Using Student Assessment Results
for Education Quality and Systems Strengthening

READ ARMENIA

ESCHBORN, GERMANY – OCTOBER 25, 2011

READ
Russia Education Aid for Development
When children learn, nations prosper


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SHIRAK
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Vanadzor
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Hrazdan
Gavar
ARAGATSOTN
Ashtarak
YEREVAN
Armavir
ARMAVIR
Artashat
ARARAT
CECHARKUNIK
VAYOTS DZOR
Yeghegnadzor
SHAHUMIAN
Shaumian
MARDAKERT
Mardakert
ASKERAN
Askeran
Stepanakert
MARTUNI
Martuni
SHUSHI
Shushi
KADRUT
Kadrut
Kapan
SYUNIK

Key Data About Armenia

- **Population**
  - about 3,2 million
- **Land area**
  - 29 743 square km
- **Region**
  - Eastern Europe and CIS
- **Location**
  - Southern Part of Caucasus
- **Capital city**
  - Yerevan

- **Formation and Independence**
  - Traditional date - 2492 BC
  - Nairi - 1200 BC
  - Kingdom of Ararat - 840 BC
  - Orontid Dynasty - 560 BC
  - Kingdon of Armenia -190 BC
  - Democratic Republic of Armenia - established 28 May 1918
  - **Independence regained** - 21 September 1991

- **State System**
  - Democratic Presidential

Key Data About Armenia

- **Administrative division**
  - **11 regions (marzes)**
- **Ethnic Divisions**
  - **Armenians 97,9 %**
  - **Yezidis 1,3 %**
  - **Russians 0,5 %**
  - **Others 0,3 %**
- **Languages**
  - **Armenian (official), Russian, English, other**

- **GDP (nominal) 2010 estimate**
  - **Total $9.389 billion**
  - **Per capita $2,846**
- **Economy**
  - **Declined in 2009 by 14.4% and had an increase of 2.8% in 2010**

Brief Historical Perspective

- **Armenia is an ancient country with a long cultural and educational traditions.**
- **Education in Armenia, based on more than 1600 years of literary heritage, has long been regarded as the main factor in maintaining national identity especially during the last 6 centuries without independent statehood.**
- **Armenia has adopted Christianity as a state religion in 301.**
- **Armenian alphabet was invented in 405.**

Brief Historical Perspective

- **In the same year the first school was created in Armenia.**
- **In the 7th century Anania Shirakatsi created first secondary school.**
- **The first textbook referring sciences, in particular to mathematics, was written in the 7th century.**
- **One of the first higher education institutions- Tatev university was founded in the 9th century.**
- **At present 15000 pieces of ancient Armenian manuscripts are kept in a special museum in Yerevan called Matenadaran.**

Brief Historical Perspective

- **Until 1920**
  - **Schools were under the official support of the Armenian Christian Church, however they were secular (not religious).**
- **1920-1991**
  - **In 1920 Soviet power was established in Armenia and the existing network of Christian schools was completely reformed according to the new socialistic values. A large net of educational institutions was created and developed during Soviet period.**
  - **The Soviet system of education was completely centralized and managed from Moscow, but the Armenian language was basically preserved.**
- **in 1991**
  - **At the time of break-up of the Soviet Union, Armenia enjoyed high standards of education and the prestige of having developed a sophisticated scientific community.**

