



# REVIEW OF *THE ECONOMIC BENEFITS OF CLOSING EDUCATIONAL ACHIEVEMENT GAPS*

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## Summary of Review

A new report from the Center for American Progress estimates substantial economic benefits from closing achievement gaps. These gains result from higher economic growth, which the report suggests would arise from higher levels of student achievement and specifically from higher achievement by minority students. Overall, the report estimates that if Black and Hispanic high school math scores converged to equal those of White high school students, the size of the U.S. economy would increase by \$20 trillion over the period from 2014 to 2050. Federal and state/local tax revenues would also increase, by \$4 trillion and \$3 trillion respectively, over this period. Thus, the report makes an economic case for sizeable public investments to close achievement gaps. However, although there are likely to be economic gains from closing these gaps, the report does not include much detail concerning specific calculations and does not check the accuracy of its estimates. Moreover, these estimates rely on a single study, and that study has limitations: it looks across countries rather than at the U.S. economy, and it implies a very powerful role for cognitive skills (test scores) over behaviors. A general proposition—that reducing educational gaps makes sense on both efficiency and equity grounds—is plausible. But the report does not provide enough detail for readers to see how big the efficiency gains are, and readers are asked to accept that closing achievement gaps—rather than raising graduation rates or enhancing socio-emotional skills—will yield the biggest economic pay-off.

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# REVIEW OF *THE ECONOMIC BENEFITS OF CLOSING EDUCATIONAL ACHIEVEMENT GAPS*

*By Clive Belfield, Queens College, CUNY*

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## I. Introduction

The report under review here—*The Economic Benefits of Closing Educational Achievement Gaps*—was written by Lynch and Oakford for the Center for American Progress.<sup>1</sup> The report begins by describing the salient concerns to the U.S. education system: rising inequality within the context of demographic change; and the many ways in which achievement gaps by race can develop. The report then describes current public policies to address these concerns. The main contribution of the report is its estimate of how U.S. Gross Domestic Product (GDP) might increase if Black and Hispanic high school students achieved math scores that were at the same level as White students. The estimate relies on prior research linking test scores with national GDP and extrapolates from that research to predict U.S. GDP if achievement levels were equalized across these racial groups. The report finds very large economic gains from closing achievement gaps. However, it is difficult to accurately assess the actual size of these gains.

## II. Findings and Conclusions of the Report

The report depicts an economic system where several factors have combined to exacerbate racial gaps and to reduce economic growth. Specifically, income and wealth inequality have grown since the 1970s and minority families have been hardest hit. At the same time, the U.S. demography is changing: the Baby Boom generation is retiring, and the proportion of children who are from minority ethnic/racial groups is rising. In turn, these economic inequalities, which influence the quality of home life, of school, and of neighborhood, drive racial gaps in achievement.

The report proposes three policy areas that might reduce achievement gaps. These areas are broad: early childhood programs; criminal justice system reforms; and family supports. Enhancements in each area should, the authors claim, reduce achievement gaps.

The main finding of the report is that closing racial achievement gaps would have substantial economic benefits. The authors note that although human capital has many forms the most economically meaningful measure is academic achievement (cognitive

skills) as measured by test scores. Using macroeconomic correlations, they then estimate the economic benefits if there were no racial achievement gaps. Over the period up to 2050, they estimate that U.S. Gross Domestic Product would increase by \$20 trillion and that federal tax revenues would increase by \$4 trillion and state/local tax revenues would increase by \$3 trillion.

Linking the policy discussion and economic evidence together, the report argues that the U.S. should “invest, and continuously reinvest, in the health, education, skills and social well-being of our most valuable resource—our people” and that this investment will “simultaneously reduce economic disparities, strengthen ladders of opportunity, and generate the resources we need for future investments” (p.23).

### III. The Report’s Rationale for Its Findings and Conclusions

The report relies on other publications and research reviews for its discussion of both the educational and economic challenges facing the U.S. and the public policies that might address these challenges. The evidence on income inequality and demographic changes—and achievement gaps—is well-known and has been widely documented. Similarly, the general proposition that investments in early education are effective has a strong evidence base. There is also a wealth of evidence and research on the important influence on child development of the family and home environment. The report cites strong studies from this research literature to make the case that the achievement gap is economically relevant, large, and can be redressed by investments in effective policies.

