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What money can't buy: A Financial and School Climate Data-Based Analysis of Israeli School-Based Management

MA thesis

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Abstract

School based management (SBM) reforms have been introduced around the world. Most SBM reforms include some form of devolvement of decision-making processes in the areas of budget, curriculum and staffing to the school level. However, empirical evidence for the effectiveness of this wide variety of reforms has been conflicted. Moreover, existing examinations of SBM reform effectiveness often overlook whether and to what extent SBM schools indeed implement the reform directives. Hence, focusing on the inner workings of schools operating under SBM reforms is required in order to differentiate between failures of the SBM model and failures of SBM implementation. This study, therefore, uses regression analyses between five sets of variables in order to examine the connections between the various "moving parts" of the Israeli SBM model: connections between schools' background characteristics, their spending and income, organizational-culture attributes and the schools' outcomes. Findings show a disconnect between financial and non-financial variables. On the other hand, school teamwork is strongly connected to school outcomes. However, there is no evidence that SBM has influenced teamwork. Parental involvement is also strongly connected to SBM school outcomes, but was also not found to be influenced by SBM. Furthermore, the type of parental involvement that is more strongly linked to outcomes is that of individual involvement based on a strong relationship between teachers and parents, rather than collective involvement of parents in the school management. Findings also show that contrary to what some believe, as can be seen from the choice of some Israeli school districts to refrain from doing so (in breach of the SBM Directorate's guidelines), involving parents is not as contentious as expected and is actually positively linked to teacher satisfaction. There is some weak evidence to suggest that accumulative time in SBM may dull socioeconomic inequalities with regards to access to resources and school outcomes. There is also weak evidence indicating that alongside the organizational changes that take time to ripen, schools may go through a "learning curve" over a number of years, during which they learn how to run their own budgets. Investigating SBM as a chain of influences, this study allows a more nuanced unfold of SBM influences on school operation and outcomes.

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List of abbreviations

LEA	Local Education Authority. The local government body in charge of education. There are approximately 250 LEAs in Israel.
MATANA	Hebrew acronym for "planning, management and preparation package". The literal translation of Matana is "gift".
MEITZAV	Hebrew acronym of "school efficiency and growth indices", a nation-wide administered test taken in grades 5 and 8. The test covers language (either Hebrew or Arabic), mathematics, English and in 8th grade also science, and was administered in each school once in three years until 2019. In addition to the exam, the MEITZAV also includes a questionnaire regarding school climate.
MOE	Ministry of Education. At some periods, the title of the Ministry included culture and sport as well. However, the abbreviation MOE will be used regardless of the exact composition of the Ministry.
NIS	New Israeli Shekel
OCQ	Organizational Culture Question (variables OCQ1 to OCQ10 are the variables for the second stage in the research model.
RAMA	Hebrew acronym for National Authority for Measurement and Evaluation in Education, an independent governmental organization charged with evaluating MOE programs and outcomes.
SBM	School Based Management
UO	Ultra Orthodox

Note: Correlations and regression coefficients in this paper marked with a * are significant at the 5% level.

What is School Based Management?

School Based Management (SBM) is a genre of education reform that decentralizes decision making from the central or district level to the school level (Santibañez, 2007). SBM reforms aim for decision making to be made closest to the client, in order to better harmonize them with the specific context and unique needs of a specific school (Sackney & Dibski, 1994). However, after over 30 years and with over 800 programs dubbed "SBM" worldwide, an exact definition of SBM is still elusive (Santibañez et. al, 2014).

An early categorization of SBM reforms uses the variables of structure, flexibility, accountability, productivity and change (Brown, 1990). The structure of an SBM reform is linked to the reasons for adopting SBM; The amount of flexibility given to schools defines the kind of change we can expect in a school's behavior; the mechanisms of accountability are linked to the role-changes occurring and the measures of performance that schools are held to; productivity refers to the 'bottom line' of improvement in a school's efficiency; and change refers to the process in which SBM was adopted and how final the process is.

Another early description states that in SBM, professional responsibility takes the place of bureaucratic regulation, and school autonomy is increased in return for the staff assuming responsibility for the results. These reforms devolve decision making in one or more of the three areas of budgeting, curriculum and personnel (David, 1989). These three areas of responsibility appear in many definitions of SBM, but some definitions include additional areas of responsibility, such as maintenance (Ganimian, 2016), procurement of textbooks, infrastructure improvement and monitoring of teacher performance and student learning (Bruns et al., 2012). Other definitions leave out areas of responsibility, such as decentralization of the curriculum, which is suggested as a complimentary reform to SBM (Wohlstetter & Odden, 1992). However, in some cases, alongside the introduction of SBM, the curriculum was re-centralized (e.g. The UK, France and Greece; Daun & Siminou, 2009), as a means of maintaining control over what is taught, while relinquishing control over how it is taught. While they do include it in their definition of SBM, Grinshtain & Gibton (2011) point out that it is difficult to devolve decision making regarding staff where teachers' unions are strong, and therefore this element is often left out of SBM reforms. Thus, while it is unclear how many of the various components are required for a decentralization reform to come under the definition of SBM, it is clear that there must be some minimum requirement. Some control over budgeting is not enough for a reform to come under the title of SBM, and other components are required (Brown, 1990).

Santibañez (2007) classifies SBM reforms into five levels, according to the 'strength' of the SBM model and which components are included. However, SBM being a reform with numerous moving parts, there are many SBM reforms that do not fit into this classification, requiring an unrealistic number of exceptions to the classification.

Others emphasize certain components of SBM, such as a school committee either as an advisory mechanism, or as a decision-making forum (Brown & Hunter, 1998); the act of planning as a central activity carried out by SBM schools (Gamage, 2009); or the shared decision making and increased influence of parents (Sackney & Dibski, 1994).

An important categorization focuses on the locus of control within the school (Leithwood & Menzies 1998). In "Administrative control SBM" the locus of control is the principal, "Professional control SBM" centers on the teaching staff and "Community control SBM" puts the community and parents in the decision-making role. Each of these models has different reasoning, different levers for change and results in a different accountability structure (see **table 1**).

Table 1- Three SBM models based on the locus of control (Leithwood & Menzies, 1998)

	Administrative control SBM	**Professional control SBM**	**Community control SBM**
Locus of control	Principal	Teaching staff	Community & parents
Reasoning	Resource efficiency: putting resources under the control of the principal rather than a higher level official.	Improving student outcomes by handing decision-making over to professionals closest to the student.	Allows parents to steer the curriculum to better represent the values of the local community.
Accountability	Towards the central office/ district	(not specified)	Towards parents
What to expect	Likely to result in little change, as it is the most similar to previous management structures. Most SBM reforms, even when planned otherwise, end up becoming Administrative control SBM.	Most likely to improve student outcomes.	Likely to result in the most change, as it admits new participants into the decision-making process.

However, these three archetypes don't always appear in their 'pure' form, and SBM reforms often include a mixture of more than one model. A further categorization merges these three forms with the three areas of responsibility (budget, curriculum and staff) to form a matrix of nine separate models of SBM (Wohlstetter & Odden, 1992).

The many, sometimes conflicting definitions of SBM have left it "an empirically elusive notion" (Malen et al., 2012). A wider definition, which can encompass many of the other definitions, describes SBM as devolution of decision-making authority to schools in a wide variety of models and mechanisms, which differ in terms of which decisions are devolved, to whom they are devolved and how this is implemented. The decisions devolved can be financial, managerial or related to the curriculum (Carr-Hill et al. 2016).

Background of SBM reforms

School Based Management (SBM) reforms developed in the context of growing recognition that schools are organizations, and as such, require organizational health in order to function effectively (Hopkins et al., 2014). This recognition has led to increased emphasis on educational initiatives along with increased demands for school accountability and development of school leadership and organizational change. The outcome is a process in which schools are granted more authority, with SBM as a central means of devolving such authority. The backdrop of such devolvement is a growing discontent with schools' academic achievements and their failure to prepare students for an ever changing job market (ibid). This discontent with schools' accomplishments in systems laden with a complex maze of programs, rules and regulations is common to many SBM reforms. Examples can be found in Chicago (Bryk, 1998); El Salvador, Nicaragua, Guatemala, Honduras (Ganimian, 2016); The Philippines (Yamauchi, 2014); Mexico (Santibañez et. al, 2014); Kenya (Duflo et al., 2015); The United States (David, 1989); Indonesia (Pradhan et al., 2011; Katuuk, 2014); and elsewhere (Carr-Hill et al., 2016). Israel is no exception to this (Vollansky & Bar Elli, 1995; Ministry of Education and Culture, 1993).

SBM reforms evolved following the "Effective schools" research movement, a movement which sought to identify key characteristics of effective schools (Lezotte, 2001). This literature prescribed various lists of characteristics for schools, many of which were based on weak empirical foundations (Purkey & Smith, 1983). However, some characteristics stand out as being prerequisites for school effectiveness, among them: Strong instructional leadership by the principal, a clear and focused school mission, frequent and systematic monitoring of student achievement, positive home-school relations and parental involvement and support, school district support, and school autonomy (Lezotte, 2001; Purkey & Smith, 1983; Zigarelli, 1996).

