NEVADA POLICY RESEARCH INSTITUTE

analysis

Does School District Size Matter?

by Robert Schmidt and Alan Schlottmann*

Executive Summary

Policymakers throughout the United States are examining whether students, parents, teachers and taxpayers receive any benefits from large unified school districts. Nevadans also, as revealed in a 2004 survey on Nevada public school performance, have begun to question the "bigger is better" approach to school district size.

What recent studies strongly suggest is that size *does* matter, and that students, teachers, parents and taxpayers are all better off where school districts are smaller in size. A surprisingly robust body of academic literature now concludes that negative impacts of large school districts outweigh the positive.

Large school districts arose in an era dominated by large-scale manufacturing techniques and their resulting efficiencies. It was easy to believe that economies of scale would exist in larger districts, making delivery of education more efficient there. The resulting consolidation of small school districts—perhaps the most dramatic changes in public education during the last century—began with 150,000 school districts. Today, in the United States, there are less than 15,000.

Moreover, 24 districts in the U.S. now enroll more than 100,000 students. If economies of scale actually were the result, we would find school-district spending on instruction increasing as a share of the total as district size increased. Empirical research finds, however, that not to be the case. In fact, as school district size increases, the percentage of budget spent on teachers, books, and materials actually tends to decline.

In 1954 Nevada's counties began serving the state as school districts, and this policy has never been reappraised. Today Clark County School District (CCSD) has become the nation's fifth largest. Although invariably supporting smaller size metrics in every other area of education, CCSD administrators are reluctant to discuss the prominent role of district gigantism as a contributing factor in the district's chronically poor showings on national quality-of-education indices. Typically, when discussing classes and schools, district educators argue that smaller is better. When confronted with the problematic size of the CCSD, however, they tend to reflexively shift to "economies of scale" arguments—notwithstanding the overwhelming evidence against these arguments in public sector education.

It is time for a reasoned discussion of the impact of size on Nevada's school districts.

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Note: In producing this white paper, the authors relied in significant part on a paper written by David N. Cox, titled "Big Trouble: Solving Education Problems Means Rethinking Super-Sized Schools and Districts." The Nevada Policy Research Institute wishes to acknowledge Mr. Cox's valuable contribution and to give him due credit.

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INTRODUCTION

Recently many Nevada policymakers and parents have begun to question the "bigger is better" approach to schools.[1] Nevada parents expressed their concerns over school district size in a 2004 report on Nevada public school performance. Such concern is not specific to Nevada, but is echoed throughout the United States.

As shown in Figure 1, the percentage of parents who feel that the Clark County School District (CCSD) is too large is particularly striking.

In the same study, Nevada employers expressed similarly high levels of dissatisfaction with the basic skills of recent graduates of Nevada's large metropolitan school districts (Figure 2, next page).

Nationally, policy makers are examining whether bigger is really better for students, parents, teachers and taxpayers. Specifically, they question whether "bigger" might actually hinder public school performance and discourage positive student outcomes. Can "bigger" actually be a source of the widespread dissatisfaction with public school performance? The answer coming from numerous recent studies, both quantitative and qualitative, strongly suggests the answer is *yes*. School district size does matter, and students, teachers, parents and taxpayers all do better in smaller school districts with smaller schools.

Reliable research on the relationship between student performance and school district size requires the analysis of complex relationships between various factors that interact with school district size. Such factors may account for observed variations in student, school and school district performance. Fortunately, new computer modeling techniques allow researchers to examine the impact of school district size

