

# Policy Analysis

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## *The Cato Education Market Index*

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### Executive Summary

The index presented in this report attempts to measure how closely existing school systems resemble free markets and rates education policy proposals on how conducive they are to the rise of competitive marketplaces. We define an education market as a system that provides the freedom for producers and consumers to voluntarily associate with one another, as well as the incentives that encourage families to be diligent consumers and educators to innovate, control costs, and expand their services. It is a system in which schools can offer instruction in any subject, using any method, for which families are willing to pay.

One of the least surprising findings of the Cato Education Market Index is that no U.S. state currently has anything resembling a free education marketplace. Perhaps more surprising, few of the prevailing “school choice” reforms, which are often described as “market-based,” “market-inspired,” or even “free-market” proposals, actually embody true markets. It is our hope that this index will spur debate about the necessary and sufficient conditions for a lasting and vigorously competitive education industry, and hence serve as a guide to policymakers interested in harnessing market forces for the betterment of children’s educational opportunities.

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## **Introduction**

### **What Are Education Markets, and Why Do They Matter?**

Broadly speaking, a free education market is a system in which parents decide what, where, by whom, and for how long their children will be taught. It is a system in which educators have complete control over the curricula they offer, the teaching methods they employ, the prices they charge, and the hours they work; in which anyone who wants to open a school has the right to do so; and in which the profit motive drives the innovation and expansion of some substantial share of the education sector. It is also a system in which consumers are the primary payers and in which government schools do not enjoy a subsidy advantage over private schools—that is, if the government runs “free” schools, it must make a comparable level of financial assistance available to families who prefer independent schools.

Contrary to common assumptions, education markets are not a recent, untested idea. The first education system in the world in which schooling reached beyond a tiny ruling elite was the market that arose in classical Athens during the 5th century BC. Today, education markets thrive everywhere from impoverished slums and villages of the developing world<sup>1</sup> to the multi-billion-dollar after-school tutoring sector in Asia. Conversely, though fee-charging, nongovernment schooling does exist to a limited extent in many Western nations, it would be a mistake to say that those schools currently constitute a free market in education, given that virtually all are nonprofit and must compete with a high-spending (and yet tuition-free) government monopoly.

Why does it matter whether or not education is organized along free-market lines? It matters because a substantial body of international<sup>2</sup> and historical<sup>3</sup> research finds that education markets are a superior way to meet the public’s educational goals, in terms of both individual needs and broader social effects. According to that research, market schools are typically more efficient, academically effective, well maintained, and responsive to the demands of families. In addition, students in independent schools in the United States have been found to exhibit levels of civic engagement and tolerance that are comparable to or better than those of their peers in public-sector schools.<sup>4</sup> Systems in which parents can easily pick schools of their choice, and in which most education funding comes directly from parents, also reduce the cultural conflicts that arise over government-run, government-funded schooling. The less people are pressured to patronize or pay for schools they disapprove of, the less social tension is created.<sup>5</sup> Finally, in the industries in which markets have been allowed to flourish, they have driven dramatic improvements in quality and efficiency, spurred relentless innovation, and pressured producers into being responsive to the preferences of consumers.

### **Index Goals and Design Principles**

The purpose of the Cato Education Market Index (CEMI) is to rate existing school systems on the basis of how closely they approximate true free markets (we call this a market rating) and to rate education policy proposals on their conduciveness to the growth of markets (a policy rating). The index takes a large number of details about a given system or policy as its input data and uses those data to produce a numeric score from 0 to 100. This overall rating is computed by combining several subcomponent scores, which allows conclusions to be drawn about the specific strong and weak points of the school system or proposal under consideration.

CEMI ratings are issued for whichever political unit is chiefly responsible for education legislation. In the United States, education is mainly a state-level responsibility, so CEMI rates each U.S. state individually. The same applies to countries like Canada, where each province is responsible for structuring its own education system. Countries in which education legislation is created chiefly at the national level, such as Japan or the Netherlands, receive a single, nationwide rating.

CEMI is intended to advance several related goals:

- To encourage a discussion of the criteria necessary for effective and sustainable education markets,
- To provide a tool for rating a policy proposal's conduciveness to the rise of a competitive education industry, and
- To illustrate that markets have more in common with ecosystems than with smorgasbords—that their key attributes are interdependent and hence cannot be hobbled or omitted without undermining the system as a whole.

The index has been made available as both a Microsoft Excel spreadsheet and an interactive Web application,<sup>6</sup> to maximize its usefulness to different users. Researchers can make use of the spreadsheet to perform comparisons of different school systems and policies, and policymakers and analysts can easily enter the data for a single case study via the Web interface.

CEMI's design was guided by four principles: reliability, objectivity, comprehensiveness (content validity), and accuracy (predictive validity).

In order for the index to be useful, it must be reliable, that is, it must consistently produce the same rating for a given policy proposal regardless of who enters the data for that proposal. In other words, the need for subjective judgments on the part of the person entering data into the index must be kept to an absolute minimum. We have sought to maximize reliability by using multiple-choice questions whenever possible and by providing guidelines to people entering the data to ensure that the meaning of each of the possible choices is well-defined.

Objectivity in the calculations that make up the index is also important, though considerably more difficult to achieve. The education policy details that the index measures, and the weights it ascribes to them, were based as much as possible on either empirical observations of actual school systems or generally accepted axioms of economic theory. For example, there is considerable evidence that the responsiveness, efficiency, and effectiveness of schools are positively affected by the share of school funding that comes directly from parents.<sup>7</sup> On the basis of this work, it is reasonable to include in our metric a term corresponding to the share of total education spending that comes (or is expected to come) directly from parents. Similarly, the well-established role of prices in competitive markets suggests that the index should give lower scores to education policies that impose price controls.

Although certain components of the metric can be readily based on broadly accepted economic theory or easily quantifiable facts, others cannot. Both in the design of its calculations and in the weighting of its various components, numerous judgments were required. What, for instance, are the relative impacts on market activity of government curriculum mandates and government testing mandates? What are the relative impacts on the size and diversity of the teaching labor force of a mandatory four-year government teacher certification process and a one-year process? There is no way to answer such questions with perfect objectivity, so subjective judgments are required. The meaningfulness of CEMI's ratings and rankings is bounded by the accuracy of such judgments.<sup>8</sup> For that reason, CEMI is best thought of as a numerical distillation of expert opinion, rather than as a window on cardinal truths.

Another essential characteristic of the index's design is comprehensiveness. We have sought to include every policy detail that is known to have a significant, measurable impact on the operation of education markets.

Finally, the CEMI was designed from the top down, beginning with a general conception of what constitutes a vigorous and free educational marketplace, and then progressively breaking down that general conception into greater and greater detail. That top-down design process is laid out in the section titled Measuring Education Markets.

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### **A Note on Simplicity**

Ideally, our index would embody all of the design goals described above and also be very simple to explain and calculate. In reality, the effort to maximize simplicity is in direct competition with our design goals. Faced with that tradeoff, we have chosen to emphasize the reliability, objectivity, comprehensiveness, and accuracy of our index in this inaugural version. Our reasoning is that it is impossible to rationally simplify the index until we are confident that we have a complete, meaningful version against which to compare any simplifications. Otherwise, we would have no basis for deciding which simplifications were acceptable and which excessively compromised our core design principles.

A further reason to prefer a complete version of CEMI to one that is highly simplified stems from our goal of explaining how and why education markets work. The rich detail of our index illustrates the interactions between various characteristics of education markets, making it a more useful educational tool.

That said, we believe that once CEMI has been subjected to wider scrutiny we may find ways of reducing its complexity without excessively compromising its accuracy or usefulness.

## **Measuring Education Markets**

Markets thrive when educators have the freedom and incentives to serve families and families have the freedom and incentives to be diligent consumers. When one set of freedoms and incentives exists without the other, there can be no market. Consider, for example, a system in which children are automatically assigned to schools by the state. Regardless of how free the schools themselves happen to be, there is no market under that scenario, because families cannot choose the schools they deem best, and schools have no incentive to ascertain and satisfy families' needs. Similarly, if families are completely free to choose any school they want, but all schools are compelled to be absolutely uniform, consumer choice is rendered meaningless and no market exists.

