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**Local-Authority Funding of Primary School  
Instruction hours and Its Effect on Affirmative Action  
in the State (Jewish, Non-Religious) Education System**

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# **Local-Authority Funding of Primary School Instruction hours and Its Effect on Affirmative Action in the State (Jewish, Non-Religious) Education System**

Nachum Blass, Shay Tsur, and Noam Zussman

## **Abstract**

This paper examines the extent of local authorities' involvement in the funding of state (Jewish, non-religious) primary education, and the affirmative-action policies adopted within the local authorities. The local authorities' share of funding instruction hours in state primary schools between 2001 and 2009 was about two weekly hours per class, less than 4 percent of total hours and close to one-third of hours financed by sources other than the Ministry of Education. Funding by local authorities has reduced affirmative action for students from weak socioeconomic backgrounds over those from stronger backgrounds from 32 percent (in the case of hours funded by the Ministry of Education only) to 27 percent—a direct outcome of two conflicting phenomena: Local authorities with strong socioeconomic characteristics made much more resources available to primary schools than did weak local authorities, while in contrast, these authorities invoked a significant affirmative-action policy in favor of schools with students from weaker socioeconomic backgrounds—an additional 2–3 weekly hours per class. A positive correlation is found between local authorities' fiscal condition and their investment in state primary education: the elasticity of teachers' work hours financed by the local authority to the authority's average total revenue per resident was 1.2, and the elasticity to the authority's debt per resident (in absolute terms) was -0.4. Higher socioeconomic ranking and better fiscal condition of the local authority are correlated with greater affirmative action within the local authority.

## מעורבותן של הרשויות המקומיות במימון שעות העבודה של כוחות ההוראה

### בחינוך היסודי

### והשפעתה על ההעדפה המתקנת בחינוך הממלכתי-עברי

נחום בלס, נעם זוסמן ושי צור

#### תקציר

המחקר בוחן את מידת מעורבותן של הרשויות המקומיות במימון שעות העבודה של כוחות ההוראה בחינוך היסודי הממלכתי-עברי הרשמי הרגיל, ואת מדיניות ההעדפה המתקנת שהן נוקטות בתחומיהן. חלקן של הרשויות במימון בין 2001 ל-2009 עמד על כ-2 שעות שבועיות לכיתה, המהוות פחות מ-4 אחוזים מסך השעות וקרוב לשליש מהשעות שמקורן אינו במשרד החינוך. מימון הרשויות צמצם מכ-32 אחוז לכ-27 אחוז את ההעדפה המתקנת בהקצאת השעות שמשרד החינוך מעמיד לטובת תלמידים מרקע חברתי-כלכלי חלש לעומת תלמידים מרקע חזק. הסיבה היא שרשויות חזקות הקצו לבתי הספר היסודיים משאבים רבים הרבה יותר מרשויות חלשות, אף על פי שהרשויות החזקות הנהיגו בתחומיהן מדיניות משמעותית של העדפה מתקנת לטובת בתי ספר שתלמידיהם באים מרקע חלש – תוספת של 2–3 שעות שבועיות לכיתה יחסית לבתי ספר שתלמידיהם באים מרקע חזק.

קיים מתאם חיובי בין חוסן הפיסקלי של הרשויות המקומיות ובין השקעותיהן בחינוך היסודי הממלכתי-עברי, בהנחה שיתר המשתנים קבועים: כל עלייה של אחוז אחד בסך ההכנסה הממוצעת מתושב מביאה לגידול של 1.2 אחוז בהשקעה בחינוך (גמישות של 1.2), והגמישות ביחס לגובה החוב לתושב (בערכו המוחלט) היא כ-0.4. ההעדפה המתקנת בתוך הרשות מתואמת חיובית עם הדירוג החברתי-כלכלי שלה ועם חוסנה הפיסקלי.

## 1. Introduction

Recent decades have seen growing involvement of nongovernmental organizations in funding and delivering services to citizens in Israel, including education. Furthermore, political and socioeconomic processes have been powering a growing extent of competition among local authorities over the composition of the basket of services for individuals and their nature, mainly to attract strong population groups to the locality. Some of this competition focuses on education services (Blank, 2004). Furthermore, households have stepped up their direct participation in funding their children's education (Central Bureau of Statistics, 2013a, 2013b).

Thus, the burden of education funding is divided among central government, local authorities, households, and additional players, precipitating a lively public discussion both in Israel and around the world. The debate has diverse aspects, of which inequality in education is one. This study centers on inequality that traces to the involvement of local government in education funding.

Conventional wisdom has it that local authorities' fiscal condition and preferences are manifested, among other things, in the extent of resources that they allocate to the education system. Since the socioeconomic composition of a population is more homogeneous at the municipal level than at the national level, and given that local authorities act for the wellbeing of their inhabitants only, fiscally strong authorities may make much larger resource allocations for local education systems than weak authorities would, thereby widening education inequality. Concurrently and contrastingly, central authorities are interested in narrowing disparities among population groups and geographic areas. Accordingly, they usually promote a policy of affirmative action in education budgeting, one that favors students from weak backgrounds and peripheral areas—a policy that helps to narrow inequality among local authorities (Klinov, 2010 [Appendix 2]; GAO, 1998; Zhang et al., 2011; Department of Education, 2011a+b).

In Israel, very few published studies deal with education expenditure by local authorities and its development over time. Exceptions to this rule are Lavy and Tirosh (2003), Ben-Bassat and Dahan (2009), and Pollack (2012). These researchers found, as expected, that socioeconomically strong local authorities spend a much larger share of their resources per student (at all levels of education combined) than do weak authorities. In 2006, for example, strong authorities funded about one-third of per-student expenditure while weak authorities covered around one-tenth, causing the total share of per-student expenditure funded by strong authorities to exceed twice that of the weak ones. The authors of these studies, however, base themselves on the financial reports that the local authorities present to the Ministry of the Interior, even though the Ministry (2009) and the Central Bureau of Statistics state explicitly that these data should not be used to calculate per-student expenditure on education. Despite the disclaimer, the findings of these studies resonate in the public sphere and have made inroads in public opinion.<sup>1</sup> In fact, it has become the conventional belief that the levels of resources that strong local authorities allocate to their education systems have upended the Ministry of Education's affirmative-action policy. Below it is shown that this is not the case.

To demonstrate this, the study will:

- Describe the extent of municipal resource allocation for the funding of instruction hours,<sup>2</sup> focusing on regular official primary schools (i.e., excluding the haredim [the “ultra-

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<sup>1</sup> See, for example, Swirsky and Dagan-Buzaglo (2009) and Arlosoroff (2012).

<sup>2</sup> Not including ancillary services (secretarial, janitorial, etc.).

Orthodox”] and special education) in the state (Jewish, non-religious) education system, in 2001–2009 (the 2000/01–2008/09 school years).

- Analyze municipal affirmative-action policies: do local authorities allocate more hours per class to schools attended by students from weak backgrounds than they do to strong schools in their jurisdictions?
- Determine the extent to which local-authority involvement in funding instruction hours contributes to or counters affirmative-action measures by central government in resource allocation for primary schools among and within local authorities.
- Investigate the relation between non-local-government sources of funding and local authorities’ economic strength, on the one hand, and the extent of independent funding and affirmative action within the authorities, on the other.

The study is based on unique information gathered as part of a standard control procedure—a check performed for the Ministry of Education almost every year in order to determine the share of instruction hours (in terms of hours, not of cost)<sup>3</sup> that is funded by the Ministry of Education, local authorities, nonprofits, parents, and other sources, and to see whether the hours are used in accordance with the rules. The control procedure is based on a sample of around 50 percent of official regular primary and junior-high schools; the sampling strata are districts, education systems, and schools’ socioeconomic ranking. (See elaboration in Blass et al., 2010.) A check performed (ibid.) found that the standard-control sample of official schools is indeed representative of the total population of such schools. It deserves emphasis that the control procedure is the only inspection mechanism that yields comprehensive and reliable information about municipal, nonprofit, and parental involvement in funding instruction hours because, at the present writing, there are no administrative sources of information on the topic. The procedure does not elicit information about the funding of ancillary services, extracurricular activities, procurement, construction, and so on.<sup>4</sup>

The analysis focuses only on the funding of instruction hours due to data limitation. Instruction hours, however, lie at the very core of education and the lion’s share of education expenditure is on payroll. The analysis relates only to schools in the state (Jewish, non-religious) education system because the standard-control procedure covered few schools that belong to the country’s other education systems (particularly after parsing by socioeconomic ranking or after focusing on developments within local authorities). Furthermore, Arab local authorities hardly fund any instruction hours because they lack the resources.<sup>5</sup>

This study is the continuation of a previous publication that discussed, mainly, Ministry of Education funding of instruction hours in primary schools in 2001–2010 (Blass et al., 2010). The study shows that the Ministry funded, on average, 88 percent of total instruction hours in regular official state primary schools and that it administered a rather strong dose of affirmative action.

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<sup>3</sup> Differences among schools in the cost of a teaching hour in the regular state (Jewish, non-religious) system, (processing by the authors for the 2011/12 school year—the only year for which data are available—from the following data source: Ministry of Education, Economics and Budgets Administration, *Budget Transparency in the Education System*, <http://ic.education.gov.il/shkifut/startprod.htm> [Hebrew]). The reason for this outcome is that there are no conspicuous differences among schools in the observed personal indicators of teachers that determine their wage. See also note 10 below.

<sup>4</sup> These are dealt with, for example, in Central Bureau of Statistics (2001).

