A Review of Formula Funding
Identifying main bottlenecks for formula funding for general secondary schools

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Background to the Report

In 2013 the Government of Kazakhstan introduced a national formula funding methodology for central government supported costs of general secondary education schools (covering grades 1-11) on a pilot basis. The purpose of the pilot was to design and evaluate a national funding methodology based on a unit cost per pupil which would improve the fairness and transparency of national school education funding. The centrally supported costs covered by the formula included all teaching and teaching related management costs and non-salary costs relating to the process of education, and forms the largest proportion of school costs. The current formula also includes some of the costs of the education environment including payroll costs of non-teachers, post and telephones and routine repairs and maintenance. However the formula does not cover costs provided in local oblast and rayon budgets which include most premises related expenses, which are determined and allocated according to the policies of local administrations.

The initial pilot run by the government included a sample of 63 schools in 5 oblasts including Aktobe, East Kazakhstan, Akmola, Almaty and South Kazakhstan oblasts. An additional 10 schools in Astana and Almaty cities were included in the sample in 2016. The original pilot sample covered 1-11 grades, but in 2015 at the 1-9 grades were temporarily dropped over concerns about data and the application of the formula and re-incorporated back in the sample in the following year. Since September 2016, the formula has been gradually improved by adding funding for maintenance of equipment and hardware, but it does not currently cover children with disability (CwD), some of whom are taught at home by teachers from the general secondary schools. The pilot is intended to be expanded to
include all general secondary schools in Astana and Almaty cities in 2018 with the purpose of introducing nation-wide coverage of per capita for the 2019 financial year.

Despite the addition of substantial additional funds for the pilot schools in 2017, 5 schools are still net losers under the present pilot formula; however without the additional funding provided under the pilot a far larger group of schools would have been adversely affected. (see Annex 1 for details). Conversely a significant number of ‘gaining’ schools have seen increases well over 100% compared to their historic budget allocations. While the introduction of a fairer funding formula must inevitably involve redistribution of funds with ‘gainers’ and ‘losers’ it is important that the formula weights distribution criteria appropriately particularly to reflect the heavier fixed cost element in lower enrolment schools. Furthermore the implementation of the national formula while signaling the need for a more efficient and rational distribution of resources, must give time for local governments and their schools to adjust their provision and network to the revised funding system. This is particularly so as unlike the case of the pilot, the introduction of a national system will not be accompanied by a large net increase in resources.

Although there is currently no coefficient in the formula to cover children with disabilities (CWD) in the formula, the Ministry have proposed weighting CWD students with a multiplier of 2x the weighting of an equivalent regular student; with a far lower teaching hour load of around 10 hours per week this equates to an effective multiplier of 3x. The Ministry are unsure as to whether this matches the likely additional recurrent cost of teaching a CWD student at school and seeks international experience on the treatment of formula funding with special educational needs.

Purpose and the Structure of the Report

The objectives of the report, taking into account the experience of the pilot scheme so far and relevant international experience are to:

i) Review the pilot funding formula and make recommendations (if appropriate) for improving its design the coefficients used and its applicability to CWD

ii) Review the wider context of the introduction of formula funding so that its potential benefits in supporting improved local management of schools and better resource management may be fully realized

iii) Advise on the implementation of the pilot scheme in 2018 and the transition to a nationwide formula funding scheme in 2019.

The structure of the report follows the objectives.

Part 1 examines the detail of the current formula, its components and coefficients and makes recommendations including options where appropriate
Part 2 looks at the associated context of the introduction of formula funding methodology including financial freedoms and the supervision role of school councils.

Part 3 examines options for extending the pilot in 2018.

Part 4 considers the necessary conditions for successful implementation of a nationwide scheme including consultation, communication and training.

Part 5 summarizes the principal conclusions and recommendations.

Annex 1 summarizes the financial position of the pilot schools.

Annex 2 summarizes the current UK government’s approach to a national formula funding methodology which is also due to be introduced in 2019-20.

Annex 3 summarizes different international approaches to formula funding of schools.

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Part 1: The pilot formula.

Overview

The current formula is laid down in Ministerial Order 520 of the Republic of Kazakhstan dated August 25 2016.

The formula consists of two parts, the first relating to the salary costs and non-salary costs of the educational process and the second to the costs of financing the educational environment.

i) Education Process Unit Cost

This core formula produces a total budget through multiplying an overall unit cost per student by the number of students in each of three grades (1-4, 5-9, 10 – 11).

The unit cost is built up from two salary components and one non-salary component. The 2 salary components reflect:
i) **A main cost** based on average basic pay\(^1\) multiplied by a social tax on-cost rate\(^2\), with multiplication factors for management, allowances for special working conditions, surcharges and allowances and teaching qualifications. The average salary is based on a category 1 teacher with a university degree or diploma and 15 years of experience, and the weightings reflect the incidence of these additional costs in the payrolls of the 73 pilot schools.

The total average salary is then multiplied by a student/hour ratio (m/v) which incorporates the teacher loading for each of the three main grades and the target enrolment in each class. The teacher loading provides the age-weighted element in the formula, and the target enrolment an element of urban/rural differentiation (based on 24 per class in urban areas and 20 in rural)

ii) **A supplementary** cost reflecting the health improvement benefits payable to employees on annual leave. This is based on one average teacher’s monthly salary rate * the management increment * the student hour rate.

The non-salary component is a simple coefficient of 1.2 * the Monthly calculation Index (MCI) currently 2.269 KZT to pay for participation in academic music and sports competitions (0.3 MCI) and training (0.9 MCI)

The addition of these three elements together is then multiplied by a scaling factor for i) teaching in rural areas and ii) teaching remedial classes in both rural and (at a lower rate) urban areas. These co-efficients are themselves differentiated by the 3 grade levels although the differentiation between them is very small for the rural coefficients. Only the urban coefficient for teaching remedial classes in urban areas shows any significant variation between the grade levels. The salary-related weighting is then applied to the total unit cost including that relating to the non-salary component

ii) **The Education Environment Cost**

This is a single undifferentiated rate per student cost based on a multiplication 20.75 * the MCI rate and multiplied by the total number of students in the school. This cost covers payroll costs for non-teaching staff, postal and communication charges, routine repairs and small items of equipment)

**Current Proposed Changes**

During discussions with the MoE, changes to the current formula were proposed as follows:

i) **Tapering the amount of formula funded grant for schools exceeding their design capacity by at least 150% up to a maximum loss of 17%**. This is designed to prevent urban schools over-competing for students without adequate classroom space and other facilities

ii) **Adding a special needs weighting of 2 per standard pupil for educating students with disabilities** (see below)

iii) **Tidying up the main salary formula by bringing the up-lift for teaching in rural areas within the main part of the salary formula (applying only to the basic salary component) and incorporating the teaching remedial classes within one of three coefficients representing**

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\(^1\) Based on a coefficient of 4.3\(^*\)Base Official Salary (BOS) which since January 1 2017 is 24,459 KZT

\(^2\) The on-cost rate covers employer’s social tax and social medical insurance contributions and is projected to rise on an annual basis from 1.099 on January 1 2017 to 1.144 on January 1 2020
additional premiums and increments for extra duties and qualifications. This is a more logical arrangement than in the 2016 formula.

**Critique of the Formula**

The current formula has a number of positive aspects:

i) The formula is driven by the number of students which constitutes the main cost driver in education

ii) It disaggregates education spending into 3 categories – teachers’ payroll costs, non-salary education process costs and education environment costs – to reflect that for each of these categories the per student cost driver operates in a different way.

iii) It reflects the more complicated educational processes (more subjects, optional subjects) at lower secondary (grades 5-9) and higher secondary (grades 10-11) through increasing the learning hours component of the curriculum which increases the teacher loading for these grades.

iv) It also reflects significant cost differences arising from the higher salaries paid to teachers in two circumstances – teaching in rural areas and teaching remedial classes – as well as additional increments for teaching qualifications, responsibilities etc.

v) It is also relatively straightforward particularly with the proposed modification of the salary formula; however its approximation to the mean average salary is still highly dependent on extent to which the 73 pilot schools reflect the average salary in the country as a whole and also the degree of dispersion around the average salary. The greater the degree of dispersion, the larger the number of individual schools whose average salary will diverge significantly from the average.

The current formula may be considered as a first generation formula (see Annex 3) in that it focusses on providing ‘horizontal equity’ making sure that students across different localities attract the same unit of resource. Its scope is wide covering the majority of education costs (60 – 70% of costs). It does not however attempt to address issues of vertical equity i.e. attempting to compensate through additional financial premiums students who are disadvantaged through learning disability or economic circumstances. This is because it is first not a priority and because no data probably exists to justify what may represent proper compensatory weightings.

As a first generation formula the principal issues are outlined below.

**Principal Issues with the Existing Formula**

i) The linear nature of the formula does not reflect the heavier burden of fixed costs for smaller schools.

Formula funding generally assumes a linear relationship (or a close approximation to linear) between total recurrent cost and the number of students. It needs to do this in order to make the formula understandable. In reality particularly where there are rigid norms on class sizes, or management: teacher ratios, the education cost function consists of stepped costs and between the stepped costs the line is likely to be more of a parabola than a straight line.
The proportion of fixed to total costs is generally significantly higher for small schools than for larger schools. Smaller schools need to have for example a principal and deputy, a school secretary, the services of at least part-time maintenance staff, school accountant and nurse. In Kazakhstan, the adoption of strict norms has meant these fixed cost elements are greater than in other systems.

There are two ways of tackling this problem, which are not mutually exclusive. The first is to accord a higher weight to student numbers in schools with much lower than average enrolment. The second is to give a fixed cost allocation in respect of the first block of students (say between 0 and 50) so that schools will get a certain allocation irrespective of the actual number of students they enroll up to the minimum number. This makes it easier to include smaller schools within the general formula allocation.

**Recommendation 1:** It is recommended that an analysis be undertaken looking at the proportion of fixed to variable costs (in the budget lines covered by the formula) in schools with low enrolments. Consideration should be given to providing a block allocation for all 3 formula elements (for the first 50 pupils) in every school and then a higher weighting for students within the range of 51 – 200 and 201 to 350 for students within general secondary schools (running grades 1-11). The latter should be applied to the teaching payroll and educational environment cost factors; the current educational process cost can use a single straight multiplier of 1.2.

**ii) Other formula adjustments**

**Larger Rural Schools**

Under the current formula, teacher loading for rural classes is calculated at 20 per class compared to 25 for urban classes to reflect the likelihood of lower enrolment schools in rural areas. However as the visit to the rural school in Turkestan showed, not all rural schools have small enrolments and where they do not, there is no intrinsic reason to fix the class : teacher ratio at 20. In the school in question all the class sizes in all grades were above 20 even in grades 10 and 11.

**Recommendation 2a):** Large rural schools in excess of for example 600 students (single language) and 800 (dual language school) should operate on the basis of a higher class teacher ratio of 1.22 up to say 1000 students and 1:25 for enrolments above this figure.