This interrelation of the producer and consumer components of free education markets implies that our index is better calculated as a product than as a sum or average. That allows each component to have a more powerful impact on the overall index value. Consider the second of our examples above, in which we would give producer freedom a very low score (say 0.1 on a scale from 0 to 1) but consumer freedom a high score (say 0.95 on the same scale). If we simply averaged those values, we'd get a result that was better than 50 percent, but, with so little producer freedom, that seems inappropriately high. On the other hand, if we multiplied the two values, the result would be a more sensible 0.095.

Calculating our index as a product is a departure from most other metrics of educational and economic freedom.<sup>9</sup> Typically, such metrics are calculated as sums or averages of their component variables. In many cases, the component variables are also given equal weights. That approach has the advantage of simplicity, but it assumes that there are no interactions between the input terms and is therefore incompatible with our understanding of how education markets work.

So, to accommodate the interaction between the producer and consumer components of an education marketplace, the Cato Education Market Index is computed as the degree of freedom and market incentives enjoyed by producers *times* the degree of freedom and market incentives enjoyed by consumers (see Equation 1).

$$\text{Cato Education Market Index} = \text{Producer Freedom and Incentives} * \text{Consumer Freedom and Incentives} * 100 \quad (1)$$

We calibrate our measurements so that both terms in the equation are in the range of 0 to 1, and hence their product is also in that range. We then multiply that product by 100 to produce a final index score in the range of 0 to 100 (with 0 representing the complete absence of market activity and 100 representing a maximally free and vigorous market).<sup>10</sup>

The next step in our top-down design process is to define, in general terms, the freedoms and incentives that we measure.

### **Producer Incentives**

Schools must be free to enter the market and to specialize once they have set up shop. In an ideal education marketplace, there are no barriers to entry. Everyone who wants to open a school has the right to do so. Furthermore, an ideal education market would be free of regulations on the operation of schools, other than minimal health and safety standards that apply to all institutions serving the public.

But there is more to markets than freedom. Producers are most efficient, innovative, and responsive to consumers' demands when they have powerful incentives to be so. The most fundamental market incentive of all is the desire to protect and improve one's livelihood, which can only be accomplished, in the context of a competitive market, by attracting and retaining paying customers. More specifically, the profit motive encourages businesses to allocate resources to the services for which consumers are most willing to pay. Profits encourage and enable providers to innovate and to expand their services in response to rising demand.

An illustration of what happens in the absence of the profit motive can be gleaned from the mainstream private education sector in the United States, roughly 95 percent of which is operated on a not-for-profit basis. Though commendable in many respects, nonprofit private schools have been among the nation's most stagnant institutions over the past century. Even the most popular among them serve roughly the same number of students today as they did a hundred years ago. Compare that to the client curve of a GE or a Microsoft.

Though computers have been introduced to many classrooms, their addition has been at best facilitative rather than transformative. In other words, the enormous potential of modern technology to revolutionize education remains largely untapped. A typical private school classroom today would be immediately recognizable by and intimately familiar to a student from the 1850s. The last dramatic instructional innovation occurred while Thomas Jefferson was president: the introduction of the chalkboard, around 1801.

The chief cause of stagnation has been the absence of any systematic incentive powerful enough to overcome the risks and costs of innovation and expansion. For-profit schools in the United States and abroad demonstrate considerably greater desire and ability to expand, with some for-profit education chains enrolling literally millions of students in dozens of countries.<sup>11</sup> Hence, to ensure that we meaningfully rate the vigor of education markets, our index takes into account the share of schools operated for profit.

In order for the profit motive to work effectively, businesses must be able to set their own prices. It must be possible for them to recoup investments in expensive research and development programs by charging high initial prices for the products or services that result from those investments. Consider cell phones. Once a plaything of the rich and famous, they are now given away with a subscription to cell-phone service. Color televisions, VCRs, and DVD players followed essentially the same pattern. A first-generation DVD player that sold for \$1,000 could not even be marketed today, given that far more sophisticated units retail for \$30.

In other words, it is the ability of innovative producers to charge high initial prices for new products that allows those innovations to eventually reach the masses. Our index must therefore penalize education systems that cap the amount that schools can charge for their services. For example, a voucher system in which schools are not allowed to charge customers more

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than the voucher's value should receive a lower index rating than one in which there is no price ceiling.

Just as price ceilings impede the process by which free markets encourage innovation and the expansion of popular providers, artificial price floors impede efficiency. An artificial price floor is created when a service is subsidized at a rate higher than the lowest rate being charged for that service in the open market. In the case of a school voucher program, the voucher creates an artificial price floor if it is larger than the lowest tuition charged by existing private schools. In the United States, private elementary schooling is widely available for under \$5,000 per year. Elementary schooling is often available for under \$3,000. If a universal \$8,000 voucher were introduced tomorrow, there would no longer be any incentive for schools to find ways of serving students for less than \$8,000.

The extra money would not be entirely wasted, because schools would still be competing for students and hence trying to find ways to use the new money to make themselves more attractive to consumers. Nevertheless, some waste would be inevitable; if parents and taxpayers had considered any new services to be worth the extra \$3,000, they would already have been paying for them without the need for government involvement. Hence, artificial price floors have a negative impact on producer efficiency.

It is worth mentioning at this point that subsidies to private schools can also have a separate, positive impact on market vigor if they increase competition between public and private schools by diminishing any existing subsidy discrimination that favors government schools. When public and private schools have the same cost to parents, public schools have to compete to attract customers because parents can switch, without financial penalty, to the private sector. At present, however, American parents must pay taxes toward the public school system whether or not they make use of its services. That puts private schools at a significant competitive disadvantage, because private school tuition represents a major additional financial burden over and above mandatory education taxation. Our index accounts for this effect, as will be discussed below.

### **Producer Freedom**

In addition to having incentives for efficiency, innovation, expansion, and responsiveness to customer needs, schools must have the autonomy to act in accordance with those incentives. Regardless of prevailing incentives, schools whose ability to compete is hobbled by regulation cannot generate a vigorous education market.

A key way in which schools' freedom to compete is commonly impeded in the public sector is the parceling up of schools into districts. Since schools within a given district are generally forced to conform to curriculum and other policies, the unit of competition becomes the district rather than the individual school. That reduction in what we call competitive density is reflected in CEMI's rating system: the CEMI competitive density factor for public school systems is a function of the number of districts per metropolitan area. Because charter and private schools do not bear a similar burden, their competitive density scores are defaulted to the maximum value of 1.

We break the remaining aspects of producer freedom into two categories: freedom of entry into the marketplace by new schools and freedom of operation for existing schools. Freedom of entry is calculated using a host of criteria relating to financing, registration, and other requirements imposed on prospective new schools. A system in which anyone could open a school, anywhere, without giving notice to the state, would receive the maximum score for freedom of entry. A system that erected high regulatory hurdles to the creation of new schools would receive a low score.

We measure operational freedom in terms of schools' ability to choose their own curricula, hire their own teachers, set teachers' salaries, adopt or eschew religious instruction, select

their own textbooks, and so forth, and on the freedom of individuals to enter the teaching profession without having to be certified by the state.

### Consumer Incentives

With few exceptions, parents have a natural inclination and incentive to ensure that their children are well prepared for adult life, and we can expect this to be more or less constant across education systems. For the purposes of our index, we wish to measure incentives that are known to vary in strength between systems. One such incentive is the extent to which parents directly shoulder the cost of their children’s education.