For the economic model estimating the benefits of closing achievement gaps, the report applies a simple trend model. The model results are largely determined by three parameters: the size of achievement gaps by race; the changing racial demographics of the U.S. population; and the importance of achievement for economic outcomes such as GDP. Based on values for these three parameters, the report calculates the increase in GDP for a given change in achievement by minority students, adjusting for changes in demography (i.e., adjusting for the fact that over time minority students are becoming a larger proportion of all students). As the report identifies big achievement gaps and a growing concentration of minority students as well as a large effect of achievement gains on GDP, the economic consequences of closing the achievement gap are found to be substantial.

### IV. The Report’s Use of Research Literature

For its discussion of the educational, economic, and policy context the report relies heavily on existing research literature. This literature—on economic inequality, demography, achievement gaps and social policy—is vast. Much of it is based on very large datasets spanning several decades and much of the research on social policy applies rigorous research designs. The report does a good job of highlighting key trends from the data and

of identifying important studies. However, the report does not arbitrate between social policies (e.g., it does not argue that investments in early childhood education are more important than investments to reform the criminal justice system). More importantly, the report does not discuss the costs of these reforms nor does it provide much specific detail on implementation (e.g., it does not stipulate the length of an early childhood program or the appropriate change to treatment of juvenile offenders).

For the economic model, the report considers the evidence on the macroeconomic association between education and GDP. Surprisingly, it does not consider the substantial body of work on the microeconomic association between education and income. Nevertheless, much of the macroeconomic evidence finds that human capital—measured either as years of schooling or achievement (test scores)—is positively associated with economic growth. However, for the empirical value of the association between achievement and economic growth, the study relies on one study: a 2010 research paper by economists Hanushek and Woessmann.<sup>2</sup>

Given the importance of this parameter to the model results, it would have been preferable if the report had used a summary estimate of the returns to achievement, i.e. used an estimate from across the many published studies rather than just one study. This is especially important given the difficulty of precisely estimating—at a macroeconomic or national level—the impact of test scores on economic growth. Test scores are measured at a point in time for a group that is not yet in the labor market (e.g. a cohort of 15-year olds). But U.S. GDP (and its growth) depends on the aggregate amount of all capital, labor and land in the economy. Thus, the models are predicting economic growth across approximately 150 million workers (the aggregate U.S. labor force) from changes in cognitive skills across 4 million youth. Controlling for other factors and properly estimating the flow of workers is difficult. Identifying a precise association between achievement and growth is therefore a challenge. Looking across studies, there is no clear consensus on how human capital boosts economic growth over the long term and even less consensus as to how researchers should empirically test for it. For example, economic growth might be a function of the overall level of human capital or it might depend on the rate of growth of human capital.

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Reliance on one study is even more problematic in light of the study chosen. The paper by Hanushek and Woessmann (2010) uses international cross-country data on PISA scores. It does not look in detail at the U.S. economy and how achievement influences economic outcomes. Key here is that it identifies a relatively powerful link between achievement and economic growth.<sup>3</sup> (Other studies have emphasized the role of years of education and this measure has been used much more extensively in microeconomic studies, not least because it more accurately reflects differences in behaviors.<sup>4</sup>) In fact, this specific study has been subject to direct critique. An analysis by Breton (2011) found that, even as both caused economic growth, attainment was actually more important than achievement.<sup>5</sup> In a

more recent study, Hanushek (2013) has re-asserted the evidence on the importance of achievement.<sup>6</sup> But there is no agreement on this issue and the report should have acknowledged this.

## V. Review of the Report's Methods

The report's method for the economic model is straightforward: changes in achievement levels by race, adjusting for the racial make-up of the population, generate changes in GDP. Thus, the validity of the method—and the results from the model—rest on its ability to estimate the three parameters related to achievement, demographics and GDP growth.

As noted above, the association between achievement and economic growth most likely cannot be estimated with certainty. In this case, it is important for the researchers to undertake extensive testing to see how robust the results are to alternative assumptions and to determine the accuracy of the \$20 trillion estimate. This type of sensitivity testing is the only way to show how the report's conclusions might differ if the assumptions were varied. Unfortunately, the report does not include a formal sensitivity test. Thus, it is not possible for the reader to determine how confident they should be in these results. We cannot know whether the \$20 trillion figure might be misestimated by \$1 trillion or \$10 trillion, for example.