<sup>5</sup> Israel’s primary education system is divided in the following ways: by population sector—Jewish (“Hebrew”), Arab, Bedouin, and Druze; by inspectorate—State, State-Religious, and Haredi; by legal status—official, recognized and exempt; and by type of education provided—regular and special. For elaboration, see Blass et al., 2010.

That is, the number of hours per class received by schools attended by students from weak backgrounds (in the bottom third of the deprivation index was 30 percent greater than the number received by schools attended by students from strong backgrounds (in the upper third of the index).

The main conclusions of this study are the following: In 2001–2009, local authorities funded around two instruction hours per week per class in the regular official Jewish state primary education system, accounting for fewer than 4 percent of total hours but nearly one-third of hours funded by non-Ministry sources. Municipal funding lowered the rate of affirmative action in the Ministry's allocation of hours in favor of students from poor socioeconomic backgrounds relative to those from strong backgrounds from 32 percent to 27 percent. The reason is that wealthy local authorities allocated to primary schools much more than did less-wealthy ones, even though wealthy authorities applied meaningful affirmative action policies toward schools that had socioeconomically weak student enrollments—adding 2–3 hours per week per class relative to schools that featured socioeconomically strong student enrollments.

Our estimations demonstrate the existence of a positive correlation between a local authority's socioeconomic ranking and fiscal strength and its funding of instruction hours. Thus, the elasticity<sup>6</sup> of local-authority-funded instruction hours relative to average revenue received per resident (from all sources) was around 1.2 (per NIS thousands of revenue per resident, accompanied by an average increase of 0.4 hour per class) and elasticity relative to per-resident debt (in absolute terms) was -0.4. Affirmative action within the local authority's jurisdiction correlates positively with the authority's socioeconomic ranking and fiscal strength.

The rest of the article presents descriptive statistics (Section 2) and describes the outcomes of the estimations (Section 3).

## 2. Descriptive statistics

In 2001–2009, local authorities funded around 1.5 weekly instruction hours per class, on average, in the regular official Jewish state education system—2.5 percent of total hours and 25 percent of hours funded from non-Ministry of Education sources. (See also Klinov, 2010, and Bank of Israel, 2011.) Notably, local authorities funded, on average, 6 percent of current national expenditure on primary education (not including depreciation) at this time<sup>7</sup>—NIS 1.2 billion in current prices in 2008 (Central Bureau of Statistics, 2013a, 2013b).

Local authorities that had schools in the Jewish state education system and belonged to relatively high socioeconomic clusters funded more hours than did authorities with schools in the Arab education system and those in low clusters, which are heavily represented in the Arab sector (Table 1 and Figure 1). In the Jewish state system, local authorities funded two weekly hours per class, 3.6 percent of total hours and 32 percent of hours not funded by the Ministry of Education.

These authorities allocated more hours per class to primary schools attended by students of strong socioeconomic background than per class in schools populated by students of weak backgrounds. The disparity was 1.7 hour (1.4 in the state system only—Tables 1 and 2). Consequently, the extent of affirmative action in the Ministry of Education's allocation of hours to schools attended by weak-background students narrowed from 27 percent (32 percent in the state

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<sup>6</sup> Elasticity is the percent change of one variable relative to the percent change of another variable. At issue here is the change in teacher working hours relative to change in average revenue or debt per resident.

<sup>7</sup> This calculation of municipal expenditure includes, among other things, wages of education administration ancillary personnel and staff, procurements, and the like. As stated, these components are not part of teaching hours, which lie at the center of concern in this study.

**Table 1: Instruction hours, primary schools,\* by source of funding, students' socioeconomic background,\*\* and education system**

Weekly hours per class, 2001–2009 average

Source of funding	Socioeconomic background		
	Weak	Medium	Strong
<b>State system (Jewish)</b>			
Local authorities	0.9	1.9	2.4
Nonprofits	4.5	3.8	2.0
Parents	0.0	0.5	1.9
Ministry of Education	56.2	48.7	42.5
Total	61.6	54.7	48.8
<b>State-Religious system</b>			
Local authorities	1.4	2.1	2.9
Nonprofits	4.3	4.0	2.9
Parents	0.1	1.1	1.9
Ministry of Education	72.2	60.1	49.9
Total	78.0	67.4	57.7
<b>Total Jewish</b>			
Local authorities	1.1	2.0	2.4
Nonprofits	4.4	3.8	2.2
Parents	0.0	0.7	1.9
Ministry of Education	62.9	52.4	43.5
Total	68.5	59.0	50.0
<b>Arab system (incl. Druze and Circassian)</b>			
Local authorities	0.5	0.5	—
Nonprofits	1.8	1.0	—
Parents	0.0	0.0	—
Ministry of Education	46.7	46.9	—
Total	48.9	48.4	—
<b>Bedouin</b>			
Local authorities	0.2	0.2	—
Nonprofits	0.9	0.0	—
Parents	0.0	0.0	—
Ministry of Education	48.3	46.2	—
Total	49.3	46.2	—
<b>Total Arab</b>			
Local authorities	0.4	0.5	—
Nonprofits	1.5	1.0	—
Parents	0.0	0.0	—
Ministry of Education	47.2	46.8	—
Total	49.1	48.3	—
<b>Grand total</b>			
Local authorities	0.7	1.7	2.4
Nonprofits	2.9	3.3	2.2
Parents	0.0	0.6	1.9
Ministry of Education	54.7	51.4	43.5
Total	58.4	57.1	50.0

\* Regular official primary schools that teach grades 1–6 only.

\*\* Weak background—deciles 8–10 on the deprivation index; medium background—deciles 4–7; strong background—deciles 1–3.

\*\*\*The values in the table are slightly different from those derived from Blass et al., 2010 (Appendix Table 4) because the data in this study were not inflated by composition of classes in the total population. When a comparison with Blass et al. is performed, it may be seen that the results obtained in both cases are essentially the same. The total diverges from the tally of hours allocated to each segment of the system separately due to the different weights of the population of schools in each system.

Source: Aida Economic Management and Consulting, Ltd.



**Table 2: Allocation of instruction hours to state primary schools,\* by source of funding and students' socioeconomic background\*\***

Weekly hours per class, 2001–2009 average

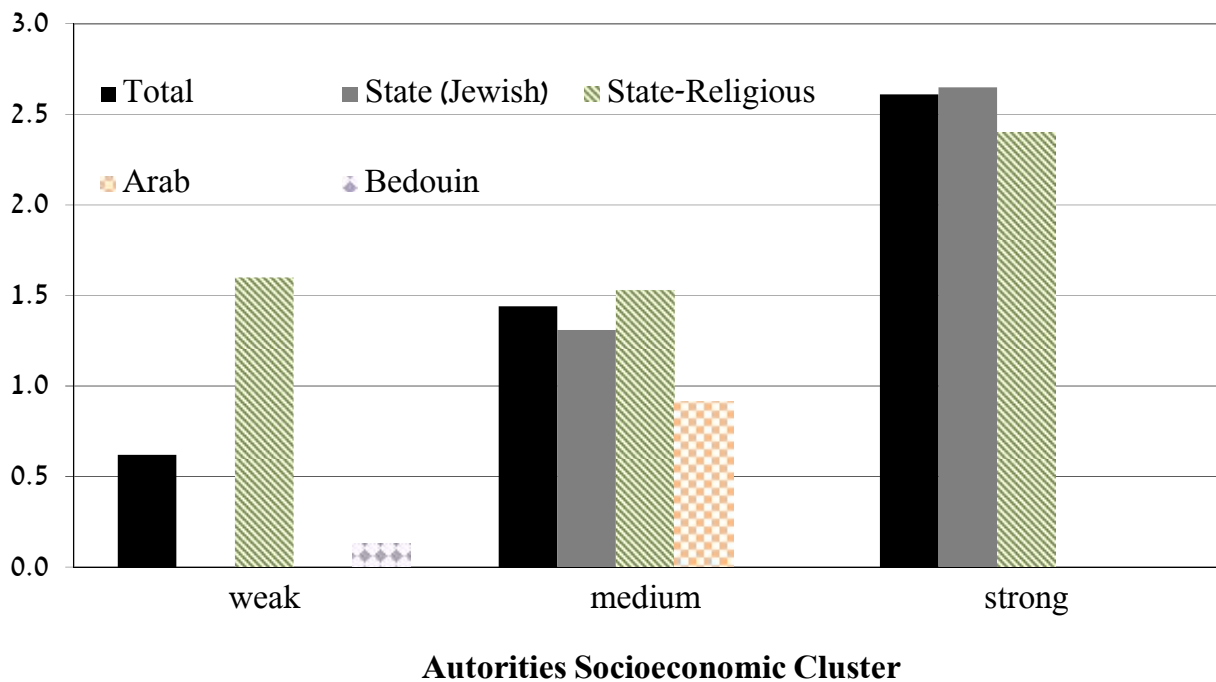
Source of funding	Difference between:		
	Weak and strong background	Weak and medium background	Medium and strong background
Local authorities	-1.4	-1.0	-0.4
Nonprofits	2.5	0.7	1.7
Parents	-1.9	-0.5	-1.3
Ministry of Education	13.7	7.7	6.0
<b>Total</b>	<b>12.8</b>	<b>6.9</b>	<b>5.9</b>

\* Regular official primary schools that teach grades 1–6 only.

\*\* Weak background—deciles 8–10 on the deprivation index; medium background—deciles 4–7; strong background—deciles 1–3.

system) to 20 percent (27 percent). The regressivity of this municipal funding traces to a positive correlation between the socioeconomic background of these local authorities' inhabitants, and, in turn, their wealth, and the level of local-authority resource allocation to the education system (see Section 3).