There are other ways to explain the emergence of SBM. The Economic World Systems paradigm views education systems as being constantly restructured in order to fit the economic needs of society, and SBM is just another such restructuring (Daun, 2009). The institutional paradigm assumes that restructuring as happens in SBM reforms occurs as a result of pressure by various stakeholders (ibid).

Accountability Mechanisms

SBM devolves authority and grants a level of autonomy to schools, alongside introducing accountability mechanisms to ensure outcomes.

Bruns et al. (2012) view the problem of education as a "principal-agent" problem, in which the Education Ministry is the "principal" and the schools are the "agent" which is failing to produce the required results. They also suggest an alternative view, in which the community (parents) is the "principal", while the education system as a whole is the "agent" failing to supply the required educational results. In both cases, accountability is needed in order to achieve the required results.

The general premise of SBM is that schools can become more effective if outcome goals are set at the top of the system, while the implementation of these goals is decentralized to the school-level. Accountability is structured so that rewards are given to schools for achieving goals and sanctions are imposed when they are not achieved. In other words, for accountability to work, accountability mechanisms need to have 'teeth' (Wohlstetter & Odden, 1992).

This accountability structure holds schools accountable to a central office. However, the Chicago model severed the normal hierarchical accountability of schools to a central office and instead banked on democratic localism as the main accountability principle. School councils in Chicago are accountable to their constituents and can be voted out of office. School principals are held accountable to the school council, which has the power to remove the principal. The reform legislation set clear goals for improvement and charged the central office with intervening if the goals are not met, using an external accountability model not for process compliance, but for school improvement (Bryk, 1998).

In the British model, schools are held accountable to parents, and they are required to publish their outcomes publicly in an annual report. Schools that are deemed 'at risk' receive a team of specialists charged with helping the school to improve. Schools that do not improve are closed down (Gamage & Zajda, 2009).

Brown (1990) lists budget reviews by a school board and annual "report cards", making public the schools' achievements as components of accountability. Grinshtain & Gibton (2011) also view accountability as the obligation of the school to report on processes and results achieved by the school, to explain them and to justify them. However, such "report cards" require consequences in case of failure, as stated by Wohlstetter & Odden (1992) in order to be effective. Such consequences could be hierarchical intervention, as is the case in the British model, or coupling decentralization with granting parents with the ability to choose the school for their children, based on the schools' published results (open enrollment).

Brown (1990) considers the work of Kogan, who viewed school accountability as being comprised of two parts: the first in which school planning and budgeting is considered by a school board, before actions take place, and the second in which results are reviewed and consequent actions may take place. Additionally, Kogan offers accountability mechanisms, based on the body to which the school is accountable: the State or school board, teachers and parents. This is a similar distinction to Wohlstetter & Odden's (1992) classification based on the locus of control. However, there is a big difference between having the authority to make decisions and being owed accountability.

Finally, Bruns et al. (2012) discuss three core accountability measures, with SBM being one of them and the other two being the use of information, allowing other actors to act in accordance in order to 'reward' success and 'punish' failure, and teacher incentives as a means to improve outcomes.

The school committee

A central accountability mechanism in SBM reforms is the school committee. SBM almost always includes the formation of some form of school committee. Committees vary in their composition, the methods of member selection, their authority and the scope of the issues they deal with.

The institutional settings of the committee may have direct bearing on where the locus of control is placed. In the Chicago reform, parents are a majority on the committee and the committee has the authority to evaluate the principal and renew his or her contract; to confirm and review the implementation of the school budget and the school plan (Gamage & Zajda, 2009). Thus, the locus of control in Chicago is in the hands of parents and the community. In fact, the reform in Chicago deliberately shifted power away from local professionals (Bryk, 1998). In the Los Angeles model, the teaching staff comprises one half of the committee, while all other stakeholders comprise the other half. The committee may make decisions regarding the administration of the school and its resources, but does not have authority in personnel issues (Gamage & Zajda, 2009). Thus, the Los Angeles model represents an example of an impure model of "Professional control SBM", with teachers having strong representation, while lacking a clear majority, and taking part in administrative decisions, rather than professional ones. In other models, power within the committee is more evenly distributed (e.g.- Spain) and in others, the committee may have only an advisory status (e.g.- the Czech model), making the committee a weaker mechanism for accountability (ibid).

School Based Management in Israel ("Nihul Atzmi"[1])

SBM in Israel was enacted in primary schools in two waves to date, the first beginning in 1995 and the second in 2011. Additionally, in 2019, the MOE introduced a narrow reform granting limited budgetary autonomy to some junior high schools. This section discusses the development of SBM in the Israeli primary schools and the main components of the reforms.

The Israeli Ministry of Education (MOE) commissioned two committees in 1992, the first to examine possibilities of raising funds for schools from non-public sources and the second to examine the possibility of enacting SBM in Israeli schools. The recommendations of the two committees were presented in October 1994 and August 1993, respectively.

Among the recommendations of the committee on SBM was funding schools with a per-student sum, which would include most of the budget items designated for the students, teachers and schools. This sum would be made public and would be differential in order to give precedence to students from lower-income backgrounds. Schools would be able to plan pedagogical objectives and fulfill them, by affording the school flexibility in the use of its funds. The role of the school's superintendent would

[1] Hebrew for "Self-management"

change to a consulting and supporting role, on how to achieve the school's goals. The principal would receive authority on personnel issues, including the hiring of new staff, granting tenure and firing (Ministry of Education and Culture, 1993).

The committee on raising funds recommended encouraging schools to act in order to raise funds from donations, self-run activities and other sources. The committee was also aware of the danger of widening socio-economic gaps between schools that are able to raise funds and schools that are unable to do so, and suggested forming a national education fund, which would raise funds in Israel and abroad (Ministry of Education, Culture and Sport, 1994).

In April 1995, the MOE launched a trial program in nine elementary schools, but not all of the committees' recommendations were adopted. No autonomy was given in the area of personnel, and governing boards were not formed, due to teacher union objections (Vollansky & Bar-Elli, 1995). The national education fund prescribed by the committee on raising funds was also never formed[2]. However, a per-student sum was given to every school that joined the program via the local education authorities (LEAs), a total of approximately 670 schools (roughly a third of the state elementary schools in Israel) over the years the program was active. The last LEAs to join the program did so in 2003 (State Comptroller, 2009). In the 2004 school year, the ministry officials in charge of the SBM program left their positions and were not replaced, leaving the program to dissipate with no MOE direction. However, the per-student funds continued to be paid by the MOE via the LEAs, which continued to allow varying levels of autonomy to the 670 schools which had joined the program (ibid).

In 2011, the Israeli government adopted a resolution to restart the SBM program in state elementary schools. The resolution stated that schools in the program would be charged with setting goals and school plans. Each school is to form a committee, to which the school will report on the achievement of said plans. School principals are to be given budgetary flexibility. The program is to begin as a pilot program in the 2011-2012 school year. Finally, the MOE is to reach understandings with the LEAs regarding permanent funding of the schools which join the program (Government secretary, 17/3/2011).

The MOE formed a designated directorate for gradually implementing the decision in all state elementary schools over a planned period of five years. The directorate included a pedagogical administrator and a financial administrator at the national level, as well as a superintendent as district supervisor in each of the six geographical districts in the country[3]. The directorate also employed organizational and financial advisors, who were charged with providing training to schools, LEAs and later on, also to superintendents (due to the understanding that the roles of superintendents need to change along with the roles of school actors). By the 2017-2018 school year, the seventh year of

[2] To date, the city of Haifa runs such a fund for its schools, by sharing a percentage of the income generated from renting school premises after school hours with schools in the city that are less able to generate such income.

[3] The six districts are Southern Israel; Haifa area; Jerusalem- comprised of the Jerusalem area and the city of Jerusalem itself, which for non-SBM purposes are run as two separate districts; Central Israel; Northern Israel; and Tel Aviv area. Later on, the MOE formed an additional, non-geographic district in charge of State Ultra-Orthodox schools, which also employed a district supervisor.

implementation, 98% of Israel's almost 1900 state elementary schools in 245 of 250[4] LEAs had joined the SBM reform.

Joining the new SBM program was done by voluntary signature of the LEAs (and not the schools) on a uniform memorandum of understanding, outlining the new relationships between the Ministry, the LEA and its schools (Ministry of Education, 2012). Legally, the schools are jointly owned by the MOE and their LEA, and are considered a branch of the LEA for financial purposes. The signature of the LEA on the memorandum requires all state elementary schools within the LEA to join the SBM program. LEAs that join the program receive the per student sum given to SBM schools in the first wave, and an additional differential per-student sum for their schools, based on the socio-economic rating of the LEA (ibid).

