budget execution rate has been relatively high, but there is still room for improvement

- The budget execution rate in the education sector has ranged between 85 and 95 percent since 2011
- However, this is partly due to the high proportion of wages & salaries, which typically have very high execution rates
- Even then, about 5-15 percent of the education budget goes unspent every year, which could be usefully utilized
- Capital & development (mostly under the Infrastructure Fund) exhibits the lowest execution rate
- This bottleneck is a concern – given that the education sector needs additional school infrastructure
- Municipalities also appear to have difficulty utilizing their budgets– with an average execution rate of 72 percent since 2017
- This is likely due to both public financial management bottlenecks (late allocation and disbursement of funds from the central level) and capacity constraints, which affect service delivery

Budget execution (USD million and %)



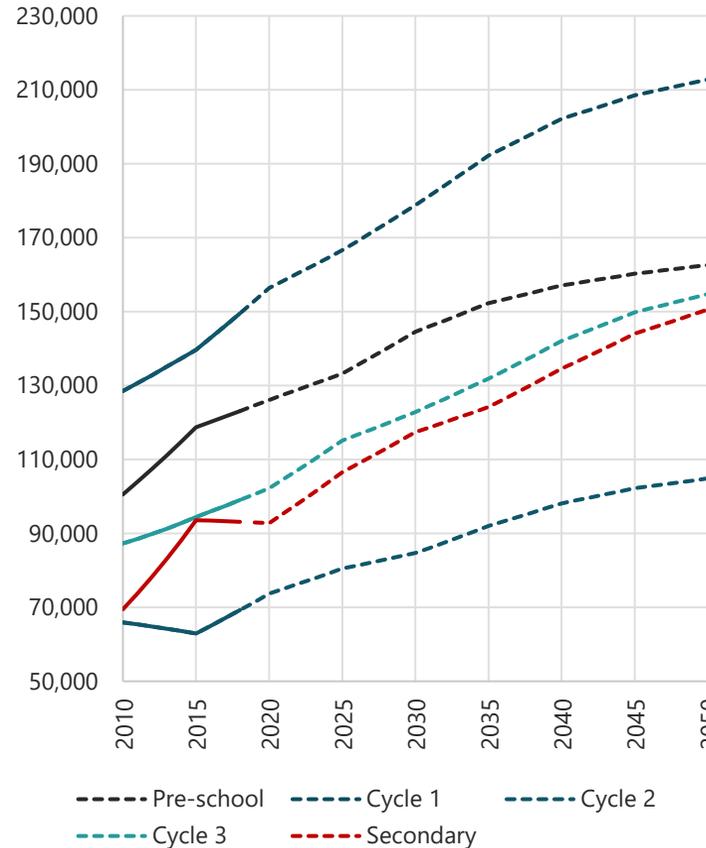
Contributions to execution (USD million)



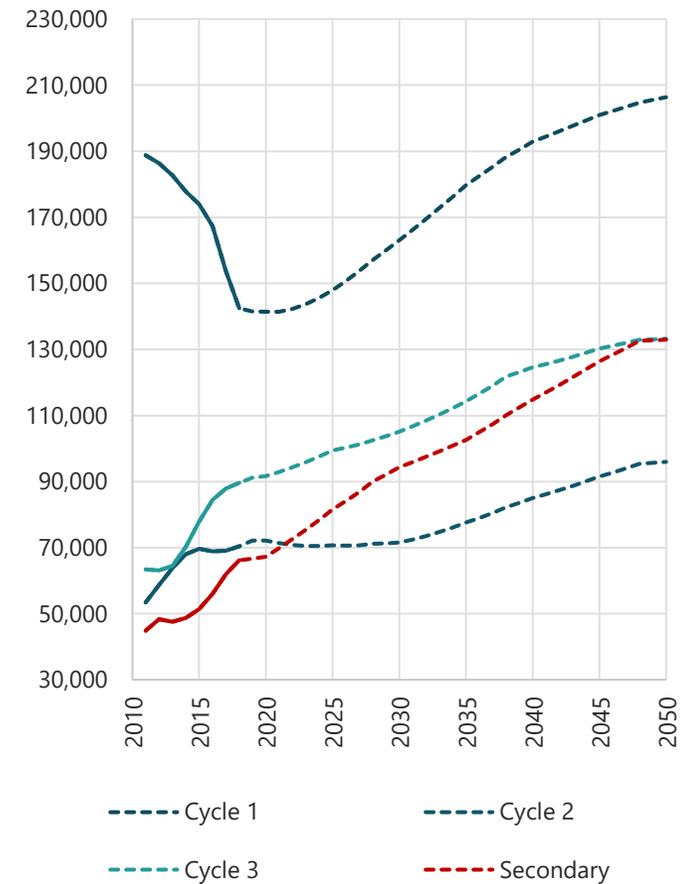
The education system will face higher demand for services due to demographic trends