During 70 Years
Soviet Armenia Achieved

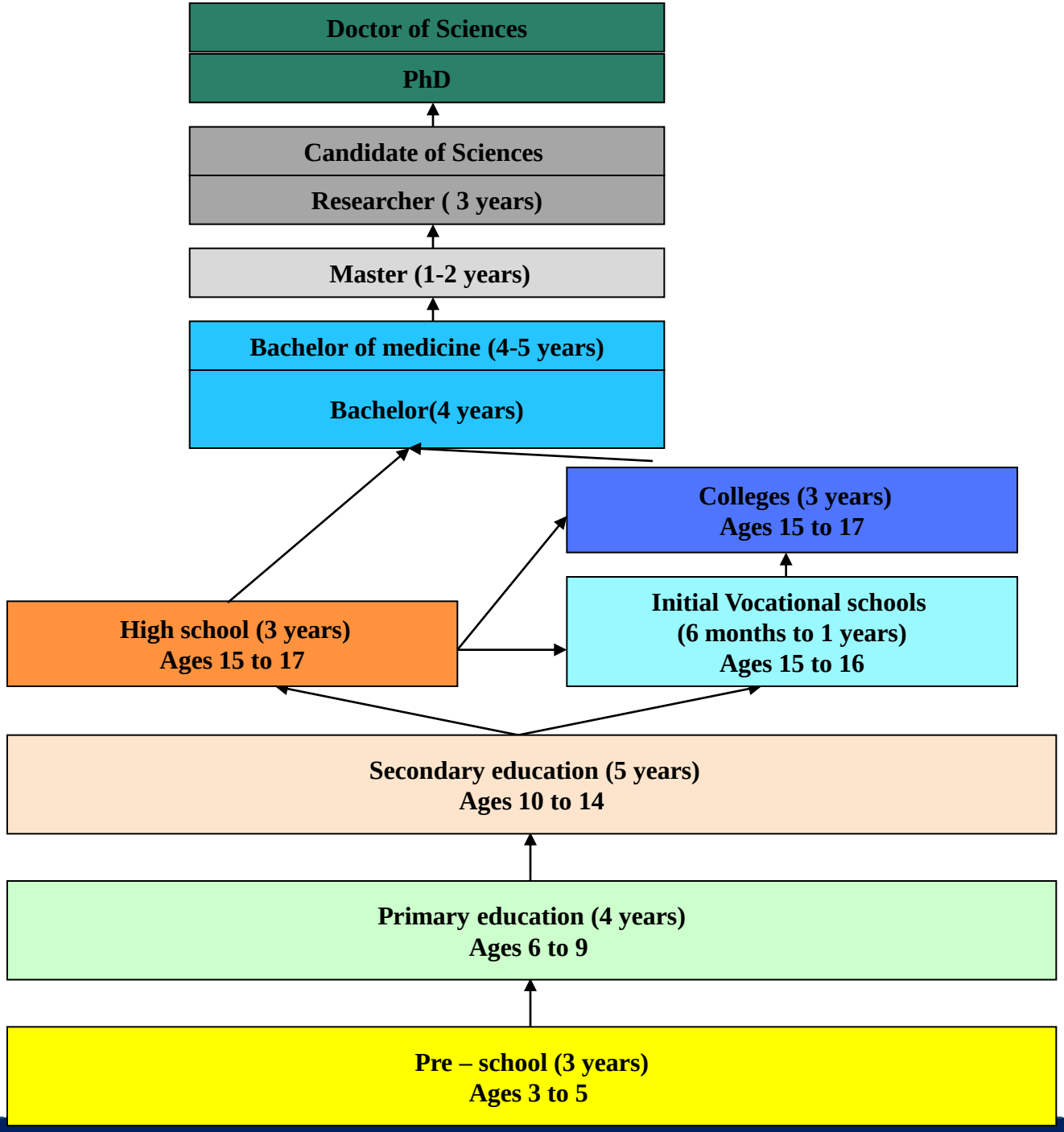
- **10 years of compulsory basic education with complete enrollment**
- **free education on all levels from pre-primary to higher**
- **universal access**
- **negligible drop out and repetition rates**
- **very high completion rate**
- **gender equity**
- **co-educational and monograde classes**
- **bilingual and literate adult population with 25% university graduates**
- **highly qualified, well paid teacher force**
- **provision of strong and academic knowledge**
- **appreciation of knowledge by population**

What Was Not Good in Soviet Education

- **Extreme centralization**
- **Ideological bias**
- **Armenian history and culture almost missing**
- **Too academic and rigid curricula**
- **Non interactive teaching methodology**
- **“Directive” or “frontal” teaching**
- **Limited parental and society participation**
- **State initiative**
- **Absence of shared decision-making**
- **Students’ equalization**
- **Absence of democracy**

Number of Institutions

- **Before 1991 in 2011**
  - **1316 schools ---------- 1457 schools (increase 10.5%)**
  - **82 VET institutions ---------- 101 institutions (increase 22%)**
  - **15 HEIs ---------- 66 HEIs (increase 4.4 times)**


Doctor of Sciences
PhD
Candidate of Sciences
Researcher (3 years)
Master (1-2 years)
Bachelor of medicine (4-5 years)
Bachelor(4 years)
Colleges (3 years)
Ages 15 to 17
Initial Vocational schools
(6 months to 1 years)
Ages 15 to 16
High school (3 years)
Ages 15 to 17
Secondary education (5 years)
Ages 10 to 14
Primary education (4 years)
Ages 6 to 9
Pre – school (3 years)
Ages 3 to 5