**Figure 1. Instruction hours funded by local authorities, primary schools,\* by education system and local authority's socioeconomic cluster**



\* Regular official primary schools that teach grades 1–6 only.

\*\* Socioeconomic cluster of the local authority in 2006: low—clusters 1–3; medium: clusters 4–7; high—deciles 8–10. In some education systems, several schools in certain clusters were included as a standard control; therefore, their hours are not presented.

Source: Bank of Israel (2011)

Tables 3 and 4 and Figure 2 focus on official regular primary schools in the state system in 2001–2009 and parse the allocation of instruction hours per class by source of funding and socioeconomic background of local authority and school.<sup>8</sup> Table 3 makes it clear that wealthy local authorities budget, at their expense, more hours than do middle-ranking authorities.<sup>9</sup> This is also evident when one compares schools of the same socioeconomic background in strong local authorities with those in others. The authorities' share in total resources breaks down similarly—around 10 percent in strong authorities and 2 percent in weak ones (Table 4).

Strong local authorities apply affirmative action policies in their areas of jurisdiction, meaning that schools attended by students of medium socioeconomic background receive more funding than do schools that cater to students of strong backgrounds. Authorities that rank in the middle do not have clear affirmative action policies in place and fund relatively few hours in any case. In absolute terms, local authorities invoke less affirmative action than does the Ministry of Education. As a case in point, strong local authorities allocate four more hours per week, on a per-class basis, to schools with student enrollments of medium socioeconomic background, than they allocate to schools where the students have strong backgrounds. The Ministry of Education, in turn, allocates eight hours more; and in middle-ranking authorities, as stated, no clear-cut policy of affirmative action is discernible, whereas in the case of the Ministry of Education it is perceptible. In relative terms, however (that is, relative to total hours that they allocate), local authorities sustain a higher level of affirmative action.

Overall, local authorities have lowered the level of affirmative action in resource allocation for education (Table 2) because strong authorities allocate to state primary schools in their areas of jurisdiction much more resources than weak authorities do, and because strong authorities apply only a low level of affirmative action.<sup>10</sup>

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<sup>8</sup> The state system was chosen for several reasons: (a) Within a given municipal jurisdiction too few schools are affiliated with the other systems to allow easy examination of the authority's affirmative action toward these systems; (b) most Arab authorities and schools have low socioeconomic rankings and no Arab authority is in a high socioeconomic cluster; therefore, affirmative-action policies among and within Arab local authorities cannot be examined. Appendix Table 1 shows how many schools in the state system were sampled in the standard-control procedure for local authorities during the research period and specifies each authority's socioeconomic ranking.

<sup>9</sup> The standard control includes some state schools that are in weak local authorities; therefore, these schools were omitted from the analysis.

<sup>10</sup> Previous studies (Zussman et al., 2007; Blass et al., 2008; Blass and Romanov, 2010) revealed no material differences in schooling and teaching seniority of teachers who work in primary schools (including those in the state-Jewish system) when the schools are examined on the basis of their students' socioeconomic background (using the deprivation index). This finding may suggest that teachers in different local authorities—irrespective of the authorities' socioeconomic cluster—have similar observed personal characteristics.

**Table 3: Weekly instruction hours in state primary schools,\* by source of funding, authorities' socioeconomic background,\*\* and students' socioeconomic background.\*\*\***  
Weekly hours per class, 2001–2009 average

Source of funding	Socioeconomic background of local authority				
	Medium			Strong	
	Weak	Medium	Strong	Medium	Strong
Students' background					
Local authorities	0.9	1.5	1.0	7.9	4.4
Nonprofits	4.5	3.9	2.5	3.3	1.8
Parents	0.0	0.5	1.8	1.1	2.1
Ministry of Education	56.2	48.4	42.7	50.4	42.4
<b>Total</b>	<b>61.6</b>	<b>54.3</b>	<b>48.0</b>	<b>62.7</b>	<b>50.6</b>

\* Regular official primary schools that teach grades 1–6 only.

\*\* The local authority's socioeconomic cluster in 2006. Medium—clusters 4–7; high—clusters 8–10. In low-cluster authorities, there are few schools affiliated with the state (Jewish) system.

\*\*\* Weak background—deciles 8–10 on the deprivation index; medium background—deciles 4–7; strong background—deciles 1–3.

Source: Aida Economic Management and Consulting, Ltd.. and Central bureau of Statistics (2009).

**Table 4: Distribution of instruction hours per class in state primary schools,\* by source of funding, socioeconomic background of local authority,\*\* and socioeconomic background of school student enrollment.\*\*\***  
2001–2009 average (pct.)

Source of funding	Socioeconomic background of local authority				
	Medium			Strong	
	Weak	Medium	Strong	Medium	Strong
Students' background					
Local authorities	1.5	2.8	2.0	12.6	8.6
Nonprofits	7.3	7.1	5.2	5.3	3.5
Parents	0.0	0.9	3.8	1.8	4.1
Ministry of Education	91.2	89.2	88.9	80.3	83.7
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

\* Regular official primary schools that teach grades 1–6 only.

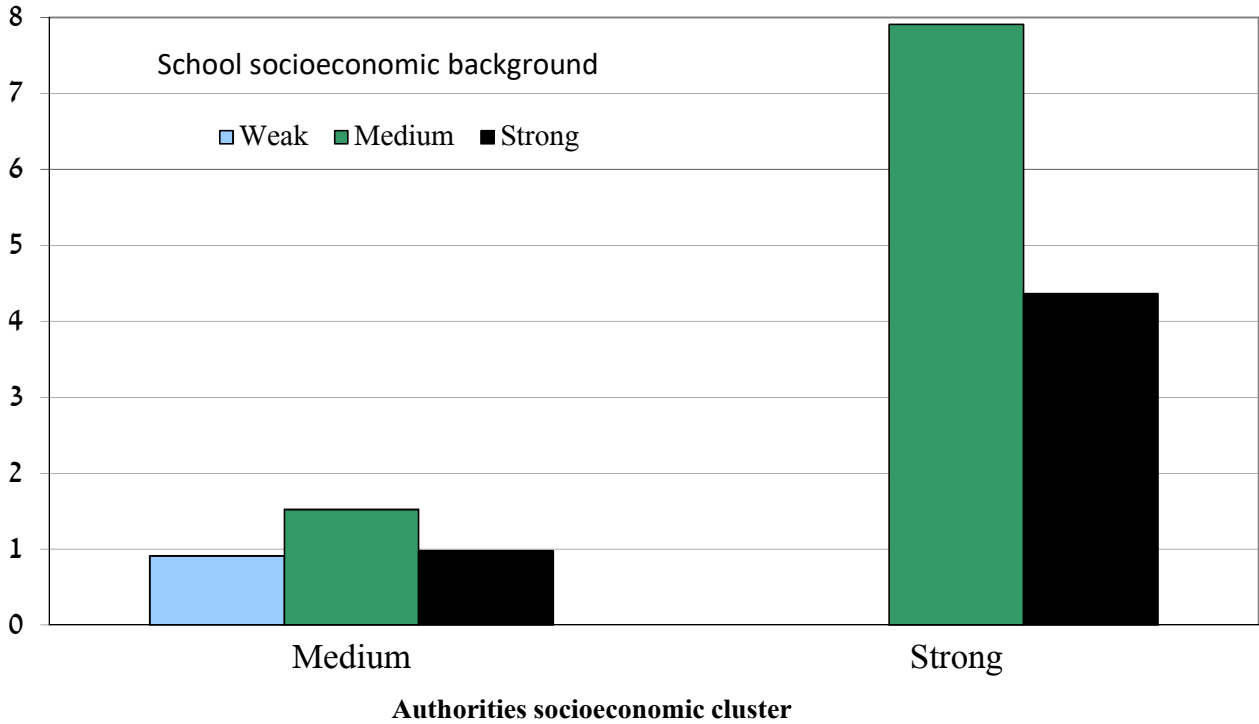
\*\* The local authority's socioeconomic cluster in 2006. Medium—clusters 4–7; high—clusters 8–10. In low-cluster authorities, only a few schools are affiliated with the state (Jewish) system.

\*\*\* Weak background—deciles 8–10 on the deprivation index; medium background—deciles 4–7; strong background—deciles 1–3.