- The demand for public education services will grow considerably in the near future
- The current infrastructure and workforce levels in pre-school are inadequate, while the number of 3-5 year-olds is expected to increase by about 17 percent between 2018 and 2030
- Basic education also requires more classrooms and adequately-trained teachers to meet a growing demand while ensuring good quality services - the student population is projected to increase by 23 percent between 2018 and 2035
- The future availability of domestic and external resources for education is uncertain, given the expected depletion of the Petroleum Fund
- Development assistance to Timor-Leste is likely to continue declining – at least in relative terms – which will need to be offset by domestic sources of finance to maintain the same level of spending

Budget execution (USD million and %)

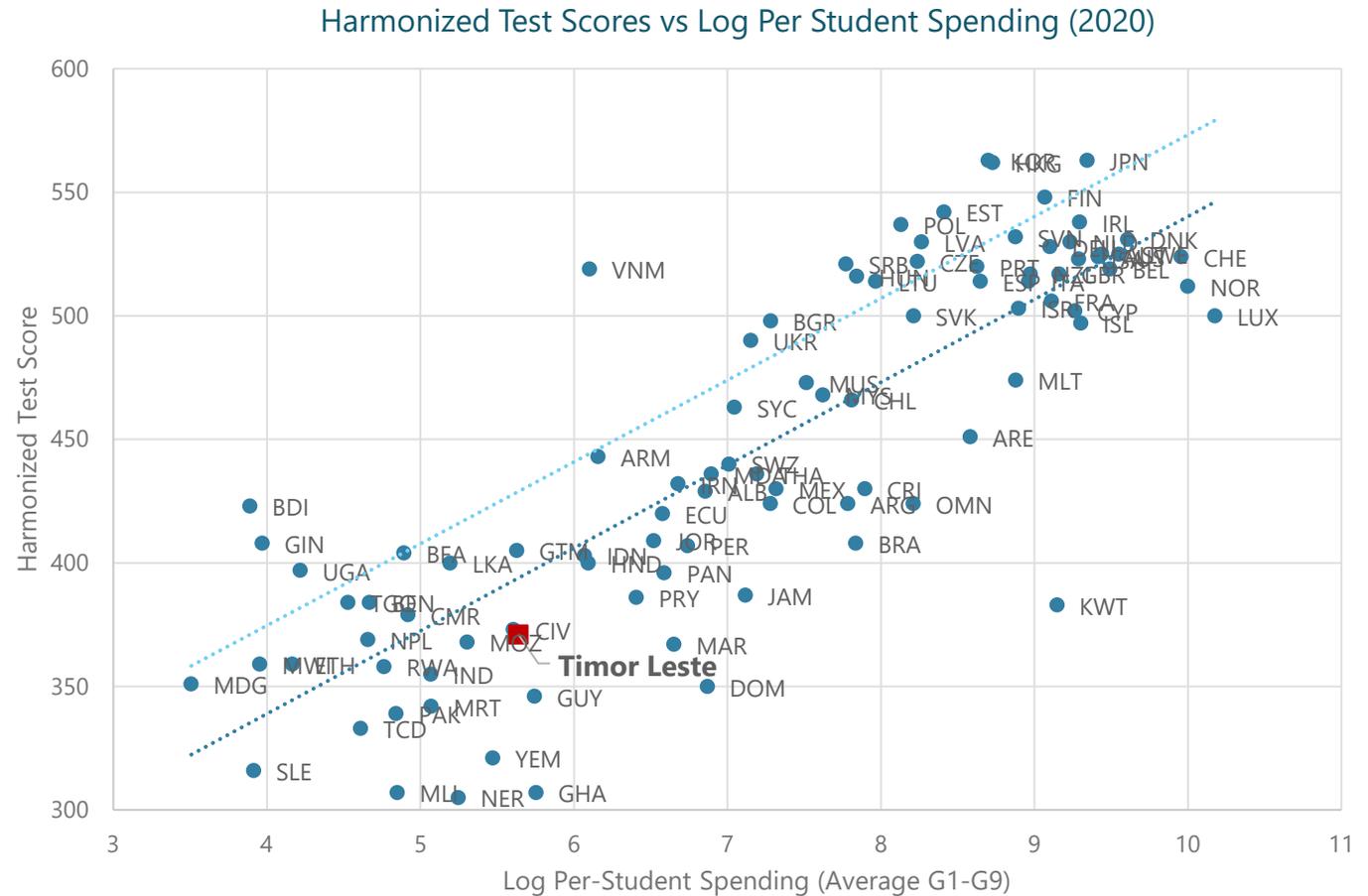


Contributions to execution (USD million)



Efficiency and effectiveness

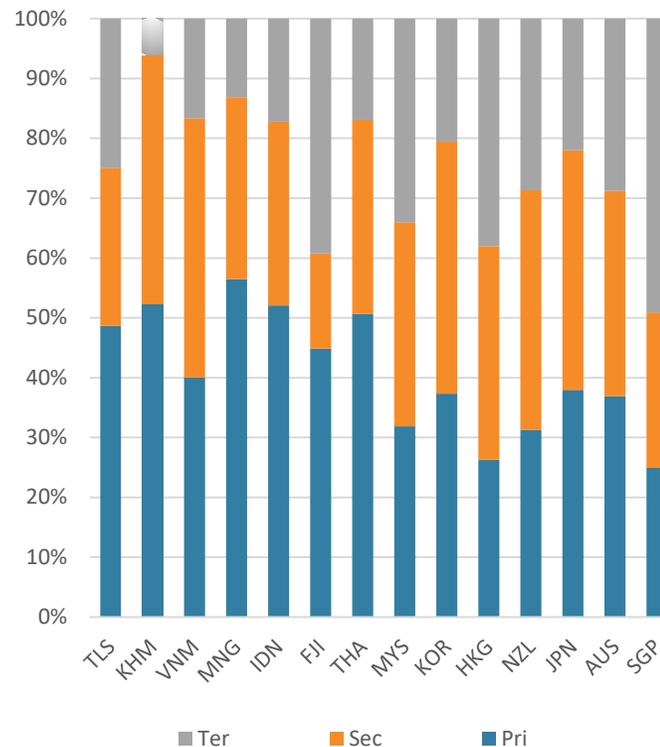
- Given expenditure levels per student, better student learning outcomes could be achieved
- For instance, Harmonized Test Scores are lower than the average country with similar levels of public spending per student (Cumulative spending from G1-G9)
- Timor Leste's theoretical maximum student achievement is 432 (measured using the PISA scale), which is substantially higher than the 371 the country managed



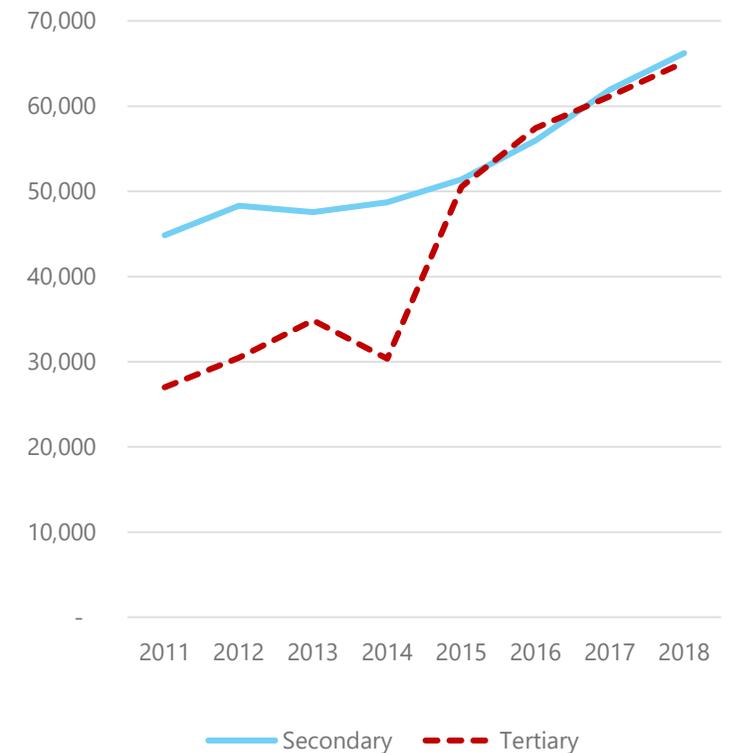
The allocation of spending across education levels is uncharacteristic given the country's level of development