Education Sector Statistical Summary

Indicators	Unit of measure	1992	1993	1994	1996	1998	2011
Public education expenditures	% of TPE	11.2	6	4.5	8.4	9.3	12
Public education expenditures	% of GDP	7.2	4.9	2	2.7	2.7	2.9
		1990			1996	1998	2011
Public expend. general educ.	USD per pupil	500-600			27	37	280
Enrollments		1990			1996	1998	2011
Kindergartens	% of age group 3-5	45			21	15	25
Grades (1-9), compulsory	% of age group 6 -14	96			79	83	90
Grades (10-12)	% of age group 15-17	85			63	59	70
Illiteracy	% of pop (age 15+)	1			1	1	1
Pupil/teacher ratio		11.4			11.1	9.8	12
Average class size						20.5	21

SABER Student Assessment System Benchmarking Results – Armenia

Assessment Type	Level of Development
Classroom Assessment	Classroom assessment is done by teachers on a daily basis. 10 score system is used for marking students
Examinations	Graduation examinations (end of primary school, basic school, high school), University entrance unified examinations are administered by ATC
National Large Scale Assessment	National large scale assessments was conducted by ATC in 2010 in grade 8 (Armenian language and literature, Armenian history) are
International Large Scale Assessment	TIMSS 2003, TIMSS 2007, TIMSS Advanced 2008, TIMSS 2011

SABER Student Assessment System Benchmarking Results – Armenia

(Baseline 2011, Pre-READ)

Assessment Type	Level of Development
Classroom Assessment	Cutting Edge
Examinations	Established
National Large Scale Assessment	Emerging
International Large Scale Assessment	Established

Classroom Assessment

External current assessment program of ATC

- All high schools (about 150): Mathematics, Armenian Language and Literature
- Sampled basic schools from all regions of Armenia (about 100):
- Mathematics, Armenian language and Literature, Science (Physics, Chemistry, Biology, Geography by choice), Foreign language (Russian, English, German, French by choice)

Examinations

- State graduation examinations at the end of each level are administered by schools

  - Primary School (Grade 4)
  - Main School (Grade 9)
  - High School (Grade 12)

- University entrance examinations are unified and centrally administered by the Assessment and Testing Center, exam test are also prepared and scored by ATC

National Large Scale Assessment

Conducted by ATC in 2010

- **HAAS 2010** (Armenian language and literature, Armenian history)

Planned NLSA program

- **BAAS 2011** (Physics, Chemistry)
- **ICT** (Information and Communication Technology) competences
- **SAM** (School Achievement's Monitoring

International Large Scale Assessment

ILSA programs

- TIMSS 2003
- TIMSS 2007
- TIMSS Advanced 2008
- TIMSS 2011

- In 2003 Armenia participated in TIMSS 2003, along with 49 countries, (23rd place in Math and 17th - in Natural Sciences)
- In 2073 Armenia participated in TIMSS 2007 demonstrating significant improvement in results (13th place in Math and 17th - in Natural Sciences, among 59 countries)

Planned ILSA programs

- TIMSS 2015
- PIRLS 2016

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

TIMSS 2007

Mathematics and Science Achievement at the 8th Grade

Mathematics Achievement

Country	Average Scale Score
Chinese Taipei	598
Korea, Rep. of	597
Singapore	593
Hong Kong SAR	572
Japan	570
Hungary	517
England	513
Russian Federation	512
United States	508
Lithuania	506
Czech Republic	504
Slovenia	501
TIMSS Scale Average	500
Armenia	499
Australia	496
Sweden	491
Malta	488
Scotland	487
Serbia	486
Italy	480
Malaysia	474
Norway	469
Cyprus	465
Bulgaria	464
Israel	463
Ukraine	462
Romania	461
Bosnia and Herzegovina	456
Lebanon	449
Thailand	441
Turkey	432
Jordan	427
Tunisia	420
Georgia	410
Iran, Islamic Rep. of	403
Bahrain	398
Indonesia	397
Syrian Arab Republic	395
Egypt	391
Algeria	387
Colombia	380
Oman	372
Palestinian Nat'l Auth.	367
Botswana	364
Kuwait	354
El Salvador	340
Saudi Arabia	329
Ghana	309
Qatar	307
Morocco	381
Benchmarking Participants	
Massachusetts, US	547
Minnesota, US	532
Quebec, Canada	528
Ontario, Canada	517
British Columbia, Canada	509
Basque Country, Spain	499
Dubai, UAE	461