Moreover, there is almost no detail on how the parameters in the model vary over time or how the model results are derived. For example, the report says that the convergence in test score gaps will occur over a 20-year time horizon. But there is no table or figure showing how overall test scores are changing over this time. The report includes no information on the model structure: the only figures included in the report are the model results (there are no tables). Thus, it is very difficult for the reader to see how the model works and how the key parameters are changing.

## VI. Review of the Validity of the Findings and Conclusions

Overall, the discussion of key economic concerns and the policy context is persuasive. Most research does lead one to conclude that: the trend in income inequality is of concern; demographic changes will likely exacerbate this trend; achievement gaps are unacceptably large; and that an encompassing and substantial commitment to public investments is appropriate, both on efficiency and equity grounds.

However, the key challenge for researchers is to identify the magnitude of the economic gains from investment and to express those magnitudes in ways that are credible and comprehensible. The reliance in this report on a single study suggests caution as to the validity of the economic findings. However, the absence of sensitivity testing and the lack of model transparency make it difficult to fully evaluate these findings.

The lack of model transparency makes it hard to put the results in context. The report refers to changes in achievement yielding gains in family income of \$7,600. This is a large amount compared to current family income. But it is not clear how many youth will have to increase their achievement scores to ensure this gain, or whether this is a steady-state gain or whether it is a maximum gain from the proposed educational changes. Models that involve overlapping cohorts of subsets of the population and lagged economic changes are quite difficult to interpret.

Also, the report does not consider what it would cost to close achievement gaps. It is appropriate to propose “what if?” counterfactuals and estimate the economic benefits that arise. However, the findings and conclusions of the report should emphasize that these are the economic benefits of closing the achievement gap and not the net economic benefits.

## VII. Usefulness of the Report for Guidance of Policy and Practice

The first part of the report is helpful for policymakers. It is helpful to remind policymakers that economic changes are important and consistently point toward a long term trend in inequality. It is also helpful to meld this discussion with demographic changes, both in terms of flows out of the labor market (Baby Boomer retirement) and flows into the labor market (disproportionately minority youth from low-income backgrounds). Furthermore, policymakers should appreciate that responses to these trends cannot be piecemeal or marginal. Only reforms that simultaneously enhance home circumstances, invest in early childhood programs, and reform the criminal justice system will “move the needle.”

Moreover, and to the main point of the report, it is important to emphasize that closing achievement gaps makes sense from an economic standpoint—both in terms of GDP and tax revenues. Most models, including this one, find large economic gains from increasing levels of human capital. However, in order to be fully convincing, an economic model needs to be transparent in how the calculations are made and incorporate extensive sensitivity testing. It should also fully justify the focus on closing achievement gaps rather than, for example, gaps in attainment. Only then will the actual numbers generated by the economic models be useful for a calculation of how much to invest in our long-term future from purely an efficiency perspective.

## Notes and References

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- 1 Lynch, R. & Oakford, P. (2014). *The Economic Benefits of Closing Educational Achievement Gaps*. Center for American Progress: Washington, DC. Retrieved November 14, 2014, from <https://www.americanprogress.org/issues/race/report/2014/11/10/100577/the-economic-benefits-of-closing-educational-achievement-gaps/>.
- 2 Hanushek, E.A. & Woessmann, L. (2010). How much do educational outcomes matter in OECD countries? NBER Working Paper 16515, [www.nber.org](http://www.nber.org).
- 3 Using PISA scores might also be questioned: it seems unlikely that the scores of 15-year olds would fully capture national education standards across all grade spans. It is difficult to see how the policies advocated by the report will translate into improved PISA scores.
- 4 Heckman, J.J. & Kautz, T. (2012). Hard evidence on soft skills. *Labour Economics*, 19(4), 451-464; Levin, H.M. (2012). More Than Just Test Scores. *Prospects*, UNESCO, 43(2), 269-284.
- 5 See Breton, T. R. (2011). The quality vs. the quantity of schooling: What drives economic growth? *Economics of Education Review*, 30 (4), 765-773. The report does not cite this study.
- 6 See Hanushek, E.A. (2013). Economic growth in developing countries: The role of human capital. *Economics of Education Review*, 37 (4), 204-212.



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