- In their early stages of development, countries predominantly invest in primary education to build strong foundational skills – such as basic literacy and numeracy – for most of the population
- They then gradually move to higher levels of education over time, as demand for higher skills increases
- However, Timor-Leste appears to be an outlier, since a relatively high share of public funds is devoted to tertiary education
- Enrolment in higher education increased considerably (from 27,009 in 2011 to 57,436 in 2016), surpassing enrolment in upper-secondary education
- This raises some concerns regarding the quality of the graduates, as well as the allocative efficiency of education spending

Public spending on education (by level)



Secondary and tertiary enrolment (2011-2018)



The internal efficiency of education spending could be improved in basic education schools

- Regression analysis can shed light on the relationship between educational inputs and key learning outcomes
- The analysis used the TL-SLS 2014 and EMIS 2018 school level datasets to construct sub-municipal level variables for all 65 administrative post in Timor-Leste
- Two educational outcome variables are evaluated, namely: 'share of youths who can read a letter without difficulty' and 'share of 6-17 year-olds attending formal schooling'

	Share of youth who can read without difficulty		Share of 6-17 year-olds attending formal schooling	
	OLS	SFA	OLS	SFA
Average class size (standard deviation)	-3.763** (1.576)	-3.763** (1.489)	-2.330*** (0.838)	-2.097*** (0.771)
Teacher-to-class ratio	10.383 (8.304)	10.383 (7.844)	4.719 (4.412)	5.073 (4.101)
Share of classrooms in good condition	0.328* (0.172)	0.328** (0.163)	0.159* (0.092)	0.167* (0.092)
Average per capita consumption expenditure	2.099*** (0.716)	2.099*** (0.677)	0.686* (0.381)	0.477 (0.352)
Average per capita consumption expenditure squared	-0.015** (0.006)	-0.015*** (0.005)	-0.005 (0.003)	-0.003 (0.003)
Average years of schooling for adults ages 26-60 years	3.008** (1.177)	3.008*** (1.112)	0.342 (0.626)	0.26 (0.568)
Intercept	-25.25 (25.616)	-25.194 (30.105)	58.767*** (13.611)	70.071*** (12.999)
Observations	65	65	65	65
R-squared	0.463		0.302	

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Educational inputs and learning outcomes

Empirical evidence suggest that the large classes observed across basic education schools is detrimental to student learning

- Specifically, it is estimated that a one standard deviation reduction in average class size (a reduction in class size of 6.5 students) is associated with a large increase of 3.8 percentage points in youth literacy rate

A unit increase in the teacher-to-class ratio is associated with a 10 percentage point increase in youth literacy rate

- According to the model, raising the teacher-to-class ratio from 0.98 to 1.38 is expected to increase youth literacy rate by 4.2 percentage points, other factors remaining constant

There is also evidence of the effect of improving physical classroom condition

- Increasing the share of good classrooms by one percentage point is associated with a 0.33 percentage point increase in youth literacy rate
- Around 53 percent of classrooms in basic education schools are in good condition: Eliminating classrooms and school infrastructure that are in poor state could therefore have a significant impact on student learning

The regression results for the model where the dependent variable is the 'share of 6-17 year-olds attending formal schooling' can be analyzed analogously

- The conclusions reached are similar (see regression table in the previous slide)

Improving the efficiency and effectiveness of government spending is key to ensure that public resources have a strong impact on service delivery and learning outcomes