**Class sizes and loading in grades 10-11**

The formula assumes a teacher loading of 3.3 for grades 10-11 (based on teaching hours of 57 and teaching hours of 18 per teacher). However in dual language schools with a humanities and science stream, this may not be sufficiently high enough. For example In school No 4 in Aqmola with only 27 in grades 10 and 11, the teaching load was considered to be 95 hours per grade per week and they were using up to 19 different teachers (all only in a part-time capacity). While it is not suggested that teaching loads be fully adjusted to the needs of such small classes (where for some classes there may be only 5 or 6), consideration should be given to revising the relevant loading according to the needs of the grade 10-11 curriculum and considering a lower class maximum particularly for dual language schools operating the two curriculum streams.
**Recommendation 2b):** Examine teaching loading at grades 10-11 for the sample of 73 schools to investigate whether and in what circumstances a higher teaching load should be considered.

**Tapering for Unit Costs for substantially exceeding capacity**

The proposed new formula includes a tapering adjustment to the unit cost (reducing weighted student numbers below 1) when a school has exceeded its design capacity by 150% or more. The design capacity would presumably need to be calculated on whether the school operates single or double shift, and also take into account additional capacity from re-design of usage of space or additional annexes. The adjustment is to discourage successful schools presumably in urban areas from taking on too many students and overcrowding classrooms. This is a valid consideration although the tapering at a maximum reduction of just 17% of the unit cost is relatively modest and may not act as a sufficient deterrent to over-recruitment.

**Recommendation 2c):** At this stage including the tapering adjustment is not necessary but this could be kept under review particularly in the light of experiences in the planned pilots in Astana and Almaty cities.

c) **Formula Coefficients**

**Average Teacher Salary**

Teaching salary costs make up the largest part of the formula. The teaching coefficient is based on a grade 1 teacher with a university degree or diploma and 15 years of experience. There are however 4 grades of teachers – one higher grade and two lower grades – with the lowest grade being for newly or recently trained teachers. Nationwide about 70% of teachers are grade 1 teachers.

An important assumption of the formula is that overall the greater than average cost of higher grade teachers is balanced out by the lower than average cost of lower grade teachers.

However in individual schools this may not hold true. For larger enrolment schools with a bigger turnover in teachers (and higher recruitment of newly trained teachers) this may be particularly so. For example at Jumabayev High School in Turkestan only 64 out of 232 teachers (27.5%) were grade 1 teachers compared to 65 in the highest category and 93 in the two lower categories. The additional cost of the higher category teachers was calculated at 83% of the saving of the lower cost categories, so overall there was a net financial benefit against the average salary calculation.

**Recommendation 3:** The national average salary calculation should be reviewed taking into account the proportion of teachers in all four grades and a weighted average salary calculation adopted that may be different from the current figure. If the Government decides to allow local adaptation of the formula at oblast level (within strict parameters), then it could allow oblasts to determine average salaries based on their own averages albeit

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3. In comparison Seifullin School in Barovoye Aqmola region had 13 teachers at grade 1, 11 in the higher category and 13 in the lower two categories (4 in the new teacher category) and although not calculated it is likely that the costs of higher and lower grade teachers at least balanced out, if not were slightly higher than average
national distribution of central government funding should be based on the average national figure.

**Average Management Increment**

A management increment of 0.904 * BOS is included to compensate for management costs. This was determined with the use of the model routine staff of governmental education institutions and the calculation of the proportion of managerial salary costs to teaching staff salary budgets for the pilot schools amount to 21%.

Based on the sample of schools visited this seems a very high proportion. For example in the case of Ulyk bebek High school in South Kazakhstan, the proportion of principal and deputies as a percentage of the teaching workforce was 7/232 (3%); in High school No4 Shuchinsk it was 2/46 (4.3%). This also does not recognize that the principal and deputies in reality contribute 2-9 hours of teaching time, so not all of their cost is managerial. Even accepting that the management increment includes other costs (such as the school secretary) the increment seems very high. Furthermore the increase in managerial staff is triggered by increases in classes and student numbers on a stepped basis so assuming a linear relationship with a high increment provides an unfair financial incentive to larger schools in that the resource increment is not well related to additional cost.

It is not clear why the increment is high. One possibility is that all salaries of principals, deputies are coded as managerial together with other non-teaching staff which may have inflated the increment based on accounting data.

**Recommendation 4:** The managerial increment should be reviewed on the basis of the actual cost situation in a wider sample of schools; on the evidence of the 4 schools visited an increment of about 0.25 * BOS would appear more realistic although this would need to be substantiated in the review process.

**Special Needs Increment**

In the new proposed formula, a special needs weighting of 2 would be applied to that of a general student. This would reflect the cost of additional teaching and caring support which depending on the nature of the disability would need to be provided on a small group or 1 to 1 basis, and possibly some small cost aids and equipment. Most other costs such as adaptations to premises and specialized equipment would need to be provided through capital budgets.

The number of those with disabilities receiving home based education, together with anecdotal evidence from the pilot school visits, accords with a general value of around 1% of the student population with significant disabilities. However without a detailed appraisal it is impossible to say what percentage of the population could realistically be educated in school as opposed to at home or in a special school environment.

There is currently no cadre of specially trained teaching assistants who could work with CWD students in mainstream schools. Therefore it is difficult to be clear about the real additional recurrent cost as well as potential numbers of students.

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**Recommendation 5:** The inclusion of a special needs weighting in the formula is a welcome indicator of intent and the proposed weighting is not unreasonable in the absence of information on potential CWD who could be in mainstreamed schools. Without other changes it is likely however to lead to only a very small number of CWDs being educated in mainstream classrooms. The Ministry of Education needs to undertake a detailed survey to assess the possible numbers of CWDs who could be mainstreamed and the resources likely to be necessary to support inclusion. The weighting of the teaching element of the formula needs to be the same for both school and home based teaching so there is no financial benefit to doing home schooling compared to inclusion at school\(^5\).

d) **Non-salary elements of the formula**

*Educational Process Coefficient*

A small flat rate coefficient is included of 1.2 * MCI is included to finance teacher training and inclusion in sports and academic competition. It is not clear that the competition element is particularly relevant to primary (grade 1 – 4) students as *generally* they will not be involved in competitions. Comments from one of the pilot schools also suggested it may be difficult for teachers accompanying students to such events, to access funding and therefore restricting access only to older students of perhaps grade 8 and above who do not need to be accompanied.

**Recommendation 6:** Evaluate the size of this coefficient in the light of actual teacher training costs and participation and access to competitions, and whether other aspects of the education process (e.g. general field trips, school-based projects and other innovations) could be financed using these sums. It is important that this coefficient is linked to the promotion of innovation aspects of the National Performance Framework (see Part IV (vi) below))

*Education Environment Coefficient*

This is also fixed at a rate of 20* MCI per student irrespective of grade or age. In general education costs increase with age because of the needs of the curriculum particularly in terms of science and technology and also need for greater variety of books and reference materials. While the cost differential may not be very significant between different grades, most international formulae give additional weighting to higher grade students.

Costs involving repairs and maintenance and possibly some non-teaching staff would seem to be more related to the area and condition of the buildings and the type of facilities provided, although as utilities are excluded from the formula, it may be overcomplicated to provide these amounts on a different buildings related basis.

**Recommendation 7:** Consider grade weighting the Education environment cost coefficient at least by the three different levels (1-4, 5-9, 10-11) to reflect different curriculum related costs.

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\(^5\) Home-schooled children are not counted for the education environment part of the formula whereas CWD educated at school would be. Also the proposed coefficient of teaching special remedial classes and homeschoolers would be the same.
Part 2: Increasing the benefits of a formula funding methodology

Formula funding has been adopted by most countries primarily to support management of schools by local communities rather than by levels of local government or even by central government. The thinking has been that empowerment of school principals working in conjunction with local communities will enable schools to design and implement their own school improvement plans under the supervision rather than direct control of local government units. In this context formula funding is necessary to ensure that each school recognizes it has been treated on the same fair and equal basis as every other school so that inadequate performance cannot be blamed on discriminatory funding allocations.

The Ministry has introduced reforms to provide for more local governance but in particular the operation of the financial system currently does not allow the full benefits of formula funding to be realized. As a result the additional funding that ‘gaining’ schools has mainly been used for increasing the financial remuneration of teachers and staff\(^6\). While this is a legitimate use of funds, the main reason for applying funding increases to extra pay has been the difficulties of spending money in other ways. Therefore the Ministry of Finance in conjunction with the MoE should consider introducing three important financial freedoms.

i) Financial Freedoms

*Carry Forward of Surpluses and Deficits*

Schools operating under local management are usually allowed to carry forward deficits and surpluses. Carrying forward deficits allows schools to adjust their operations in future academic years rather than having to balance the accounts in December within an existing academic year; this may significantly the quality of education to current students. Conversely carrying forward surpluses allows schools to accumulate larger sums to implement more costly projects rather than ‘waste’ small sums on items of equipment or consumables that add little value to education provision. It may also increase the value from larger procurement. A particular example from the pilot schools visited was the way pieces of computer equipment (monitors, keyboards and servers) had been purchased in small lots because of limitations of funding.

Consideration should also be given to limiting the total amount of accumulated deficits and surpluses. These can be asymmetric values; deficits could be limited to 10% of a school’s annual budget allocation because it is important for schools and education authorities to take prompt action to address underlying structural problems of school deficits promptly. The main purpose of limiting accumulated surpluses to say 25% or 30% of a school’s annual budget allocation is to stop unnecessary hoarding of cash or to prevent schools undertaking

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\(^6\) It is assumed that while under the pilot scheme the tied grant has been funded from specific budget lines in the Republican budget, schools have been free to spend any of their formula grant on these recurrent budget lines within their own school. In other words, the budget is completely ‘fungible’ within these lines. If this was not so, then a minimum requirement for formula funding would be to allow such ‘fungibility’ (transferability)
capital projects that require large allocations and should provided through special capital allocations from Oblast level.

It is not clear if carry forward will require any changes in the Budget Code (dated 4 December, 2008 No. 95-IV). Regional bodies can carry forward their own locally financed surpluses. However Article 104 para 4(5) of the Budget Code states that there should be a refund of the unused (underused) amounts of targeted transfer in the past financial year, allocated from the republican or regional budget for which the Government of the Republic of Kazakhstan or local executive body does not decide on the further use (use before) in the current financial year. It may be necessary to obtain a specific derogation from this clause based on the general principle that unused funds will be dedicated to schools development and be incorporated in school budgets proposed before the end of the current financial year.

In accounting terms, assuming such a derogation is given, balances can remain within State Treasury, merely that balances are cleared at the financial year end and then re-credited or debited to school accounts at the start of the next financial year.

**Recommendation 8:** The carry forward of surpluses and deficits should be discussed between MoE and MoF with a view to incorporating this as part of the financial regulations governing the nationwide adoption of formula funding. Maximum carry forward limits should be set; these may be fairly tight at first but could be relaxed as schools gain experience in budget management. Carry forward of surplus / deficit on locally funded budget lines should also be considered particularly if local budgets are subject to a local formula funding arrangement.

*Expenditure on Items of a Capital nature*

Many improvement projects are of a capital nature involving either purchasing of large items of equipment or adaptations / repairs to buildings or sometimes a combination of both. It is good practice to allow schools to spend money on capital projects provided that i) Projects are not artificially subdivided in order to get round procurement or carry forward limits ii) Projects are approved by the school council who can contribute additional voluntary raised funds for projects and iii) Projects of a building nature are supervised by relevant competent local authorities (e.g. in order to comply with building and health and safety regulations)

**Recommendation 9:** Expenditure of accumulated recurrent funds on capital items should be allowed subject to maximum financial limits on sizes of individual projects and the necessary approvals of local governments and school councils.