Nobel laureate in economics Milton Friedman observed that we are most careful when we spend our own money on ourselves, less careful when we spend someone else’s money on ourselves, and least careful when we spend someone else’s money on a third party. He was not the first to make that observation. Two thousand years ago, the Roman corruption prosecutor Pliny the Younger decided to found a high school in his hometown and to partially subsidize the tuition cost from his own pocket. He explained:

I would promise the whole amount were I not afraid that someday my gift might be abused for someone’s selfish purposes, as I see happen in many places where teachers’ salaries are paid from public funds. There is only one remedy to meet this evil: if the appointment of teachers is left entirely to the parents, and they are conscientious about making a wise choice through their obligation to contribute to the cost.<sup>12</sup>

The views of Friedman and Pliny the Younger are consistent with the modern empirical education literature. As explained in the Introduction, schools funded by tuition fees tend to be more responsive in the curricula they offer, more academically effective, more efficient, and better physically maintained than those funded by the state. Though alternative explanations can be ventured to account for this relationship, our index adopts the Friedman-Pliny theory that consumers pay closer attention to services they pay for themselves than to services they receive for free. Hence, we include a variable titled Incentive for Parental Responsibility in our index that is a function of the share of school costs paid directly by parents.

### Consumer Freedom

In liberal democracies, parents can usually choose any private school they want, at least if they pay for it themselves. Hence, in the case of private schools, parental, or consumer, freedom can generally be assumed to be unfettered. The same is not true of government schools. Students are usually assigned to these schools on the basis of place of residence, so most families can choose a different government school only by moving to a different neighborhood. That is a dramatic imposition on the consumer’s freedom of choice.

Even under many “open-enrollment” or “public school choice” programs, parental choice of public schools remains limited. Some school districts, for example, allow parents to name their top three public school choices; then the districts allocate students to schools on the basis of racial integration levels, space availability, and parental preference. That is clearly a greater degree of choice than exists under systems that force parents to move to a new district to change schools, but it falls far short of unfettered choice *even within the public sector itself*. Our index takes account of these varying levels of consumer freedom of choice within the conventional public sector and assumes complete freedom of parental choice among private and charter public schools.

Of course, the fact that parents have to pay for private schools directly, whereas government schools charge no tuition, also has an effect on consumers’ choices—it pushes many peo-

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**Vouchers create an artificial price floor if they are larger than the lowest tuition charged by existing private schools.**

ple to choose government schools when, up-front costs being equal, they might prefer private schools. But, strictly speaking, this does not constitute a substantial reduction in their *freedom*. In the absence of government schools, parents would still have to pay for private schools. The “free” status of public schooling makes it artificially appealing from an economic standpoint but does not strictly and substantially curtail the freedom of parents to choose private schools.

Note that our index does take into account the ramifications for market effectiveness of encouraging families to frequent the (usually much more heavily regulated) public sector rather than the private sector—it is just that we do not include this effect *under the rubric of parental freedom*.

A counterargument can be made that parental freedom *is* impinged because parents must pay for the government schools in taxes, and then again for private school tuition—even if they make no use of the government schools themselves. In practice, however, this imposition on parental freedom is smaller than might be assumed. Because the cost of government schooling is spread over the entire taxpaying population, not imposed exclusively on parents with school-aged children, the share of education taxes paid by parents is generally far less than the cost of the government school services they consume. For a family with two children in school, the average cost of the government system would be about \$20,000 a year, whereas the dollar value of that family’s tax burden that would go toward government schooling would typically be much lower. This is especially true since parents with school-aged children are generally younger than the average taxpayer and have correspondingly lower incomes and property values (and thus tax liabilities) than the average taxpayer.

Even so, we could still reasonably factor in the compulsion to pay government school taxes as a restriction on parents’ freedom. We have chosen not to do so, however, on the grounds that this effect is captured, to a great extent, by another term in our index: the Incentive for Parental Responsibility, described above. Because that term measures the share of school funding that comes directly from parents, it rises and falls in inverse proportion to the share of tax funding of education (the larger the share of spending coming directly from parents, the less remains to be paid through taxes). Our Incentive for Parental Responsibility term thus reflects, to a substantial degree, the freedom-limiting effects of education taxes on parents.

### **Overview of Index Inputs**

Assimilating the previous discussion, we can now specify that

$$\text{Producer Freedom and Incentives} = \text{Competitive Density} * \text{Incentives for Innovation and Expansion} * \text{Incentive for Efficiency} * \text{Entry and Operational Freedom}$$

$$\text{Consumer Freedom and Incentives} = \text{Incentive for Parental Responsibility} * \text{Parental Freedom of Choice}$$

Substituting these values into Equation 1, we arrive at Equation 2:

$$\text{Index} = \text{Competitive Density} * \text{Incentives for Innovation and Expansion} * \text{Incentive for Efficiency} * \text{Entry and Operational Freedom} * \text{Incentive for Parental Responsibility} * \text{Parental Freedom of Choice} * 100 \quad (2)$$

Though we are now getting closer to the nitty-gritty data input terms from which index scores are calculated, we still have a bit further to go. Most of the terms in Equation 2 are not directly measurable values; they must be computed from a series of more basic inputs. This sec-



tion provides an overview of those inputs. A fully detailed enumeration of the raw data used in the index can be found in Appendix A of the CEMI technical report,<sup>13</sup> and the index's computational details, including relative weightings of the various components, are presented in full in Appendix B of that report. An Excel spreadsheet encompassing both the data and the calculations can be found on the Cato Institute website ([http://cato.org/cemi/cemi\\_2006.xls](http://cato.org/cemi/cemi_2006.xls)).

A final consideration is the relative weight to be given to each of the terms in Equation 2. That subject is also examined in detail in Appendix B of the technical report.

As mentioned above, *Competitive Density* is set to 1 (i.e., maximum density) in the case of private and charter schools, because they are not forcibly grouped together into relatively homogeneous districts. In the case of traditional public schools, *Competitive Density* is proportional to the average number of districts per metropolitan area.

*Incentives for Innovation and Expansion* is the product of two terms: a function of the share of schools operated for profit and a measure of how strict a price cap, if any, is imposed on schools.

The *Incentive for Efficiency* term is a function of the size and scope of any school subsidies as a fraction of the average tuition charged by private schools. The point of this term is to measure the extent to which school subsidies create an artificial price floor for school spending, and hence eliminate any economic incentive for schools to find ways of serving students for less than that artificial floor amount.

*Entry and Operational Freedom* is a term that resembles a standard index of economic or educational freedom: it is a weighted sum that measures the freedom of new schools to enter the market and the degree of autonomy that schools enjoy once they have been allowed to open for business. The freedom-of-entry inputs measure the degree to which proposed new schools are unencumbered by requirements to

**Schools whose ability to compete is hobbled by regulation cannot generate a vigorous education market.**

- Register with the state,
- Prove consumer interest (e.g., submit a list of preenrolled students),
- Join a government-approved private school organization,
- Limit themselves to certain locations, and
- Post a bond with the state.

The operational freedom inputs measure the degree to which schools enjoy autonomy with regard to their

- Admissions policies,
- Curricula,
- Testing,
- Textbooks,
- Budgets,
- Staffing,
- Teacher certification,
- Religious affiliation, and
- Other unenumerated freedoms.

Each of those inputs is allowed to take on one of several discrete numeric values between 0 and 1, corresponding to the level of freedom schools enjoy in that area. As an example, the possible values for schools' autonomy with regard to their curricula are presented in Table 1.

The final entry in the list of operational freedom inputs, "other unenumerated freedoms," is meant to capture the fact that our list cannot be exhaustive. Even under a system in which schools have 0 freedom in all of the areas we measure, it is still possible that educators will find

**Table 1**  
**Input Quantizations for Schools' Freedom over their Curricula**

Level of Curriculum Freedom Enjoyed	Value
The entire curriculum is laid down by the state	0
Highly detailed state standards are imposed in all subjects	0.25
Standards are either highly detailed or cover most or all subjects	0.5
A few general standards are imposed in a limited number of subjects	0.75
The state imposes no curriculum mandates whatsoever	1

ways of differentiating their services. So, even when the measured operational freedom terms all have the value 0, the overall operational freedom value should not necessarily be 0. We account for this by including in our sum the constant “other unenumerated freedoms.” In theory, if our list of specific operational freedoms were truly exhaustive, we could dispense with this constant.