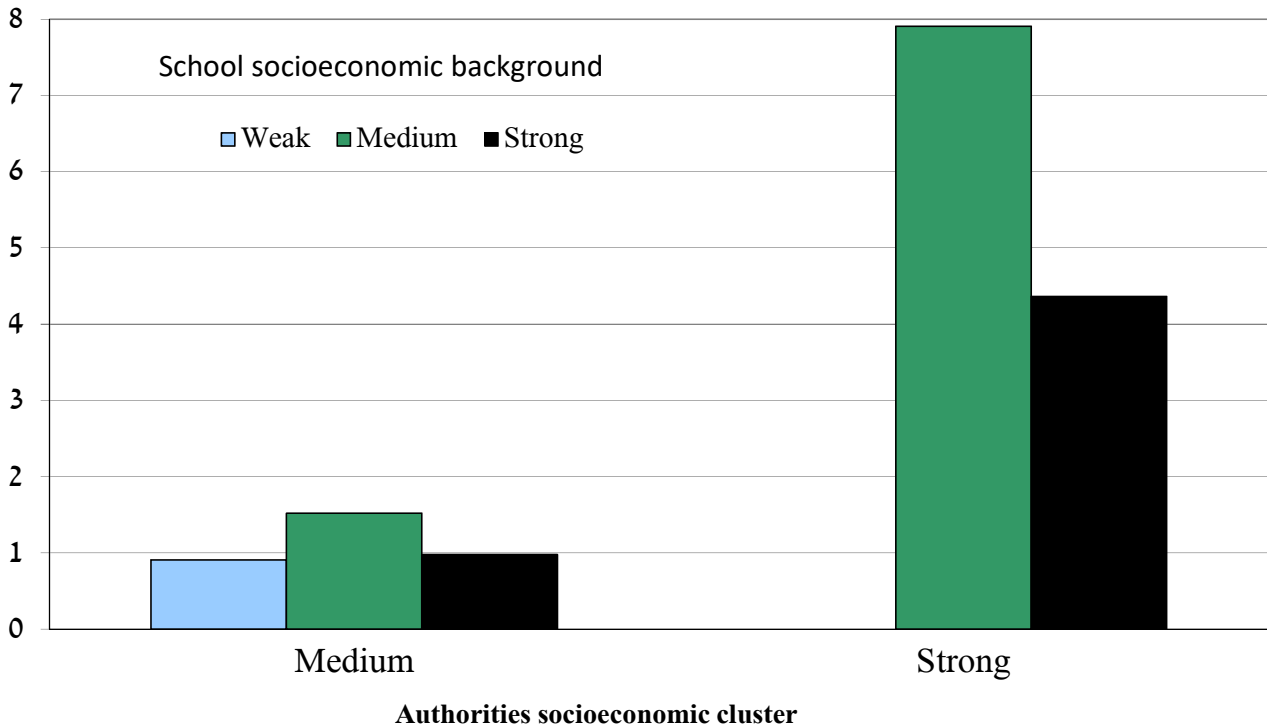
Source: Aida Economic Management and Consulting, Ltd.. and Central bureau of Statistics (2009).

**Figure 2: Distribution of instruction hours per class in state primary schools,\* by source of funding, socioeconomic background of local authority,\*\* and socioeconomic background of school student enrollment.\*\*\*  
2001–2009 average (pct.)**

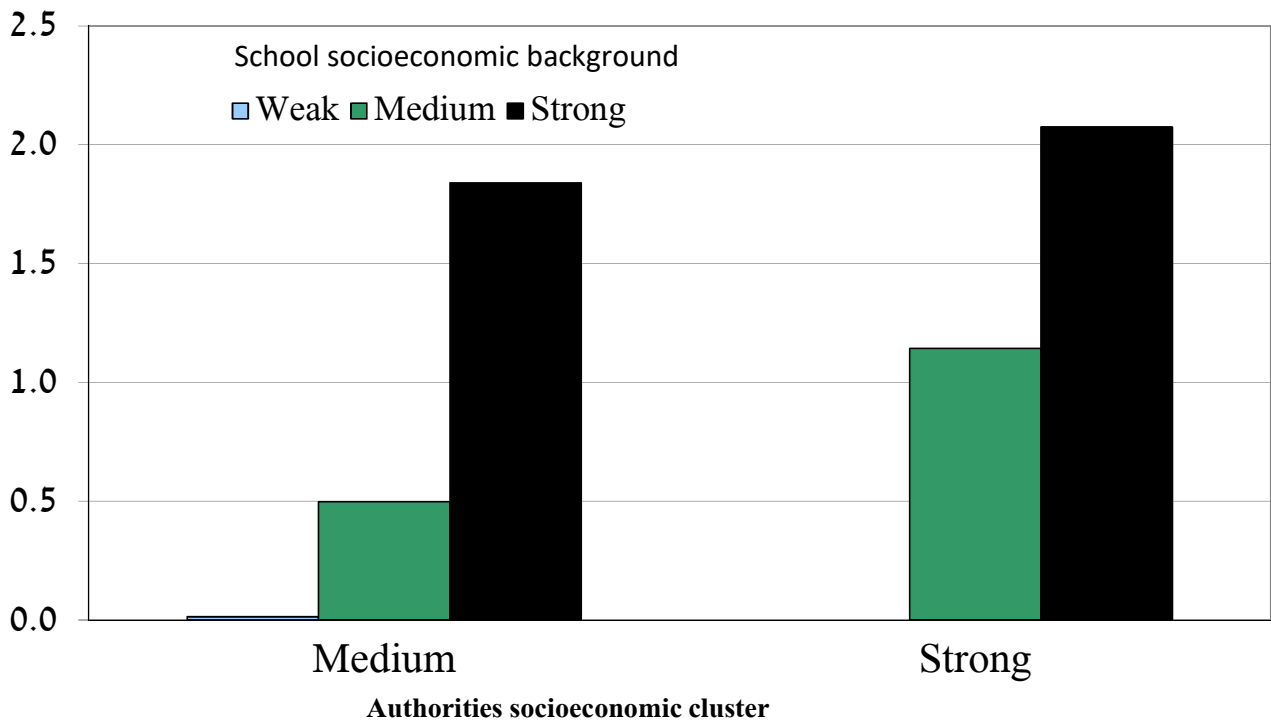
a. Local authorities



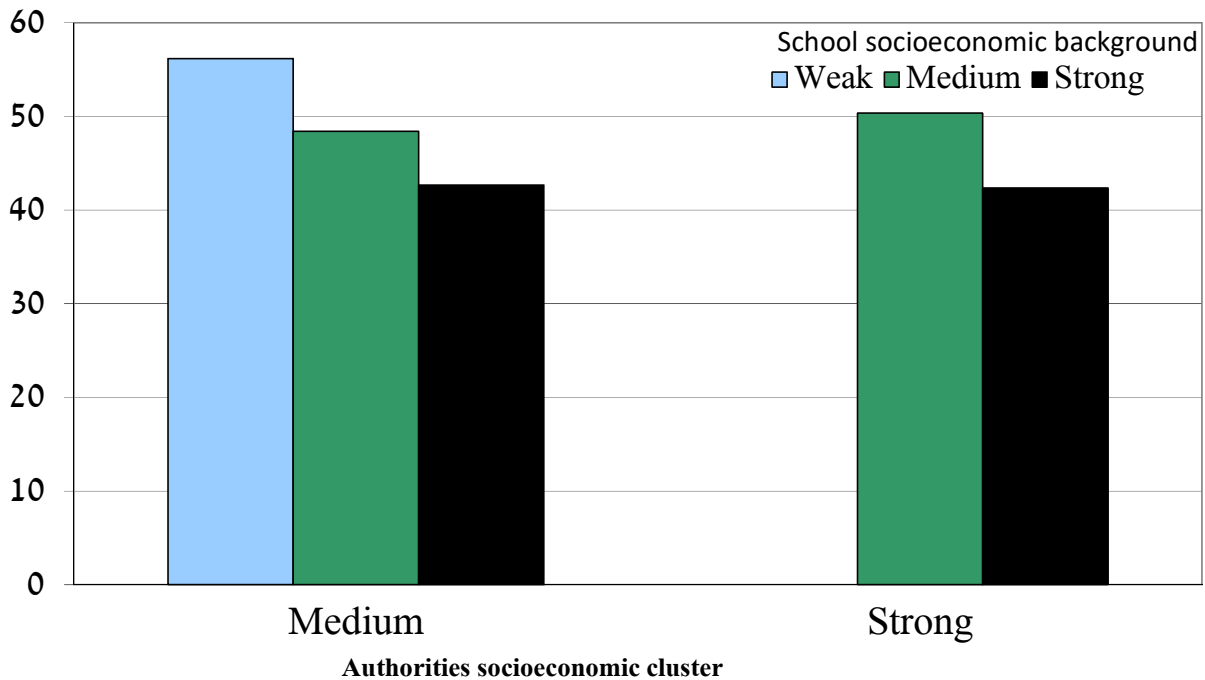
b. Nonprofits



c. Parents



d. Ministry of Education



\* Regular official primary schools that teach grades 1–6 only.

\*\* The local authority's socioeconomic cluster in 2006. Low—clusters 1–3; medium—clusters 4–7; high—clusters 8–10. In some education systems, several schools in certain clusters were included as a standard control; therefore, their hours are not presented.

\*\*\* Weak background—deciles 8–10 on the deprivation index; medium background—deciles 4–7; strong background—deciles 1–3.

Source: Aida Economic Management and Consulting, Ltd., and Central Bureau of Statistics (2009).

To measure inequality in instruction hours in official regular state primary schools that are funded by local authorities,<sup>11</sup> use was made of the Gini index, which yields values ranging from 0 (a hypothetical state of full equality, in which all classes receive the same number of hours) and 1 (total inequality, one class receiving all the hours and the others getting none). It was found that the index stands at 0.744—a value that, while high, indicates only that the distribution of local-authority-funded hours per class is not unitary; one cannot adduce from it how progressive the allocation is.

Next, the Gini index of inequality was deconstructed into two segments: inequality among schools in different local authorities and inequality among schools within one authority (Lerman and Yitzhaki, 1984; Fogel, 2011). The conclusion is that 95 percent of the inequality originates in inequality among authorities—an indication of the regressivity of the local authorities' contribution, given that strong authorities allocate many more instruction hours than do weak ones. In contrast, differences in allocation among schools within authorities are rather small.