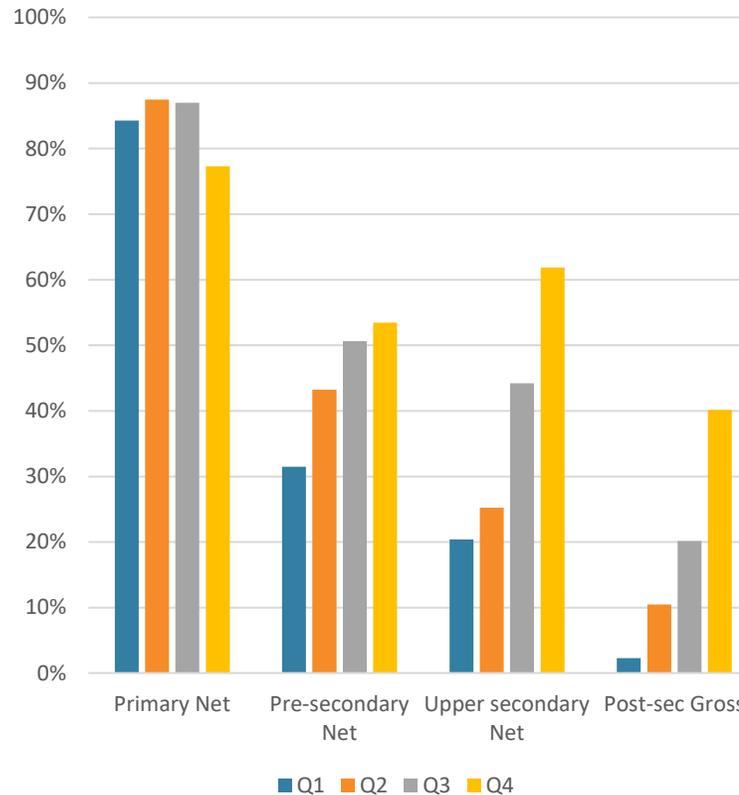
Equity

Children from poorer households are less likely to be enrolled, especially at higher levels of education

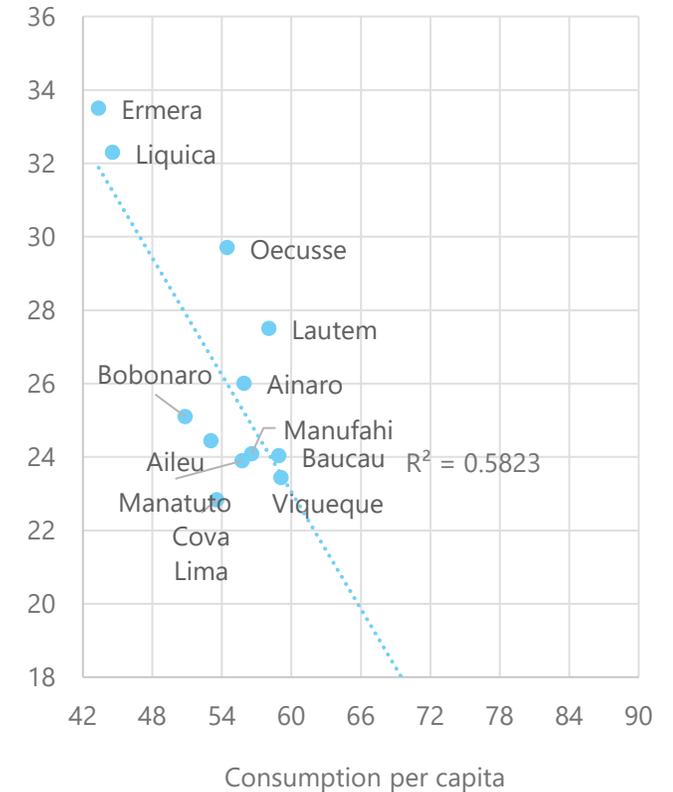
- For the primary level (cycles 1 and 2), both net and gross enrolment rates are quite high across all wealth groups
- At the pre-secondary level (cycle 3), there is a stronger pattern of progressively higher enrolment rates for children from higher income quartiles
- The pattern becomes very prominent at the upper secondary (grades 10 to 12) and the tertiary education levels

Not only is access lower for poorer students, evidence from class size analysis also indicate that they are more likely to be attending schools with overcrowded classrooms

Enrolment Rates by Household Expenditure Per Capita Quartile



Avg class size – Basic education (excl. Dili)