*Incentive for Parental Responsibility* is a function of the share of educational costs covered directly by parents.

*Parental Freedom of Choice* is set to 1 in the case of private or charter schools. In the case of traditional government school systems, it has a very low value if the only way to choose a school is to move to a different district, and it has a progressively higher value as public school choice options become stronger.

**Accounting for Different Market Conditions across Sectors**

Different types of schools are treated very differently by lawmakers. Curriculum and testing regimes, for instance, are generally determined by schools in the private sector but stipulated by government in the public sector. The extent to which costs are covered directly by parental fees also varies dramatically between sectors. These differences in the characteristics of, and regulations applied to, the different education sectors require us to collect data for each type of school separately. Consequently, our index recognizes four different types of schools: Conventional Government Schools (CGS), Alternative Government Schools such as charter schools (AGS), Voucher-accepting Private schools (VP), and Nonvoucher Private schools (NVP). In states that offer education tax credits for personal tuition costs or for donations to private scholarship organizations, the details of those programs are recorded in the section for Nonvoucher Private schools.

Having those separate data input categories solves the problem of different regulations being applied to different types of schools but creates a new problem of its own: how do we combine these four component scores to produce an overall rating? The solution we have adopted when rating existing education systems is to calculate our index scores individually for each of the four categories and then combine those scores in a sum that is weighted by their school type’s respective shares of total enrollment. So, a state in which 88 percent of students were enrolled in the Conventional Government School sector, and the remainder attended Nonvoucher Private schools, would have an overall index score of  $(0.88 * \text{CGS rating}) + (0.12 * \text{NVP rating})$ , where the CGS and NVP ratings depend, respectively, on the regulatory frameworks applicable to Conventional Government Schools and to Nonvoucher Private schools.

**What about Other School Types?**

Our four-part categorization of educational options is obviously incomplete. Most notably absent from this list are homeschooling and after-school tutoring services. Both are omitted

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from this initial version of our index chiefly due to the scarcity of relevant data, though both could (and, ideally, should) be added at a later date. Of the two, the one most likely to skew the index's results, at least in the case of international comparisons, is the omission of tutoring services. That is because of the enormous role played by such services in many Asian nations. While Japan's public schools are among the most nationally centralized in the free world, that nation enjoys a vast, multi-billion-dollar-a-year, unregulated for-profit tutoring sector. Most Japanese students study at *juku*—as the tutoring schools are known—for some period of time during their elementary and/or secondary years, often for many hours a week. The metric's current inability to pick up on this large free market in after-school education decreases its accuracy for the purpose of international comparisons.

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## Measuring Education Policies

### Why Do We Need a Separate “Policy” Rating?

To maximize the usefulness of our index as a policy tool, it must be able to rate not only existing school systems as they are currently constituted (the market rating described in the preceding section) but education policy frameworks as well (policy ratings). As explained in the previous section, market ratings weigh the differing levels of enrollment in each of the four school types assessed by our index. This ties market ratings to the current reality on the ground and prevents them from capturing the likely future effects of newly passed legislation. If New York State were to adopt a universally accessible school choice program tomorrow, for example, the impact on public versus private sector enrollment might not be felt for months, and might not reach its full effect for years. Hence, a market rating for New York computed today would be very similar to the rating computed tomorrow, even though that state's policy framework would have changed dramatically.

It is important, therefore, to be able to assess the “market-friendliness” of education policies in the abstract, without taking current enrollment breakdowns into account. Doing so allows us to evaluate not only the policy frameworks already on the books but new education reform proposals as well. We call these evaluations policy ratings.

Computing policy ratings requires certain modifications to our list of input data and our calculations, which we explore in the next section. Note that inputs and calculations that are common to both policy and market ratings are not discussed again here.

### Computing Policy Ratings

When calculating the *Competitive Density* term for a policy rating we will not generally have exact figures for the average number of schools per district or districts per metropolitan area, because these are not typically spelled out in complete detail in enabling legislation. In most cases, however, it should be possible to estimate these figures from the proposed policy and the state or nation in which it is intended to be implemented, and that is the approach we have chosen.

The *Incentives for Innovation and Expansion* term for a market rating requires us to know the share of schools that is operated for profit—again, something that will not be available for a proposal that has not yet been implemented. To fill that gap, we measure the presence or absence of an outright prohibition against for-profit schools and, if there is no outright prohibition, the extent to which the policy would penalize schools for being operated on a for-profit basis. We consider the current U.S. federal income tax exemption for nonprofit private schools a major disincentive to for-profit operation.

In computing the *Incentive for Parental Responsibility* term, we weigh the share of school funding that is likely to come from tuition, based on the details of the policy in question. So, for

**Our index recognizes four different types of schools.**

example, a school voucher proposal that explicitly forbids voucher-receiving schools to charge tuition fees above the voucher amount would receive the lowest value for this term. A voucher proposal that required parents with sufficient means to directly cover some of the cost of their children’s education would receive a higher value. This is different from the calculation of *Incentive for Parental Responsibility* under a market rating, which is based on the actual share of children’s educational costs that is paid directly by parents in the form of tuition fees.

By far the most substantial difference between market and policy ratings, however, is the absence, in the latter case, of enrollment data for the different types of schools. Without that information, we must come up with an alternative mechanism for assigning weights to the component scores for each of the four school types. Our chosen solution is to weight them on the basis of the extent to which they are favored or discriminated against in both financial and regulatory terms. In other words, we look at the relative levels of subsidies available to each school type, and the relative levels of autonomy they are allowed, and weight the school types accordingly. Our reasoning is that consumers are encouraged to frequent the types of schools that cost the least and have the most autonomy with which to respond to those consumers’ demands.

Let’s consider an example. Imagine a policy that allows for only two types of schools: conventional government schools and voucher-receiving private schools. Under this policy, private schools receive a voucher worth two-thirds of the per pupil spending in government schools, but they are essentially unregulated, whereas government schools must follow a strict and uniform curriculum. Such a policy creates a relatively strong incentive for consumers to at least consider enrolling their children in the private sector. Now imagine a policy that offers an identically sized voucher but imposes the same restrictions on private voucher schools that it does on government schools. Under such a scenario, the incentive for families to seek private-sector schooling is much weaker. The combination of these two factors—relative subsidies and relative autonomy levels—is thus how we determine weights for each school type when computing a policy rating. A fully detailed explanation of this weighting system is provided in Appendix C of the technical report.

An important design goal for CEMI was to achieve consistency between its market ratings and its policy ratings. We have attempted to ensure that, when the education policy details governing a particular state or nation are fed into the index, it will produce a policy rating similar to the current market rating for that same state or nation—provided that the policy framework for that state or nation has not recently changed in a substantive way. Put mathematically, we wish to maximize the correlation between the market and policy ratings produced by the index. We explore this correlation in Appendix C of the technical report<sup>14</sup> and find that, after excluding states with relatively recent and strong charter school laws (whose policy and market ratings *should* differ), the correlation between our market and policy scores is quite high.

## **Index Ratings**

### **Interpreting the Results**

Before discussing the ratings produced by our index, a caveat regarding their interpretation is in order: It does not make sense to speak of a CEMI rating of 25 as “one-quarter of a free market” or to say that a rating of 50 represents exactly twice as much of a market as a rating of 25. This is partly due to the subjective judgments required in the construction of the index, discussed in the Introduction, and partly because CEMI ratings and market outcomes are not necessarily related in a linear way. It seems likely, for instance, that vigorous and sustainable markets cannot arise until a critical mass of constituent freedoms and incentives is achieved;

and so even if our index is effective in measuring the presence of those freedoms and incentives, its relationship to particular market outcomes could well be nonlinear.

### The United States

Tables 2 and 3 list the overall market and policy ratings (respectively) for the 50 U.S. states. Several conclusions are immediately apparent from the results:

- No state currently has anything resembling a free market in education.
- No state's education policies are likely to create a free market in education if left unchanged.
- In most cases, the current market ratings are quite similar to the policy ratings, but there are notable exceptions.