Science Achievement

Country	Average Scale Score
Singapore	567
Chinese Taipei	561
Japan	554
Korea, Rep. of	553
England	542
Hungary	539
Czech Republic	539
Slovenia	538
Hong Kong SAR	530
Russian Federation	530
United States	520
Lithuania	519
Australia	515
Sweden	511
TIMSS Scale Average	500
Scotland	496
Italy	495
Armenia	488
Norway	487
Ukraine	485
Jordan	482
Malaysia	471
Thailand	471
Serbia	470
Bulgaria	470
Israel	468
Bahrain	467
Bosnia and Herzegovina	466
Romania	462
Iran, Islamic Rep. of	459
Malta	457
Turkey	454
Syrian Arab Republic	452
Cyprus	452
Tunisia	445
Indonesia	427
Oman	423
Georgia	421
Kuwait	418
Colombia	417
Lebanon	414
Egypt	408
Algeria	408
Palestinian Nat'l Auth.	404
Saudi Arabia	403
El Salvador	387
Botswana	355
Qatar	319
Ghana	303
Morocco	402
Benchmarking Participants	
Massachusetts, US	556
Minnesota, US	539
Ontario, Canada	526
British Columbia, Canada	526
Quebec, Canada	507
Basque Country, Spain	498
Dubai, UAE	489

TIMSS & PIRLS
International Study Center
Lynch School of Education, Boston College

The Armenian Context of Unified Examinations

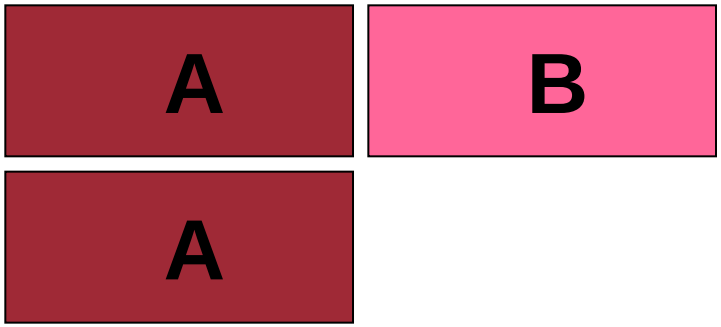
- The priorities for the unified examination are security and transparency.
- The educational value of the exam is not seen as a high priority.

Positive Outcome #1

- The concept on which the examinations are built remains valid and beneficial.

Unified Examination

School Graduation



Positive Outcome #2

- The question papers are been produced securely and on time.

Yerevan, 2009

Positive Outcome #3

- The new technologies used in the Unified Examination work well.

Positive Outcome #4

- The reform of the examination system has met relatively little resistance.
- In general, the new examinations have been accepted by the public.

Issue #1: Strengthening decision making processes

- Strategic and operational decisions are made without giving due consideration to measurement theory and objective evidence.

- A national advisory committee on examinations should be established. This could include:
  - representatives of the Ministry of Education
  - key stakeholders e.g. universities and school leaders
  - assessment and measurement experts.

Issue #2: Improving the test development process for unified exams

- Question papers for the Unified Exams are prepared by ATC under the auspices of the Minister of Education and Science. The perceived need for secrecy means that quality control measures are weak.

- ATC could, for example, maintain large, closed banks of quality-assured items to be used in the construction of question papers.

Issue #3: Fighting the negative backwash effect of objective exams

- The exclusive use of multiple-choice, computer-scored questions has a negative effect on teaching and learning in key subjects.

- An attempt should be made to include at least some open questions ('constructed response') into key subject exams. Given the obsession with objectivity, this may be difficult but, for example, can it be right for a student to pass Armenian Language and Literature without writing one character of the Armenian alphabet?