In regard to the three areas of autonomy usually included in SBM programs, personnel, budgeting and curriculum, Israeli SBM focuses mainly on budgeting. Schools receive per-student funds from the LEA, which were previously used by the LEA for the operation of the school. LEAs are required to update the amounts given to the schools annually, based on the amounts spent by the LEA prior to SBM and on changes in utility and other rates over the year. In addition, schools receive the two per-student sums funded by the MOE (the uniform sum from the first wave of SBM and the differential sum given in the second wave). Schools may use the funds for operational uses as well as enacting educational programs and initiatives. Teacher salaries continue to be paid directly by the MOE, and schools have no authority in the area of hiring and firing of teachers. Schools may, however, hire non-teaching staff through the LEA with the funds available to them (ibid). In the area of curriculum, the MOE publishes an annual instruction book (dubbed MATANA - planning, management and preparation package), delineating various instructions and rules regarding the amount of teacher hours that must be spent on each curriculum subject. Under SBM, the Ministry relaxed the instructions in the MATANA and allowed 25% flexibility in spending teacher hours. However, it has been pointed out that within the remaining guidelines, it is impossible to implement this flexibility (Ben-Shlomo, 2018).

Israeli SBM is based on six underlying principles (Ministry of Education, 2014):

1. An internal locus of control
2. Decentralization, delegation of authority and empowerment
3. School as a learning organization
4. Accountability
5. Development of schools' relations with their surroundings and the community
6. Information based management of schools' resources

Accountability mechanisms under Israeli SBM

The placement of the locus of decision making is connected to the structure of accountability (Leithwood & Menzies 1998). The official accountability mechanism of Israeli SBM is the school

[4] There are in fact 256 local government bodies in Israel, but only 250 have state elementary schools within their jurisdiction.

committee (Ministry of Education, 2015). However, it is accompanied by two other programs, open enrollment and the "Marom" program, which both contribute to the accountability of Israeli schools operating under SBM.

The school committee

The main mechanism for accountability in the Israeli model of SBM is the school's "accompanying committee". The members of the committee are the principal; the school's superintendent; the director of education and the treasurer of the city or local council, or their representatives, representing the local government; teachers and other members of school staff; representatives of parents; and other relevant stakeholders. However, the MOE did not lay down rules regarding the number of teachers or parents in the committee, and decisions are made either by mutual agreement or a majority vote, while the discussions are led either by the principal or the superintendent (ibid).

The committee meets twice a year, once for approving the school plan for the coming year, including the school budget, and the second time for discussing whether the goals specified in the school plan were achieved and for drawing conclusions for the future. The legal authority for approving the budget still lies with the city or local council's treasurer, as the school building and its bank account are owned by the city or local council, while the legal authority for approving educational plans lies with the superintendent. The committee's authority is based on the mutual agreement of these two functionaries to allow the other members of the committee to share in the decisions, requiring a successful committee to have an atmosphere of trust between its members (ibid). The MOE's instructions were deliberately left vague in order to support fostering of such relationships.

For this reason, many school principals refrained from inviting parents to take part in their school committees, despite the instructions of the MOE, either for fear of creating an adversarial relationship with the parents, or because such an adversarial relationship already existed. A number of the MOE's district managers supported this, and in some cases gave instructions not to involve the parents in the school committee but rather within other structures.

The fact that principals control the number of parent and teacher representatives on the committee, giving them the ability to create a majority to support their policies, while the committee does not have any institutional ground rules for making decisions leaving it to affirm decisions that have already been made by the principal, marks the school committee as a mechanism that firmly supports an "Administrative control SBM" model.

The structure of the committee as the main accountability method, having no formal decision-making powers besides affirming school plans and following up on their implementation, leaves it without the 'teeth' prescribed by Wohlstetter & Odden

(1992). However, the MOE inadvertently did create such 'teeth' through two other programs: the open enrollment reform and the Marom program.

Open enrollment

Open enrollment is an important complementary factor to SBM, as it acts as a consequence for the school's accountability and allows parents to send their children elsewhere when a school is not showing results. It also means that schools must make an effort to compete for their students. When funding is provided to schools on a per-student basis, open enrollment can be quite significant.

The Israeli MOE introduced open enrollment in 2012, the same year as SBM was renewed, but unrelated to the SBM reform. However, open enrollment is voluntary at the LEA level, and to date, approximately 62 of 250 LEAs allow open enrollment, in various models and under various constraints. Schools that fail as a result of open enrollment receive assistance from the MOE (Yisraeli, 2019). Another important factor regarding SBM and open enrollment is the availability of information regarding schools' outcomes (Wohlstetter & Odden, 1992; Bruns et al., 2012). The MOE begrudgingly began publishing school outcomes, also in 2012 (known as the MEITZAV exams). This was as a result of a court order, however, and not as a coordinated effort to enhance the SBM and open enrollment programs (Administrative appeal 1245/12). In February of 2019, the MOE announced that it would no longer be publishing the MEITZAV results (Ministry of Education 2019A; Ministry of Education 2019B).

The Marom program

In the 2015-2016 school year, the MOE launched the "Marom" program, aimed at improving outcomes of under-achieving schools within weak socio-economic level communities. The program was to complement a redistribution of teaching-hours resources, favoring such communities (MOE, the Marom program). The running of the program was assigned to the SBM directorate, at a time when implementation of SBM in primary schools had almost reached completion[5]. The program was originally planned to run for seven years, and was later extended to eight years (Ministry of Education, 2016).

Under the Marom program, 700 elementary and junior-high schools from weak socio-economic backgrounds with low student outcomes are planned to undergo a three or five year intervention, which includes help from a pedagogical instructor and an organizational adviser as well as a voucher for bringing in specialists in various education-relevant areas (ibid).

[5] By the following school-year, 97.5% of State-primary schools had joined SBM (Vininger, 2017).

The director general of the MOE[6] put this program at the forefront of his agenda and requested regular updates on the progress of underachieving schools, and in some rare cases, principals were fired. The program generated increased data collection and monitoring on school improvement indices by ministry officials, and schools with low achievements are included in the intervention[7], effectively acting as 'teeth' for principals' accountability, similar to the mechanism used in the UK (Gamage & Zajda, 2009). Prior to the "Marom" program, there was no similar system-wide intervention program, to act as such an accountability mechanism. "Marom" is an uncomfortable option for principals, as their schools are put under the microscope of the MOE and a team of specialists are thrust upon the school, effectively curtailing their autonomy. Wohlstetter & Odden (1992) suggest setting system-wide learning goals for SBM schools; Marom effectively fulfills the role of enforcing the goals of student outcomes and school climate measurements.

However, it is important to point out that the MOE publishes a set of annual system-wide goals (Ministry of Education, 2020), from which schools have a number of goals that they are required to fulfil, and others to choose from. The four goals for the 2019-2020 school year, that are broken down into sub-sections, include "Promoting meaningful and qualitative learning: Knowledge, skills and values"; "Education of values in the spirit of the declaration of independence"; "Promoting equal opportunities and fulfilling potential"; and "strengthening educational leadership". While these constitute the official goals of the MOE, their implementation is not measured and there is no accountability mechanism for enforcing them, as opposed to student outcomes in the MEITZAV exams and the school climate questionnaire[8], as measured by RAMA.

[6] Shmuel Abuav, who served in the position in the years 2017-2020.
[7] Information based on the author's knowledge while working at the SBM Directorate.
[8] The climate questionnaire is taken alongside the MEITZAV and includes teacher responses and student responses on issues of school climate.

Existing research on School Based Management: early findings, outcomes and organizational changes in SBM schools

This section will focus on existing research on SBM programs worldwide, while discussing findings and facets of SBM that have a bearing on the Israeli case, which will be presented in the next section.

Early findings from research of SBM reforms

Early findings on SBM show greater teacher satisfaction and greater differences between schools, proving that schools have used their autonomy to make their own choices. However, findings also show that school councils have avoided tackling instructional issues, and very few schools have implemented second order changes (David, 1989).

The early research into SBM focused on the degree to which teacher morale, job satisfaction and job stress have been affected by such reforms (Wohlstetter & Odden, 1992). This direction of research focusing on teacher satisfaction comes in light of an organizational perspective which views SBM as a means of empowering teachers in order to make schools more effective (Conley, 1991). Wohlstetter & Odden (1992) urge a shift of focus in research of SBM towards outcomes. However, SBM does not lead directly to educational student outcomes, but rather to organizational changes, which in turn set the stage for student outcomes to be improved. Therefore, research on SBM tends to focus on proximal outcomes, rather than educational student outcomes (Carr-Hill et al. 2016). Indeed, many studies have focused on teacher satisfaction. Santibañez (2007) found that schools don't want to go back to the old way of doing things, and that this is a consistent finding (Katuuk, 2014 is another more recent example of such studies). While identifying dissatisfaction and addressing it may be important to policymakers, and identifying satisfaction may be an indicator of other changes that may occur at later stages, it cannot be a substitute for empirical evidence as to the actual effects of reform on the way schools have changed organizationally and whether SBM in fact does improve outcomes.