Equity

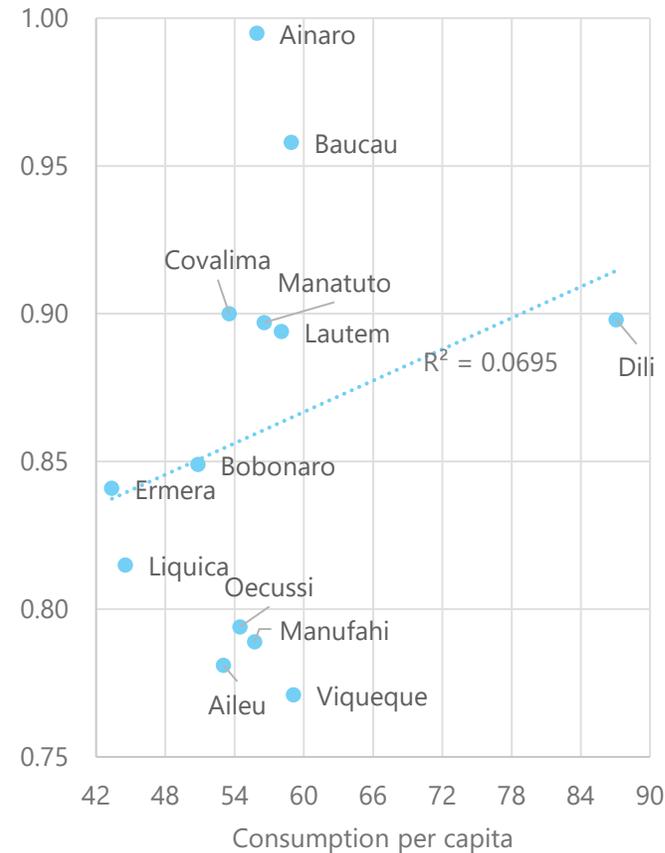
Students in schools in poorer municipalities are further disadvantaged by having to attend understaffed classes

- None of the municipalities have an average teacher-to-class ratio of one or greater
- This means that most of basic education schools in Timor-Leste are unable to conduct all classes at the same time, unless they employ multi-grade teaching to relieve the shortage
- Therefore, poorer students are not only more likely to attend overcrowded classrooms, they are also more likely to be placed in schools which are even more chronically understaffed

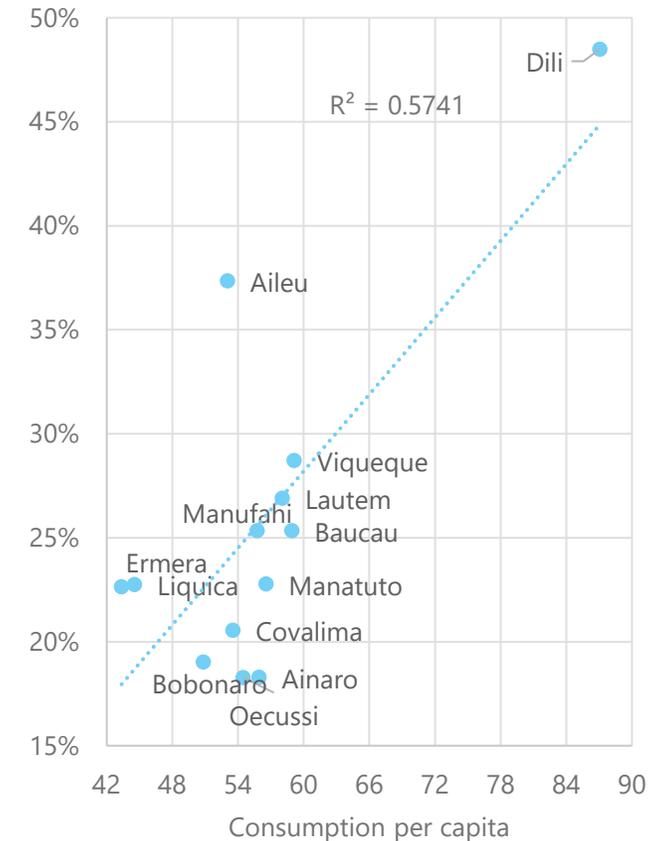
Poorer children in Timor-Leste are also more likely to be enrolled in schools with inferior teacher quality