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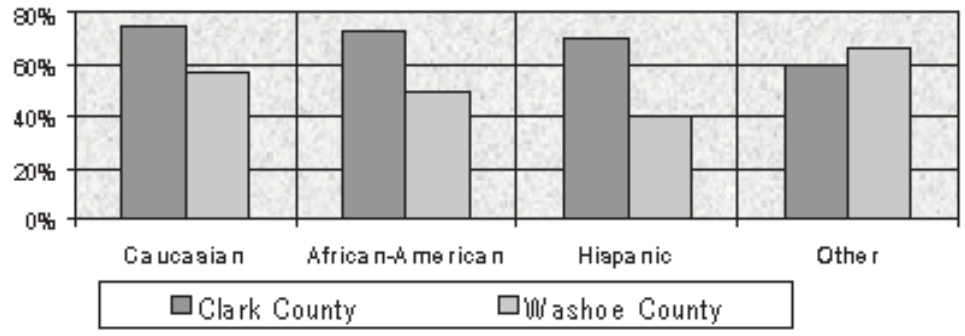
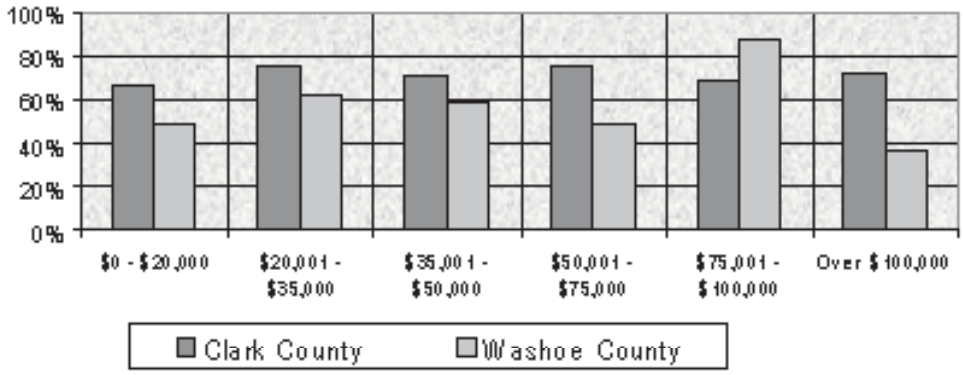
Figure 1. Percentage of parents who think school district is too large, by race



Percentages are based upon only those respondents who expressed a positive or negative opinion.

Figure 2. Percentage of parents who think school district is too large, by income



Percentages are based upon only those respondents who expressed a positive or negative opinion.

on performance, making the conclusions of the academic literature on the negative impacts of large school districts surprisingly robust.

In this report, we address recent evidence on the relationship between school district size and student outcomes. In addition, the differing perspectives on this issue between most of the educational administration in Nevada's largest school district and the research community are noted and contrasted.

School District Size: An Overview

The original impetus for large school districts was the notion that large size would result in large scale efficiencies. Looking back at earlier eras dominated by large-scale manufacturing techniques in the private sector, this, to many people, appeared self-evident.

The resulting consolidation of more than 130,000 small school districts remains one of the most dramatic changes in the structure of public education during the last century. In 1928, there were 150,000 school districts in the United States; today, there are less than 15,000.

Presently, 24 districts in the U.S. have enrollments that exceed 100,000 students. If production economies of scale were actually present—with fixed costs being spread over a larger operation—a school district's spending on instruction would increase as a share of total spending as district size increased. However, empirical research finds just the opposite. Rather than making up a larger percentage of the budget as school district size increases, the percentage spent on teachers, books and teaching materials actually appears to go down.[2]

Nevada designated its counties as school districts in 1954, consolidating 185 districts into 17. This practice has never been reassessed, notwithstanding the fact that, today, the Clark County School District is the fifth largest school district in the nation. Despite the empirical evidence, Clark County school administrators are reluctant to discuss the role of district size as a structural factor in the quality of Clark County education. These educators have generally disparaged the role of structure to focus attention on process. Given administrators' tendency to support smaller metrics for every other school characteristic, this is a peculiar position for them to take.

Typically, Clark County educators argue that smaller is better. For example, class size reduction is at the top of their education reform list. Most also would agree with former U.S. Secretary of Education Richard W. Riley who said: "We need to find ways to create small, supportive learning environments that give students a sense of connection to each other.... That's hard to do when we are building high schools the size of shopping malls. Size matters."[3]

However, when Clark County School District (CCSD) administrators are questioned about the size of their district, most of these same educators immediately revert to the "bigger is better" or "economies of scale" arguments. This position is interesting given the overwhelming evidence that smaller school districts are more successful. The reluctance of the CCSD's upper management to address this issue was evident in recent educational roundtables on Nevada's public schools.[4]

Perhaps it is public choice theory[5] that best explains the reluctance of large-district administrators to discuss the ample evidence indicating that larger districts interfere with positive student outcomes. There is a wealth of academic literature that identifies the negative impacts of large school districts. For example, in her review of 100 research projects, Kathleen Cotton notes: "The states with the largest schools and school districts have the worst achievement, affective and social outcomes."[6] Florence Webb found that researchers have fallen into two camps on the question of district size and student