Figure 3 presents the Lorenz curve (cumulative distribution function) of local-government involvement in funding instruction hours.<sup>12</sup> The diagonal (black line) represents absolute equality, a hypothetical situation in which an equal number of hours per class is allocated to all classes countrywide (including those in the given local authority). The Gini index is equal to the ratio of the trapped area between the diagonal and the curve to the entire area below the diagonal. The larger the first-mentioned area is, the greater is the inequality in allocation of hours. The figure shows that when one shifts from the curve that represents a local authority's average funding of hours per class to the curve showing the average funding per class at the school (irrespective of the local authority to which the school belongs), the trapped area increases somewhat because most of the total inequality originates in inequality among local authorities—a result also obtained in the foregoing deconstruction of the Gini index.

Another observation elicited by the local-authorities curve is that authorities in high socioeconomic clusters (marked with a thick green diamond) are usually found on the right-hand segment of the curve. Namely, they fund large numbers of hours per class, with Tel Aviv as a salient example. Similarly, on the schools curve, it is found that most strong ones (marked with a dark blue diamond) are positioned on the right-hand side of the curve, since wealthy local authorities—in which strong schools are relatively common—fund on average a larger share of primary education than do weak authorities. However, the share of strong schools on the right-hand segment of the Lorenz curve of schools is lower than the share of local authorities in high socioeconomic clusters that are positioned on the right-hand side of the distribution of the local-

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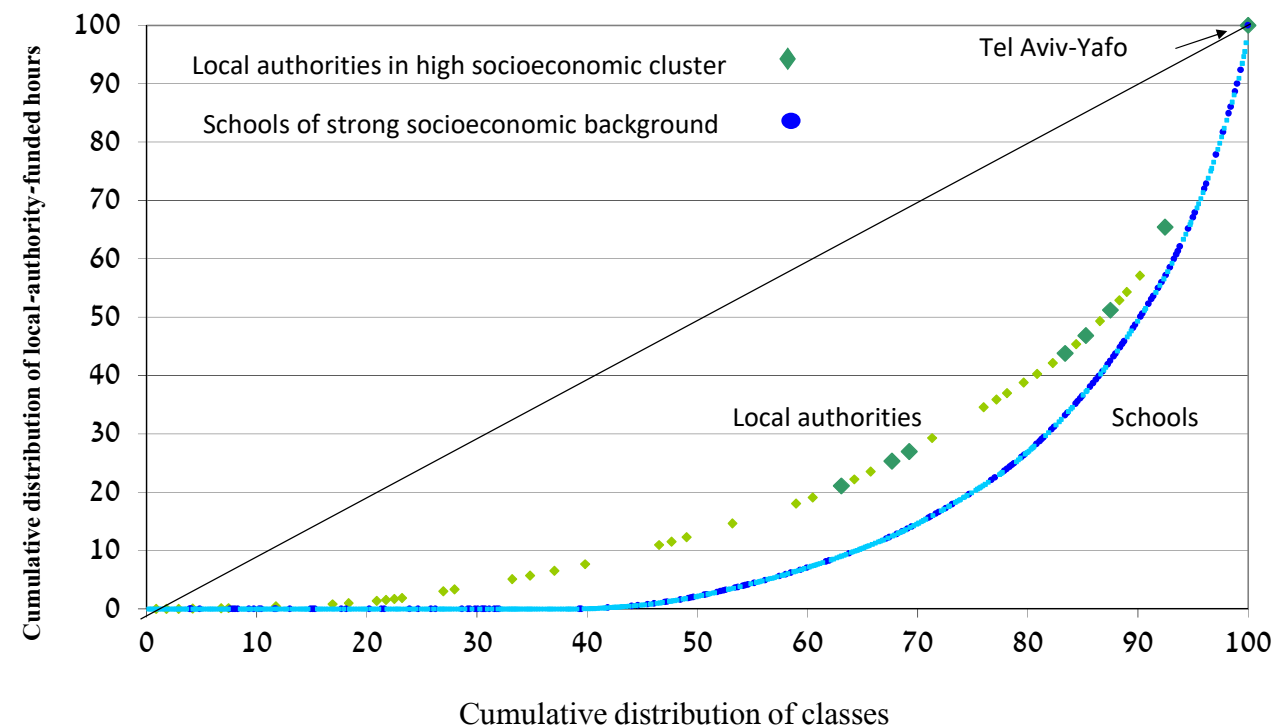
<sup>11</sup> The measurement was done only for local authorities in which at least four different primary schools were affiliated with this system in 2001–2009. This is due to the additional goal of examining the extent of affirmative action within a given local authority.

<sup>12</sup> The curve was built in the following way: schools (or local authorities) were ranked in rising order according to the average number of local-authority-funded hours at the school (or by the local authority). The x-axis shows the cumulative proportion of classes at the school (local authority) so that 100 percent denotes all classes, and the y-axis shows the cumulative share of local-authority-funded hours. Each dot on the schools curve represents a school; each dot on the curve of local authorities represents an authority.

authorities curve. (That is, two-thirds of strong schools are above the median cumulative distribution of classes, whereas all wealthy local authorities are above the median.) This is suggestive of affirmative action within local authorities. The latter finding is also substantiated by the observation that 70 percent of all state primary schools cater to students from medium-strong backgrounds but account for only 50 percent of the uppermost decile of the Lorenz curve for schools.

Figure 3 also shows that instruction hours receive no municipal funding whatsoever in more than 40 percent of classes. (Observe the segment of the school curve that runs along the horizontal axis.)

**Figure 3: Lorenz curve: local-authority-funded\* instruction hours in state primary schools,\*\* by schools and local authorities 2001–2009**



\* In local authorities that had at least four different state schools in 2001–2009.  
 \*\* Regular official primary schools that teach grades 1–6 only.  
 \*\*\* The local authority’s socioeconomic cluster in 2006. Low—clusters 1–3; medium—clusters 4–7; high—clusters 8–10. Strong school background—deciles 1–3 on the deprivation index.  
 Source: Aida Economic Management and Consulting, Ltd., and Central Bureau of Statistics (2009)

Examining the funding of hours on the basis of socioeconomic background—of students at the school and of the local authority—it is found that the extent of local-authority-funded hours has hardly changed over the years (Figures 4, 5). Such is the case even though implementation of the "Shoshani" report, expanding affirmative action in the Ministry of Education’s budgeting of standard classroom hours (Blass et al., 2010), began in the 2003/04 school year. This expansion could have prompted strong local authorities to increase their funding of hours because students in

such jurisdictions received fewer hours from the Ministry of Education after the implementation of the report began. As stated, however, no such increase occurred.

Along with municipal funding, it is of interest to examine the involvement of nonprofits and parents in funding instruction hours in regular official state primary schools in 2001–2009 (Tables 2 and 3 above). Nonprofits funded, on average, 3.3 weekly hours per class (as against 2.0 hours funded by local authorities)—6 percent of total hours and 54 percent of non-Ministry of Education hours. Nonprofits invoked an explicit policy of affirmative action. Their funding increased during the research period, particularly for schools with socioeconomically weak pupils (Figure 4).

Parents funded 0.9 weekly hour per class (implemented via supplemental curricula), less than 2 percent of total class hours and 14 percent of non-Ministry of Education hours. As expected, their participation increased in tandem with the strength of their socioeconomic background. During the research period, parental funding was basically unchanged except for a slight decrease among the wealthy (Figure 4).

Notably, nonprofits are less active in the Arab education system than in the Jewish system and their activity is progressive. Furthermore, parental participation in this sector is nil (Table 1 above).

In sum, the number of weekly instruction hours per class in the state (Jewish) education system that is funded by sources other than the Ministry of Education—local authorities, nonprofits, and parents—was around 6 in 2001–2009, 11 percent of all weekly hours in the system. The distribution of these resources does not appear to reflect a meaningful policy of affirmative action on the basis of students' socioeconomic background. This is due to clashing effects: the nonprofits' progressive policies, countered by the overall regressive effect of the local authorities<sup>13</sup> and the regressive effect of the parents whose children attend strong schools. Consequently, the number of per-class hours funded by the Ministry of Education in schools attended by students from weak socioeconomic backgrounds was 30 percent greater than per-class hours funded in this matter at schools that enroll students from strong backgrounds (a disparity of fourteen hours in favor of the former). After the other sources are added, the extent of affirmative action falls to 29 percent (=declines by about one hour), meaning that the final outcome of funding from sources other than the Ministry of Education is slightly regressive.

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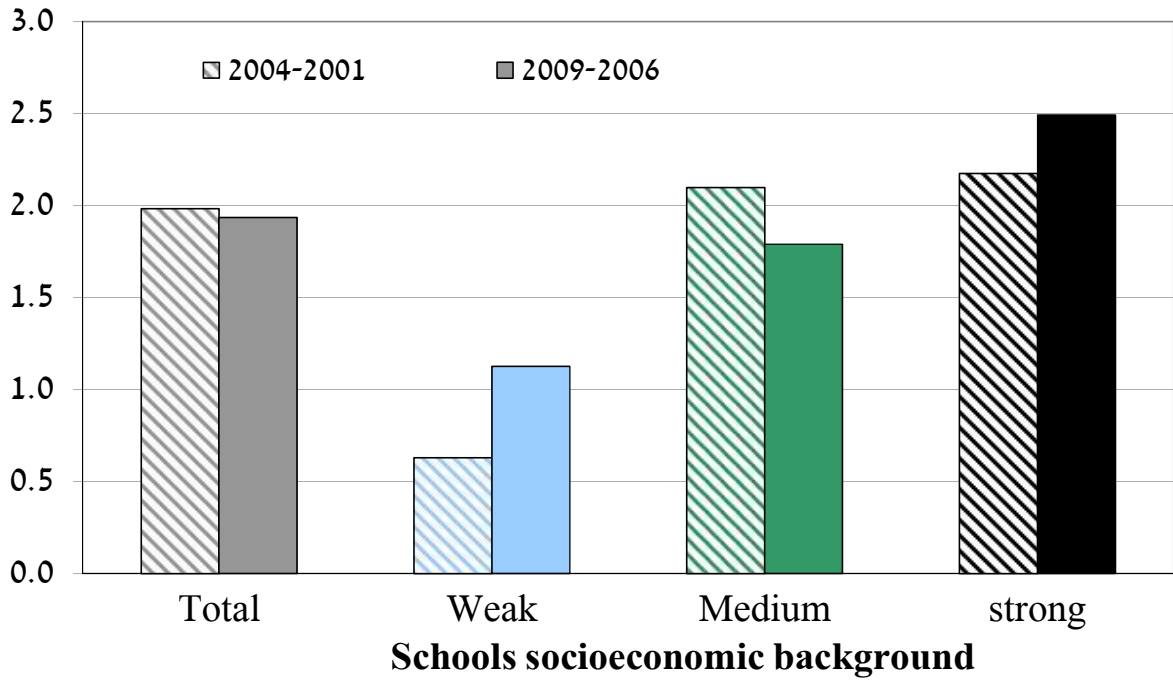
<sup>13</sup> As noted above, strong local authorities do practice affirmative action in their areas of jurisdiction and allocate more resources to weak the schools and two strong ones. This, however, offsets only some of the budgeting gap between them and other authorities.