The top states by education market freedom arrive at their scores in varying ways. Wisconsin, one of the two top-scoring states, combines an unusually free (but still far from marketlike) conventional public school sector, one of the freest private sectors in the nation, a nonnegligible charter school program, and a small voucher program. Connecticut, which tied Wisconsin's score of 26 out of 100, has an even freer conventional public school sector but a much smaller charter sector and no voucher program. Idaho is a more distant third, having one of the freest conventional public school systems in the nation but a minuscule private education sector.

Of these states, only Wisconsin places in the top 3 on the policy rating. What the top 10 states on the policy rating scale have in common is that all have charter programs that do not cap the total number of charter schools that can be created. That leaves open the possibility that charter schooling will continue to spread and that, over time, a substantial share of the families in those states may gain access to charter schools. As a result, the top 9 of those states have policy ratings that are as high as or higher than the market rating of Wisconsin.<sup>15</sup>

Interestingly, Connecticut's market and policy ratings are nearly identical. That is because Connecticut has such a tight cap on its charter school program that it has little room for growth, and so the long-term market education prospects for the state are not very different from the current reality.

The states with the most market-friendly education *policies* in the nation are Texas and Wisconsin. Even they, however, rate only 30 out of 100. That should not be a surprise. While their charter schools are substantially freer than their own or other states' conventional public schools, the component scores for those charter sectors are still only in the mid-30s on our metric's scale, because of their limited freedom and market incentives.

Arizona comes in a close third on the policy scale, and an inspection of its results helps to illustrate precisely which policy features bring down its score. The state's conventional public schools earn 11 out of 100, due to their combination of very limited freedom and incentives for families and very limited freedom and incentives for educators. The state does have inter-district choice, but that choice is highly constrained, and, as is the case for U.S. public schools generally, parents have no direct financial responsibility for their children's education (only attenuated indirect responsibility, through taxation). Arizona's public school principals have virtually no autonomy with regard to their curricula, admissions policies, teacher qualifications, and budgets. Finally, public schools are not, and cannot be, operated for profit.

Arizona's charter schools fare substantially better than its conventional public schools, but their score is also limited because of constraints on their freedom and incentives and the absence, once again, of any direct financial responsibility for parents. Arizona charter schools have no control over their admissions policies, are compelled to administer state tests (which

**To maximize the usefulness of our index as a policy tool, it must be able to rate not only existing school systems as they are currently constituted but education policy frameworks as well.**

**Table 2**  
**Current Market Ratings for the United States**

State	Overall Market Rating	Conventional Public		Charter Public		Nonvoucher Private		Voucher Private	
		Score	Weight	Score	Weight	Score	Weight	Score	Weight
Wisconsin	26	16	0.84	30	0.03	87	0.12	72	0.01
Connecticut	26	19	0.89	37	0.00	85	0.11	N/A	0.00
Idaho	22	19	0.93	35	0.03	81	0.04	N/A	0.00
South Dakota	21	17	0.92	N/A	0.00	61	0.08	N/A	0.00
Florida	20	12	0.87	20	0.03	87	0.10	75	0.01
Delaware	19	3	0.79	39	0.04	85	0.18	N/A	0.00
New Jersey	19	9	0.85	39	0.01	80	0.14	N/A	0.00
Texas	19	15	0.93	34	0.02	81	0.05	N/A	0.00
Pennsylvania	18	6	0.82	36	0.02	81	0.15	N/A	0.00
Missouri	18	10	0.87	36	0.01	75	0.12	N/A	0.00
New York	18	7	0.85	37	0.01	82	0.15	N/A	0.00
Alaska	17	14	0.92	14	0.03	79	0.05	N/A	0.00
Kansas	17	11	0.92	29	0.00	87	0.08	N/A	0.00
Louisiana	17	8	0.84	33	0.01	65	0.16	N/A	0.00
Hawaii	17	11	0.80	14	0.02	44	0.17	N/A	0.00
Michigan	17	9	0.87	33	0.04	87	0.09	N/A	0.00
New Hampshire	17	9	0.89	42	0.00	82	0.11	N/A	0.00
Rhode Island	16	9	0.85	16	0.01	64	0.14	N/A	0.00
Nebraska	16	8	0.87	N/A	0.00	68	0.13	N/A	0.00
Ohio	16	7	0.85	34	0.03	81	0.12	71	0.00
Massachusetts	16	7	0.86	29	0.02	80	0.12	N/A	0.00
Georgia	16	10	0.91	36	0.01	85	0.07	N/A	0.00
Arizona	16	11	0.88	35	0.08	84	0.04	N/A	0.00
Minnesota	16	9	0.88	36	0.02	72	0.10	N/A	0.00
California	16	9	0.88	38	0.03	76	0.09	N/A	0.00
Maine	15	10	0.92	N/A	0.00	79	0.02	72	0.06
Arkansas	14	10	0.93	30	0.01	78	0.06	N/A	0.00
New Mexico	14	8	0.91	18	0.02	87	0.07	N/A	0.00
Washington	14	9	0.92	N/A	0.00	76	0.08	N/A	0.00
Indiana	14	6	0.90	35	0.00	80	0.10	N/A	0.00
Maryland	13	2	0.85	31	0.00	78	0.15	N/A	0.00
Illinois	13	3	0.87	18	0.01	86	0.12	N/A	0.00
Iowa	13	10	0.91	25	0.00	47	0.09	N/A	0.00
Vermont	12	5	0.89	N/A	0.00	81	0.04	69	0.07
Tennessee	11	5	0.91	24	0.00	78	0.09	N/A	0.00
South Carolina	11	4	0.91	26	0.01	85	0.08	N/A	0.00
Montana	11	7	0.94	N/A	0.00	73	0.06	N/A	0.00
Oregon	10	4	0.92	27	0.01	84	0.08	N/A	0.00
North Dakota	10	6	0.94	N/A	0.00	76	0.06	N/A	0.00
Colorado	10	3	0.89	36	0.04	85	0.07	N/A	0.00
Mississippi	10	2	0.90	12	0.00	85	0.10	N/A	0.00
Virginia	9	2	0.91	25	0.00	83	0.09	N/A	0.00

State	Overall Market Rating	Conventional Public		Charter Public		Nonvoucher Private		Voucher Private	
		Score	Weight	Score	Weight	Score	Weight	Score	Weight
Oklahoma	9	5	0.95	28	0.00	87	0.05	N/A	0.00
Kentucky	9	2	0.90	N/A	0.00	76	0.10	N/A	0.00
West Virginia	9	6	0.95	N/A	0.00	66	0.05	N/A	0.00
North Carolina	8	2	0.91	39	0.02	78	0.07	N/A	0.00
Nevada	8	4	0.94	27	0.01	76	0.04	N/A	0.00
Wyoming	7	6	0.97	26	0.00	69	0.02	N/A	0.00
Alabama	6	2	0.91	N/A	0.00	52	0.09	N/A	0.00
Utah	5	2	0.95	35	0.01	77	0.03	N/A	0.00