- This suggests an inequitable allocation of education opportunities and teacher quality, which is concerning. If left unattended, this may reinforce a vicious cycle of low educational attainment and poverty

Teacher-Class Ratio



Share univ+



Conclusion

Significant efforts have been made to rebuild the education system and improve access to education

- Since independence, there have been considerable efforts to rehabilitate and build new schools, train and recruit teachers, and improve service delivery
- Enrolment levels have increased and learning outcomes have improved – especially with regard to youth literacy
- Despite progress in several areas, many pertinent challenges still remain
- Enrolment rates in pre-school – a key foundation for later skills – are low, while repetition rates in the early grades are very high
- Enrolment in the first cycle of basic education is high, but learning outcomes remain low

Increases in education spending have supported an expansion of services, but there are concerns about its composition and sustainability

- Although spending has declined in recent years, it remains relatively high by international standards – at about 7 percent of GDP in 2019
- Nonetheless, this does not necessarily suggest that education is being prioritized, since the sector only accounts for 10 percent of total public expenditure
- The wage bill has risen substantially, while spending on capital & development has been very limited
- Streamlining some categories of education spending is needed to ensure sustainability – especially since demographic trends will place further pressures on the education system

Conclusion

Spending on education has not translated into commensurate improvements in learning outcomes

Improving the allocative and technical efficiency of public spending on education would help boost learning outcomes

- Comprehensive assessments in the early grades show low levels of student learning
 - Efficiency analysis suggests that the use of both financial and human resources could be improved to achieve better outcomes
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- While secondary education requires further investments – as overcrowded classrooms suggest – these will only yield strong results if basic education is able to provide the expected knowledge and skills to students
 - A small cohort of students is currently pursuing technical training, which will maintain the dependence on foreign labor despite the large number of university graduates
 - new investments in school rehabilitation need to be counterbalanced with adequate spending in goods & services (e.g. textbooks) and personnel salaries and incentives

Conclusion

High repetition rates in the early grades of formal schooling requires immediate attention

Producing and attracting sufficient numbers of good teachers is of paramount importance

- Pre-school coverage and quality need improving – especially in remote areas – to ensure that all children are school ready
- Enhancing the school feeding program would support the physical and cognitive development of young children
- Additional measures could include reducing class sizes and providing individualized support to those with difficulties – through remedial classes, peer instructing, involving assistant teachers, and tutoring
- Using classroom testing to assess which students require more attention, coupled with more effective teaching methods
- The language challenge can be tackled either through further language training for teachers and materials provided, or advice on transition from (de facto) mother tongue usage
- Current data – such as on student-teacher or teacher-to-class ratios – and demographic projections suggest that there is a need to recruit teachers
- It is important that the education system attracts and produces teachers with the right competences and set of skills
- Continuous in-service training and professional development, as well as better teacher management can also play an important role
- Providing monetary and non-monetary incentives could improve teacher performance (e.g. reduce absenteeism), as well as providing adequate training (e.g. for mixed-age classrooms)
- A formula should be developed for adequately staffing classrooms (including redeployment) and ensure that teacher skills are suited to student needs

Conclusion

Improving infrastructure can have a significant impact on learning outcomes

- The rehabilitation and construction of school buildings are important
- Classrooms are overcrowded and many are in poor conditions, which affect students' ability to learn
- School infrastructure standards should be developed, together with a rating scorecard to allow an accurate assessment and effective prioritisation of infrastructure upgrading
- it is also crucial to improve connective infrastructure, water & sanitation, electricity, and ensure that facilities are regularly maintained
- Lack of access to pre-schooling and secondary education should be addressed

Appropriate monetary and non-monetary incentives could boost school attendance

- Student absenteeism is one of the key reasons for school repetition
- A national campaign highlighting the benefits of schooling, scholarships, and enhancing Bolsa da Mae – a cash-transfer program conditional on school attendance – could reduce the opportunity cost (of working) and improve school attendance
- The school feeding program alone does not seem sufficient to tackle absenteeism, partly because of some challenges in its implementation

School management can also be improved through better data and processes

- Improving the Education Management Information System (EMIS) is key to enable an adequate monitoring of performance and better decision making
- Decentralization and digitization of data collection will also enhance timely submission of data and result in improved accuracy



Thank You