Findings from research of SBM focusing on outcomes

Much of the later research has in fact focused on student outcomes. However, this type of research has had mixed and inconsistent findings.

Some examples of findings showing positive results of SBM include:

- In Mexico, the AGE reform, which gave grants to schools while increasing parental involvement, has been shown to decrease dropout rates (Santibañez et. al, 2014).
- The PEC reform, which was implemented in Mexico later-on, and included grants to schools for cooperation of principals, teachers and parents in planning and decision making, resulted in a small but statistically significant improvement in dropout and failure levels (ibid).

- PEC-FIDE, the subsequent, more expanded reform, was found to have resulted in a statistically significant improvement in 3rd grade language test scores (ibid). However, the study did not find any improvement in other areas, and it was evident only in schools that had not been part of the previous reform. Furthermore, the study could not attribute the improvement to organizational change, rather than a simple influx of funds.
- A synthesis of later research has found that devolving of decision making has had a somewhat beneficial effect on dropout levels, repetition levels and test scores (Carr-Hill et al., 2016).
- In the Philippines, reform included grants given to schools which had handed in school plans. According to the SBM program there, better plans received better grants. SBM schools there were found to have slightly better test scores in math. Additionally, schools with more experienced staff and larger classrooms were found to have written better school plans and received larger grants, leading to greater improvement (Yamauchi, 2014). These findings are in line with Bryk's (1998), who showed that the organizational state of a school prior to SBM has implications to the outcomes of SBM.

Other studies have not been able to find a connection between SBM and an improvement in outcomes. Some examples include the decentralization reforms in Sweden, the UK, France, Germany, Czech Republic and Greece, in all of which there was no connection found between the reforms and student outcomes (Daun & Siminou, 2009). This is in line with earlier findings that there is little evidence that SBM has any effect on students (Leithwood & Menzies, 1998).

There have been attempts to explain these mixed results. Santibañez (2007) found that reviews which found increases or decreases in student outcomes tended to be based on weak research models, while the stronger evidence shows an increase in access to education in poor and rural areas, alongside a decrease in dropout and repetition rates. A later review notes that experimental studies tend to find positive effects for SBM (Santibañez et al. 2014). The scope of decentralization may be another important difference: weaker forms of decentralization that do not include personnel decisions have been found to be insufficient to affect learning outcomes, as they do not affect change at the level closest to the student (Bruns et al., 2012). Wohlstetter & Odden (1992) explain that SBM needs power, knowledge, information and rewards in order to work. Missing one component can greatly reduce organizational effectiveness. Therefore, viewing all SBM interventions as equal will result in conflicting findings, as they do not necessarily include all the required components for success. Finally, a study conducted in Nicaragua distinguished between de-jure autonomy, (i.e. - the school signed a contract to join SBM) and de-facto autonomy, represented by the portion of decision-making that is in the hands of the school. The study found that de-jure autonomy made little difference, while schools with higher de-facto autonomy performed better (Santibañez 2007).

Findings from research focusing on organizational changes in SBM schools

Other studies focus their examination on the various components of SBM, its aims and what may help it to succeed or fail.

The aims of SBM

Malen et al. (1990) examine possible aims of SBM, and whether those aims have been achieved. They start by examining "governance theory", that states that SBM is expected to change the relationships between the various stakeholders in the school. However, they find that SBM did not substantially alter the existing influence relationships in schools: parental involvement is still constricted due to protective school staff that is prone to protect their professional autonomy; school councils have not altered relationships, but rather serve to lower pressure and mediate conflict, thus upholding the existing relationships. While they themselves find relationships unchanged, others have found changes in the roles that principals play at school. For example, research in Sweden found that SBM principals had shifted their focus to administrative tasks and had reduced emphasis on pedagogical tasks, marking a shift for Swedish principals from instructional leadership to administrative leadership (Lindberg & Vanyushyn, 2013).

However, for SBM to succeed, it requires change in the roles of actors all along the hierarchy, including superintendents and central office staff. Wohlstetter & Odden (1992) stress the importance of changes occurring in the relationship between schools and their districts. While there are indications of change occurring at the central office level in some places (e.g., Queensland; Cranston, 2000), other school systems have received mixed signals from the state and district levels, showing that change has not taken root at the central levels (Wohlstetter & Odden, 1992).

As they did not find relationships changed, Malen et al. (1990), suggest alternative perspectives for viewing the aims of SBM. The organizational renewal theory posits that involving school staff in decision making is expected to produce effects that serve to secure improvement by enhancing motivation, improving the quality of planning and stimulating the adoption of innovative practices. Their findings show that SBM did in fact generate interest in planning in some schools, but did not improve the quality of planning. Effective schools theory assumes that granting schools autonomy increases the probability that characteristics of effective schools will emerge. Their findings show that elements of SBM tend to take stronger hold in schools that exhibit qualities of effective schools, but that the direction of causality is unclear. Finally, a fourth explanation, symbolic response theory, proposes that SBM is a means of quelling conflict and restoring confidence in the school system, at a time when it is faced with complex competing demands.

Brown (1990) views increased productivity and outputs as an important aim of SBM. He suggests that rather than viewing productivity as cost reduction, cost increase and student access to resources, to examine how SBM may allow schools to spend money more efficiently. SBM schools are more aware of costs and are able to carry surpluses over to the next year. This

flexibility allows them to spend money for actual needs, rather than on a spending frenzy at the end of each year. Meanwhile, increases in costs must be viewed not only in terms of monetary expenses, but also in terms of workload increases, for instance increased paperwork required of the school.

Research conducted in Indonesia attempted to quantify productivity of various elements of an SBM reform there, by putting a monetary price tag on each element of reform in relation to the improvement in test scores attributed to each element. The researchers investigated the improvement in test scores in 520 schools in 520 villages, achieved by introducing each intervention method. Each school was given a grant, in addition to one or two interventions, which included establishing democratic elections to the school council, linking the school council with the village council or providing training to members of the school council. Some of the schools served as a control group and received no intervention at all. Each intervention has a fixed monetary cost, in addition to the monetary grant. This was calculated per points of improvement in test scores, showing that linking the school councils with the village councils was the most cost-effective intervention method, as it created cooperation between the school and the village and brought previously untapped resources to the school (Pradhan et al., 2011).

What makes SBM succeed or fail?

Meta analyses have found common elements that serve as enablers or obstacles to the success of SBM reforms. Obstacles include excessive time demands on teachers and principals; adherence of teachers and principals to traditional roles; doubts about the advantages of SBM; principals' lack of experience and training; apathy and low involvement of parents; power struggles and political conflict within the school councils; unwillingness of the central office to become less bureaucratic; central staff resistance and obstruction of further change (Leithwood & Menzies, 1998); poverty; illiteracy; a limited capacity of government led reforms; strength of the national teachers' union; constraints imposed by the central system; security and conflict (Carr-Hill et al., 2016). Meanwhile enablers of success include an active desire for autonomy within the community; strength of the local teacher job market (i.e. the ability to find new teachers, allowing the school to fire underachieving teachers); teacher ability; training for committee members; and giving parents majority voting power on the committee (ibid).

The shape taken by educational decentralization reforms depends on local context (Nir & Piro, 2007; Nir, 2009a). This is also a basic assumption in Carr-Hill et al.'s analysis (2016), which differentiates between country income-level as an independent variable affecting the outcome of SBM reforms. For instance, in low income countries, as opposed to a higher income setting, an influx of funds for non-salary expenses at schools can be very significant, where there were previously very little funds for such expenses prior to SBM (Santibañez et al., 2014). Increased money, however, does not necessarily translate into educational outcomes (Carr-Hill et al., 2016).

Another important factor for success of SBM reforms is the time passed since the implementation of the reform. David (1989) has shown that SBM takes five to ten years to show

results, as the staff needs time to acquire new knowledge and skills and to put them into practice. Other, more recent estimates cite five years for organizational changes to take effect and eight years until educational outcomes improve (Bruns et al., 2012; Car-Hill et al., 2016). This challenges many of the studies which attempted to find improvements in school outcomes, but were conducted less than five years since implementation of SBM reforms.

Findings on the influence of Parental involvement on SBM

The idea of involving parents in decision making in schools appears in most SBM models (but not in all) and is a contentious idea. In order for it to succeed, and not to become a struggle between parents and the school, certain steps need to be followed (Noy, 1992). Some see parental involvement in decision making as a struggle between competing and opposing interests and suggest that parents make demands and withhold information from other stakeholders in order to better further parents' interests (Brown & Hunter, 1998). Others find that such a view undermines the ability of SBM to succeed; parental participation may in fact harm schools and cause a decrease in teacher effort when parents are not viewed as being 'on the same side' (Beasly & Huillery, 2014). Bryk (1998) found that adversarial politics in schools inhibit school restructuring, thus hindering change and improvement. While others yet find that SBM itself can lead to such adversarial relations between schools and parents (Nir & Ben-Ami, 2005).