**Table 3**  
**Policy Ratings for the United States**

State	Overall Policy Rating	Conventional Public		Charter Public		Nonvoucher Private		Voucher Private	
		Score	Weight	Score	Weight	Score	Weight	Score	Weight
Texas	30	15	0.47	36	0.45	81	0.09	N/A	0.00
Wisconsin	30	16	0.45	32	0.46	87	0.07	72	0.02
Arizona	29	11	0.47	37	0.44	84	0.09	N/A	0.00
Minnesota	29	9	0.41	38	0.51	72	0.08	N/A	0.00
California	29	9	0.47	40	0.45	76	0.09	N/A	0.00
New Jersey	27	9	0.55	41	0.36	80	0.09	N/A	0.00
New York	27	7	0.50	39	0.41	82	0.09	N/A	0.00
Idaho	27	19	0.77	37	0.14	81	0.09	N/A	0.00
Indiana	26	6	0.47	37	0.44	80	0.08	N/A	0.00
New Hampshire	25	9	0.63	45	0.29	82	0.09	N/A	0.00
Connecticut	25	19	0.89	39	0.02	85	0.09	N/A	0.00
Utah	24	2	0.48	37	0.43	77	0.08	N/A	0.00
Pennsylvania	23	6	0.59	38	0.33	81	0.09	N/A	0.00
Arkansas	23	10	0.58	32	0.34	77	0.09	N/A	0.00
Oklahoma	23	5	0.48	30	0.44	87	0.09	N/A	0.00
Ohio	22	7	0.58	36	0.33	81	0.05	71	0.04
Maryland	22	2	0.48	33	0.43	78	0.09	N/A	0.00
South Dakota	21	17	0.91	N/A	0.00	61	0.09	N/A	0.00
Alaska	20	14	0.64	15	0.28	79	0.09	N/A	0.00
Oregon	19	4	0.59	28	0.33	84	0.09	N/A	0.00
Virginia	19	2	0.52	26	0.40	83	0.09	N/A	0.00
Florida	19	12	0.86	21	0.05	87	0.07	75	0.02
South Carolina	18	4	0.63	28	0.29	85	0.09	N/A	0.00
Kansas	18	11	0.90	31	0.02	87	0.09	N/A	0.00
Missouri	18	10	0.83	39	0.09	75	0.09	N/A	0.00
Georgia	17	10	0.90	39	0.02	85	0.09	N/A	0.00

*Continued*

**Table 3 continued**

State	Overall Policy Rating	Conventional		Charter Public		Nonvoucher		Voucher	
		Public Score	Weight	Score	Weight	Private Score	Weight	Private Score	Weight
Michigan	16	9	0.88	36	0.04	87	0.09	N/A	0.00
Wyoming	16	6	0.67	26	0.24	69	0.09	N/A	0.00
New Mexico	16	8	0.84	19	0.07	87	0.09	N/A	0.00
Maine	16	10	0.91	N/A	0.00	79	0.03	72	0.06
Washington	14	9	0.91	N/A	0.00	76	0.09	N/A	0.00
Hawaii	14	11	0.90	14	0.02	44	0.09	N/A	0.00
Massachusetts	14	7	0.88	31	0.04	80	0.09	N/A	0.00
Rhode Island	14	9	0.88	17	0.03	64	0.09	N/A	0.00
Louisiana	14	8	0.89	35	0.02	65	0.09	N/A	0.00
Delaware	14	3	0.83	42	0.08	85	0.09	N/A	0.00
Nebraska	14	8	0.91	N/A	0.00	68	0.09	N/A	0.00
Colorado	13	3	0.84	38	0.08	85	0.09	N/A	0.00
Iowa	13	10	0.91	25	0.00	47	0.09	N/A	0.00
Montana	12	7	0.91	N/A	0.00	73	0.09	N/A	0.00
North Dakota	12	6	0.91	N/A	0.00	76	0.09	N/A	0.00
Tennessee	11	5	0.91	24	0.00	78	0.09	N/A	0.00
Nevada	11	4	0.89	29	0.02	76	0.09	N/A	0.00
Vermont	11	5	0.91	N/A	0.00	81	0.03	69	0.07
West Virginia	11	6	0.91	N/A	0.00	66	0.09	N/A	0.00
Illinois	11	3	0.89	19	0.02	86	0.09	N/A	0.00
North Carolina	10	2	0.88	41	0.03	78	0.09	N/A	0.00
Mississippi	9	2	0.91	12	0.00	85	0.09	N/A	0.00
Kentucky	8	2	0.91	N/A	0.00	76	0.09	N/A	0.00
Alabama	6	2	0.91	N/A	0.00	52	0.09	N/A	0.00

**It does not make sense to speak of a CEMI rating of 25 as “one-quarter of a free market” or to say that a rating of 50 represents exactly twice as much of a market as a rating of 25.**

stifle the diversity of their curricula), have no control over their revenue and prices, cannot offer devotional religious instruction, and may not be directly operated as for-profit businesses (they can, however, be contracted out by the nonprofit charter board, at its discretion, to a for-profit management company). Nor is there any binding appeals process for rejected charter applications, and there are nonnegligible barriers to the entry of new charter schools. All of those limitations conspire to make Arizona’s charter school system, while among the freest in the nation, quite remote from a truly free educational market.

**Sweden and the Netherlands**

For an international perspective, we turn now to Sweden and the Netherlands, both of which have nationwide voucherlike programs under which government education funding follows children to whichever public or eligible private school their parents select. The Dutch program was introduced in 1917, and the Swedish program has been in existence since 1992. Both nations impose a substantial regulatory burden on voucher-accepting private schools—more substantial than the controls imposed on any of the existing U.S. voucher programs. In both nations, voucher schools must follow the state curriculum and are forbidden to charge tuition fees larger than the voucher amount. For-profit status is permitted for voucher



schools in Sweden, but not in the Netherlands. Dutch restrictions on staffing and budgeting decisions also tend to be more severe. One of the few respects in which the Swedish program is more restrictive than the Dutch is the extensive constraints it imposes on schools' admissions policies—constraints very much like those imposed on U.S. voucher programs. The Dutch program gives schools more autonomy in this regard.

The overall result of these differences is that, on paper at least, the Swedish program is more marketlike than the Dutch, and so receives a substantially higher policy rating (40, versus 31 for the Netherlands), as seen in Table 4. Interestingly, the reverse is true for the current market rating, shown in Table 5, in which the Netherlands outscores Sweden 31 to 25. The reason for this reversal is that the Dutch voucher program is now nearly a century old, and the private-sector share of enrollment has thus had ample time to grow, fulfilling the potential of its enabling legislation. That explains why the policy and market scores for the Netherlands are identical.

About 76 percent of Dutch children are enrolled in the private sector today, compared to only 8 percent in Sweden. The much smaller Swedish private-sector share is due to the fact that its program is comparatively recent. Sweden went from having only about 1 percent of its students enrolled in private schools before 1992 to having 8 percent enrolled today. Should this growth trend continue, as it has in other countries with uncapped voucher programs, Sweden is likely to ultimately reach an even higher share of private-sector education consumption than has the Netherlands. That is due to the fact that Swedish voucher schools currently operate under somewhat freer regulatory conditions than do Dutch voucher schools, and so should have an easier time customizing their services to the needs of families and hence a better chance of luring families out of the more heavily constrained public sector. This difference in the long-term prospects for the Swedish voucher program is captured by CEMI's policy rating, which explains Sweden's substantially higher score.

It should be noted that the Dutch program has become increasingly regulated over time,

**No state's education policies are likely to create a free market in education if left unchanged.**

**Table 4**  
**Policy Ratings for Sweden and the Netherlands**

State	Overall Policy Rating	Conventional Public		Charter Public		Nonvoucher Private		Voucher Private	
		Score	Weight	Score	Weight	Score	Weight	Score	Weight
Sweden	40	24	0.10	N/A	0.00	N/A	0.00	42	0.90
The Netherlands	31	25	0.23	N/A	0.00	N/A	0.00	33	0.77

**Table 5**  
**Current Market Ratings for Sweden and the Netherlands**

State	Overall Market Rating	Conventional Public		Charter Public		Nonvoucher Private		Voucher Private	
		Score	Weight	Score	Weight	Score	Weight	Score	Weight
The Netherlands	31	25	0.24	N/A	0.00	N/A	0.00	33	0.76
Sweden	25	24	0.92	N/A	0.00	N/A	0.00	46	0.08

and should the Swedish program suffer the same fate, its policy rating will fall closer in line with that of the Netherlands.

## Market-Inspired Policy Proposals

Even one of the most market-friendly education policies in the industrialized world, that of Sweden, receives a failing grade from our index. Because of factors such as strict price controls and central planning of the curriculum, Swedish schools do not, and cannot, constitute a true free market. That prompts an obvious question: what policies *would* bring about free and vigorously competitive education markets?

We address that question in Table 6, looking at 13 different policy options ranging from the total separation of school and state to the current education policy situation in California (which, as the most populous state, was chosen as a benchmark for the status quo). California data are also used in some of the school choice program scenarios to show how the various policy options would affect the ratings of an existing state education system.