*Relaxation of Procurement Rules*

The opportunity to carry forward surpluses will provide greater flexibility for procuring items, particularly as the real extent of likely surpluses will not be known until towards the financial year end and procurement under current rules can take anywhere between one and six months. However the procurement rules still offer significant restraints on getting the best value added from resources. For example, there is no practice of having pre-qualified tenderers for particular goods and services who can be invited to tender on a restricted competitive tender basis or shopping list. There is also a presumption to take goods at the lowest tendered price without perhaps due consideration towards quality issues or post procurement maintenance and service arrangements. Schools also appear to
individually procure whereas forming larger pooled funds for procurement with other schools could allow for larger bulk purchases and reap benefits of economies of scale.

**Recommendation 10:** The MOE should discuss with the MOF and Financial Inspection authorities some relaxation of procurement rules with a view to providing sensible procurement flexibilities to coincide with the introduction of a national formula funding methodology.

**ii) School Development Plans**

School Development Plans (SDPs) are the crucial instrument in mobilizing the local school community to define its vision for the school and in implementing practical measures to realize that vision over the medium term of three years. As a condition of being included in the formula funding pilot, each school in 2013 had to develop its own SDP. However the School Council had no role in developing or approving the SDP. Furthermore, discussions with the gaining pilot schools in South Kazakhstan suggested that the SDP was not really being used to guide spending decisions; instead ad hoc decisions were being made on the basis of savings immediately available and the limited options to spend those savings. It was also clear that most teachers had not been significantly involved in the development of the SDP and that the SDP was essentially a tick box document to ensure eligibility for the pilot scheme.

**Recommendation 11:** A substantial training program on the participatory development of SDPs should be provided to all schools in 2018 probably through the development of master trainers at Oblast level who can then train schools. This training program could include different modules (finance, human resources, development of infrastructure etc) and should receive a large proportion of its initial funding from the Central Government in a special project allocation.

**iii) School Councils**

School Councils have played a relatively marginal role in the life of schools, with their main role being restricted to raising funds and resources for projects within schools and receiving annual reports on school progress. This is a very passive role which would be recognized by members of UK school governing bodies in the years of local government control before local management of schools began in 1990.

From discussions with MoE officials, it is understood that the role of School Councils is to be significantly enhanced in new regulations including performance assessment of the Principal and agreement on some budget lines. The representation of the Councils will also be changed to restrict representation from government agencies to 25% and have a majority representation by parents and outside representatives of sponsors and business organizations. The purpose is to increase the supervisory role of the School Council; and the Principal is not a member of the School Council.

Most autonomous governing bodies include the Principal as a member because it is intended that the Principal and governing body be jointly responsible for managing the school. This means School Council members have specific roles and responsibilities that are intended to support the Principal in the strategic management of the school but not interfere in day-to-day management. The collaborative model is also more useful in helping to resolve potential Governing Body: Principal conflicts. The question in the supervisory model if the School Council overrules the Principal is what happens. Either the Council may
be ignored or an open rupture takes place which may result in the dismissal or transfer of the Principal for reasons of lack of communication or personal antipathy.

**Recommendation 12:** Before the new regulations are issued on School Councils, they could usefully be reviewed in the light of the intention to expand formula funding and financial responsibilities of individual schools, taking into account international experience.

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**Part 3: Implementation of the 2018 Formula Funding Pilot**

**i) The Organization of the 2018 Pilot**

The current pilot scheme run since 2013 has embraced only a small number of schools in 5 regions. The schools were chosen to represent a wide variety of rural and urban settings, size of schools, different language streams and different demographics. While there has been a considerable amount of learning from the pilot schools (in particular on cost function data), the small scale of the pilot has obviously placed constraints on wider aspects of the formula funding. These include:

- Managing the communication and training process between the centre and large numbers of local governments and schools
- Understanding the likely impact of formula funding on gainers and losers in the absence of significant extra funding
- Improving planning and resource management skills within schools
- Helping local governments manage the consequences of formula funding including issues for local budgets such as school network rationalization or expansion, the provision of school transport and potential more centralized provision of health services, pedagogical support and inspection.

The 2018 pilot envisages a significant expansion to include all general secondary schools in Astana and Almaty cities. This is an important development because it enables formula funding to be tested and managed involving all general secondary schools in a particular locality and therefore to test more realistically ‘readiness’ in the areas identified above. However given the plan to roll out a national methodology in 2019, it would be appropriate to expand the pilot to cover all schools in 2 of the oblasts where such as South Kazakhstan and Aqmola where some experience of pilot formula funding has already been gained. This would enable the pilot to include more realistic simulations of issues (such as rural-urban differences) that will affect all the other oblasts in the national roll-out planned for 2019.

**Recommendation 13:** The 2018 pilot should be expanded to include all general secondary schools in two of the existing pilot regions to improve the learning experience from the anticipated final pilot year.

One possibility raised by the expansion of the 2018 pilot is to allow one or two of the local oblasts to develop local modifications to the national formula and pilot scheme within well-defined limits\(^7\). For example discretion could be given to the local oblasts within the

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\(^7\) The introduction of England’s national Local management of schools scheme in 1990 was predicated on the development of a local formula by each responsible local education authority reflecting primarily age-weighted pupil numbers and distributing at least 90% of the ‘General Schools Budget’
structure of the national formula to i) modify the coefficients to reflect local cost data ii) consolidate aspects of the salary equations iii) add budget lines into the three part formula and/ or iv) provide additional formula for local budget lines (for example on premises). However distribution of central funding to oblasts must be based on the national formula.

The chief advantage of allowing some degree of experimentation to achieve buy-in from the active participation of schools and local governments in designing their own local formula as well as additional information which could be used to modify the national formula irrespective of whether a single national formula is applied or not. Participation in the development of the formula would also likely to provide additional awareness of the wider potential benefits of formula funding.

Nevertheless there would need to be tight controls over what parameters could be changed and to what extent; and both training and support from the Financial Center would need to be given to make sure that any localization of the formula was within both the basic national formula structure and complied with the intent of the scheme to equalize average per pupil funding.

**Recommendation 14: The MoE should give serious consideration to running a dual pilot with two oblasts running the national formula and two oblasts being allowed to develop their own local formula within national parameters.** If the MoE accepts this recommendation, the development of the local formula (including relevant training) should start not later than September 15 2017 to allow the local formula to be agreed before the start of 2018.

**ii) Performance Assessment Framework for the 2018 pilot**

A condition for the go-ahead for the implementation of the national funding formula is for the pilot to demonstrate the ‘success’ of the pilot scheme. However to date there has been only a few criteria to judge what ‘success’ represents (for example greater student participation in competitions) and given that the pilot schools budgets have been substantially increased in total, it is not clear that this criteria represents the success of the pilot or the benefit of additional funding.

Clearly the impact of formula funding on resource management or the quality of education can only be determined on a long term perspective. In the short term perspective of the 2018 pilot only three main criteria should be used:

a) The spread between the unit cost per student in different schools should be reduced – this is a key test of fairness. (The extent of what that reduction should be can only be determined after looking at the historic budget allocations)

b) The technical implementation of the pilot should be efficient in terms of providing on time and according to schedule:

- General information on the pilot formula and associated changes in accounting and financial management

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by the formula. However issues such as average teacher’s salary and items to be excepted from the formula were decided by the local authority
- Responses to school and local government questions (including website and helpdesk type facilities)
- Individual school budget allocations
- Release of funds

c) The awareness of all stakeholders of the scheme and its implications should be clearly raised during the period of the pilot through financial management and other training (see Part Iv (v) below). This will need to be demonstrated through survey techniques such as questionnaires and in-depth interviews with stakeholders

**Recommendation 16:** A simple performance framework should be developed to assess the ‘success’ of the 2018 pilot based on the above criteria, with ex-ante surveys taking place in September / October 2017 and ex-post surveys taking place in June 2018.

**iii) Additional Funding for the 2018 Pilot**

Additional Funding for the ‘whole oblast’ pilots need to be calibrated in terms of any likely increase in resources that can be secured for national implementation in 2019. Additional funding has two purposes. The first is to provide direct compensation for extra activities (workshops, training materials, additional trainers etc) that are undertaken to provide support for the implementation of the pilots and should be provided as a specific accountable grant to the involved oblast.

The second is to provide additional funding to smooth the implementation of the pilot and in particular limit the losses of the ‘losing’ schools. This needs to be a realistic sum commensurate with what may be provided on a national basis, in agreement with the MoF; a real increase over inflation-adjusted historic budgets of 3 – 5% would appear to be feasible.

For the 73 pilot schools, the MoE should consider paying a one-off grant for 2018 only, to make their funding up to their 2017 level, in order to maintain a positive attitude to the pilot funding initiative.

**Recommendation 17:** The MoE should agree with MoF additional funding to support the 2018 pilot scheme on a basis that will be feasible for a national introduction of formula funding

**Part IV: The introduction of a national formula funding scheme**

i) **Develop a Project Management Approach**

If a national scheme is to be introduced for the start of 2019, it is vital that a project management approach be adopted to ensure that the essential building blocks are put in place on time. This involves drawing up a detailed project plan covering what needs to be done, by whom, with what resources and in what timescales. It will also be necessary to create a multi-disciplinary project team led the Financial Center of the MoE but drawing on resources from other departments, and including where appropriate members from other Ministries and agencies particularly the MoF. A financial plan will need to be drawn up for inclusion of extra funding in the MoE’s 2018 budget.
Recommendation 18: The Financial Center should work with other departments within the MOE to create a project team, budget and plan to deliver national formula funding in 2019 irrespective of whether the go-ahead is given or national introduction is delayed.

ii) Extending Timescales
The piloting of formula funding began in 2013 and its national introduction has been targeted for 2019. Ordinarily despite the significant changes involved and the repercussions for schools and local government education departments, this should have been sufficient time to identify and resolve most of the main issues including those with the formula and change management processes of communication, participation and training discussed below. However the pilot has not developed in a straight linear fashion and therefore the pilot in its non-technical aspects is not much further ahead in 2017 than it was at the outset.

The 2018 pilot represents a major step up in terms of coverage and change management. Furthermore before the 2018 pilot can be fully evaluated, a decision needs to be made on 2019. Planning for 2019 will need to commence almost immediately and the commitment of significant extra training resources for the 2019 budget will probably need to be made on the basis the pilot will go ahead.

A way in which the national implementation can take place in 2019 but without schools having to deal with the immediate consequences is to run the national scheme as a shadow exercise i.e. all schools would be given a formula budget but would keep their historic budgets for one year. A second option would be to adjust historic budgets on a 5/12 basis so that changes would relate to the start of the academic year 2019-20. Either option would give schools and local governments more time to prepare for changes, provide an opportunity to evaluate the 2018 pilot and adjust the formula used in the shadow calculations.

Recommendation 19: The national scheme should be operated on a ‘shadow’ basis for the 2019 financial year with a view to introducing the scheme on a proper basis for the financial year 2020

iii) Limiting the amount of year-on-year changes (‘safety netting’)
The introduction of formula funding is often accompanied by limitations in year-on-year changes in school budgets. This helps gaining schools make sensible adjustments to spending plans (particularly if they are not allowed to carry forward surpluses). However more importantly it gives ‘losing’ schools time to adjust to losses of budget (for example withdrawing courses and changing teacher contracts) without the need for rapid adjustments which may affect the education within an academic year or leave school with a deficit. Safety netting is usually applied for a transitional period of 3-4 years with losses restricted more than gains.