However, Carr-Hill et al.'s (2016) meta-analysis finds that parental involvement in decision making is a key element to the success of SBM reforms. Leithwood & Menzies (1998) explain that community control SBM, shifting the locus of control to parents, is the form of SBM most likely to bring change to the school, as it adds new views, that were previously unrepresented, to the decision-making process. This does not, however, guarantee the quality of decision making, as it has been found that involving uneducated parents from disadvantaged communities in decision making has not improved school outcomes (Carr-Hill et al., 2016). For example, in Niger, parents did not necessarily have the knowledge required to use the resources allocated to them in order to improve the school (Beasly & Huillery, 2014). However, Bryk (1998) argues that even parents from poor communities can take control of their circumstances and improve them, as was the case in the Chicago reform. Santibañez et al. (2014) have found that parental involvement in school decision making is a predictor of academic success, and that involvement of all stakeholders at a school improves the efficiency of decision making. Furthermore, relations between stakeholders and schools are expected to increase their feelings of 'ownership' and commitment to the school. However, little evidence of this has been found in practice (ibid).

Findings on the effects of teacher participation in SBM schools

Models of SBM that shift decision making to professional staff have been found to be the most effective in improving student outcomes, as teachers are the actors with the most knowledge relevant to improving teaching practices (Leithwood & Menzies, 1998), but this model rarely occurs. This is because, firstly, many staff members are uninterested in being involved in decision making at schools and secondly, because principals do not permit decisions to be made if they do not agree with them, as principals are the ones who will be held accountable for such decisions (Brown, 1990).

In Queensland, teachers have been reluctant to accept new responsibilities, while principals have complained of increased workloads in the early years of SBM implementation there (Cranston, 2000). Therefore, David (1989) calls for salary levels to change to reflect the value attached to the new roles of principals and teachers.

In Israel, teacher participation did not improve student outcomes, but it did increase feelings of empowerment and commitment of teachers to the school. However, commitment to student learning was not improved, meaning that commitment to the organization is not equal to commitment to learning (Gaziel, 2009).

Finally, Brown (1990) raises the question of what "teacher-based management" would even look like, as models of SBM have rarely devolved significant decision making to teachers.

School Based Management in Israel: Research Evidence

Most of the body of research on SBM in Israel refers to the first wave of SBM and was written prior to the second wave, which began in 2012. Very little has been written about the second wave. To date, RAMA has published a series of three studies on the second wave of SBM, ordered by the MOE, and a two-part study, also ordered by the MOE has been written by Ben-David & others (Ben-David et al. 2015; Bogler et al., 2016).

Studies conducted on the first wave of SBM in Israel

RAMA studies of the first wave of SBM in Israel

RAMA conducted a series of four studies on the first wave of SBM. The findings of these studies are described in **table 2** (Nir & Piro, 2007).

Table 2- RAMA studies of the 1st wave of SBM in Israel

Study	Sample group	Time since SBM implementation	indications of success	shortcomings
1st study	9 schools	1 year	Schools understand the principles of SBM and are satisfied with the program and their newly acquired independence.	No significant difference between the way SBM and non-SBM schools operate.
2nd study	6 schools	2nd year	Pedagogical changes have occurred, clear objectives defined and the curriculum modified to achieve them. Schools have more authority in areas of personnel and budgeting. Principals unwilling to go back even in the face of resource shortages.	Variances in the levels of transparency and authority given by the LEAs
3rd study	Schools in Jerusalem			Schools encounter unexpected difficulties, with no role models to follow. Concerns over increased workloads and the possibility of the LEA shirking its responsibilities.
4th study	**Sample:** 44 schools **Control:** 109 schools	**Sample**: 3rd year **Control**: 1st year	Both groups have defined goals.	Veteran SBM teachers still unaware of school's resources. No significant changes in the way school works. Schools' organizational starting point is the main factor for success of SBM.

Decentralization, responsibility and authority

Brown (1990) differentiates between political decentralization and organizational decentralization. In organizational decentralization, the central office devolves some decision making to lower levels, but can recentralize through an administrative decision. Autonomy that has been given can always be taken away again. Such decentralization leaves the principal accountable to the higher levels in the hierarchy. In contrast, political decentralization gives some measure of autonomy to the school or school board, and recentralization cannot be done without legislative action. In such a case, the principal is accountable to the school board, or some other form of local community leadership, which usually has the power to hire and fire the principal. Similarly, Nir says, in reference to Israeli SBM, that autonomy that is 'given' is not real autonomy, because it is based on the good will of the giver, and not intrinsic to the school (Nir 2001; Nir 2009b). To date, there is no legislative basis for SBM in Israel. The MOE has proposed legislation regarding SBM, but the legislation has yet to pass (Local Authorities Bill)[9]. The absence of a legislative basis for Israeli SBM leaves the decentralization process chaotic and vague, without clear boundaries of authority and responsibility (Grinshtain & Gibton, 2011).

Studies on Israeli SBM find discrepancies between the authority given to schools and the responsibility thrust upon them and between the amount of autonomy declared by the MOE and the actual autonomy given to schools (Nir & Piro, 2007; Nir, 2009b, Nir et al., 2016). This is dubbed the "Centralization trap", namely that in a highly centralized system, such as the Israeli one, it is extremely difficult to enact true decentralization, as the government tends to retain control over the education system, despite declarations to the contrary, by means such as setting goals at the national level (Nir & Piro, 2007; Nir, 2009b, Nir et al., 2016). Wohlstetter & Odden (1992) actually suggest having outcome goals be set at the top of the system. Inbar (2009) also describes the Israeli education system as highly centralized, and stresses that the devolvement of authority to schools does not necessarily make them autonomous. Grinshtain & Gibton (2011) confirm that principals feel a discrepancy between their authority and their responsibility. However, they find that non-SBM principals feel this discrepancy more acutely than SBM principals. The absence of a legal basis for Israeli SBM strengthens this claim regarding the discrepancy between the principals' responsibility and their authority, which was originally made regarding the first wave of SBM, and puts both waves of Israeli SBM in the category of "organizational decentralization".

The discrepancy between declared autonomy and actual authority is not unique to Israel. For example, in El-Salvador, school management committees were officially given authority, but were found to have control over only seven of twenty-nine administrative activities that were checked (Santibañez et. al, 2014).

[9] The series of repeat-elections in Israel in 2019-2020 cleared all unpassed legislation, so that the SBM legislation will have to be re-proposed if it is to become law.

Outcomes and consequences of the first wave of SBM in Israel

Nir (2001) conducted a study on SBM schools in Jerusalem and found no positive changes in school measures, while there were complaints by staff of heavier workloads. However, the study encompasses only one city (i.e. one LEA) and was conducted only 1-2 years into the first wave of SBM, while results in school outcomes are expected only much later (Bruns et al., 2012; Car-Hill et al., 2016).

Nir & Piro (2007) conducted a review of Israeli SBM and organized their findings according to three focuses. Under the administrative focus, they find that the leadership style of the principal is central to the success of SBM. Principals report an increase in their workload in this study as well. However, principals are reluctant to delegate authority to teachers. Teachers have received more resources, but do not have the autonomy to use them as they see fit. Meanwhile, principals' preoccupation with administrative issues takes away from their ability to act also as pedagogical leaders. Finally, SBM has brought new resources to schools and has improved efficiency, but the added resources have been used mainly for infrastructure rather than pedagogy. The technical focus points to improved morale, which later decreases, increased competition between staff members and an increase in staff workloads. From an institutional focus, some studies point to improved relations between parents and schools, while others point to increased pressure and conflict between parents and schools. While parents support SBM, it leads to increased pressure by parents on teachers, greater restrictions on parents' involvement, and increased willingness of parents to act militantly towards schools.

Studies conducted on the second wave of SBM in Israel

The second wave of SBM was announced in 2011, after the initial interest in studies of SBM had died down, and to date very little has been written about the second wave of SBM in Israel. RAMA conducted a series of three studies for the MOE, and a further two-part study was conducted at the request of the MOE (Ben David et al., 2015, Bogler et al., 2016).

Additionally, in 2017, the Knesset Education, Culture and Sport Committee ordered a paper on School Based Management from the Knesset research and information center, prior to discussing the legislation on SBM. The paper, which was based on the SBM Directorate data, pointed to a worrying disparity between schools from different socio-economic levels in their access to funds, in the amounts they raised and in the amounts spent (Vininger, 2017).

RAMA studies of the second wave of SBM in Israel

RAMA conducted a series of three studies on the second wave of SBM.