The first scenario treated in Table 6 represents the complete withdrawal of government from the field of education. By definition, this yields a perfect market score of 100. Notably, this separation of school and state includes the elimination of the federal government income tax exemption for schools organized as nonprofit corporations. The reason for taking that exemption into account is that it dramatically favors nonprofit over for-profit schools (because nonprofits are allowed to retain substantially more of their revenues than are for-profits). When the exemption for nonprofit schools is introduced, the rating for an otherwise free educational market drops from 100 to 89.

The next highest-scoring policy scenario is a sizable tax credit program that offers credits both for the personal use of parents with school-aged children and for donations to private scholarship-granting programs that subsidize education for low-income students. This scenario also assumes that independent schools operate in an environment that is essentially free of government regulation, including the absence of the income tax exemption for nonprofit schools. When that exemption is introduced, the rating drops from 96 to 84.

The third most marketlike policy scenario is a universal school voucher program that provides all children with a voucher for the lesser of \$4,000 or the tuition charged by their chosen private school. Like the previous two scenarios, it assumes that there are no government-owned, government-operated schools, and that there is no tax exemption for nonprofit schools. Were the tax exemption included, the score would drop from 86 to 77.

The chief reason that the idealized voucher scenario scores well below the idealized tax credit program is that it more severely limits the share of educational costs paid directly by parents in the form of tuition. Because personal use tax credits allow parents to pay for their children's schooling with their own money, they maximize the share of the population in which the consumer is also the payer and minimize third-party payment. Increasing the voucher size from \$4,000 to \$9,800 drops the metric's rating from 86 to 77—a drop that is also attributable to the lower share of school costs paid directly by parents.

The highest-ranking scenario that represents a plausible policy is the current California education system supplemented with a two-part \$4,500 tax credit program. Under that scenario, the average personal use tax credit would total \$4,500, as would the average scholarship awarded by scholarship-granting organizations. Unlike the four highest-scoring scenarios, this one takes account of the federal income tax deduction for nonprofit schools. If that deduction were removed, this scenario's score would rise from 74 to 82. It does, however, assume that nongovernment schools would be allowed complete freedom in regard to their

**The states with the most market-friendly education policies in the nation are Texas and Wisconsin. Even they, however, rate only 30 out of 100.**

**Table 6**  
**Policy Ratings for U.S. Market-Inspired Proposals**

Scenario	Overall Policy Rating	Conventional Public		Charter Public		Nonvoucher Private		Voucher Private	
		Score	Weight	Score	Weight	Score	Weight	Score	Weight
Free market, no gov't schools or intervention	100	N/A	0.00	N/A	0.00	100	1.00	N/A	0.00
Idealized \$4,000 dual tax credit, no gov't schools	96	N/A	0.00	N/A	0.00	96	1.00	N/A	0.00
Idealized \$4,000 voucher, no gov't schools	86	N/A	0.00	N/A	0.00	100	0.04	85	0.96
Idealized \$9,800 voucher, no gov't schools	77	N/A	0.00	N/A	0.00	100	0.04	76	0.96
California + decent \$4,500 dual tax credit program	74	14	0.09	42	0.02	81	0.89	N/A	0.00
Idealized maximally free conventional gov't schools	65	63	0.92	N/A	0.00	87	0.08	N/A	0.00
Idealized maximally free charter schools	65	N/A	0.00	63	0.92	87	0.08	N/A	0.00
Idealized vouchers and charters, \$9,800 / pupil	64	N/A	0.00	63	0.30	100	0.02	63	0.67
California + \$7,000 decent voucher program	53	9	0.01	40	0.01	76	0.04	53	0.93
California + \$2,500 decent dual tax credit program	52	9	0.23	40	0.22	74	0.56	N/A	0.00
California + \$9,800 decent voucher program	51	9	0.00	40	0.00	76	0.04	50	0.96
California + \$4,000 decent voucher program	45	9	0.21	40	0.20	76	0.04	58	0.55
California	29	9	0.47	40	0.45	76	0.09	N/A	0.00

curricula (as in the three highest-scoring scenarios), which would be a departure from the existing policy in California (where private schools must adopt curricula comparable to the public school curriculum). If we add that curriculum restriction to this California plus tax credits scenario, its score drops from 74 to 69.

The next three scenarios represent idealized and unregulated public school choice, a similar idealized vouchers plus charter schools combination, and an idealized charter school program with no vouchers. All receive comparable scores of 64 or 65 and assume the existence of the federal income tax exemption for private schools and hence that, in every case, the education industry would be dominated by nonprofit providers.

The next highest-scoring real-world scenario is California plus a \$7,000 voucher, followed by California plus a \$2,500 dual tax credit program and California plus a \$9,800 voucher program. These, in turn are followed by California plus a \$4,000 voucher. The \$9,800 voucher receives a lower score than the \$7,000 voucher because of its more severe reduction in the share of school costs paid directly by parents. The lowest-scoring scenario is the existing California policy, which rates a score of 29.

**Because of factors such as strict price controls and central planning of the curriculum, Swedish schools do not, and cannot, constitute a true free market.**

**On all five of our regression tests, the CEMI market rating was positively and statistically significantly associated with educational outcomes.**

## **CEMI Ratings and Educational Outcomes**

We have already noted that the relationship between CEMI ratings and the scope and vigor of market activity is not necessarily linear. Nevertheless, it is inevitable with an index of this kind that linear regression will be used to search for relationships between its ratings and whatever educational outcome measures happen to be readily available.

Given that reality, we have run a series of regressions using a variety of different educational outcome measures, and a reasonable suite of controls for other factors commonly associated with those outcomes. Our outcome measures include on-time high school graduation rates, the average of fourth grade NAEP reading and mathematics scores, the average of eighth grade NAEP reading and mathematics scores, the average of fourth and eighth grade NAEP reading and mathematics scores, and a composite index of fourth and eighth grade reading and math scores with graduation rates.

The NAEP was chosen because it is the only test administered to representative samples of students from every state. Reading and mathematics were selected as the subjects of interest because they represent two of the three “Rs” and because other NAEP subject test results (such as science) are not reported for all states. The fourth and eighth grades were chosen because they are the only ones for which state-level NAEP data are available.

Each of our regressions controlled for five common socioeconomic and demographic variables:

- The share of householders receiving state or local assistance,
- The share of children living with foreign-born householders,
- The share of children not living in married-couple families,
- An index of parents’ level of education, and
- The share of white children.

Other control variables such as the share of Hispanic families, the share of students for whom the language spoken at home was not English, and the share of disabled students were also included in various models but were not found to be statistically significant or to add predictive power to the model.

On all five of our regression tests, the CEMI market rating was positively and statistically significantly associated with educational outcomes, though its effect was not large by conventional measures. For the outcome measure that combined fourth and eighth grade test scores with graduation rates, the CEMI term was highly significant and of moderate effect size, and it uniquely explained more of the variance of the outcome measure than did any of the control variables. In other words, CEMI uniquely explained more of the variation in this overall educational outcome measure than did race, wealth, presence of nuclear families, or parental education. It is worth noting, however, that none of the variables in that model uniquely explained more than 5 percent of the total variance in that outcome measure, implying that much of the predictive effect of the variables in this model is due to interrelations among them.

These results are described in detail in Appendix D of the full technical report.

## **Index Robustness to Alternative Component Weights**

Given the unavoidable subjectivity involved in the calibration of CEMI’s weighting values, it is useful to test how its ratings respond to variations in the weights we have chosen. If our index ratings varied wildly in response to tiny changes in our calibrations, then CEMI’s use-

fulness would be limited. If, on the other hand, its ratings are fairly stable so long as the weights remain within some reasonable range of the values we have chosen, then its potential usefulness is greater.