In the light that some changes are likely to be very large, local governments may need to consider providing additional resources in the short term to ensure that budget reductions can be limited.

Recommendation 20: In the light of data on likely changes in school budgets from different oblasts, and proposed changes in the formula, adjustments should be modelled
and transitional safety net limits applied – ideally a maximum loss of no more than 5% in any one year and a maximum gain of 7.5%.

iv) Communication

The introduction of national formula funding will represent a major change management exercise particularly if this involves more responsibilities for school councils and greater financial freedoms for schools. The pilot school visits revealed a lack of understanding about the implications of national formula funding. For example the pilot schools in South Kazakhstan talked about ‘savings’ rather than budget increases as if the savings had resulted from planned decisions to economize on existing budgets rather than larger budget allocations arising from the use of the formula and the extra financial resources put into the pilot schools. Similarly (but in the opposite context) the pilot schools and education authorities in Aqmola seemed reluctant to accept that falling enrolments and lower resources would involve considering options to change the configuration of the school network (including school closures) or restricting some options within schools where there low class numbers would have to be considered.

The adoption of formula funding will inevitably create significant opposition particularly from localities and schools which will lose funding; and it should be taken as axiomatic, that the losers will be more vocal and passionate than the ‘gainers’ are supportive of the change. Those ‘losing’ schools which are long-established and have important alumni will be able to mobilize significant support to water down the change or get formula funding abandoned altogether. The MoE must be prepared for this. One important defence is that the formula (e) must be seen as well justified and fair. A second consideration involves limiting year-on-year changes to individual school budgets (to give ‘losing’ schools time to adapt).

A third and equally important consideration is the requirement to run a good communication campaign both within the education system itself and involving publicizing changes to the general public. This will involve the project team in the Financial Center working with the wider MoE including the public relations department / unit to ensure that promotional material is produced for different target audiences. An early requirement will be to involve oblast governments and educational departments in understanding the changes, and then publicizing and promoting these changes to their local stakeholders and communities.

Recommendation 21: The Project team in the Financial Center should work with other departments within the MoE to prepare a communications strategy to cover the period from September 2017 through to the end of 2020 on the basis that a national formula funding methodology will be adopted. This strategy needs to be more than a ‘statement of intent’; it needs to be defined by time bound concrete objectives in terms of building awareness throughout the education sector and beyond. It should consider hiring public relations professionals and higher education institutions to ensure its core messages about the benefits of formula funding - fairness, accountability, sensible competition and better use of resources - are effectively conveyed to all stakeholders.

8 The proposed safety nets for the adoption of the national formula funding methodology in the UK are 1.5% per annum for the losers and 3% for the gainers. However the variation created by the national funding methodology for each school is likely to much less than that arising in Kazakhstan because a substantial part of the difference across the UK has already been eliminated through local formula funding.
v) Training Programs

While formula funding will not directly involve any changes in the financial system for schools, its introduction will sharpen the focus on how schools manage resources irrespective of whether they gain or not from the formula. If it is combined with other changes including the adoption of school development plans and financial flexibilities, it will require greater involvement from school senior management teams. This will create a need for significant training for non-financial specialists.

For cost and logistical reasons, it is likely that such training programs will need to be delivered by a ‘master’ training team at each oblast which will need to be initially trained and supported by the MoE project team at the central level. The training should be supported by the use of centrally created training resources such as short videos handbooks, presentation slides and other reference materials, which could be available on a special section of the MoE website. At this stage it is difficult to be prescriptive about how much training and support will be required. The 2018 pilot conducted at oblast wide level may give some indication of what will be needed but all schools should receive at least some direct one-to-one training.

**Recommendation 22: The MoE should draw up a training strategy for the 2018 pilot oblasts which it could use to guide the development of a national training strategy.**

Specific budgetary provision should be sought from the MoF as part of the special 2018 project budget for creating a training team within the MoE and three year grant provision made for the development and operation of oblast training teams.

vi) National Performance Framework

The pilot performance framework needs to be developed into a national performance framework (2019-22) which will measure ‘success’ against the main objectives of formula funding. This is also required by Article 46 of the Budget Code which requires objectives and targets to be set for programs for which tied grants are given and which are subject to annual reporting. The objectives should include

a) A reduction in the spread of unit cost per student within and between oblasts
b) An increase in the diversity of education provision particularly for ‘gaining’ schools
c) Evidence of greater efficiencies in terms of reductions in unit costs in higher cost areas
d) Evidence of students following funding in urban areas
e) Greater inclusion of special needs students in mainstream schools
f) Improved resource planning and use of SDPs to drive school improvement
g) Stronger involvement local communities in managing schools particularly through more active school councils

**Recommendation 23: A National Performance Framework should be developed during 2018 with detailed KPIs and how they are to be measured.** An initial data baseline (including all school historic budgets and unit costs) should be taken during late 2018/ early 2019 against which to evaluate the impact of change.
Part 5: Conclusion and Summary of Key Recommendations

The experience of the introduction of formula funding in many countries is that it is not primarily a technical exercise. It is a ‘change management’ program that will raise the importance of finance and resource management within schools, create far greater awareness of strategic resource issues and will change attitudes in terms of how schools and education authorities meet expectations of parents and students. This report lays emphasis on both aspects but it is the change management aspect which requires the most attention given the significantly larger scale of the 2018 pilot and the objective of introducing a national formula funding methodology in 2019.

Technical Aspects of the Formula

It is important that the formula distributes resources on an equitable basis (which is age-weighted pupil numbers) but also makes provision for schools which have inherent and uncontrollable higher costs. The main reasons for these higher costs are i) the school is of smaller size which is usually but not always associated with being in a rural location and ii) the school has a higher proportion of students which for reasons of disability or social circumstances require higher cost interventions (most importantly for recurrent expenditure one to one or small group teaching support.

The current formula does not currently reflect either of these main sources of cost variation. There is no small school addition which is common in education formulae in most countries. It does also not include the idea of a disadvantaged pupil premium although this is proposed for students with disabilities.

The core recommendations are Recommendation 1, 3 and 4

**Recommendation 1** involves providing block funding for at least 50 students and higher unit cost funding for students up to 350, in order to compensate for the higher fixed costs faced by small schools. This is a standard component in almost all first generation formula. It is possible these number ranges may need to be changed when the formula is applied nationally and the size of potential gains and losses assessed.

**Recommendations 3 and 4** involves re-examining the assumptions behind average salary including using category 1 teacher as the basic unit, and the size of the management increment, in order to produce the fairest possible average salary. However since the size of the other proposed increments (for extra duties, remedial education and qualifications) are larger than the management coefficient combined these also should be looked at across all areas to check that the weightings are approximately correct.

Financial Freedoms

All 3 financial freedoms discussed are important and intrinsic to making formula funding work as an instrument for improving resource management at school level

However **Recommendation 8** on the carry forward of surpluses and deficits is the most important, so that schools can plan properly how to manage any extra resources or shortfalls over more than one academic or financial year. It also involves no fundamental change to present government financial systems as the carry forward/deficit is a only an accounting transaction.
School Governance

School Councils currently have a very limited role in the management of schools, do not get involved in the use of the school’s public funds and are principally concerned with raising additional private funds for projects. Proposed new regulations would expand the oversight role of school councils, but it is not clear how possible conflicts of interest between school management and the councils would be dealt with.

**Recommendation 12** concerns reviewing the role of School Councils taking into consideration a more partnership oriented model of a governing body where the Principal handles operational day-to-day matters and the Governing Body with the Principal works on long term strategic issues.

The 2018 Pilot

The 2018 pilot represents a major scale up of the existing pilot program before the intended introduction of national formula funding and a last opportunity to learn lessons that it was not possible to gather with running the limited pilot. Preparation for the pilot including communication and training strategies which will be essential for the national introduction need to commence from July 2017 onwards, with implementation at oblast and school level from September 2017.

All three specific recommendations are crucial to ensuring the pilot is realistic and its performance can be meaningfully assessed.

**Recommendation 14** proposes to get a better understanding of the scale of resource changes in a mixed urban and rural context. It will also help to provide important data for refining the national pilot. The possibility of allowing localization of the formula for distributing resources to schools within one or more oblast should be considered.

**Recommendation 15** proposes ensuring that any financial increase to the total historic pool of funds (from amalgamating all the relevant budget lines in the Republican Budget) is commensurate with what can be afforded on a national scale.

**Recommendation 16** proposes developing a performance assessment framework which focuses primarily on the process of building awareness of formula funding and its implications and the implementation of the pilot including release of budgetary information and funds.

Introducing the National Scheme

With a potential nationwide implementation only 18 months, it is vital that a project management approach involving the establishment of a specific team, timetabled plan and budget is established to drive implementation.

All recommendations are important but it is worth highlighting the importance of communications and training as key factors in successful implementation. It should not be assumed that if a message was given once it will be clearly understood. Interviews with the pilot schools and education authorities emphasized a lack of understanding on the part of some senior officials on the nature of the pilot and of the potential change. Given the focus of principals, teachers and directors of education on education matters, this should not be surprising.
As an example of the importance of consultation, England’s proposed national formula funding scheme has undergone 2 rounds of consultation with stakeholders, the first a shortened period of 6 weeks on general principles and the second a 3 month consultation on the details of the proposals. This is in a system where the principles of formula funding are well known and accepted and the likely resource shifts are smaller than in Kazakhstan.

Therefore Recommendation 21 and 22 on creating within the overall project funded communications and training strategies are particularly relevant to the success of the national scheme.
Annex 1 – Details of Pilot Scheme

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Comment</th>
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<tbody>
<tr>
<td>Historic Budget (73 schools)</td>
<td>7,776,681 KZT</td>
</tr>
<tr>
<td>Pilot Budget (73 schools)</td>
<td>14,003,943 KZT</td>
</tr>
<tr>
<td>Change (amount)</td>
<td>6,227,262 KZT</td>
</tr>
<tr>
<td>Change (%)</td>
<td>80%</td>
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<tr>
<td>Number and % schools reporting increase in</td>
<td>This is a large increase in total budget which would not be sustainable in a national level pilot</td>
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<tr>
<td>enrolment of 15% or more</td>
<td>Some of these increases are very large for one year. Increases of 10% or more would normally happen only in the case of extensive migration or school consolidation. This points to the need to audit enrolment figures under a formula funding system</td>
</tr>
<tr>
<td>Number and % schools reporting increase in</td>
<td>17/63 (27%)</td>
</tr>
<tr>
<td>enrolment of 10 – 14%</td>
<td></td>
</tr>
<tr>
<td>Number of % schools reporting increase in</td>
<td>23/63 (37%)</td>
</tr>
<tr>
<td>enrolment of below 10%</td>
<td></td>
</tr>
<tr>
<td>Number and % of schools reporting a decrease</td>
<td>9/63 (14%)</td>
</tr>
<tr>
<td>No of gainers under FF</td>
<td>58/63</td>
</tr>
<tr>
<td>No of gainers under FF with historic budgets only</td>
<td>26/63</td>
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<tr>
<td>Maximum gain under pilot amount and %</td>
<td>250,563 (336%)</td>
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<tr>
<td>Maximum gain if historic budget only had</td>
<td>165,744 (122%)</td>
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<tr>
<td>been used amount and %</td>
<td></td>
</tr>
<tr>
<td>No of losers under FF</td>
<td>5/63</td>
</tr>
<tr>
<td>No of losers under FF with historic budgets only</td>
<td>37/63</td>
</tr>
<tr>
<td>Maximum loss under FF</td>
<td>-7,978 (-9%)</td>
</tr>
<tr>
<td>Maximum loss under FF with historic budgets</td>
<td>- 46,698 (-54%)</td>
</tr>
<tr>
<td>Standard Deviation (historic budget)</td>
<td>68.63</td>
</tr>
<tr>
<td>Standard Deviation (FF with extra money)</td>
<td>32.34</td>
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<tr>
<td>Standard Deviation (FF based on historic budget)</td>
<td>16.09</td>
</tr>
</tbody>
</table>

NB: All figures apart from the total budget figures are based on 63 schools. Historic enrolment figures for those in Astana and Almaty were not available to the consultant.
Annex 2 – Overview of the England’s proposed national formula funding scheme

Why is England moving to national formula funding?