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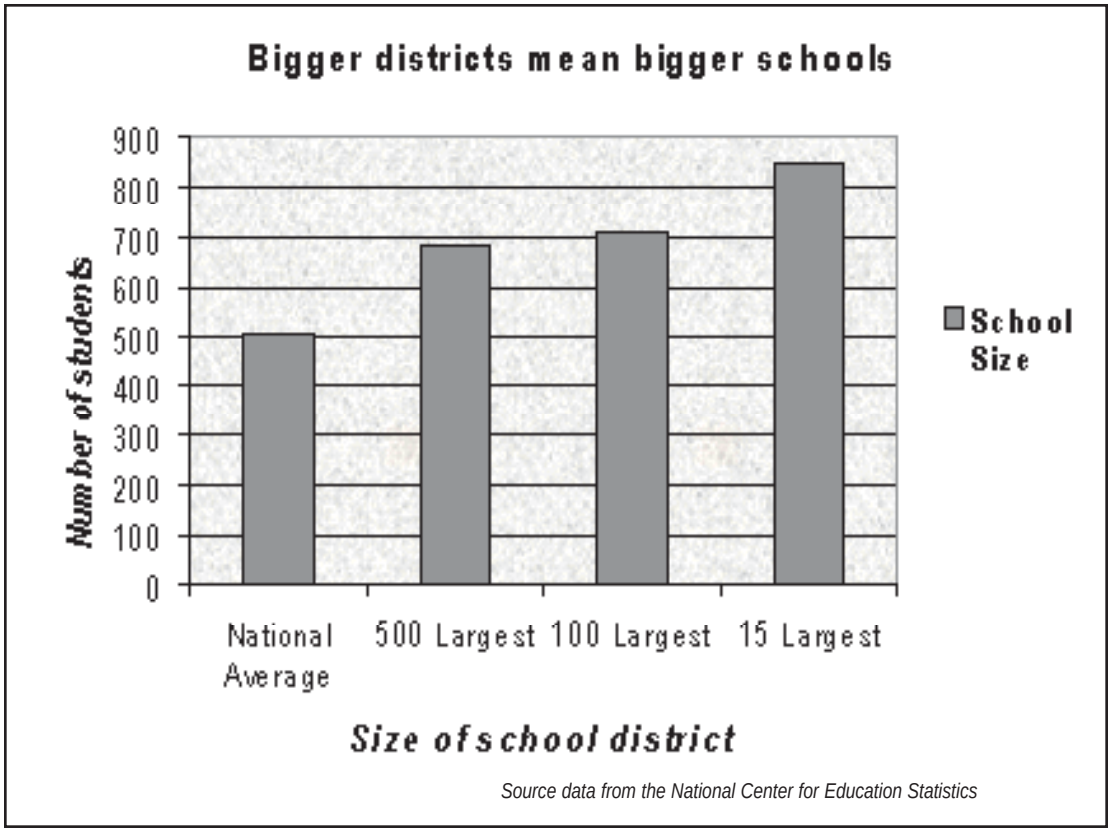
CCSD is immense by any measure: geographical or enrollment size.

achievement: those who see no advantage for big districts and those who find "that achievement drops as enrollment levels rise." In lower socioeconomic populations, she says, this is even more evident: "There was a strong, consistent negative correlation between district size and student achievement in [low-income] populations."[7] The work of Herbert Walberg reveals a direct, negative relationship between test results and states with large district size.[8] Robert Jewell succinctly states: "Students in states with smaller districts and smaller schools have higher SAT and ACT scores."[9]

There is no uniform consensus on the precise definition of a "large school district," but CCSD is definitely large by any measure. The two most common means of interpreting "large" are enrollment or sheer geographical size.