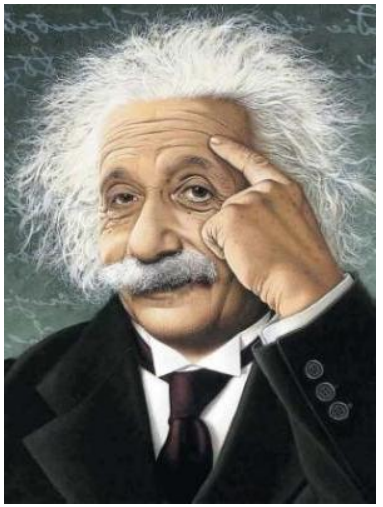
Issue #4: Introducing stability and comparability to the system

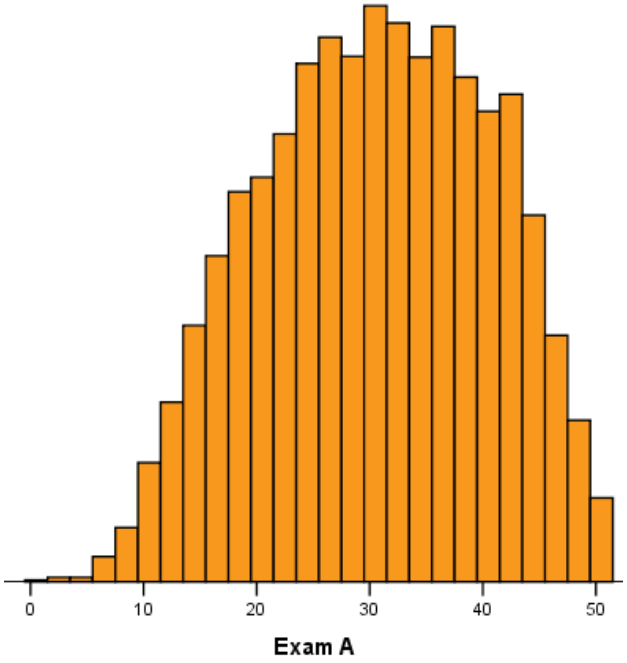
- At present there is no mechanism for maintaining constant or comparable standards within the exam system.

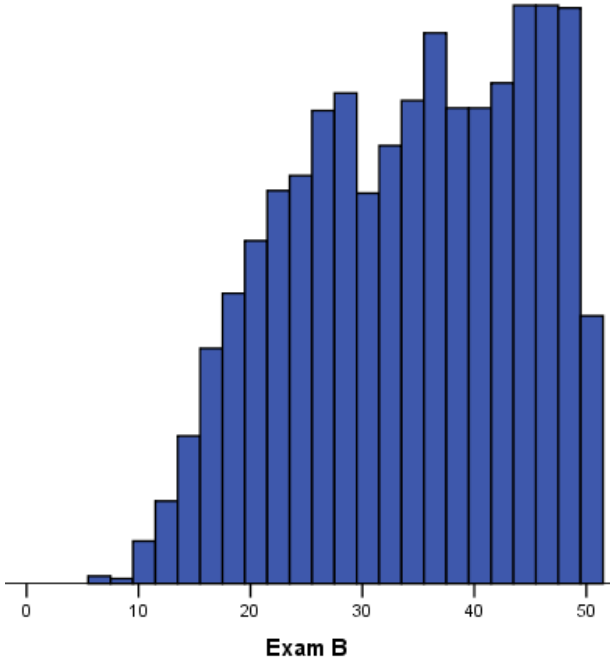
Issue #4: Comparability and Stability of exam results

- Comparability and Stability of exam results:
  - between subjects;
  - across years.
- Why do we need this?
  - Admission into university is based on a student's results from several exams.
  - Exam results are valid for admission this year *and the next*.
- How can we compare different groups of students taking different exam papers?