England has run formula funding at local government level since 1990. The last major change in the system of funding was 2006-07 when the Government introduced the Dedicated Schools Grant (DSG) – the basic block grant to finance recurrent school expenditure from years 5 – 16. This DSG is paid to local government education authorities (LEAs), county councils (the equivalent of oblasts) and larger city governments who are responsible for most local schools and who distribute the money to schools using a local formula built on a number of permitted distribution criteria. The most important of these is age-weighted pupil numbers.

The distribution of DSG to LEAs was based largely on historic spending by LEAs in the financial year 2005-06 which in turn was determined partly by historic patterns of spending and partly on the basis of ‘needs’ factors which were seen as partly out of date. Since that time LEAs allocations have been largely increased on a ‘cost plus’ basis building in long term differences in per pupil funding. The difference between funding per pupil in the lowest funded LEA and the highest is of the order of 75%.

Not all school grants are distributed through the main schools block of the DSG by the local formula. Early years’ education and high needs pupils have their own blocks within the DSG. Funding for disadvantaged pupils (‘the pupil premium’) together with capital expenditure are allocated on different bases.

The Government’s proposal

The Government has proposed distributing the DSG directly to schools on the basis of a national funding formula. A relatively small amount of funding would be retained for LEAs to carry out legal functions with regards to areas such as admissions, statements of special needs and strategic planning of the education service.

The Government proposes the following distribution criteria and weightings for the DSG using two main factors i) Student related criteria and ii) School related criteria

<table>
<thead>
<tr>
<th>Factor</th>
<th>Weighting</th>
<th>Factor</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) Pupil-led factors</td>
<td>90.6</td>
<td>ii) School-led factors</td>
<td>9.4</td>
</tr>
<tr>
<td>- Basic Allocation</td>
<td>72.5</td>
<td>- Lump sum</td>
<td>7.1</td>
</tr>
<tr>
<td>- Additional Needs</td>
<td>18.1</td>
<td>- Sparsity(^9)</td>
<td>0.08</td>
</tr>
<tr>
<td>Of which</td>
<td></td>
<td>- Premises(^10)</td>
<td>1.5</td>
</tr>
<tr>
<td>Deprivation</td>
<td>9.3</td>
<td>- Growth(^11)</td>
<td>0.5</td>
</tr>
<tr>
<td>Low prior attainment</td>
<td>7.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English as an additional</td>
<td>1.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>language</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^9\) Sparsity relates to population density in an area (supports rural areas)
\(^10\) Premises relate to high cost premises built under Public/Private Partnerships or split site costs
\(^11\) Growth is an additional element for schools experiencing fast enrolment (in addition to extra revenue from extra pupils)
In addition a high needs formula will distribute money for special needs pupils to LEAs based on 13 criteria which will then use a local formula to distribute funding to special needs schools and mainstream schools with special needs students

i) A basic allocation (40% of total)

ii) An allocation based on historic factors

iii) Various population, ill-health disability and deprivation factors

iv) Cost of teaching students in hospital

v) Area cost adjustments

High needs pupils attract funding of approximately £10,000 p.a. The basic allocation for a primary pupil is £2,700, those for a lower secondary pupil £3,300 p.a and those for upper secondary (equivalent of grade 10-11) of £4,300 p.a. A secondary pupil on average attracts around 29% more than a primary pupil, and a special needs pupil around 3.5 times more.

Implementation of the Proposals

The Government are planning to go for a soft introduction of national formula funding in 2018-19, distributing money to local governments on the new basis but allowing LEAs to distribute money to schools using their existing local formula. In 2019-20, The Government will distribute directly to schools on the basis of the national formula, limiting losses to 1.5% of the previous baseline budget in each of the next three years and gains to 3% in the first year and 2.5% in each of the next two years.

The national formula is estimate around 54% of schools nationally with 46% losing. Schools most likely to benefit are schools in better-off areas where spending has been traditionally constrained due to the workings of the local government grant system. High unit of resource schools in London and some other major cities are expected to lose resource per student although the Government has pledged that no school will lose money in absolute terms (compared to per student terms) as a result of the changes.

Main Reference

Nerys Roberts and Paul Bolton (2017) – School Funding in England: Current system and proposals for fairer school funding – House of Commons Library

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12 Mobility relates to the extent of inflow/outflow of pupils through school
Annex 3: Policy Note on School Formula Funding

Objectives of School Formula Funding

One of the most significant changes in education in the last two decades both across the developed and developing world has been the devolution of the power to manage and take responsibility for school education outcomes, from local government to school level. Specifically this has involved transferring responsibilities for control and allocation of the budget and human resources to the school director and the local community represented by a governing body of parents and local officials who manage the school within the framework of HR and financial regulations, set by national and sub-national governments.

School formula funding is an integral part of this policy for the following reasons:

a) Providing a predictable and sufficient income stream to enable public schools to fulfil their statutory education responsibilities, ensure adequate non-salary funding and preventing the local education administrative authorities taking an undue share of the budget (‘leakage’)

b) Supporting greater access to education through reducing or abolishing mandatory parental fees and providing replacement state funding

c) Promoting competition between schools through the ‘money following students’ supported by open admission policies and better information on school outcomes

d) Promoting the development of private or charitable schools by providing equal or partial funding to those schools following a national curriculum, thus again increasing competition

e) Promoting network optimization through school mergers and closures where demographic change has made the existing school network inordinately expensive to maintain; and

f) Promoting equity in the treatment of all pupils and schools regardless of socio-economic, linguistic, racial and health background (for pupils) and geographic and socio-economic location (for schools).

Meaning of Equity

Equity has a number of different meanings. ‘Vertical equity’ has been described as the ‘unequal treatment of the unequal’ i.e. providing sufficient resources to enable pupils at varying levels of disadvantage to obtain the same benefits of education as any other pupil.

‘Horizontal equity’ involves all students being resourced in order to finance a common standard of education at the same price across different localities.

‘Horizontal’ equity in particular requires that communities and local governments with smaller revenue bases are provided with sufficient compensating grant to provide the same quality at the same price.
‘Level’ equity refers to the balance of resources going into the different levels of education and in particular preventing an undue proportion of education spending being devoted to a particular level that may benefit one particular cohort of the student population which may have privileged access to that level.

The purpose of ‘benefit incidence analysis’ is to provide estimations of the distribution of benefits of government expenditure across the student population with a view to establishing to what extent the financing of the school system may be considered as inequitable or unfair.

School and local government formula funding
A distinction needs to be made between formula funding of schools and formula funding of the responsible local government for school education. The former determines the amount going to each school; the latter the amount going to each local government to fund the totality of schools in its area. Most school funding formula actually concern the latter case with different countries giving varying degrees of freedom to sub-national governments to develop local formulae.

In some countries where there has been concern over the amount retained by local governments for centralised education administration and services such as the UK, local governments are required to pass on grant with minimal permissible changes to the formula and strictly defined exceptions. In other countries with a federal structure or with a tradition of greater local government freedom (such as the Nordic countries and the United States), much greater local discretion is given over local adjustments to the formula and level of spending.

A similar distinction needs to be made between whether the formula applies just to the grant made by central (or provincial) government for education or whether it relates to the aggregate of education spending which is assessed as a notional or minimum level of education spending. Countries where local governments finance a much greater spend from local taxes and revenues tend to use a formula distribution of notional spending (for education and other services); the central grant is then a compensating amount between total assessed spending need and total assessed local revenues.

For other countries where education is either a national responsibility or central funding is preponderant, the funding formula often relates only to the grant component alone (but which forms a high proportion of the school’s budget).

Development of Formula Funding Models
Formula funding has been characterised as having three generations of models.

The first generation model used by many countries implementing school based management is to use a simple capitation (per student) formula, usually weighted by age or grade to capture differential costs from different levels of school education. Often the formula only applies to financing expenditures for non-salary costs recurrent costs because of difficulties in reflecting salaries in ‘averaging’ formulae. Sometimes a small number of supplementary

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13 The difficulties are usually caused by a) large differences in the salary ranges of teachers for which applying an average salary may cause problems to schools with a very experienced and therefore relatively expensive teaching cohort; and b) a skewed distribution of teachers between urban and
factors are applied, notably protecting small schools through either a fixed sum plus variable student per capita or financing a minimum number of students.

Usually the funding is provided as a block grant which confers discretion on the governing body to use the funds (within any limitations prescribed by central government) as it sees as most appropriate to meeting the needs of the school. However some countries such as Thailand break the block amount into allocations for types of expenditure (textbooks, learning materials, uniforms). This may be helpful in demonstrating both transparency in allocation to parents and communities and ensuring sums are made available for specific initiatives (such as providing uniforms and free school meals)

The first generation models have a number of advantages. The per capita formula is simple to understand, and therefore the amount that schools can earn is predictable from both the school and government point of view. It also provides a straightforward incentive for schools to prevent drop-out and increase participation from disadvantaged communities; and in urban areas to attract additional pupils from across traditional catchment areas. It also reflects a reality for many central governments that either do not have the requisite financial information on actual spending to develop more sophisticated formulae and / or where spending was so constrained by lack of funding, that actual expenditure would be an insufficient guide to true needs.

The second generation formula models pay much more attention to the question of addressing ‘vertical equity’ by weighting pupils in a far more sophisticated way. For example the Polish formula outlined in the attached annex has two blocks of supplementation (in addition to the simple per student block allocation).

The first block has 27 additional weights (including 5 relating to special needs, 2 linguistic and 14 to special types of education). The second block has 13 weights (of which six relate to boarding activities and three for out of school activity). The weights are designed to reflect the relative scale of disadvantage, and sometimes include multiple characteristics (for example boarding of special needs pupils). However the weighting is intended to distribute a notional amount and is not necessarily a reflection of the real additional costs of providing additional services.

The third generation models are designed to achieve a closer correlation between weighting for different inequalities and actual spending needs. This may be derived through regression analysis on actual expenditure (particularly where local governments top up central government grants to provide a more realistic picture of actual need) and or through bottom up research on activity costing (for example providing additional remedial teaching or individual assistance to special needs students)

Inclusion of Capital Expenditure
Most school funding formulae do not include funding of capital expenditure. The only country in the examples provided in Annex 1 to do is Estonia. The usual reasons for this are:

i) The ownership of the school estate is usually vested in the local government which therefore has responsibility as “landlord” for capital repairs and expenditure.