Based on enrollment, CCSD is the nation's fifth-largest school system, serving more than 280,000 students. Only New York City, Los Angeles, Chicago and Miami-Dade County school districts have more students enrolled. Additionally, CCSD has the highest enrollment growth rate in the top 100 school districts in America. The district employs over 32,000 individuals, making it the largest single employer in Nevada.[10]

CCSD is also immense in terms of geographical size. The district covers 7,910 square miles, almost 30 times the national average of 280 square miles. CCSD currently operates 301 schools and plans to add another 88 schools and more than 500 administrators in the next 10 years. The district has an operating budget in excess of $1.5 billion and a building modernization program in excess of $3.7 billion.[11]



Source data from the National Center for Education Statistics

Recent Research Findings

Although school district size has been researched as extensively as school size, curriculum and teacher quality, it is rarely mentioned as a key element in the context of school reform within the Clark County School District. Yet, it should be. Most researchers studying the impact of school district size assert a truly significant result: small schools and school districts have a positive effect on the quality of education for children from poor families.

In their study of 13,600 schools and 2,300 districts, Howley and Bickel refer to what they call the "excellence effects" of size, in which smaller schools and smaller school districts with large numbers of economically disadvantaged students are likely to have higher average test scores than their counterparts in larger systems.[12]

In the six states they studied, Howley and Bickel found a consistently predictable relationship between smaller schools and school districts and higher test scores. The authors also found a pattern they call the "equity effects" of size. This analysis focuses on the strength of the relationship between socioeconomic status (SES) and achievement. In general, the odds of getting high test scores are improved by high SES and reduced by low SES. In smaller schools and districts, the authors found that the relationship between aggregate achievement (student achievement averaged for a school or district) and SES was consistently weaker.[13]

In 2002, spurred in part by the research of Howley and Bickel, the school board members of Washington state—operating as the School Director's Association—commissioned a study on the influences of district size, school size and socioeconomic status on student achievement in Washington.[14] An explicit replication study, it confirmed Howley and Bickel's findings.

Harvard researcher Caroline Hoxby found that public school productivity is higher in metropolitan areas where families have a wide range of school districts from which to choose.[15] She argues that families in areas with many districts are better able to determine the relative effectiveness of different districts in producing school quality and that, consequently, district officials in those areas will be less able to divert public resources to non-productive but politically powerful education-industry special interests.

In a recent 2005 study on the effect of residential school choice on public high school graduation rates, Jay Greene and Marcus Winters evaluated the impact of state school district size on public high school graduation rates. After calculating graduation rates over the last decade, the authors examined the relationship between these rates and changes in each state's average school district size.[16]

Greene and Winters found that decreasing the size of school districts has a substantial and statistically significant positive effect on graduation rates. Conversely, consolidation of school districts into larger units leads to more high school dropouts. The analysis indicates that decreasing the average size of a state's school districts by 200 square miles leads to an increase of about 1.7 percentage points in its graduation rate. This finding is particularly important for states like Nevada that have geographically vast school districts.[17]

Greene and Winters also argue that decreasing the size of school districts will improve educational outputs, including

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graduation rates, by increasing the choice that parents have regarding the school system that educates their child. By making it easier to relocate from one school system's jurisdiction to the next, smaller school districts make it possible for a larger number of families to exercise greater choice. When families can move from district to district, individual students are taken less for granted by schools which, for a variety of reasons, do not want to lose enrollment. This study provides empirical evidence that increasing the choice parents have among school districts contributes to higher public high school graduation rates.

When families can move from district to district, individual students are taken less for granted by schools.

This latter point is particularly relevant for Nevada. Of the 11 state averages of high school completion rates for 1998-2000 reported in Schmidt and Ziebell (2005), Nevada was second lowest.[18] It is also critically important to acknowledge that smaller districts yield substantial improvements in school performance for poor communities. Large school districts compound the disadvantages faced by high-poverty communities.

Economies and Diseconomies of Scale

Economic theory holds that the cost to produce an individual item normally decreases with an increase in the number of items produced. This phenomenon is often called "economies of scale," because it implies that a firm can achieve economic savings by increasing its scale of production.

Applying the theory of economies of scale to education would imply that it costs more to educate each pupil in a small school district than in a large one. One way to illustrate this is to compare fixed costs spread over a district's enrollment. For example, all districts must employ a superintendent, whose salary can be converted into a per-pupil cost. If the salary for a superintendent is $100,000, this translates into costs of $10 per pupil in a district with 10,000 pupils and $1,000 per pupil in a district with 100 pupils.

However, what is often conveniently missing in public-education discussions of economies of scale is that economic theory also supports the idea that reduced costs of providing education may only be present for school districts up to an optimal size. In other words, diseconomies of scale may cause per-pupil costs to increase again as the size of the school district increases beyond an optimal point and becomes too big. We are aware of no literature which justifies mega-districts of the size of the CCSD.