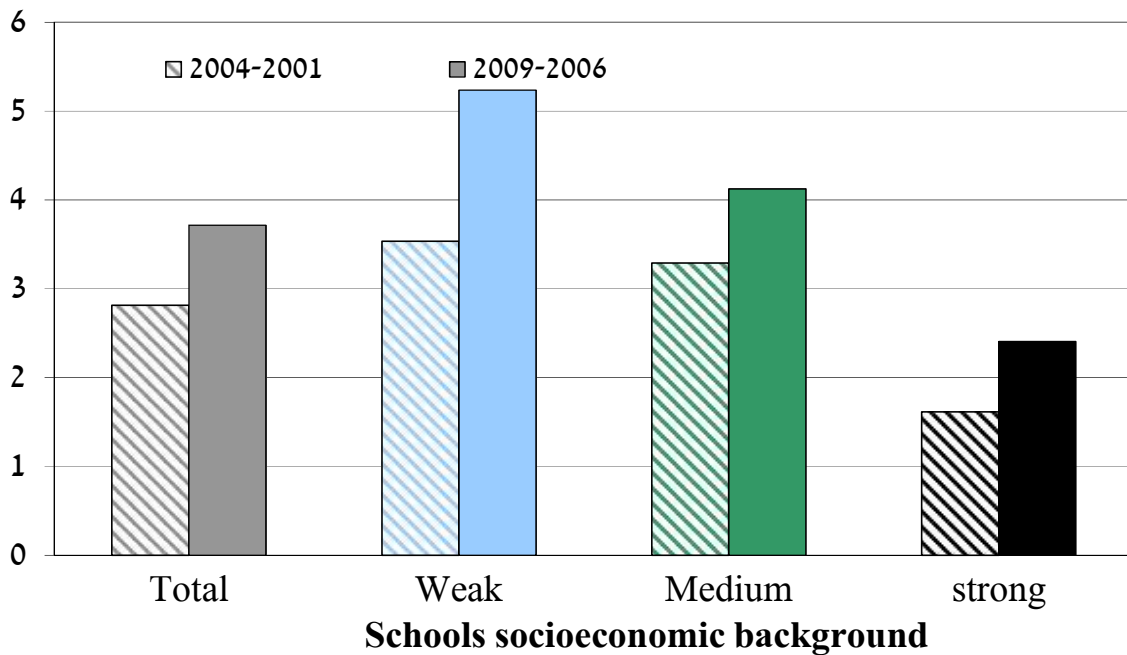
**Figure 4: Instruction hours in state schools,\* by source of funding and socioeconomic background of student enrollment\*\***

