

Submission to the Senate Select Committee on School Funding

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*The views expressed in this submission are provided in a personal capacity by the author and do not represent the views of any organisation.

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1. Introduction

Two assumptions underpin the school funding approach developed as a result of the Review of School Funding.¹ The first is that a substantial increase in per student funding is required to ensure Australian schools perform to a high level; the second that significant additional funding should be provided to offset the consequences of a range of characteristics, including the characteristics of schools' student bodies in terms of socio-economic status ("SES") and primary language.

There is no evidence whatsoever supporting the first of those assumptions. There is an enormous literature in the economics of education that examines the relationship between school funding and student outcomes.² most often, no link is found—and when one is found, it tends to be weak and not to hold at relatively high expenditure levels (so that once typical advanced economy spending levels are achieved, further increases in funding have little or no effect on outcomes, and when they do, the impacts are so slight and uncertain as to make the added spending difficult to justify on cost-benefit terms³).

Indeed, in Australia, despite real growth in government funding of over 3.8 percent per annum over the period 2000-2012, performance on international standardised tests either did not improve or deteriorated. Moreover, far from supporting an increase in funding, the statistical analysis conducted for the Review of School Funding found that even correcting for potential confounding variables (such as geographical location, school size and the socio-economic composition of the student body), better-performing secondary schools spent some \$400 *less* per student than the schools that performed less well on NAPLAN.⁴

¹ Gonski et al 2011, *Review of Funding for Schooling -Final Report*, Department of Education, Employment and Workplace Relations, December.

² See for example, Grubb, WN, 2011, *The Money Myth : school resources, outcomes, and equity*, Russell Sage Foundation, New York, which also explores some of the complexities involved in the links between resources and outcomes.

³ The absence of any relationship once spending is at typical advanced country levels is clear from Figure 2.1, page 22 of *Equity, Excellence and Inclusiveness in Education: Policy lessons from Around the World*, OECD Paris, 2014. It is worth noting that the strong performance of the Finnish education system occurred in the context of significant falls in expenditure and of substantial differences between schools in funding, with schools in more disadvantaged areas receiving less funding. See Häkkinen I., Tanja Kirjavainen and Roope Uusitalo 2003 "School resources and student achievement revisited: new evidence from panel data", *Economics of Education Review*, 22, 329.

⁴ Trends over time in outcomes are reviewed in Hanushek, Eric A and Woessman, L, 2010, 'The Economics of International Differences in Educational Achievement' in EA Hanushek, S Machin and L Woessmann, (eds),

As a result, it is entirely unclear how the very substantial projected increases in school funding—which is expected to rise at an average rate of 6.5 percent over the next decade, nearly twice the already high rate of the previous decade—could be viewed as a properly justified use of taxpayer funds.

2. *Spending and disadvantage*

Turning to the second assumption (that additional expenditure is needed to offset characteristics such as socio-economic status), it too is not well established. As best one can tell, it relies on two claims: the claim that student performance is significantly adversely affected by those characteristics; and the claim that those effects can be addressed through ‘loadings’, i.e. through supplementary payments to schools.

In practice, it is likely that there is some impact on student performance of parental characteristics, but the underlying relationships are neither strong nor simple. And as for the effectiveness of increased funding in altering or offsetting those relationships, the relevant evidence is even weaker.

For example, simple analyses, such as graphical presentations in the Review of School Funding (relating mean NAPLAN performance at a school level to mean socio-economic characteristics) are of little value in assessing the extent or strength of relationships between student characteristics and education outcomes, as they are highly vulnerable to the ecological fallacy.⁵ Those analyses cannot provide a basis for concluding that any particular variable—say, the socio-economic composition of the student body—has a material impact on performance. Rather, the best evidence is that parental socio-economic status has a relatively minor effect on school outcomes, explaining a small share (in the order of 4 to 9 percent or possibly less) of the variation in outcomes.⁶

Handbook of the Economics of Education, Volume 3, Elsevier, Amsterdam. Data on school spending distinguishing high performing from less well performing schools are analysed in Allen Consulting Group 2012 *Schooling Resource Standard: Technical Report*, at Appendix B.