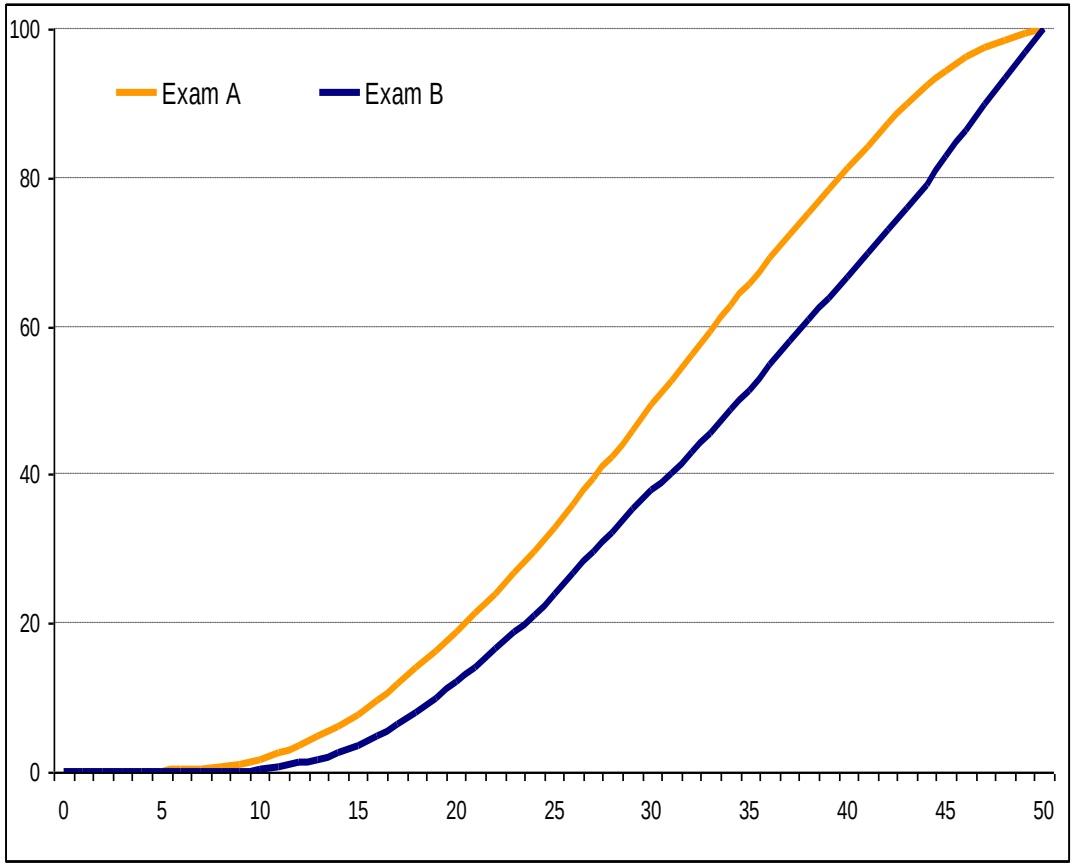
The simplest method of comparing results from different exams…