Weekly hours per class, 2006–2009 vs. 2001–2004

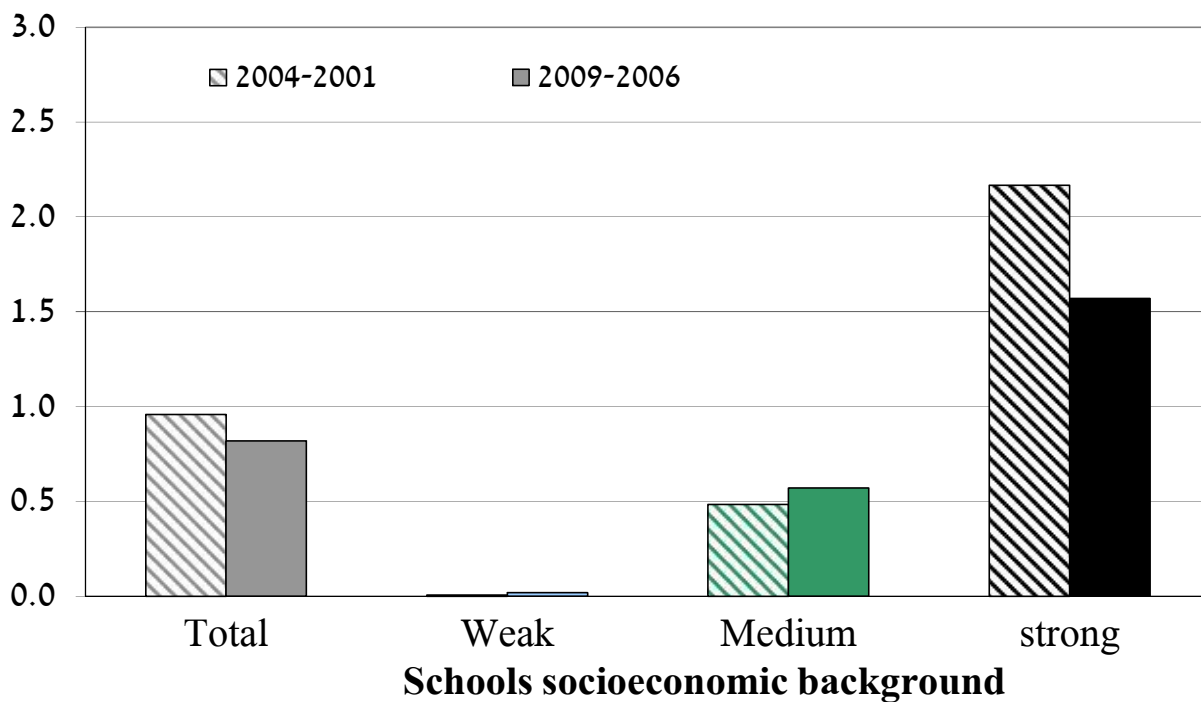
a. Local authorities



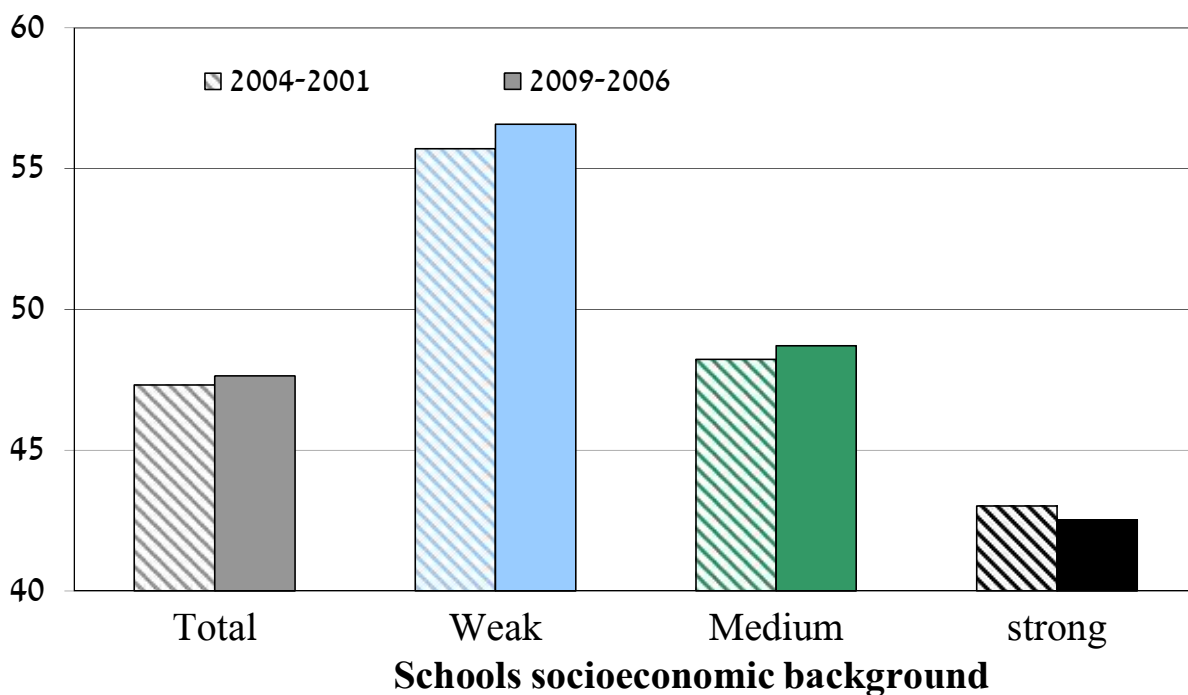
b. Nonprofits



c. Parents



d. Ministry of Education



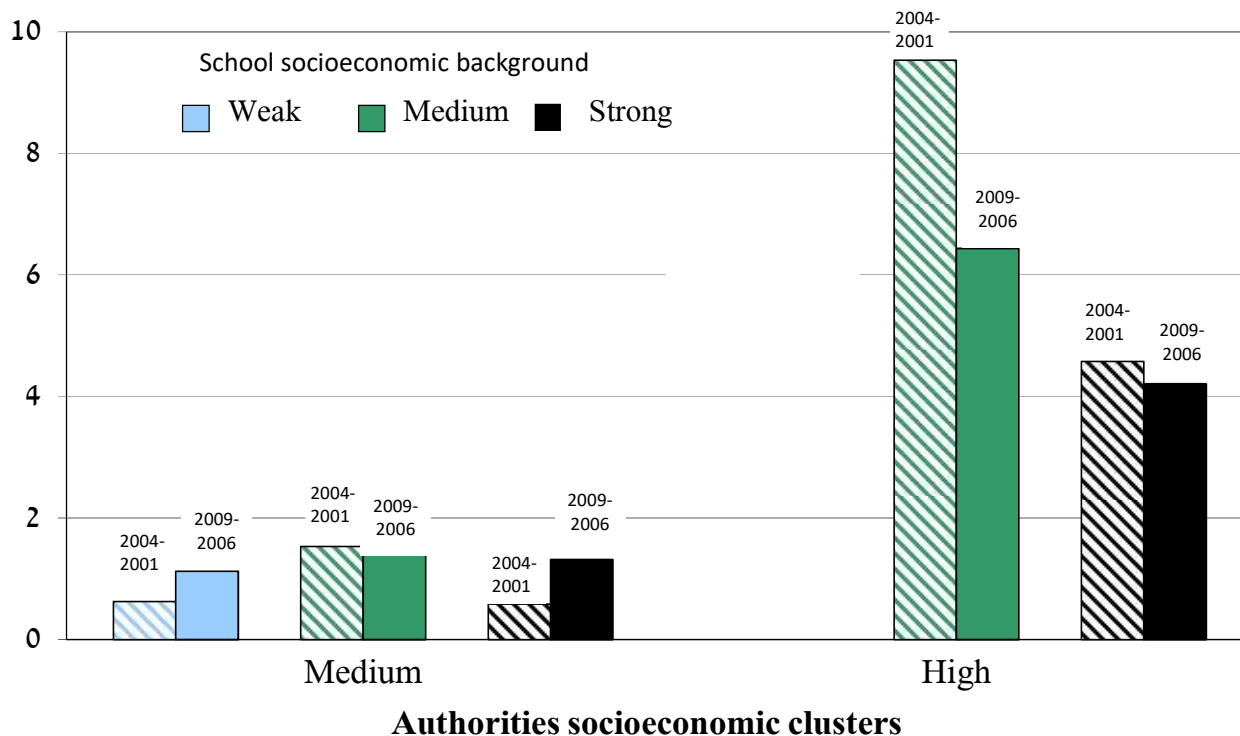
\* Regular official primary schools that teach grades 1–6 only.

\*\* Weak background—deciles 8–10 on the deprivation index; medium background—deciles 4–7; strong background—deciles 1–3.

Source: Aida Economic Management and Consulting, Ltd., and Central Bureau of Statistics (2009).

**Figure 5: Municipal-funded instruction hours in state schools\***

Weekly hours per class, by socioeconomic background of local authority\*\* and student enrollment,\*\*\* 2006–2009 vs. 2001–2004



Regular official primary schools that teach grades 1–6 only.

\*\* The local authority’s socioeconomic cluster in 2006. Medium—clusters 4–7; high—clusters 8–10. In low-cluster authorities, only a few schools are affiliated with the state (Jewish) system.

\*\*\* Weak background—deciles 8–10 on the deprivation index; medium background—deciles 4–7; strong background—deciles 1–3.

Source: Aida Economic Management and Consulting, Ltd., and Central Bureau of Statistics (2009)

### 3. Results of the estimations

This section describes the results of the OLS statistical estimations which examined the factors that correlate with the number of local-authority-funded weekly hours per class in 2001–2009 in regular official state primary schools (Table 5). These factors include the socioeconomic background of students in the relevant schools and municipal jurisdictions and sources of funding other than local authorities.

The estimations in Table 5 were performed in two ways—excluding local-authority fixed effects (FE) and including them.<sup>14</sup> Namely, in the second model, unobserved characteristics of the local authority (e.g., residents’ preferences, characteristics of the local education administration, etc.) that remained the constant during the research period are also controlled for.<sup>15</sup>

<sup>14</sup> A Hausman test showed that the Fixed Effects model is preferable to the Random Effects model.

<sup>15</sup> Estimations omitting schools for which the local authority funded an aberrant number of weekly hours per class (>15) yielded similar results to those presented below.

### ***Estimation excluding local-authority fixed effects (Table 5, Model 1)***

As expected, local authorities' socioeconomic rankings correlated positively with the number of hours per class. That is, the addition of one cluster unit of socioeconomic ranking (on a 1–10 scale) is accompanied by an increase of 0.4 hour per class. Schools' deprivation indices were negatively correlated with municipal funding of instruction hours, evidently due to the relatively high average deprivation index of schools in weak authorities.

No correlation was found between the extent of funding from nonprofits and that of local-authority budgeting. Notably, the relation between nonprofit funding and local-authority funding is vague overall. It is possible that when nonprofits become active in a school, the local authority withdraws its responsibility and its presence. Conversely, some nonprofits allocate resources to a school only when the local authority puts up matching funds (Weinhaber et al., 1998).

No significant positive correlation was found between the level of parental payments for instruction hours and municipal funding of the same—even though affluent parents, who can afford to co-fund instruction hours, lived in wealthy municipal jurisdictions where the authority allocated more resources for education.

The Ministry of Education allocates two kinds of instruction hours (for elaboration, see Blass et al., 2010): standard hours—core teaching hours that are distributed on the basis of standard formulas; and non-standard (additional) hours. The more non-standard hours the Ministry allocates, the more budgeting the local authority provides for the funding of primary education (significant at a 15 percent level). The reason for this may be that part of the Ministry's allocation of non-standard hours depends on local co-funding. (Keren Karev, for example, sometimes conditions its funding on participation of the Ministry of Education, local authorities, and parents.) Furthermore, the Ministry seems to tend to co-fund projects that receive major local-authority funding because the active municipal involvement makes the projects more likely to succeed.

The more per-resident revenue a local authority has and the smaller its debt, the larger the share of hours that it funds, even when its socioeconomic cluster is controlled. An NIS 1,000 increase in average revenue per resident, from all sources (the average per-resident revenue at the time of the investigation was NIS 5,900, in average period prices), leads to a 0.4 increase in local-authority-funded weekly hours per class (the average of which was 2.0), meaning that the elasticity of the hours paid for by the local authority relative to per-resident revenue (both in average terms) was 1.2. The elasticity relative to per-resident debt (in absolute terms) was -0.36. Notably, Zeira and Strawczynski (2002) found, surprisingly, that at the national level, a positive correlation exists between an increase in the government deficit and an upturn in the share of public expenditure on education in GDP.

The larger the school enrollment is, the smaller is the local authority's co-funding of hours per class,<sup>16</sup> possibly due to scale economies in funding non-frontal hours.

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<sup>16</sup> This is so even though class size is usually relatively high in schools that have large enrollments, a factor that seemingly necessitates an increase in hours.

### ***Estimations including local-authority fixed effects (Table 5, Models 2–3)***

In the estimation that includes a fixed effect at the municipal authority level (Model 2), a positive and significant estimator is obtained for the school deprivation index. Namely, the higher a school's deprivation index is, the more instruction hours the local authority allocates. This means that local authorities practice affirmative action in their areas of jurisdiction, favoring schools with students from weak socioeconomic backgrounds. To demonstrate this, the weakest schools receive around two hours more per class per week from their local authorities than do the strongest schools in the same local jurisdiction.

A positive correlation (significant at a 15 percent level) was found between non-standard hours from the Ministry of Education and local-authority funding of hours, as occurred in the previous estimation.

The estimators of the fiscal variables are not significant, evidently because over the years they have changed little within the same local authority (relative to the authority's long-term average, which is embodied in the FE).

Is the extent of affirmative action a dependency of local-authority and school characteristics? To answer, we added to estimation interaction variables between the school deprivation index and these variables (Model 3).<sup>17</sup> Whereas the local-authority FE reflects differences among authorities in the average number of instruction hours allocated to all schools in their jurisdiction (reflected in the size of the intercept in the estimation), the interaction variable points to the correlation between local-authority and school characteristics and the differential allocation of hours commensurate with the deprivation index of schools in the jurisdiction. It turns out that affirmative action increased in tandem with the local authority's socioeconomic ranking, a finding consistent with the presentation in Figure 5 above. Affirmative action grows with funding of instruction hours outside the Ministry of Education standard, apparently because local authorities match Ministry of Education funding for weak schools. An NIS 1,000 increase in per-resident revenue is accompanied by a 0.1-hour increase per class in municipal funding for each unit increase in the deprivation index (on a 1–10 scale) of schools in the jurisdiction, and an NIS 1,000 increase in per-resident debt induces a 0.2-hour decline.

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<sup>17</sup> The factors that correlate with local authorities' affirmative-action policies in funding state primary schools in their areas of jurisdiction may be estimated directly by performing an estimation in which the unit of investigation is a local authority. The explained variable in this estimation is the distance between the multiannual average of weekly hours per class in the above-median portion of the deprivation index, that were funded by the local authority, and the average among schools in the portion below the median. The explanatory variables are the averages of the explanatory variables that appear in Table 5. This estimation cannot be performed, however, due to the small number of local authorities in which enough schools were sampled in the standard control.