Most economy of scale research is based on production by a private-sector firm—most frequently in a manufacturing setting. The consensus among researchers is that larger firms can capitalize on the financial benefits of mass production, such as more efficient use of resources and specialization of labor. A large firm, for example, might have more capital resources available to automate the production of goods, whereas a small firm could not afford such efficiencies. Similarly, a large firm purchasing large quantities of raw materials might pay less per unit than a small firm purchasing smaller amounts of raw materials.

However, research also points to inefficiencies for very large production firms, implying that there is something like an "optimal" size operation. As the size of a

firm increases up to a certain point, average unit costs decrease and then level off. Above this size, average unit costs may actually increase as the production curve of the firm becomes "U-shaped." One possible explanation for this diseconomies of scale phenomenon is that a particular firm's infrastructure may be inadequate to handle the volume of goods produced. Another example would be managerial inefficiencies resulting from too large an enterprise. The recognition of such inefficiencies by industry led to the business revolution of the '90s, which emphasized more flexible operating units and leaner managerial structures. Unfortunately, there has been little recognition of these current business practices in most discussion of Nevada's overly large school districts.

Mega-Districts Are Different

The literature that support the economies of scale argument for education—implying that increased district size allows students to be taught most efficiently, or at a lower per-pupil cost—is more relevant to districts of a modest size than to the mega districts. Nearly all the relevant research supports the idea that very small school districts face relatively high per-pupil costs, often created by the required minimum level of education inputs. In these cases, increased economies of scale can favorably affect the per-pupil cost of administration, building maintenance, support programs, and purchasing of equipment, supplies and other materials.

However, the literature also suggests that a workable definition of a small district is in the range of 400 to 1,600 students, and diseconomies of size begin to occur as district size exceeds 6,000 students. See, for example, Vicki Murray (2004) and Louisiana Department of Education (2003).[19] Even advocates of "large districts" usually tend to assume an upper boundary of 30,000 students. To put these numbers in perspective, note that CCSD serves more than nine times that upper boundary: 280,000 students.

To lower their costs, some small districts have turned to inter-district alliances for:

- collective purchasing of equipment, supplies and other materials;
- technology improvements that allow students to access programs offered at other districts or higher education institutions; and
- cooperative arrangements to jointly provide expensive educational services (such as those for severely handicapped students).

While researchers may support the idea that economies of scale exist and that states should compensate districts for the resulting cost pressures, researchers also point out the difficulty of considering enrollment as an isolated cost factor. Even at a theoretically "efficient" enrollment level, districts may face different cost pressures based on:[20]

- available facilities and capacity utilization;
- cost of pupil transporation;
- community expectations; and
- geographic sparseness.

The trade-off between costs and benefits and the decisions made by local school boards in this trade-off add to the difficulty of measuring economies of scale. Additionally, researchers face the problem of how to measure consistency and quality of educational outputs. A business can measure the quality of each unit produced and impose quality control systems to ensure consistency, but quality is much more difficult to measure in education. There, students may respond differently to different educational conditions.

The most common measure of educational output is standardized test scores, although output is also sometimes measured by the number of graduates or their grade point average. Many authors note

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Unfortunately, large districts have never brought the promised financial savings.

that the output of the educational system goes far beyond measurable test scores and that a proper economy-of-scale model would need to account for these outputs as well. However, as with the cost of educational inputs, good surrogates for output measures are difficult to obtain.

After World War II there was a strong nationwide push to consolidate school districts in rural areas.[21] Many people were leaving agriculture for the cities, resulting in fewer students and taxpayers per school in rural areas. There were still about 128,000 districts in 1930, but by the end of the '60s that number had shrunk to 36,000. Today there are less than 15,000 school districts nationwide. During this entire time our cities were growing and with them the urban school districts. The net effect was fewer, bigger districts. Currently in the United States, 24 districts now have more than 100,000 students.

Administrators told parents that consolidation of schools and districts would bring economies of scale and increased opportunities. School taxes would be less, and schools would offer more because of a bigger base. Many families moved to the city for similar reasons. At that time the idea of diseconomies of scale—the potential for districts to simply grow too large—wasn't even on the horizon. In 1959, J. B. Conant, in his report "The American High School Today," called for an increase in high school size to 400 students.[22] In 1971, the Educational Research Service referred to 26 studies completed between 1939 and 1969 and noted that the most common recommendation for district size was 10,000.