The first study gathered qualitative data regarding views of school staffs about SBM after one year of implementation (RAMA, 2013). The study found a general positive view of SBM,

alongside criticism of some aspects of the program. The study pointed to five key elements that need to be addressed:

1. Discrepancies between the declared objectives and the observed objectives of the program.
2. Creating a relationship of trust and cooperation between the triangle of actors: the school, the LEA and the MOE.
3. Changes in the roles of the various actors and the interactions between them.
4. How to supervise and monitor schools without infringing on their autonomy.
5. How to avoid inadvertently increasing inequality within the school system.

The second RAMA study (RAMA, 2014) was conducted after two years of implementation and reviewed five aspects of the SBM reform:

1. **Structural-organizational aspects of SBM enactment**. In this section, RAMA found that schools have remained somewhat dependent on their LEAs for some services, such as maintenance. Almost all schools reported either an improvement or no change in the relationship of the school and the LEA. However, in many cases, LEAs are involved in decision making in schools, often infringing on the school's declared autonomy. This is more prevalent in larger LEAs, which are typically more organized but also more centralized. Furthermore, many principals raised concerns over funds not being transferred by the LEAs to the schools, and stated that the MOE's insistence and monitoring of this issue helped to improve LEA-school relations.

   In regard to another important actor in the system, a majority of principals reported no change in their relationships with their superintendents, and many superintendents expressed their un-involvement in the SBM system.

   A large percentage of principals reported that no new participants had joined the decision-making process as a result of SBM. A majority reported that there had been no change in the relationship of the school with parents.

2. **Pedagogical and administrative aspects**. Many schools have reported that they do not feel they have enough pedagogical autonomy. Minority schools report a feeling of significant potential for change, brought with the influx of new funds, although this change has not come about yet, and funds are being used for improving physical infrastructure. There is no expectation of improvement in student outcomes at this stage, but rather changes in educational and instructional practices that may later lead to such improvement. 60% of principals reported an increase in their workloads as a result of SBM. 70% of teachers in schools that joined SBM in the second wave and 61% in schools that joined in the first wave report no change in their jobs, meaning that change has remained localized to the administrative staff of the school and has not spread to the teaching staff yet.

3. **Economic and Operational aspects.** RAMA finds that in the second year of implementation of SBM, more LEAs have made their funding of schools differential, in order to support the needs of smaller schools.
   With regard to schools' ability to generate more funds by renting out classroom space, they find that in some towns, the LEAs do not allow the schools to do so. Many schools stated that they do not feel that they or the LEAs are being effectively monitored and RAMA raise questions over the ability of the MOE to enforce consequences when needed.

4. **Training for SBM.** A fourth section reviews schools' positions regarding the training that was given to principals, school secretaries and other staff members, and its adequateness.

5. **Satisfaction with the reform.** RAMA finds high levels of satisfaction with the financial model of SBM, the organizational structure model, the pedagogical model, general satisfaction from the reform and high expectations for improvement. However, RAMA also finds concerns regarding some aspects of the reform.

The third study (RAMA, 2016) examined attitudes among schools towards SBM in their second and third years of SBM. The study found rising levels of support and optimism regarding SBM as time progresses. Positive attitudes were especially high among minority populations, presumably because SBM represented a bigger change for such communities and brought in more significant resources. However, of the five basic principles that are at the base of the Israeli SBM program, RAMA finds that only the first two have been successfully integrated in schools. The principles are: (a) internal locus of control; (b) decentralization and delegation of authority; (c) accountability; (d) enhancement of relations between school and the community; and (e) school as a learning organization[10]. Regarding the accountability principle, RAMA finds some success, but the school committees, the main mechanism of the accountability principle, have only partially been integrated.

Qualitative study of Israeli SBM schools

A qualitative two-part study of four second-wave SBM schools found that both the reforms enacted for furthering school autonomy and the reforms for incorporating 21st century skills in the Israeli education system fall far short of what was planned and declared (Ben-David et al., 2015). Furthermore, SBM is not viewed as a means for enabling progressive pedagogies and schools do not necessarily even use them, but rather have strengthened practices that were already in effect prior to SBM. SBM puts resources at the disposal of schools, but does not dictate what they will be used for (Bogler et al., 2016). They also find that in all four schools, the

[10] The study did not examine the sixth principle- Information based management of schools' resources.

principal is viewed as highly authoritative, yet teachers also find they have been given some measure of autonomy.

Criticisms of SBM

SBM is not free of criticism, and some of the arguments against SBM have already appeared in this work. The arguments can be roughly divided into three groups: arguments in regard to the school's relationship with the central government; the internal relationships within the school and how it operates; and the way schools receive and use resources.

Criticisms of SBM: The relationship of school and central government

A central claim against SBM is that in highly centralized systems, the government does not actually "mean it" when decentralizing some decision making, and that decentralization in such systems is in fact a means of maintaining control from afar, through indirect means, while putting up appearances of educational autonomy (Daun, 2009). Grinshtain & Gibton (2011) dub this "Governing without government", which they define as the means used in order to oversee activities which are supposed to lead to a specific range of outcomes, which stand up to predetermined social standards. Nir (2001) views this as an imaginary form of autonomy, as the state of affairs in which autonomy needs to be given by the central government points to the fact that the actual power is not in the hands of schools at all, but rather is still held by the central government. Furthermore, if it so chooses, the central government can always recentralize (Nir, 2009a). The claim regarding responsibility without authority (Nir & Piro, 2007; Nir, 2009b, Nir et al., 2016), mentioned in the previous section is another facet of this state of affairs.

Nir (2009a) suggests that shifting decision making to the local level also allows shifting blame for shortcomings of the educational system from the central government to the local level.

Finally, there is doubt as to whether autonomous schools actually serve the "broader public interest", as the education system is a means for socialization and for instilling national values, and decentralization may mean giving up on this function. Many countries have therefore centralized curriculum, while decentralizing other areas of decision making (Sackney & Dibski, 1994). Nir (2009a) is also wary of the effects of decentralization on national socialization efforts, especially in regard to minority communities.

Criticisms of SBM: The internal relationships within school and how it operates

Sackney & Dibski (1994) find, that quite often, SBM replaces one "dictator" for another, and centers power with the principal. Centering leadership with the principal will not necessarily lead to success, as success depends on the existing relationships of the principal with the staff, and on a relationship of trust with parents and other actors. Such relationships are pre-existing and are not a function of SBM. If they do not exist, SBM will likely fail.

They also find that principals under SBM tend to devote most of their attention to administrative tasks, rather than pedagogical ones, as has also been found by Lindberg & Vanyushyn (2013).

Meanwhile, SBM is meant to bring about change, but current research suggests that school staff continue to behave in the same way and do not adopt new practices, despite the autonomy given them (Sakcney & Dibski, 1994).

Finally, SBM is intended to improve outcomes and increase productivity of schools, but most decisions made by educators are made in a vacuum of ignorance regarding the outcomes of their decisions for student learning. This criticism is not a general criticism of SBM, but rather of a specific model, as many SBM models do include an emphasis on knowledge-based decision making (for example, see Bruns et al., 2012, as well as the Israeli model).

Criticisms of SBM: The way schools receive and use resources

SBM models often include open enrollment, coupled with resource allocation based on the number of students, as accountability mechanisms. This means that successful schools will become more successful and vice versa, exacerbating inequality between schools from weaker and stronger communities (Sackney & Dibski, 1994). A school 'perishing' from lack of funding is seemingly against the public interest of all students receiving equal and adequate education. However, the city of Jerusalem has enacted a model in the city as a local policy, in which failing schools are taken over by successful schools, thus rewarding and spreading excellence and cutting short unsuccessful practices (Barkat, N., 17/3/2019).

SBM also often allows fundraising, something which schools in stronger communities are more successful at doing, further increasing inequality. Furthermore, there is fear of increasing inequality between schools that are able to leverage their newly acquired autonomy to enact change and improve outcomes, and schools that are unable to do so (Sackney & Dibski, 1994). This fear exists especially in regard to small schools, which are likely to have financial difficulties unique to smaller organizations and are unable to fund things that larger communities can afford (see for example- RAMA, 2016). However, small schools have been found to be more likely to pursue a systemic approach to improvement (Bryk, 1998), and small, tight-knit teaching staffs, typical of

small schools, have been found to benefit more from devolving personnel decision making (Carr-Hill et al., 2016).

Finally, under SBM, financial planning and allocation of funds happen before school priorities have been decided and school plans have been drawn up (Sackney & Dibski, 1994). Brown (1990) calls this "Supply side education", meaning that schools enact the practices that they are able to, based on their available funding, rather than the practices they need.