⁵ The ecological fallacy is an error of deduction that involves deriving conclusions about individuals solely on the basis of an analysis of group data. Because the grouped observations mask the within-group variance, they can overstate the strength of the presumed relationship and in some cases, suggest a relationship exists when it does not.

⁶ The correlations between socioeconomic background and student outcomes in Australia are of the order of between 0.2 and 0.3. That means only 4 to 9 per cent of the variation in the outcome measure can be accounted for by socioeconomic background. See generally, Marks, GN 2013, *Education, Social Background and Cognitive Ability*, Taylor & Francis, New York; Abingdon, Oxon. Moreover, the impact of socioeconomic background on educational outcomes seems relatively small in Australia, at least as far as can be gauged from international standardised testing: see Bjorklund, A and Salvanes, K, 2010, ‘Education and Family

With so weak a link, and many other more significant factors at work, it is difficult to see why increased funding would in itself change the observed outcomes. At the same time, the weakness of the characteristics/outcomes relationships, and of the assumed further effect of changes in funding in altering those relationships, makes it doubtful there is any evidence basis for the loadings that have been built into the new funding model. Indeed, in some cases—notably, whether students come from a non-English speaking background—there is no evidence the characteristic is actually a source of poor performance, meaning the loadings cannot be derived from empirical analysis.

As a result, there is no basis in evidence for:

1. *The substantial increase in overall spending; or*
2. *The additional loadings that have been built into that increase, especially with respect to socio-economic status and language background.*

These issues are material, given the scale of the spending involved. For example, Commonwealth funding to government schools is expected to grow by 50 percent per student to 2017, during which period Commonwealth funding to non-government schools would also rise by 23 percent. Moreover, the loading for socio-economic status alone increases the base funding by about 13 percent, with around 85 percent of that amount going to government schools (which account for 66 percent of students). It is obviously of concern that such large sums of taxpayers' money would be spent without solid evidence of likely effectiveness.

3. Design of the loadings

That said, even were the principle of loadings accepted—and ultimately, some form of loading may be justified—the current design of the loadings seems perverse. This is most obviously the case for socio-economic status.

The Review of School Funding argued that schools with a high concentration of students from areas rated as having low socio-economic status were especially disadvantaged. The statistical basis for this assertion is far from being well-established, as the report does not seem to have distinguished between “student effects” (such as socio-economic status) and “school effects” (e.g. the quality of a school and of its management, as reflected, for example, in its past

Background: Mechanisms and Policies’ in EA Hanushek, S Machin and L Woessmann, (eds), *Handbook of the Economics of Education, Volume 3*, Elsevier, Amsterdam. A similar result emerges from international data collected by the Luxembourg Income Study and reported in Ermisch, J, Jäntti, M and Smeeding, T, (eds) 2012, *From parents to children: the intergenerational transmission of advantage*, Russell Sage Foundation, New York.

performance).⁷ Perhaps for this reason, the Review suggests the extent of these “peer effects” (that is, the impact of student body composition on school outcomes) is far stronger than that conventionally found in the literature on the economics of education.⁸

However, even if such “peer effects” exist and are material, that could not justify the design of the loadings. The salient feature of that design is the loadings’ non-linearity: the fact that the payments rise steeply as the proportion of a school’s student body that comes from low socio-economic status areas rises to a threshold of 75 percent, after which the payments per additional student become a flat amount.

Although the formula used to calculate the loadings is complex (without any justification having been given for that complexity), the nature of the non-linearity is worth explaining. Under the loadings formula, the payment made in respect of a school for each student it *already has* from a low socio-economic status area rises when it adds *another* student from a low socio-economic status area, up to the 75 percent threshold. The effective marginal payment—which is the sum of the payment specifically for the additional student and the increased payment for all the already enrolled students—therefore rises as the proportion of students from low socio-economic status areas rises.

Underlying such a payment structure must be three assumptions:

- First, that the difficulties involved in teaching students from low socio-economic status areas rise more than proportionately as the share of those students in the school body increases;
- Second, that offsetting or ameliorating those difficulties requires a more than proportionate increase in per-student funding; and
- Third, that one or both of these effects no longer operates once a school gets to the 75 percent threshold.