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rural areas partly caused by the phenomenon of teaching being ‘the spouse’s job’ and the spouse following the primary wage earner
ii) The school inherits the estate; and its age and condition have no or very limited relationship to the main recurrent cost drivers and formulae.

In cases where the estate is being invested in the school as an independent legal entity it may be appropriate to provide per capita funding for the purpose of building up a capital fund from which repairs and improvements may be defrayed. The purpose of the capital fund in this sense to spread inter-generational cost between students and is analogous to those funds maintained by private schools who usually charge a one off capital fee on admission.

In such circumstances as these it would be appropriate to ensure all schools are brought to a minimum defined standard of facilities. The province of Ontario in Canada developed a partly formulaic specific capital funding scheme to address shortfalls in its school estate in 2005.

Inclusion of Performance Factors
School funding formulae do not normally include ‘performance-related’ supplements for three reasons.

First the capitation formula based on students is designed to encourage better performance because money will follow students to better schools. This assumes a number of pre-conditions:

- Other schools are easily accessible (not true in smaller rural communities),
- ‘Attractive’ schools can accommodate flexibly additional pupils (perhaps true only to a limited extent),
- The government authorities can afford spare places in less in-demand schools (a necessary corollary of competition)
- Admission rules allow such movement of students and
- Parents have access to meaningful school learning outcome and performance data on which to exercise their choice

Second many countries do not have national independently assessed school examinations on which to base an objective assessment of school performance. Instead they rely on census type data in order to capture school learning outcomes. In this regard Malaysia is well served. It does have such a national assessment system (UPSR, PMR and SPM) for which all pupils studying the national curriculum have to sit. There is therefore a comprehensive independent baseline data (with a reasonably long historic timeline) against which to monitor performance. The only gap is probably the lack of a standard exam test at primary ‘standard’ three which is important to assess early under-achievement in literacy and numeracy which could be rectified.

The third reason why performance related funding is not popular is that unless carefully designed, the supplements can accentuate the problem of disadvantaged schools rather than help resolve them. In this case performance supplements clearly need to be ‘add-ons’ not a core part of funding. They must also clearly reflect the added value of the education process above and beyond what may be expected from a particular school in a given set of socio-economic and geographical circumstances.
Examples of Formula Funding

Table 1 presents a number of examples of formulae used in the financing of general education in selected countries. The presentation of the table follows that of Levacic (2006) who highlighted four main types of factors in the derivation of financing formula.

i) Basic pupil numbers weighted by different age or grade of education

ii) Curriculum related formula (notably to reflect language teaching)

iii) Pupil related factors (notably reflecting disadvantage for particular socio-economic and minority groups)

iv) School related factors (notably small size, and geographic location).

To reflect the significant differences in the precision of some formulae, some additional sub-categories within the four main headings are added. A particular feature is the use of ‘safety netting’ for a time limited period to assist the gains or losses of moving to a formula based system.

The following are important considerations for each of the four blocks.

Block i) Pupil Numbers

The calculation of pupil numbers is either derived from the actual enrolment on a fixed census date (which is then fed into the annual EMIS statistics) or on an average daily enrolment where the data can be regularly updated. Most countries using a census approach select a date near to the start of the school year; this may not therefore reflect drop-out over the school year and is open to some degree of manipulation. Furthermore, since the EMIS system is updated only once a year, the census data is used retrospectively (i.e. the data of the last year is used).

The weighting of the pupil numbers is important, particularly if the formula reflect staffing costs. In general most formula system use a three or four level approach depending on whether pre-school is included. Pre-school students generally carry a higher weighting because of the need for lower class sizes and higher staffing ratios (and also to some extent more varied equipment). Higher secondary usually attracts greater weights because of subject specialism and therefore lower class sizes as well as the need for more science and vocational equipment.

Block ii) Curriculum

The main weighting given on curriculum concerns the provision of alternative language education from the primary language of instruction. This can be either dual language provision for a large number of students / schools or provision of an alternative language medium schools for a minority community. In Estonia for example the government overfunds places where there is a sufficient minority of students in any municipality who wish to study in one of the two main languages of instruction (Estonian or Russian). In Ontario Canada, the government funds both language and cultural studies for ‘First

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14 Rosalind Levacic (2006) Funding Schools By Formula – paper presented to International conference on financing education systems at the University of Lausanne
American’ and Innuit groups. Funding for additional language provision should be
distinguished from support for additional remedial language help for non-native speakers;
this is dealt with under the pupil disadvantage block. In New Zealand, the Government
funds Maori Immersion schools based on 4 levels of the extent to which the curriculum is
partially or completely taught in Maori.

Other curriculum enhancements can be in respect of particular specialisms schools have for
which require specialized teachers and equipment. These can include music and performing
arts, specialist science and medical vocational skills and sports. As noted above Poland has
14 additional weights to reflect specialist types of education.

**Block iii) Disadvantaged Pupil Criteria**

Disadvantaged pupils are reflected in formula funding for three types of disadvantage. The
first group of weights is for various forms of special learning needs arising from physical or
learning difficulties. In some countries these additional weightings are only for pupils
studying in mainstream schools; in other countries special schools are included wholly within
the funding formula and the weights allocated are large given often the small sizes of the
schools and the specialist nature of care that is needed.

The second group of weights concerns socio-economic disadvantage. This is usually
identified through a proxy indicator such as eligibility for free or reduced price school meals
Another indicator of disadvantage that is often used is the low educational background of
one or both parents which is found from census information. In a number of countries (e.g.
Australia, New Zealand and some American states) an additional amount is added to reflect
the impact on learning needs and resources of a concentration of pupils of socio-economic
disadvantage, which are assessed by quartiles or deciles. In California this compensates for
the fact that pupils cannot be weighted twice for different factors.

The third category concerns pupil disadvantages relating to individual circumstances usually
being immigrant children whose native language is not the medium of instruction. In the UK
for example this language allocation must be calculated on a pupil by pupil basis and is
limited to a three year period of adjustment although the rate may be higher for secondary
compared to primary pupils to reflect higher costs of acquiring fluency at a later age of entry
into school.

**Block iv) School related criteria**

The School related criteria usually consist of three main elements. The first are block
allocations to reflect the fixed costs of schools. These block allocations are usually made to
support smaller schools who are at a disadvantage in heavily pupil driven formula
allocations.

The second class of criteria relate to reflecting the higher costs of geographic locations which
are often but not always linked to smaller schools. Usually this relates to the higher costs of
providing educational facilities in areas with scattered populations (which may include
higher costs of home to school transport, educational supplies and utilities plus extra salary
supplements for teachers.) However they can also reflect higher urban living costs for
teachers working in high cost areas in or near major cities.
The third class of criteria reflect special school characteristics and higher costs such as split sites, or the use of historic buildings, safety and security issues, or as in parts of former Soviet Union and China different winter heating needs and systems.

**Centrally Managed Expenditures**

While most recurrent funding is released to schools, some expenditures are managed within local government education departments. The most important of these relate to teachers such as pension contributions or special pay supplements. They may also include training and qualification budgets, the provision of careers advice for secondary pupils, funds for municipal organised sports and cultural events and non-recurrent maintenance.

The reasons for the centrally funded items are usually twofold – the incidence of the expenditure is outside the control of the school principal and governing bodies and/or the services are sufficiently specialist that their provision only makes economic sense by pooling funding.

Over time in most formula funded systems, the amount of money held by local education administrations has fallen and schools either take over responsibility for the excepted functions or they agree to buy back from the local government the services based on their expected (and actual) usage under a Service Level Agreement (SLA).

**Considerations in the design of formulae**

There is general agreement that ‘adequate’ resourcing is critical in facilitating improved participation and improved learning in school education. School funding formulae play a potentially important role in facilitating adequate resourcing but even the relatively limited experience of the past three decades has indicated a number of potential pitfalls

i) The stability of a formula is essential both in providing transparency to stakeholders and incentives to actually adapt to and potentially use the additional resources that may be available under a formula funding system. One of the advantages for example of providing additional equity funding through a formula rather than through conditional grant programs is the signal that additional funding is being mainstreamed, whereas specific programs may be withdrawn under cost pressure or altered incrementally in ways which reduce fairness and system transparency. In the United States in particular where changes in formula have been often implemented because of legal challenges to the adequacy of resourcing, there have been large numbers of amendments to formulae (e.g. New Mexico has had 80 changes in its formula since the early 1980s) which reduces transparency and makes it all but impossible to evaluate the impact of different changes.

ii) Formulae should be simple and understandable and reflect the basic need to provide adequate funding for all students. Overly complex formula reduce the transparency of the system which may violate the principle of not only being fair but being seen to be fair. They may also build in incentives for ‘gaming’ for example seeking to classify additional pupils as non-native speakers or from lower socio-economic groups. They may also build in additional inefficiencies for example giving too much money to small schools to keep them open instead of rationalizing the network.
iii) ‘Displacement effects’ should be considered particularly where there is significant non-central government funding. For example a research study in New York City noted that additional federal government financed ‘Title 1’ support for disadvantaged elementary and middle school students led to a reduction in state and district funding for such pupils leading to very little overall impact. In a different context, the introduction of the BOS block grant system in Indonesia from 2005 has led to a large fall in parental contributions which may actually increase systemic inequities because of the differential impact across richer and poorer communities on voluntary contributions.

iv) The impact of changes formula funding is likely to increase total education spending because of the political imperative that changes should be relative and not absolute i.e. that schools that lose money under the formula changes should not actually have reduced budgets but merely that their budgets should not increase or increase more slowly than gainers. Differential rates of indexation against inflation can help in this regard allowing the impact of inflation to help in the adjustment process. However these transitions take time in low inflationary environments and it is unusual for these to be wholly achieved through differential indexation. Pushing through changes in difficult fiscal environments such as in the US in the post 2008 period is particularly difficult because of the adverse cost impact of any changes to the education budget on other services.

v) The calculation of weights needs to be carefully considered. One way of calculating weights is to develop education production function based on historic data, for example using funding levels in more successful schools and/or districts with comparatively the same sort of socio-economic background as predictors of the amounts that need to be spent to achieve the same level of student outcomes. Apart from the important issue of the inference of causality, using production functions based on historic data may lock in differences arising either from the existing formula distribution and/or from constrained spending. For example the production function weights-- calculated for Thailand were just a 2% addition for a 100% concentration of students from a lower SES. This is extremely low in relation to weights used in many developed countries for resource uplifts (20% or more) and are probably not adequate

A further problem with weights concerns the calculations of standard percentage additions on a base level of resource. Under this model, the higher the unit of resource the larger the uplift in absolute terms. However genuine needs based calculations and the concept of diminishing returns suggest that as base funding increases, lower percentage additions will be sufficient to support the special needs of the disadvantaged..

Some formula additions can be calculated in relation to actual needs with more precision than others. For example the additional costs for extra language teaching for non-native speakers may be calculated reasonably precisely from studies of past programs and the assessment of hours of additional teaching and associated resources that may be necessary to bring most students from particular language backgrounds up to a specific age related minimum standard.
Similarly it may be possible to assess the cost needs of various special needs students reasonably precisely – for example in terms of special aids or teaching assistant time for children with learning difficulties. However averaging cost for different special needs students in a formula may be more difficult; therefore it may be appropriate to provide additional cost for ‘high’ SEN students outside the basic formula.