Main failings of research on SBM

The existing research on SBM has a number of failings. First, is the attempt to generalize about unequal reforms. Each SBM reform is different and includes a unique mixture of the three main areas of autonomy: budgeting, curriculum and personnel (Wohlstetter & Odden, 1992). The specifics of a reform matter as shown by Carr-Hill et al. (2016) and Pradhan et al. (2011), meaning that comparing reforms without taking into account the different specifics and different accountability mechanisms will necessarily lead to mixed results. The existing research examines very different versions of SBM (Malen et al., 1990). Furthermore, the definition of SBM is too broad, so that even minimal decentralization is dubbed SBM, skewing the results of research into such programs' success (Wohlstetter & Odden, 1992). Most research to date has compared SBM to no SBM, instead of comparing different models of the reform (Carr-Hill et al., 2016).

Secondly, many studies of SBM simply refer to whether a school has officially switched to SBM, but not to whether SBM values and mechanisms have actually been instilled and installed in the school. Santibañez (2007) refers to this distinction as De facto SBM as opposed to De jure SBM. Therefore, studies finding failings in SBM reforms could actually be pointing to a failure in assimilating the reform, rather than a failure in the reform structure itself and its basic assumptions.

Thirdly, many studies on SBM have been qualitative descriptions of a small number of schools and do not have clear research questions and hypotheses about the process of change and the expected results of SBM (Robertson & Briggs, 1998).

Finally, research on SBM has utilized very little systematic data on what actually goes on in an SBM school, perhaps because systematic data representing the processes occurring in schools have been unavailable, leaving studies to be based mainly on outcome data, which are often more easily acquired.

The research model

Research questions

As we have seen, much of the previous research into SBM in Israel has focused either on organizational aspects of SBM, or on the relationship between a school being part of the SBM program and its outcomes, but not both. Simply being included in the SBM program is not enough to serve as an independent variable, as it can lead to findings of SBM not living up to its expectations, without differentiating between failure of the model and failure of the implementation and between de-jure autonomy and de-facto autonomy (Santibañez, 2007). If we were to find that a certain component of SBM improves outcomes, but that this component was not found to be present in most SBM schools, this would be a failure of implementation, rather than a failing of the SBM model.

This study suggests two main contributions. First, this study unfolds the relationships both between de-jure SBM and the existence of de-facto SBM behaviors, and between the existence of these behaviors and school outcomes. Secondly, this study utilizes systematic data of schools' income and spending, which has not been used before, alongside school outcomes and climate measures. This is done in regard to the second wave of SBM in Israel which has been left understudied.

The first focus of this paper will be on the question:

> **What are the relationships between the various 'moving parts' of School Based Management in Israel?**

Not all of the 'moving parts' of school based management are readily measurable or even seen. This paper utilizes data that have been already collected and that were readily available. In order to get a picture that is as complete as possible, without asking schools to fill in yet another survey that would be ignored by most schools, this approach was deemed the best option. Therefore, using the data that are available, the 'moving parts' that this study refers to can be more specifically defined:

> **What are the relationships between a school's background characteristics, its income and spending, its organizational culture and school outcomes?**

Finally, the data that are most readily available to the SBM directorate are the schools' financial data. SBM Schools are required to transmit a quarterly report from their bookkeeping software to the SBM directorate, which includes cumulative information on the breakdown of the schools' income and expenses. This allows the directorate to ensure that they have received all of the funds that they deserve, on the one hand, and to collect data on the workings of the school and to make sure that they are functioning properly, on the other hand. As opposed to outcome and climate data, which are collected from schools only once in three years, schools' income and spending information is readily available for approximately 80% of state elementary

schools every quarter. If the SBM financial data are found to be connected to organizational culture and outcomes, it is plausible that it could be used to evaluate a school's situation, even when organizational and outcome data are unavailable. Therefore, a second research question is:

What can we learn regarding the organizational changes in a school and its assimilation of SBM practices from examining its income and spending information?

Methodology

This study utilizes a model similar to that used by Bryk (1998), which assumes a multi-stage process, with each stage including a number of measured variables. Bryk's model examines the connections between each stage, by testing the correlations between the variables in each stage with those of the next, as well as their connections with pre-existing characteristics of the schools. While Bryk's methodology fits nicely with the amount and grouping of variables available, the stages in his model are designed upon the Chicago reform and not Israeli SBM. These stages are: establishment of strong democracy in schools, systemic restructuring and innovative instruction in schools. I therefore use a four-stage model, loosely based on the work of Robertson & Briggs (1998), who posited that SBM is a structural change to schools, which is dependent on contextual circumstances. These structural changes should lead to a reshaping of the decision-making process in schools, which in turn should lead to organizational changes and the creation of an effective school culture. These two changes should lead to a behavioral change of the various actors in the school, which should in turn lead to school improvement[11].

Robertson & Briggs' multi-stage model is similar to the premise of Israeli SBM enacting change in a school's outcomes by changing its organizational culture. SBM does not lead directly to educational student outcomes, but rather to organizational changes, which in turn set the stage for student outcomes to be improved (Carr-Hill et al., 2016).

Robertson & Briggs' model starts with structural changes. The structural changes in the Israeli SBM model are the granting of a certain measure of autonomy to schools. As has been already pointed out, de-jure autonomy is not enough. On the other hand, as will be detailed in the next section, direct information on de-facto autonomy is not available. Only indirect indicators of the existence of de-facto autonomy are available, and only from the perspective of the income and spending information of schools, as well as information collected regarding local education authorities' (LEAs) adherence to MOE guidlines. Therefore, I name this stage "financial autonomy indicators".

[11] Robertson & Briggs' model uses a dichotomous distinction of whether or not each stage in the model occurred, which is not possible when using numerous variables for each stage. Therefore their methodology would not be relevant for this study.

The next steps in Robertson & Briggs' model include the reshaping of the decision-making process in schools, organizational changes and creation of an effective school culture. These steps will be represented in this model as one stage: "organizational culture"[12].

Organizational culture leads to behavioral change. The existing data include information on behavioral change in one area only, namely school spending, which will be called "expense behavior change".

Finally, the last stage in the model is school improvement, or "school outcomes".

Bryk's model takes into account background information on schools. Carr-Hill et al. (2016) suggest background variables that could be taken into account: baseline ability, gender, socio-economic status, grade level, size of school, different kinds of teachers, urban and rural areas, parental education, level of community participation, type of decisions allowed for community participation (managerial or pedagogical), other national reforms implemented at the same time, incorporation of a grant, incorporation of training, incorporation of accountability mechanisms, manner of committee selection, relationship of the school with the community, the implementation body (whether governmental or an NGO), the level of compliance and the time elapsed since implementing the reform. My model includes six background variables, which will be described in more detail in the next section: sector, SBM year, SBM wave, socio-economic decile, school size and principal seniority.

The data used for this research

This research utilizes data from two main sources, the SBM directorate and the MOE outcome data, formulated by RAMA. Data from the SBM directorate include schools' 4th quarter financial reports from the years 2015 to 2018; documentation of infringements committed by LEAs and the SBM directorate's responses to these infringements, documented by the author of this work when he was employed by the directorate; and the original allocations of funds to schools per LEA[13].

[12] This stage is deliberately missing the term "change", as there is very little information of change available, but rather only the current state of certain organizational culture aspects, as will be further explained in the next section.

[13] As part of the process of joining SBM, each LEA is assigned a financial advisor, who is charged with obtaining documentation of the LEA's expenses per school, prior to SBM. The advisor must then prepare the annual allocation for the schools in the LEA, which is broken down into a list of standard expenses, per student. The allocation also includes the two payments made by the MOE to schools in SBM. The allocation from the LEA must not fall short of what the LEA spent on the school per-capita prior to SBM, and the total allocation also must not fall short of a minimum allocation set by the SBM directorate. The allocation is updated every year by the LEA on a dedicated website, based on changes in the rates of utilities and the cost of living.

MOE outcome data include the MEITZAV exam scores per school for the years 2011, 2012, 2013, [14]2015, 2016, 2017 and 2018[15] in 5th grade[16]. Alongside the MEITZAV, this research also used the school climate grades for the years 2011 to 2018[17].

The data has been grouped into four groups of variables, corresponding to the four stages in the research model, as well as a fifth group of background variables.

Financial autonomy indicator variables

The first stage in the model refers to the level of autonomy of the school. This variable does not measure de-jure autonomy as is reflected in the school's joining the SBM reform, but rather whether the school actually utilizes its official autonomy. To ascertain whether or not a school has de-facto autonomy, we could ask:

- Does the school have the means to follow up on its official autonomy: pedagogical, organizational and financial?
- Does the school have sufficient funds to enact changes to its pedagogy, or is it just "fighting to survive" and pay the bills?
- Is the LEA an enabling partner, or a hindering agent to the school? The LEA has traditionally had a hierarchical relationship with its schools, and has the ability to support them in their new position, or hinder them greatly, either by withholding funds, refraining from giving the school access to infrastructure that it needs (such as the means to hire support staff, which can only be done legally through the LEA), or by piling on expenses now that the school has a budget and funds of its own.
- Has the MOE superintendent changed his or her role in relation to the school from an inspecting role to a supporting and guiding role in order to fit the school's new autonomy?