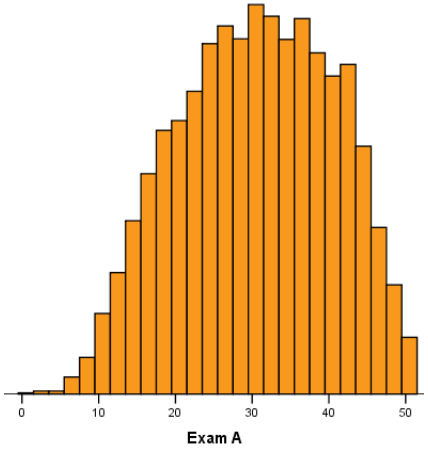


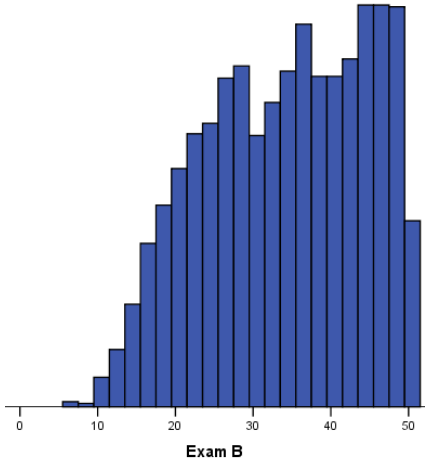




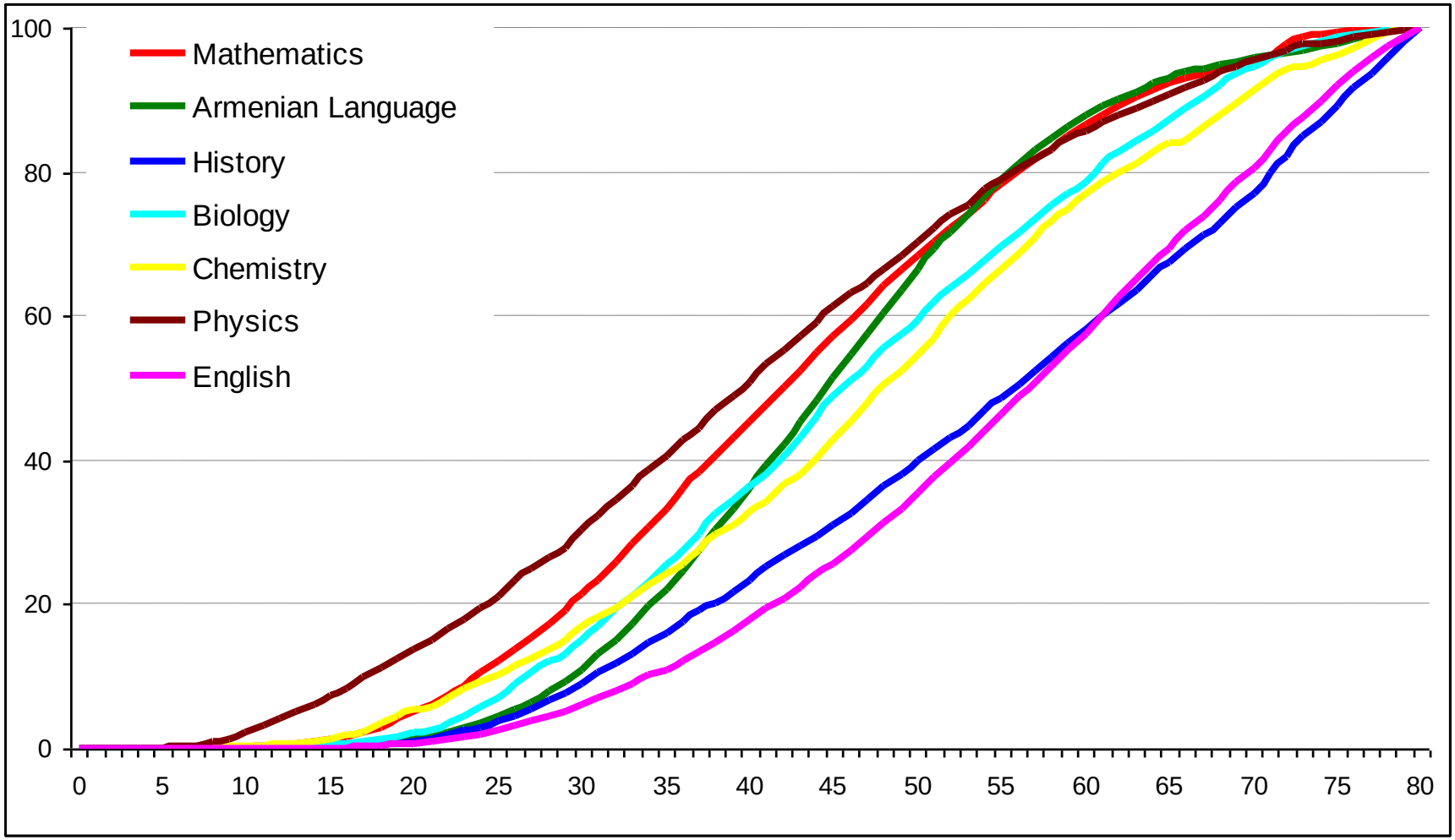
From a different angle…



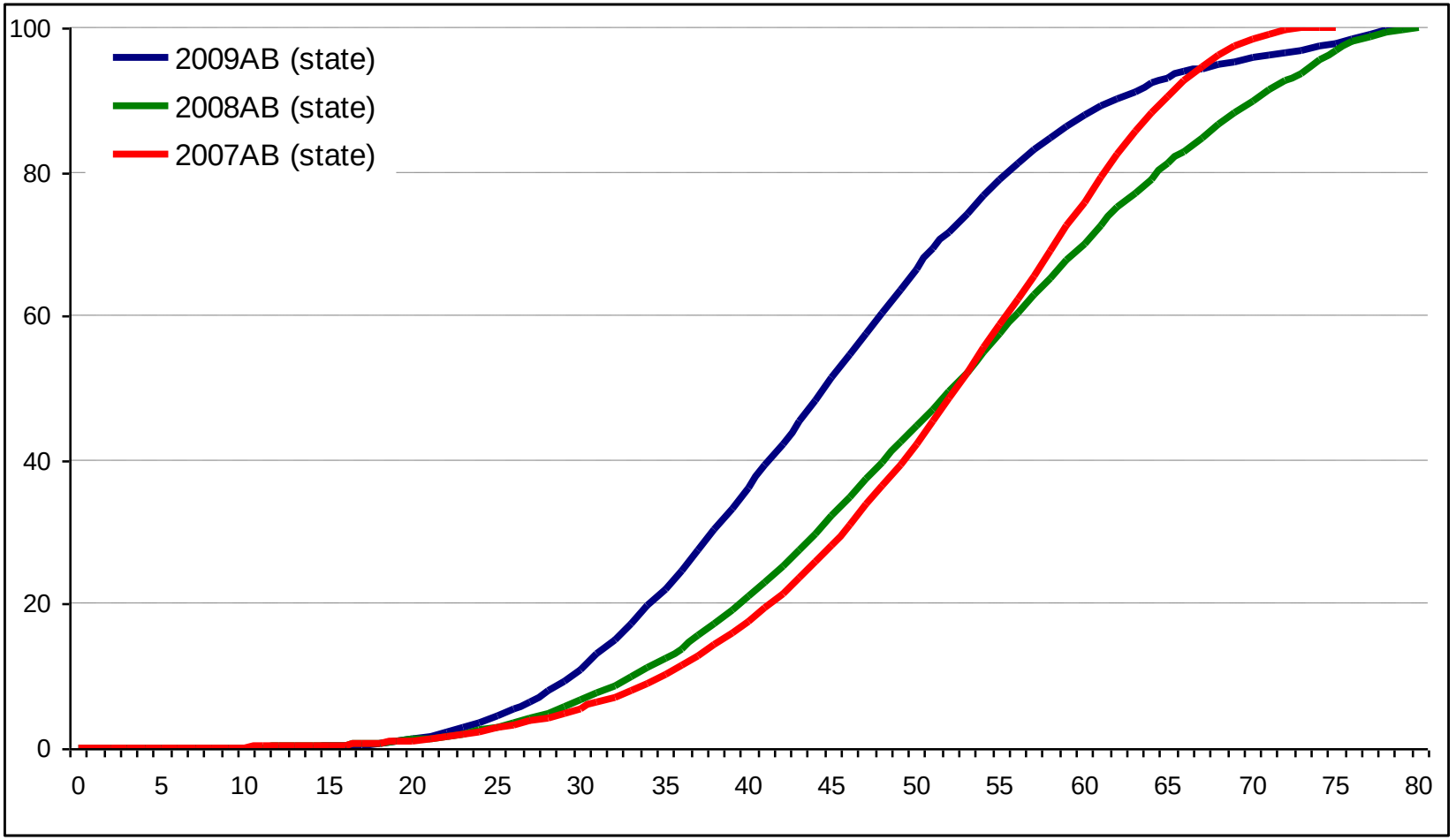




2009 results (all subjects)



Armenian Language 2007, 2008 and 2009



Need for scaling

- A special SCALING procedure is needed to transform a test's raw scores into scores on a common, i.e. comparable, scale.
- The procedure currently used (converting scores to the '1-20' scale) is NOT proper scaling as the "shape" of the score distribution is unchanged.

Conclusions

- Recent reforms have set good foundations for assessment and examinations in Armenia.
- However, there are several important issues that should be addressed.
- When considering these issues, policy makers should pay attention to objectively verifiable evidence. In particular they should recognize the importance of measurement theory and statistical data to the decision making process.
- Caution will be needed, but an 'evolutionary' approach should, in time, bring higher quality.

Potential Challenges/Issues for Armenia

Classroom Assessment: Different forms of assessment; transparency of current achievement assessment process; continuity and efficiency of education process; increase students' interest towards the subjects taught; increase the level of responsibility and professional preparedness of teachers.

Examinations: Favorable and equal conditions for students; insurance of accountability and objectivity of the exams management ; compliance of test items with the National Standards; differentiation of the examinations per goals.

National Large Scale Assessment: Evidence of students' achievement level; monitoring education quality at the system level; efficiency of education process; policy design, evaluation, and decision making.

International Large Scale Assessment: To provide internationally comparable evidence of students' achievements; to analyze the results and the acting factors of the results to have a better understanding of the observed differences in performance.

Thank you

Karine Harutyunyan
Deputy Minister
Ministry of Education and Science
Armenia