However the most problematic area concerns additional funding for students from disadvantaged backgrounds. It requires an assessment of the extent to which additional services can address differences arising from a student’s socio-economic background and home environment. Areas for potential additional funding could include:

i) Additional classes and supervised homework
ii) Extra books and equipment
iii) Support for extra-curricular activities
iv) Financial support to stay in school rather than seeking income earning opportunities
v) Building school-employer linkages to develop vocational skills and career paths

These services create extra cost but it is not clear to what extent these real additional costs are considered when calculating.. Furthermore schools are often given substantial discretion over what they may do with the extra funding which may further obscure the link between (additional) funding and (improvement in) student achievement.

Impact of Formula Funding on Student Achievement
There is relatively little literature on the impact of school funding on student achievement outside the United States. This probably reflects both the very low non-salary allocations to schools (particularly in developing countries) and the absence of standardized national achievement tests and pupil databases (at least prior to years 9 and 10). Even in the United States the focus of assessment has primarily been on the overall adequacy of school level funding in response to constitutional challenges on the levels of education state funding and the impact of differences in the levels of local taxation used for education, rather than on the impact of changes in the formula itself.

Assessing the impact of funding changes is difficult for several reasons:

1. Education systems have been often in continual change particularly in relation to changes in the curriculum and the training of teachers which may have greater impact in the medium term
2. Changes in the socio-economic and demographic context of localities (e.g. from immigration and emigration, rapid de-industrialization and conversely gentrification) may have massive impacts on the education expectations and performance of student cohorts that obscure any impacts of changes in the school funding system
3. The content of student assessment tests is often changed or the tests themselves even withdrawn making comparisons difficult
4. The impact of changes in funding levels and distribution is likely to be felt only over a decade; yet many funding formulae do not remain unchanged for this length of time and other societal changes described above are likely to have an impact and
5. The so-called endogeneity problem that additional funding may be disproportionately provided to schools and pupils with more challenging socio-economic backgrounds and lower achievements, which may weaken the overall association between funding and achievement.

The overall conclusion from the large number of US and a small number of international studies\(^{15}\) is that resource levels have a weak and unpredictable impact on student learning outcomes. Studies conducted by Erik Hanushek both in the US and internationally over three decades have suggested there is no systemic link between the level of resources and the level of achievement. Similar research by Ludger Woesmann in Northern Europe and in East Asia (2003 and 2005) reached the same conclusion and found that institutional factors particularly family background was the most important factor in determining relative achievement.

Other researchers (e.g. Hedges, Lane and Greenwald) have found resource levels have a modest but positive impact on learning. A UK study\(^{16}\) using key stage 2 and 3 test scores in the National Pupil Database also found a significant relationship between higher spending and positive test scores in maths and science but not English, although this study focussed more on overall spending rather than its distribution.

Stephen Heyneman and William Loxley in the early 1980s looking at developing countries contended that the lower the base level of funding, the greater the impact of school and teacher resources which would accord with the a priori reasoning concerning diminishing returns as well as the reduced importance of family circumstances, when the majority of parents are of a similar (and relatively) low education and occupational background. However other researchers in the 1990s could not find such associations.

Looking at the impact of changes in funding distribution, a recent study in the state of Maine in the US found no statistically significant change in Grade 11 assessment scores for 97 schools that received an increase in per pupil funding compared to 17 schools who had a reduction\(^{17}\). A longer period statistical study for 176 school districts in Kentucky and 136 districts in Tennessee between 1991 and 2001\(^{18}\) also found no statistically significant association of changes in per student expenditures or per student expenditure differences between schools on achievement as measured by standardized test scores between grades 3 and 8. A study on Finnish Upper Secondary schools between 1990 and 1998 also found no statistical association between achievement and per student funding.

By contrast a recent study on Arizona\(^{19}\) found a significant relationship between student achievement in the standard maths test between high, medium and low funded districts as measured by differences in spending relative to the local guideline spending level (‘Revenue Control Limit’). Interestingly the explanatory power of the funding variable was greater for

\(^{15}\) Summarized in (2008) Nascimento P.A. Also commented on in Fazekas (2012)

\(^{16}\) Steele, F et al (2007)

\(^{17}\) Silvernail D et al (2010) It is worth pointing out however as an illustration of the difficulties faced that the evaluation period of only two years was short; it was not possible to evaluate the impact on grade 4 and 8 tests as these tests had changed and grade 11 may be considered the level at which there is least impact of any funding changes, since student learning habits and practices have already been set.

\(^{18}\) Spears, R.A (2007)

\(^{19}\) Hoffman M J (2013)
primary (24% and 26% at grades 3 and 5) compared to secondary (19% and 11% at grades 8 and 10), emphasizing the potential importance of additional funding at earlier stages of the school cycle.

The amount of academic research and the difficulties in controlling for other factors make any conclusions highly tentative. However based on the available evidence, and a priori reasoning it seems possible to conclude that additional per student funding can have a positive impact on achievement but the extent of that impact depends on three factors.

i) The reference point or base level funding. The lower the initial level of funding compared to ‘peer’ schools or districts, the greater the likely impact of any significant funding changes and similarly the higher the base level of funding, the lower the impact of changes due to the phenomenon of diminishing returns

ii) The extent to which additional funding can be transformed into acquiring better and more experienced teacher, as teachers are probably the single most important determinant of quality. Put simply worldwide the least experienced and often the poorest performing teachers are disproportionately assigned to the most difficult schools. If salaries or at least additional allowances are not part of formula funding this teacher distribution is unlikely to change.

However even if salaries are included in the formula and schools in more difficult socio-economic areas could potentially offer higher salaries it does not mean that this will lead to the employment of better and more experienced teachers. First there is the impact of national union negotiated agreements which means that any additional increments for teaching in difficult schools may be limited. Second there are the non-salary factors including one own family circumstances and expectations of stress that may bias teachers against seeking such posts. In New Zealand publication of schools relative position in deciles of socio-economic disadvantage has actually influenced teachers in seeking positions in schools in the higher deciles even if their funding level is lower.

iii) The third factor concerns the general use of additional funds outside the recruitment of teachers. A study by the Institute of Education and Social Policy New York University20 found that there was no statistical relationship between the distribution of Title 1 funds for the most economically deprived students and school achievement using panel data between 1998 and 2003; in fact at high school level there appeared to be a negative relationship between the two even though Title 1 did significantly increase the level of per student funding at high school. The researchers concluded that one possible reason for the lack of impact was the relatively weak direction on spending priorities (10% of the funds to be used for teacher professional development and 1% for strengthening parental involvement).

A recent Harvard case study21 based approach emphasized the importance of better utilization of Title 1 funds for disadvantaged students. These included developing quality pre-school opportunities and implementing early literacy interventions (emphasizing the likely value added of additional funding earlier in the school cycle), engaging parents in a meaningful way to increase involvement and interest in school activities including

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21 Stilwell-Parvensky, M (2011)
homework, creating a culture of high expectations and college readiness and extending quality instructional time.

Extending time on task was a feature of an interesting policy experiment in Israel that arose from a move from class based to per student based funding with additional weighting for students from disadvantaged backgrounds between 2004 and 2009. The study provides some interesting evidence on the positive impact of extra funding that was translated into altered teaching budgets, more time spent in school and extra teaching in core subjects. The study found a modest but mutually consistent relationship between test scores in Maths, Science and English and changes in per student funding with very similar elasticity of change for all three subjects. The experiment however ended in 2009 with a reversion to class financing, obscuring the chance to see whether the positive relationship would hold in the longer term.

Conclusion

Despite the substantial investment made in schools across almost all countries in the past thirty years, and the significant intellectual investment made in developing and analysing school funding formulae, it is still difficult to draw firm lessons about 'what works best'. Nevertheless the following conclusions appear to be borne out from academic research.

1) Funding formulae are an inevitable consequence of increased national funding for education and the increased accountability of national governments for education results. Once national responsibility for funding is assumed, governments must adopt some form of 'fair' funding formula. Over the past two decades, governments have attempted to improve the fairness of formula funding by recognising the additional costs of supporting with pupils facing learning challenges and difficulties and compensating for weak educational and financial support from the family.

2) No funding distribution can displace the need to have an adequate basic level of funding per student that is commensurate with employing well trained and motivated teachers, working in sound and healthy school facilities and with a satisfactory inventory of books, equipment and materials necessary to fulfil the curriculum.

3) Simple per capita funding adjusted by level have the advantage of being easily understood and predictable. Given that students are the principal cost driver in education, using per capita as the basis for the majority of recurrent funding is eminently fair. However leaving out teacher cost from any formula-based distribution involves omitting the largest single item of expense the distribution of which on the basis of norms, historical trends, administrative practice and lobbying by interest groups may make the distribution of overall school funding highly unfair.

4) Using simple per capita without any other weighting risks disadvantaging certain groups of students and schools on account of their background, individual learning challenges, location and socio-economic status of their parents. Nevertheless any adjustment to the base level of funding should capture the likely real costs of programs and activities which are at least partially effective in compensating for disadvantage. Greater funding for disadvantage may have more impact in pre-school and primary education.
5) Formula funding is strongly associated with school based management and the principle that school principals and stakeholders including parents can make better decisions about how to use money than those at higher level of government. While there is growing evidence from a number of countries that this is the case, it is not a certainty. School managers and communities need training to make best use of resources and also higher level supervision over use of funding.

6) Some form of performance incentive to schools may be appropriate but must be based on value added in terms of the education process and should not wholly be determined by test score.