No evidence supporting any of these three assumptions is set out in the Review of School Funding. Indeed, they are difficult to understand—for instance, if the marginal effects are as

⁷ This distinction and its implications are discussed in Marks op. cit. Simplifying, unless prior school performance is controlled for, analysis of the relationship between student body composition and outcomes is likely to confuse the effect of attributes such as how well the school is run with the effects of student body composition.

⁸ Sacerdote, B, 2010, ‘Peer Effects In Education: How Might They Work, How Big Are They and How Much Do We Know Thus Far?’, in EA Hanushek, S Machin and L Woessmann, (eds), *Handbook of the Economics of Education, Volume 3*, Elsevier, Amsterdam.

pronounced as the structure of the loadings implies, how can it be that those marginal effects change dramatically at the 75 percent threshold? And where is the empirical analysis that even vaguely confirms the slope up to that point and the sudden change thereafter?

4. *Effects of the loadings design*

However, the issues with this structure go well beyond its lack of empirical support. Rather, they involve an additional, critical, assumption inherent in the design of the current loadings.

That assumption is that the incentives schools and school systems face have little or no effect on the composition of the school population. Put slightly differently, the design seems to assume that the loadings themselves will not adversely affect the very phenomenon they are intended to address, which is the segmentation of schools by socio-economic composition. There is, however, no evidence to support that assumption; and it seems implausible on its face given the strength of the incentives for segmentation the loadings create.

The extent of these incentives is readily illustrated. Thus, under the current loadings for socio-economic status, a primary school⁹ with a high degree of disadvantage that takes an additional student from an area with low socio-economic status receives \$14715 in additional funding, or 59 percent more than the base funding of \$9271. In contrast, if it expands its enrolment to take a student from the top 50 percent of the socio-economic distribution, it only receives \$6878 in additional funding.

In other words, because of the impact on the school's funding for *existing* students, the *marginal* student from an *average* income area does not even attract the base funding of \$9271: rather, that marginal student brings to the school an amount 26 percent below the base level of funding. Overall, the school receives 114 percent more per student by accepting further children from disadvantaged areas than from middle-income areas (\$14715 compared to \$6878).

As a result, at least up to the 75 percent threshold, the school is substantially better off accentuating the disadvantaged nature of its student body, rather than seeking greater student diversity.

Further perverse incentives arise from the interaction between (1) the non-linearity in the structure of the loadings and (2) the difference in the level of the loadings as between the lowest

⁹ While I refer to "a school", obviously the funding itself may flow to a system. In that case, the relevant incentives operate at the level of the system, rather than necessarily operating at the level of the individual school.

and second lowest socio-economic bands. Thus, consider two equally sized primary schools each with 25 percent of its students in the SES 1 classification and 25 percent in the SES 2 classification. Those schools would attract an average per student socio-economic status loading of \$1,024. However, if they swapped students, in such a way as to ensure one school had 50 percent of its students in the SES1 classification, while the other had 50 percent of its students in the SES2 classification, the average per student loading for the two schools would rise by 49 percent. Moreover, **both** schools would attract higher total loadings, even though one school no longer had any students at all from areas with the lowest socio-economic status. Indeed, the school which now had **fewer** of the most disadvantaged students would secure a 25 percent **greater** loading for disadvantage, which surely makes little sense.

In other words, viewed from the perspective of both schools together and of each school taken individually, ***funding is maximised by ensuring the greatest degree of segregation.***

Moreover, the non-linearity in the funding formula discourages non-government schools from seeking to attract students from poorer areas.

Consider a Catholic school drawing 21 percent of its students from the bottom SES quartile (which corresponds to the average for the Catholic school sector) that successfully offers a scholarship to a low SES student who is currently in a state school 36 percent of whose students come from the bottom SES quartile (again, the average for all state schools).

At most, the Catholic school system, which has a strong track record in educating poorer children, will receive 70 percent of the ‘disadvantage’ loading that student would have brought his or her former state school.