**Table 5: Estimations of per-class weekly hours in official regular state primary<sup>1</sup> schools funded by local authorities,<sup>2</sup> 2001–2009**

(Standardized standard deviations in level of municipal funding—in parentheses)

		Excluding local-authority FE	Including local-authority FE <sup>3</sup>	
		Model 1	Model 2	Model 3
Socioeconomic cluster of local authority <sup>4</sup> (1–lowest; 10–highest)		0.374** (0.177)		
School deprivation index (1–strong background; 10–weak background)		-0.126 (0.068)	-0.228* (0.125)	0.777* (0.595)
Hours per class from non-municipal sources	Nonprofits	0.001 (0.031)	-0.028 (0.025)	-0.068 (0.043)
	Parents	0.066 (0.070)	-0.053 (0.052)	-0.028 (0.044)
	Min. of Ed. standard hours	0.019 (0.027)	-0.003 (0.026)	0.061 (0.069)
	Min. of Ed. Non-standard hours	0.045 (0.030)	0.037 (0.024)	-0.053 (0.041)
Fiscal situation in previous year (NIS '000/resident)	Revenue	0.431** (0.195)	0.104 (0.186)	-0.160 (0.233)
	Deficit	0.260 (1.009)	-0.934 (0.381)	-0.981 (2.189)
	Debt	0.916*** (0.256)	0.054 (0.350)	0.862 (0.542)
School deprivation index * local-authority cluster <sup>4</sup>				0.150*** (0.050)
School deprivation index * non-standard Min. of Ed. hours				0.018** (0.009)
School deprivation index * per-resident revenue (NIS 000)				0.061* (0.033)
School deprivation index * per-resident debt (NIS 000)				-0.182** (0.082)
Share of primary-school students in municipal population <sup>5</sup> (pct.)		0.005 (0.095)		
School student enrollment (N)		-0.003** (0.001)	-0.001 (0.001)	-0.001 (0.02)
Observations (N)		876	899	877
Local authorities (N)		91	95	95
Adjusted R <sup>2</sup>		0.293	0.525	0.559

\* Significant at 10% level; \*\* significant at 5% level; \*\*\* significant at 1% level.

- 1) Schools that teach grades 1–6 only.
- 2) Municipalities and local councils. Only years in which at least three primary schools in the state (Jewish non-religious) system were sampled in a standard-control procedure were included.
- 3) Also included in the estimations were the following explanatory variables (interactions with the school deprivation index): deprivation index \* nonprofit-funded hours; deprivation index \* parent-funded hours; deprivation index \* Ministry of Education-funded hours; deprivation index \* deficit; and deprivation index \* school enrollment. All estimators of these variables are not significant at 10% level.
- 4) Socioeconomic cluster of the local authority in 2006.
- 5) In 2006.

Source: Aida Economic Management and Consulting, Ltd.; Central Bureau of Statistics (2009); and Ministry of the Interior (various years).

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## Appendices

**Appendix Table 1. Number of Regular Official Primary State (Jewish, Non-Religious) Schools Sampled in a Standard Control Procedure, by local authority, 2001–2009**

Local authority	Socioeconomic cluster (2006)	Schools sampled (N)
Acre	4	11
Alfe Menashe	8	1
Alona (Regional Council)	6	2
Arad	5	6
Ariel	6	6
Ashdod	5	28
Ashkelon Coast (Regional Council)	6	2
Ashkelon	5	19
Bat Yam	6	16
Be'er Toviyya (Regional Council)	6	9
Beersheva5	49	
Bet Dagan	6	2
Bet She'an Valley (Regional Council)	6	1
Bet She'an	5	2
Bet Shemesh	3	8
Bnei Ayyish	5	2
Bnei Brak	2	3
Bnei Shimon (Regional Council)	6	2
Carmel Coast (Regional Council)	7	10
Carmiel	6	10
Central Arava (Regional Council)	8	2
Central Sharon (Regional Council)	7	4
Dimona	4	10
Eilat	5	14
Emek Hefer (Regional Council)	7	10
Even Yehuda	8	2
Galilean Hazor	4	3
Gan Yavne	6	4
Ganei Tikva	8	2
Gedera	6	7
Gezer (Regional Council)[[]]	6	2
Gilboa (Regional Council)	5	5
Giv'at Ze'ev	6	2
Hadera	6	11
Haifa	7	55
HarAdar	9	2
Herzliya	8	20
Hod Hasharon	8	11
Holon	6	38
Jerusalem	5	57
Jezreel Valley (Regional Council)	6	2
Karne Shomron	5	1
Katzrin	5	1

<b>Local authority</b>	<b>Socioeconomic cluster (2006)</b>	<b>Schools sampled (N)</b>
Kefar Sava	7	15
Kefar Yona	6	4
Kirat Gat	4	16
Kiryat Ata	6	10
Kiryat Bialik	7	16
Kiryat Ekron	5	1
Kiryat Malachi	4	4
Kiryat Motzkin	7	6
Kiryat Ono	9	8
Kiryat Shemona	5	7
Kiryat Tiv'on	9	4
Kiryat Yam	5	10
Kokhav Yair	8	2
Lakhish (Regional Council)	6	1
Lehavim	9	1
Lod	4	2
Lower Galilee (Regional Council)	6	2
Ma'a lot-Tarshiha	5	4
Ma'ale Adummim	6	7
Ma'ale Yosef (Regional Council)	6	2
Matte Asher (Regional Council)	6	4
Matte Binyamin (Regional Council)	4	2
Matte Yehuda (Regional Council)	6	3
Mazkeret Batya	5	7
Megiddo (Regional Council)	6	3
Megilot Dead Sea (Regional Council)		
Menashe (Regional Council)	5	2
Merhavim (Regional Council)	5	3
Merom ha-Galil (Regional Council)	4	1
Metar	9	2
Metulla	8	2
Mevasseret Zion	8	6
Mevo'ot ha-Hermon (Regional Council)	6	1
Migdal ha-Emek	5	5
Misgav (Regional Council)	6	4
Mitzpe Ramon	5	1
Modi'in Region (Regional Council)	6	6
Modi'in-Maccabim-Re'ut	8	20
Nahariya	6	11
Nes Ziona	7	7
Nesher	7	7
Netanya	6	29
Netivot	3	1
Ofakim	4	7
Omer	10	2
Or Akiva	5	5
Or Yehuda	5	11
Oranit	7	1

<b>Local authority</b>	<b>Socioeconomic cluster (2006)</b>	<b>Schools sampled (N)</b>
Pardes Hannah-Karkur	6	8
Pardesiyya	7	1
Petah Tikva	6	36
Ra'ananna	8	13
Ramat ha-Sharon	9	6
RamatYishai	8	1
Ramle	4	10
Rehovot	6	21
Rishon Lezion	7	47
Rosh ha-Ayin	6	10
Rosh Pina	7	3
Safed	3	6
Sederot	5	1
Sharon Coast (Regional Council)	8	7
Shoham	8	5
Shomron	5	1
South Sharon (Regional Council)	8	7
Tamar (Regional Council)	6	1
Tel Aviv-Yafo	8	64
Tel Monday 8	3	
Tiberias	5	11
Tirat Carmel	5	5
Tsoran-Kadoma	7	2
Upper Galilee (Regional Council)	6	7
Upper Nazareth	6	13
Upper Yokne'am	6	11
Yavne	6	5
Yavne'el	4	2
Yehud-Neve Ephraim	7	4
Yeroham	4	2
Yesud ha-Ma'ala	8	3
Yoav (Regional Council)	6	4
Zevulun (Regional Council)	6	3
Zikhron Yaakov	7	6

Source: Aida Economic Management and Consulting, Ltd.; Central Bureau of Statistics (2009); and Central Bureau of Statistics and Ministry of the Interior (various years).

**Appendix Table 2: Correlations among Key Variables in This Study<sup>1</sup>**

	Per-resident revenue	Per-resident deficit	Per-resident debt	Authority socio-economic cluster <sup>2</sup>	Avg. deprivation index of schools in authority <sup>3</sup>	Share of primary pupils in population <sup>4</sup>	Authority expenditure per primary class
Per-resident revenue	1.00	-0.05	-0.32	0.45	-0.20	-0.36	0.44
Per-resident deficit	—	1.00	0.42	0.17	-0.25	-0.10	-0.05
Per-resident debt	—	—	1.00	-0.00	-0.06	-0.12	-0.28
Authority socio-economic cluster <sup>2</sup>	—	—	—	1.00	-0.65	-0.59	0.31
Avg. deprivation index of schools in authority <sup>3</sup>	—	—	—	—	1.00	0.10	-0.25
Share of primary pupils in population <sup>4</sup>	—	—	—	—	—	1.00	0.36
Authority expenditure per primary class	—	—	—	—	—	—	1.00

- 1) Local authorities that had state (Jewish, non-religious) primary schools (grades 1–6 only).
- 2) In 2006. 1 denotes the lowest (weakest) cluster and ten the highest (strongest).
- 3) The deprivation index moves on a continual scale, 1 representing the strongest socioeconomic background and 10 the weakest.
- 4) The share of primary pupils in the local-authority jurisdiction in 2006.

Source: Aida Economic Management and Consulting, Ltd.; Central Bureau of Statistics (2009); and Central Bureau of Statistics and Ministry of the Interior (various years).