The quality of being stable in the face of changes in weighting values is called “robustness,” and it can be tested by randomizing the index’s constants within some specified range and recomputing the ratings and rankings to see how widely they vary in response to those randomizations. The results of a pair of robustness tests are presented in Appendix E of the full technical report. In brief, CEMI ratings and rankings are quite stable when its weights are randomly varied in a 10 percent range<sup>16</sup> and are fairly stable, on the whole, when varied in a 20 percent range.<sup>17</sup>

The most volatile CEMI scores are its market rankings, and their greater variability is due to the fact that U.S. states have such similar education systems, and hence such similar CEMI ratings. With all the ratings so close together, even small changes in those rating values can lead to a significant shift in the rank ordering of the states. Hence, it is wise not to refer to the rankings in isolation and to always keep them in the context of the actual rating values produced by CEMI.

## Conclusion

CEMI is intended to model the way education markets work. To the extent that it accurately measures the necessary components of free education markets, it suggests a number of conclusions about America’s school systems and the policies proposed to reform them.

First, and least surprising, CEMI ratings indicate that no state in the country currently enjoys anything remotely resembling a competitive education industry—including the states that have implemented small-scale voucher or tax credit programs or larger (but still weak, from a market standpoint) charter school programs. The U.S. education industry is dominated by state school monopolies that, because of their government-funding advantage, have reduced the private sector to a tiny niche.

More intriguing, CEMI suggests that even the national voucherlike programs of Sweden and the Netherlands are also very far from free markets. Their low ratings on our index are largely due to the regulations imposed on participating schools, though the relative youth of the Swedish program also plays a role.

When we apply CEMI to a variety of different school choice policy proposals, we find very large differences in their market potential, due to differences in funding levels and mechanisms, degrees of regulation, and program size. These policy ratings, more than anything else, are likely to precipitate disagreements over CEMI’s design and calibration. But we believe such disagreements will advance the debate over optimum school choice policy design. By putting the policy questions into explicit mathematical terms, CEMI will allow a much clearer discussion of the necessary and sufficient features of meaningful reform. Analysts who disagree with particular index ratings will have the ability to point to the specific characteristics of the CEMI model responsible for those ratings and suggest alternative weights or calculations, focusing the debate in a way that has not previously been possible.

In the end, if this index leads merely to a greater emphasis on the details of school choice policies, and their roles in creating and sustaining a competitive education industry, we believe that our efforts will have been worthwhile.

## Notes

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**CEMI ratings and rankings are quite stable when its weights are randomly varied in a 10 percent range and are fairly stable, on the whole, when varied in a 20 percent range.**

1. James Tooley and Pauline Dixon, "Private Education Is Good for the Poor: A Study of Private Schools Serving the Poor in Low-Income Countries," Cato Institute White Paper, December 7, 2005, [http://www.cato.org/pub\\_display.php?pub\\_id=5224](http://www.cato.org/pub_display.php?pub_id=5224).
2. See, for instance, *ibid.*; James Tooley and David Salisbury, eds., *What America Can Learn from School Choice in Other Countries* (Washington: Cato Institute, 2005); and Andrew J. Coulson, "How Markets Affect Quality: Testing a Theory of Market Education against the International Evidence," in *Educational Freedom in Urban America*, ed. David Salisbury and Casey Lartigue (Washington: Cato Institute, 2004), pp. 265–324.
3. The seminal work in the field is E. G. West, *Education and State: A Study in Political Economy* (1965; Indianapolis: Liberty Books, 1994). For a broader survey of the evidence from ancient times to the present, see Andrew J. Coulson, *Market Education: The Unknown History* (New Brunswick, NJ: Transaction Books, 1999).
4. See, for instance, David E. Campbell, "The Civic Side of School Reform: How Do School Vouchers Affect Civic Education?" working paper, University of Notre Dame, 2002, <http://www.princeton.edu/~csdp/events/pdfs/campbell2.pdf>; Richard G. Niemi and Christopher Chapman, "The Civic Development of 9th- through 12th-Grade Students in the United States: 1996," statistical analysis report, National Center for Education Statistics, 1998, <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=1999131>; and Paul T. Hill, "What Is Public about Public Education?" research report, University of Washington and The Brookings Institution, 2000, <http://www.brook.edu/dybdocroot/GS/brown/PublicEd.PDF>.
5. See, for instance, Stephen Arons, *Compelling Belief: The Culture of American Schooling* (Amherst: University of Massachusetts Press, 1986); and Coulson, *Market Education*.
6. <http://cato.org/CEMI>.
7. Coulson, "How Markets Affect Quality." One especially large-scale study found a quadratic relationship between parent funding and school efficiency. Estelle James, E. M. King, and Ace Suryadi, "Finance, Management, and Costs of Public and Private Schools in Indonesia," *Economics of Education Review* 15, no. 4 (1996): 387–98. Higher parental funding share was always found to be better than lower parental funding share, but the magnitude of the improvement decreased as the parent funding share approached 100 percent. On the basis of this and related work, it is reasonable to include in our metric a quadratic term corresponding to the share of total education spending that comes (or is expected to come) directly from parents.
8. In the jargon of mathematicians, many of the input factors on which CEMI ratings are based are "ordinal" rather than "cardinal." Ordinal numbers convey relative rankings between things, but not the magnitude of the differences. Consider, for example, the severity of government textbook mandates. While we can say that mandating all of a school's textbooks reduces market freedom more than requiring schools to choose their textbooks from an approved list (an ordinal statement), we cannot know the exact difference in the market-stifling effect of these two government mandates (which would imply cardinal knowledge). In order to produce CEMI rating numbers, however, it is necessary to estimate the magnitude of such differences, subjectively weighting (or "calibrating") the various factors on which ratings are based. The stability of CEMI ratings in the face of variations in these estimated weights (known as its "robustness") is discussed at the end of the paper.
9. James Gwartney and Robert Lawson, *Economic Freedom of the World: 2006 Annual Report*, Fraser Institute, <http://www.freetheworld.com/release.html>; Jay P. Greene, "The Education Freedom Index," Manhattan Institute Civic Report no. 14, September 2000, [http://www.manhattan-institute.org/html/cr\\_14.htm](http://www.manhattan-institute.org/html/cr_14.htm); and Claudia R. Hepburn, "The Canadian Education Freedom Index," Fraser Institute Studies in Education Policy series, September 2003, <http://www.fraserinstitute.ca/shared/readmore.asp?sNav=pb&id=575>.
10. An important corollary of our multiplicative approach is that the metric's "sensitivity" to changes in individual input values is not constant across the range of ratings. As an example, consider two different education systems: one that is dominated by private, parent-funded, parent-chosen schools and another dominated by government schools to which students are automatically assigned. The first scenario is obviously more marketlike than the second and will receive a higher score. As a result, a change in one input variable will have a bigger impact on the score of the first system, in raw points, than it will

on the score of the second. For instance, say that both systems initially allow schools to set their own curricula but then subsequently impose an explicit state curriculum. The resulting decrease in the rating of the private-sector system will be larger, in terms of raw points, than the decrease in the rating of the public-sector system. We believe this is as it should be. A system in which students are automatically assigned to schools is so far from a market that changes in curriculum mandates amount to shuffling chairs around on a sinking *Titanic*, whereas such changes would make a significant difference to an otherwise free education market.

11. The Kumon chain of tutoring schools, for instance, enrolls roughly three million students in over three dozen countries. Other large networks include the K-12 Objetivo chain in Brazil (roughly 600,000 students) and, at the higher education level, the University of Phoenix in the United States.

12. Pliny the Younger, *Letters and Panegyricus [of] Pliny*, with an English translation by Betty Radish (London: William Heinemann, 1969), pp. 277–83.

13. The full technical report will be made available on the Cato Institute website, <http://cato.org/>.

14. Available on the Cato Institute website, <http://cato.org/>.

15. Although Idaho does not have an explicit cap on the total number of charter schools that can be created, it limits the number that may be created at both the state and the district level in any given year. For the foreseeable future, this will have an effect similar to that of a rigid cap, and so we have treated Idaho as though its total charter count is capped.

16. That is, plus or minus 5 percent of the values we have chosen.

17. That is, plus or minus 10 percent of the values we have chosen.

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