As for the typical independent school, it will gain barely half the funding the state school previously secured. Indeed, an independent school with parents who reside in upper income areas will generally have very poor incentives to take students from low socio-economic backgrounds, because of the interaction of the capacity to pay curve for the independent system and the upward sloping shape of the loading curve. Such a school may receive as little as \$3245 per student in government funding for accepting a primary school student from a disadvantaged area. (The relevant amount is given by $0.2 \text{ base funding} + .15 \text{ loading} = 0.35 \text{ base}$). That school would therefore obtain just 22 percent of the funding that would flow to a government school with a high level disadvantage that attracted exactly the same student (\$3245 as compared to \$14715).

It is not easy to understand how this could be desirable, unless one assumes that incentives have no effect (or very slight effects at best) on the location of schools and on their enrolment strategies. However, particularly over the longer term, individual schools and school systems take myriad decisions that affect the composition of their student bodies, including with respect to location, curriculum and outreach. Given just how great the incentives built into the loadings formula are, it seems difficult to believe it will not result in increased segregation of schools by socio-economic status.

That concern is accentuated by the risks that arise from the interaction between the loadings and the “capacity to contribute” factor. Together, these can result in effective tax rates on non-government schools that seem very high and essentially arbitrary. While the non-linearities in the loadings formula mean there is no simple way of translating those structures into “tax equivalents”, the effect of the formulas is to penalise non-government schools twice for the composition of their student bodies: once through the “capacity to contribute” offset, and then again through the loadings. The effective difference in treatment between government and non-government schools has therefore been increased as a result of the new funding arrangements. This effect has been compounded by the implementation of the new arrangements under which, for example, government schools—but not non-government schools—are allowed to use recurrent funding to acquire land.

In summary, the funding system risks worsening outcomes for poor students, maximising concentrations of disadvantaged students in poor performing government schools, and minimising funding incentives for independent schools to accept students from poor backgrounds. It will therefore further skew the distribution of children in the schooling system towards higher concentrations of disadvantage. The system will generate these undesirable outcomes while simultaneously significantly increasing the costs education imposes on taxpayers. This suggests the system is both inefficient and inequitable.

5. Alternatives

In practice, the best way to achieve full competitive neutrality between government and non-government schools would be to transform the current recurrent funding into a per-child voucher which would be allocated to families and which would have the same value in government and non-government schools. So as to ensure equity, the quantum of that voucher could be treated as taxable income, achieving the goal of aligning payment with capacity to contribute in a competitively neutral manner.

At the same time, the amount of the voucher could be set on the basis of the average current recurrent funding, indexed to a cost of schooling index. While it is conceivable that there should be loadings—for instance for school size and location—those need to be given a stronger evidence base, as do loadings for socio-economic status. There is an obvious need to compensate schools for the costs involved in disability; but it may well be that this would be better done as a separate funding stream, that was integrated into the new disability insurance scheme.

6. Conclusions

Overall, the new arrangements seem far from achieving the goals public policy should strive for, which include:

- Ensuring all students have access to the level of funding required for a high quality education;
- Achieving competitive neutrality between providers of education, thus maximising families' access to competition and choice; and
- Protecting the interests of taxpayers by ensuring that taxpayers' funds are used on a basis consistent with evidence and that providers of education have incentives to be efficient.

In contrast, the new arrangements:

- Involve a much larger increase in aggregate spending, with a correspondingly greater call on taxpayers' funds, than can be justified;
- Create strong incentives on schools and on systems to maximise the extent of segregation between students from areas with differing socio-economic statuses;
- Treat government and non-government schools differently; and
- Lack any basis in evidence.

It would seem preferable instead to:

- Return to a lower growth path of spending, possibly one simply based on appropriate cost-based indexation of existing spending, until there is a solid basis in evidence for increased funding levels;
- To the extent to which there are loadings for disadvantage and other student characteristics, remove any non-linearities for the structure of those loadings, thus making them flat, per-student, amounts, thus minimising the incentives for segregation;
- Examine the scope for a transition over time to a competitively neutral voucher system for funding students.