7) Although not allocated by formula, it is important to align capital expenditure with student needs. For example it is impossible to expand time on task and run additional classes for schools operating on a two shift system. Better facilities also have an important impact on teacher and student motivation.22

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### Comparison of School Funding Formulae

#### 1. Asia-Pacific

<table>
<thead>
<tr>
<th>Components of Formula</th>
<th>Australia</th>
<th>New Zealand</th>
<th>Korea</th>
<th>Indonesia</th>
<th>Malaysia</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year</strong></td>
<td>2014 based on Education Act 2013</td>
<td>1990 with incremental adjustments</td>
<td>1971 with salary grant included from 2004 and kindergartens 2008</td>
<td>2005 (BOS) (covering years 1-9)</td>
<td>2012 (covering years 1-11)</td>
</tr>
<tr>
<td><strong>1. Basic Allocation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basis – (Salary + non-salary recurrent costs)</td>
<td>Yes (including salaries for district based teaching staff and redundancies)</td>
<td>No, basic staffing costs based on norms, but allocations for relief teachers and teacher allowances based on per pupil</td>
<td>No, basic staffing costs based on norms</td>
<td>No – (but significant amount 20% of BOS spent on recruiting local teachers)</td>
<td>No, based on basic staffing norms</td>
</tr>
</tbody>
</table>
| Basic – Non-salary only |                                                                               | All non-salary recurrent costs (about 30% of recurrent funding) | Two stage allocation  
   i) central to local based on Local Education Finance Grant (LEFG) based on standard fiscal needs and standard local resources  
   ii) local to school based on standard operational expenses in 3 categories teacher related costs per teacher, school buildings per no of classes) and | Basic School Operational Grant (BOS) + District School Improvement Grant (BOS-DA) | Per capita grant (PCG) as main element (subdivided in 7 categories) among 25 separate grant elements |
### 2. Curriculum Allocation

<table>
<thead>
<tr>
<th>Language</th>
<th>None</th>
<th>Per Pupil Maori Language Immersion Funding up to 4 different levels of intensity (min 3 hours per week)</th>
<th>Sub-element iv) of PCG lesson based allocations incorporate additions for main languages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td>i) Standard ICT allocation per school and pupil</td>
<td>i) in LEFG standard unit cost allocation for kindergarten school</td>
<td>PCG has total of four other lesson based allocations for</td>
</tr>
<tr>
<td></td>
<td>ii) KiwiSports allocation per pupil</td>
<td>ii) in LEFG standard UC allocation for after school program for poor students</td>
<td>i) basic subjects</td>
</tr>
<tr>
<td></td>
<td>iii) After-schools program allocation per pupil</td>
<td></td>
<td>ii) civics &amp; citizenship</td>
</tr>
<tr>
<td></td>
<td>iv) Secondary tertiary program for FTE pupil</td>
<td></td>
<td>iii) compulsory subjects e.g. PE Music and</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>v) elective subjects</td>
</tr>
</tbody>
</table>

In addition 4 programs for i) School & residential school co-
### 3. Pupil Specific Factors

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non – native speakers</strong></td>
<td>10% loading on base amount of SRS if student comes from background other than English and at least one of student’s parents completed English only to grade 9</td>
<td>None but additional allocation for Remove class in lower secondary for students with poor command of Bahasa Melayu</td>
</tr>
<tr>
<td><strong>Minorities</strong></td>
<td>Loading on linear basis of 20% of base SRS for first Aboriginal and Torres Strait pupil up to 120% for 100%</td>
<td>None</td>
</tr>
<tr>
<td><strong>Socio – economic factors</strong> (poor households)**</td>
<td>4 per pupil grants (Trust Fund, Supplementary food, milk and uniform) paid</td>
<td></td>
</tr>
<tr>
<td><strong>Special Needs</strong></td>
<td>Basic SRS amount multiplied by 223% for pupils in special schools and 186% in mainstream schools</td>
<td>Amount per class based on Full time Teacher Equivalent, generated by number of special needs students</td>
</tr>
<tr>
<td><strong>Low Educational Attainment</strong></td>
<td>Base and per pupil targeted amount based</td>
<td></td>
</tr>
<tr>
<td>4. School Specific Factors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
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</tr>
</tbody>
</table>
| **Basic Administration costs** | None | i) Property allocation based on notional space requirements per level of school and notional depreciation of 30 NZD per square metre  
ii) Per pupil amount for caretakers and cleaners | Basic unit cost allocation under LEFG administration and schools maintenance  
Base and variable cost amount under 3 PCG categories  
i) Resource Centre  
ii) Guidance and Counselling  
iii) Operations |
| **Small Size** | Loading based on minimum thresholds (15 for primary/100 for secondary) and maximum thresholds (300 primary and 700 secondary) which do not qualify for any size addition. Maximum additions 150,000 AUD for primary and 240,000 AUD for secondary | Base fixed amount depending on level of school (primary, secondary, middle, area) and numbers of pupils with taper being applied to initial fixed allocation to reduce to zero beyond ceiling level of pupils | Minimum per pupil funding for 80 students (primary) and 120 (junior secondary)  
Under BOS-DA pilot additional resource planned for small schools  
All categories of PCG except basic Kg allocation adjusted for 7 school size categories at primary and 4 at secondary |
| **Location** | Loading based on 5 banding levels in ARIA Index value between 1 (no additional funding) and 15 (very remote school) | Base amount plus per pupil addition for isolated schools | Under BOS-DA pilot additional resources for remote schools  
None |
| **Disadvantaged Pupil Concentration** | Loading based on concentration of pupils from two lowest socio- | Special Education Grant based on % of households with school aged children | None |
economic quartiles of between 15 and 50% for Q1 and 7.5 and 50% for Q2 x proportion of pupils in each quartile (capped at 75% concentration under both Q1 and Q2 in school catchment to determine particular decile. Highest amount for decile 1 to zero for decile 10

<table>
<thead>
<tr>
<th>5. Capital</th>
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</thead>
<tbody>
<tr>
<td>Annual Formula</td>
</tr>
<tr>
<td>Assessed Needs – special allocation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6. Other</th>
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</thead>
<tbody>
<tr>
<td>Transition (Safety Netting) and other issues</td>
</tr>
</tbody>
</table>
### 2. Europe and North America

<table>
<thead>
<tr>
<th>Components of Formula</th>
<th>USA (California)</th>
<th>England</th>
<th>Canada (Ontario)</th>
<th>Norway</th>
<th>Germany (Land Baden-Wuerttemberg)(^\text{23})</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Basic Allocation</td>
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<tr>
<td>Basis – (all recurrent costs)</td>
<td>All costs – Average Daily Enrolment</td>
<td>All costs – based on October Census (school year Sept – July)</td>
<td>All costs – based on average daily enrolment Pupil Foundation Grant to cover classroom teachers and teaching and learning materials Teacher Qualification &amp; experience allocation compensates for high cost teachers</td>
<td>All costs – Formula based on notional spending for distribution of education element of general purposes grant</td>
<td>All salary, pension and social security costs for teaching staff covered by Land level</td>
</tr>
<tr>
<td>Basic – Non-salary only</td>
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\(^{23}\) [http://www.landesrecht-bw.de/jportal/?quelle=jlink&query=SchullastV+BW&psml=bsbawueprod.psml&max=true&aiz=true](http://www.landesrecht-bw.de/jportal/?quelle=jlink&query=SchullastV+BW&psml=bsbawueprod.psml&max=true&aiz=true)
### 1. Schools in high relative need

- Four levels of age weighted allocation (K – 3, 4-6, 7-8 and 9 -12)
- Additional amounts for reduced class size in K – 3 (10.6%) and 9 – 12 (2.6%)

### 2. Curriculum Allocation

#### Language

- None

#### Other

- 3 sub-allocations for native language teaching, native studies teaching & concentration of native children
  - As part of Learning Opportunities grant 1 sub-allocation for literacy & math classes outside the school day; 1 sub-allocation for high schools skills major

### 3. Pupil Specific Factors

- 89.88 % of allocations are based on share of inhabitants aged 6 – 15 years (primary school age). This share is the residual of estimated costs, after all other factors are accounted for.

- Seven levels of school (excluding special needs schools) including pre-school, basic, community schools 5 – 10, higher secondary, special schools, part and full time vocational schools
<table>
<thead>
<tr>
<th>Category</th>
<th>Uplift</th>
<th>Criteria</th>
<th>Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non–native speakers</td>
<td>20% uplift on basic allocation</td>
<td>Optional uplift with different element for primary and secondary limited to 3 years</td>
<td>Covered through largely through Language and Learning Opportunities grant sub-allocations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.2% allocated according to estimated costs for non-Scandinavian speaking pupils. Two criteria are used, immigrants aged 16–15 years from non-Scandinavian countries (2.88%) and Norwegian born age 6-15 with immigrant parents from non-Scandinavian Countries (0.32%)</td>
<td></td>
</tr>
<tr>
<td>Socio–economic factors (poor households)</td>
<td>20% uplift on basic allocation (only one uplift for pupils in both categories)</td>
<td>Deprivation mandatory factor based on free school meal provision or Indices of Deprivation (IDACI) or both</td>
<td>Demographic sub-allocation of Learning Opportunities Grant is based on 4 indicators of low income (50%), recent immigration to Canada (25%) and lone parent and low parent education (12.5% each) For particularly disadvantaged pupils there is a refund mechanism outside the general purpose grant scheme.</td>
</tr>
<tr>
<td>Special Education Needs (SEN)</td>
<td>Optional factor but must be included in SEN block allocation that is agreed with Local Schools Forum</td>
<td>Special Education Needs based on 6 separate sub-allocations (special, high needs, equipment, facilities, behaviour expertise)</td>
<td>8 classifications of special needs with multiples of the basic per pupil allocation from 13.4 to 1.25</td>
</tr>
<tr>
<td>Low Educational Attainment</td>
<td>Targeted Instructional Improvement Grant add on (for districts)</td>
<td>Optional factor for low cost educational attainment based on numbers not achieving 73 points in Early Years</td>
<td>Ontario Focussed Intervention Programme as a sub allocation of Learning Opportunities Grant to fund after school</td>
</tr>
<tr>
<td>Foundation Stage Profile (primary) and level 4 in key stage 2 in both Maths and English and summer school programmes</td>
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<tr>
<td><strong>4. School Specific Factors</strong></td>
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<tr>
<td><strong>Basic</strong></td>
<td>School Foundation grant for principals, school secretaries and office supplies based on 8 classifications of class size in primary up to more than 1000 pupils, &amp; 6 classifications for secondary up to 1500 pupils</td>
<td>Fixed sum per pupil for all schools</td>
<td></td>
</tr>
<tr>
<td><strong>Small Size</strong></td>
<td>Lump sum optional up to £200,000 p.a to cover fixed costs only</td>
<td>Geographic circumstances grant – 5 sub-components three based on small enrolment, distance from major urban centres and dispersion for higher goods and services, 1 sub-component for supporting minimum teachers and 1 for rural governing body support</td>
<td>Compensation for small size / administrative costs of small municipalities. 1.84 % allocated flat between all 428 municipalities. (This allocation is based on estimated administrative costs, ensuring that small municipalities’ are compensated for higher per capita administrative costs.)</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>Home to School Transport Grant add-on (for districts)</td>
<td>Additional cost allocations (deduction from main block)</td>
<td>Student transportation grant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Split site schools</td>
<td>5.08% of allocations are based on estimated costs due to location specific circumstances (population)</td>
</tr>
<tr>
<td><strong>Disadvantaged Pupil Concentration</strong></td>
<td>Each disadvantaged pupil above 55% concentration in school enrolment gets an extra 50% uplift, but capped at district’s overall proportion of DA pupils</td>
<td>Safe School grants provide additional funding to schools in particular need of additional psychological and behaviour support</td>
<td>No</td>
</tr>
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<tr>
<td><strong>5. Capital</strong></td>
<td>Allocated capital funding for major reconstructions and full day KG classes</td>
<td>Capital costs are included in the transfers general purpose grant. In general, capital costs are not found to differ systematically from the recurrent cost structure.</td>
<td></td>
</tr>
<tr>
<td><strong>Annual Formula</strong></td>
<td>School Renewal Grant based on age weighted adjusted floor area per pupil modified by adjustment coefficient for minimum floor area.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Assessed Needs – special allocation</strong></td>
<td>Special Education Equipment Need allocation – block amount + per pupil sum</td>
<td></td>
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<tr>
<td>6. Other</td>
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<td>---------------------------------</td>
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<tr>
<td><strong>Safety Netting</strong></td>
<td>Economic Recovery Target Add-on to safety net losing districts under formula change for 2013-14 to 2020-21</td>
<td>Minimum Funding Guarantee (MFG). Losses limited to 1.5% p.a. per pupil for 2013-14 and 2014-15</td>
<td></td>
</tr>
</tbody>
</table>