"The decrease in the total number of school districts has been 85.9 percent," said the ERS. "The job [i.e., the need to further consolidate] is, however, far from completed." In subsequent years we have increased both school and district size far beyond what proponents of larger size were suggesting at that time.

Unfortunately, large districts have never brought the promised financial savings. Webb found smaller districts more efficient than larger ones in both dollars per student and numbers of administrators per student.[23] Antonucci found "penalties of scale" with large districts. The percentage spent on teachers, books and teaching materials—rather than making up a larger percentage of the budget as school districts size increases—actually goes down. Antonucci writes, "Paradoxically, the larger a school district gets the more resources it devotes to secondary or even non-essential activities."[24]

McGuire, in a 1989 study, found, "As specialization in staff grows, program offerings expand, and administrative personnel increase, problems of coordination and control also increase. And in large systems, time and energy are more likely to be shifted away from core service activities." Antonucci notes, "And let's not forget the labor implications. Which district is more likely to have difficult contract negotiations or work stoppages? The district with 15 bus drivers or the one with 677 bus drivers?"[25]

Work-Arounds Don't Work

Some big districts have tried to gain the advantages of smaller neighborhood districts by employing ideas such as subdistricts (Los Angeles Unified School District), regions (Clark County School District) and cluster and councils (Utah)—attempting to push more control to local school levels. Actually turning over control and responsibility to these subdivisions, however, is quite another thing, as the district remains legally and financially in charge. Unable to raise revenues or allocate them, the regions remain mere arms of the larger organization. Other contemporary attempts to decentralize funding and governance within multi-layered educational organizations—state accountability schemes, school-site management,

New York City's community boards, and Chicago's local school councils—have yet to prove their value. Virtually all of the factors most associated with academically effective education are school- and neighborhood-based. Despite this knowledge, however, we shift more control and financing of education in the opposite direction—toward state and national institutions.

Mega-school districts such as CCSD do not engender community spirit toward a common goal in education. Empirical data suggests that large school districts may not only harm student performance in general but interact in a particularly negative way with poorer neighborhoods. These poorer neighborhoods are often, of course, minority neighborhoods.

School system "bigness" alienates citizens from our educational institutions, and the consequent alienation depletes local support for the Clark and Washoe school districts. It most likely will continue to result in increased state-level controls and the diversion of funding for basic instruction into accountability schemes in an attempt to force quality—quality that will become increasingly elusive.

The Path to Daylight

Setting a ceiling on the size of districts and schools—and creating an orderly way for setting up these new districts—will achieve better academic results and the more efficient use of tax dollars in the long term. It will also encourage greater participation in public schools by parents, teachers, students and taxpayers.

Smaller districts and schools bring the issues and opportunities back to the local level. This spurs commitment, flexibility and innovation from parents and teachers both. To develop students, our communities often need to develop parents at the same time, and build citizenship as well. We can do this better by creating new, smaller districts. Only in this way, with a more prominent role for parents and teachers, can genuine accountability be restored. And only in this fashion can we achieve true educational quality and productivity.

Only a more prominent role for parents and teachers can restore genuine accountability.

ENDNOTES

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3. "Education Chief Prescribes Smaller Schools to Curb Violence," *Washington Post,* September 16, 1999, p.A3.
4. See Robert Schmidt and John Ziebell, *NPRI Education Roundtables*, Nevada Policy Research Institute, 2005. Some administrators did recognize the problem, but felt that issues such as "politics" were a major hurdle.
5. "Public choice theory is a branch of economics that developed from the study of taxation and public spending.... It takes the same principles that economists use to analyze people's actions in the marketplace and applies them to people's actions in collective decision making. Economists who study behavior in the private marketplace assume that people are motivated mainly by self-interest.... Public choice economists make the same assumption—that although people acting in the political marketplace have some concern for others, their main motive, whether they are voters, politicians, lobbyists, or bureaucrats, is self-interest." Jane S. Shaw, *The Concise Encyclopedia of Economics.* http://www.econlib.org/library/Enc/PublicChoiceTheory.html
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