Data do not exist for many of these questions. However, use of the SBM directorate's data enables the creation of three variables that can be indicators of the existence or non-existence of de-facto autonomy, from the financial perspective, at schools:

1. Free funds- This variable is equal to the school's per-capita income, minus the school's per-capita expenses for utilities (electric, water and phone bills, as well as gas for heating where relevant). The variable represents the per-capita funds that are available for a school to utilize according to its own priorities, assuming that there is very little flexibility in the amount a school

[14] The exams did not take place in the year 2014.
[15] Only partial results were published for the year 2018, and they did not include exam scores for math and English language. The MOE announced that it would no longer be publishing exam scores after this.
[16] The MEITZAV exam is taken in the 5th grade and in the 8th grade. However, only a small minority of elementary schools in Israel continue to the 8th grade, while most elementary schools include grades 1 to 6 only.
[17] The MOE did publish results for the climate questionnaire in 2014, even though the MEITZAV did not take place that year.

spends on utilities. If a school has very few such available funds, its de-jure financial autonomy will not matter very much, as it will be unable to enact pedagogical changes that require funding. Thus, this variable answers the second question posed above.

2. Fundraising- Schools under Israeli SBM receive an allocation jointly from the MOE and the LEA, which is planned to suffice for all of its expenses, based on the LEA's expenses prior to SBM, with additional funds from the MOE meant to enable schools to invest in educational programs. Additionally, SBM schools are allowed to raise funds from other sources, such as renting out classroom space after school hours, hosting various fundraising events, and other initiatives. As these are funds that were not part of a school's allocation, they should be available to the school for pedagogical programming, or any other changes the school would like to make. This variable is similar to the "Free Funds" variable, but while "Free funds" may still include some upkeep that is not utility related, "Fundraising" should be completely discretionary. Secondly, the ability of a school to raise funds greatly depends on the LEA's cooperation. As the main source of fundraising is renting out classroom space after school hours, which can only be done via the LEA, which is the owner of the school building, the existence or non-existence of such funds can indicate whether the LEA supports this or obstructs it. The variable is calculated as a per-capita sum.
3. Hindrance- There is no systematic data regarding an LEA's hindrance or non-hindrance of SBM schools. No information exists, for example, on whether or not schools are able to hire support staff through their LEAs[18], or are able to rent out their classroom space after hours for extra income[19]. However, the Directorate does collect information regarding infringements by the LEA upon the memorandum of understanding, most often cases of LEAs withholding funds that should have been sent to the schools. In such cases, the Directorate, after verifying the facts through the district SBM superintendent, may send a letter to the LEA, demanding that it fulfill its undertakings according to the memorandum of understanding, with the possibility of financial sanctions if it does not. All such correspondence is documented and has served to form this variable. For this variable, each LEA (and therefore each school within that LEA) received a grade from 0 to 3, with 3 being a definite and serious hindrance to the school's autonomy, i.e. cases in which sanctions were imposed on the LEA, and 0 being no known hindrance to the school[20].

   It is important to note that this variable is susceptible to inaccuracies. Firstly, it is based on the information that was known to the Directorate, but leaves out what was not known. An LEA may have caused significant hindrance to its schools, without the Directorate being aware of it, or without being aware of the severity of it. Secondly, the information is based on the subjective perception by the Directorate of the severity of the infringement upon the schools' autonomy.

[18] State schools in Israel are not separate legal entities, but rather jointly owned by the State and the LEA, and are therefore unable to hire staff on their own. All teaching staff members are MOE employees, while all support staff are LEA employees.

[19] School buildings are owned by the LEAs.

[20] The cases in between are: 2- the Directorate documented an infringement which resulted in a letter being sent to the LEA, but no sanctions were imposed, as the issue was resolved; 1- an infringement was suspected, but the issue was resolved without the Directorate warning the LEA of possible sanctions.

Cases that were perceived as severe were taken care of by correspondence, while cases that were perceived as less severe may have been taken care of verbally, or even ignored. However, only cases that were taken care of by correspondence were documented and therefore are taken into account in this variable. Consequently, this variable should be treated carefully.

Organizational culture variables

School autonomy is expected to allow organizational change. In the Israeli context, we hope to find shifts in the organizational culture of the school to fit the six declared principles of Israeli SBM: an internal locus of control; decentralization and delegation of authority and empowerment; accountability; development of schools' relations with their surroundings and the community; school as a learning organization; information-based management of schools' resources (Ministry of Education, 2014).

Questions we should ask to ascertain whether this organizational shift has occurred, are based on the six principles of the Israeli SBM reform, and include[21]:

- Does the school have a clear vision and objectives, a cohesive plan, and does the plan fit the objectives?
- Has SBM allowed teachers to be more active? Are they more involved in setting the school plan? Do they have a say in how the school is run, what the school's resources are used for, how and what they teach? Or has the SBM reform remained enclosed within the principal's office?
- Does the school have an internal learning process? Does it evaluate itself regularly, checking the plan against outcomes?
- Is the staff accountable for the school outcomes? What accountability mechanisms exist in the school, and are they effective?
- Has the decision-making process been extended to include new actors from the community, and most importantly parents? Are the parents viewed as important partners whose involvement is paramount to the success of the school, or as adversaries to be placated? Similarly, is the LEA seen as a supporting partner, or just as a source of funds that needs to be appeased?
- Are decisions in school based on information and data? Does the staff collect data and do the staff members know how to utilize it?

Data regarding school organizational culture exist from the school climate questionnaire on three main issues: parental involvement, teacher participation and data-based decision making. However, most of the questions in this section were included in the climate questionnaire for only a short period (two to four years), and since each school goes through the MEITZAV and school climate exams only once every three years, there is only one data point for most schools. Therefore, it is not possible to calculate the amount of change in these indices (delta), only to

[21] Based on the breakdown of the six principles as they appear in Ministry of Education, 2014.

ascertain the existing level for each index. While it would have been helpful to know how much change has occurred in these areas as a result of SBM, it is still possible to examine the correlations and regressions between the existing levels of these indices and the other sets of variables. We can also measure whether these indices are higher in schools that have operated under SBM for longer.

Information regarding other organizational culture issues is not available.

Ten organizational culture variables were chosen from the existing school-climate data[22]:

Variables regarding parental involvement:

1. Participation of parents in school (Organizational Culture Question 1- OCQ1) includes the statements (teacher responses):
   - The school regularly informs the parents about the goings-on at school.
   - The parents have an open door at school for any question, problem or complaint that comes up.
   - Most of the parents are in touch with the class teacher regularly by phone, email, text-message etc. in order to get updated regarding their child's situation.
   - The teachers in school consult with the parents regarding ways to improve their child's academic progress.
   - You regularly update the parents in your class about the academic situation of their children (in addition to parent-teacher meetings).
   - You regularly update the parents in your class about the social situation of their children (in addition to parent-teacher meetings).
   - Parents of students in the school are involved in the school vision.
   - Parents of students in the school are involved in the curriculum.
   - Parents of students in the school are involved in the educational-social program (such as the programming of school trips, ceremonies, initiatives for social activities, etc.).
2. Parents of students in the school are involved in the school vision (OCQ2, teacher response, individual statement taken as a separate variable).
3. Parents of students in the school are involved in the curriculum (OCQ3, teacher response, individual statement taken as a separate variable).
4. Parents of students in the school are involved in the educational-social program (such as the programming of school trips, ceremonies, initiatives for social activities, etc.) (OCQ4, teacher response, individual statement taken as a separate variable).

Variables regarding increased teacher-participation in decision making at school:

5. School teamwork (OCQ5), includes the statements (teacher responses):

[22] The following is translated from the original Hebrew.

- Systematic and structured meetings are held at school in order to examine teaching and learning achievements.
- Teachers at school make sure to share knowledge that is accumulated at trainings with their teaching colleagues.
- Staff meetings are documented, and the summary is distributed to all the teachers in the staff.
- Regular meetings are held at school for feedback regarding various events.
- The teachers in the subject team plan the evaluation tools (assignments, exams) collaboratively.
- Teachers in the subject team share programs and tools they have developed with their colleagues.
- The teachers in the subject team discuss teaching strategies that stem from students' mistakes.

6. Teacher meetings to discuss the school activity plan have taken place this year (OCQ6, teacher response, individual statement taken as a separate variable).
7. Autonomous space of the teacher in his/her work (OCQ10), includes the statement (teacher response):
   - You have autonomy in your work, i.e., the possibility to choose the ways of teaching, evaluating, etc.

Variables regarding data-based decision making at school:

8. Data regarding ways of teaching and learning in school have been presented to the teaching staff this year (OCQ7, teacher response, individual statement taken as a separate variable).
9. You have taken part this year in a data-based discussion (data from exams or other evaluation activities) that discussed strengths and weaknesses of the school plan (OCQ8, teacher response, individual statement taken as a separate variable).
10. A discussion examining the connection between data collected (internal and/or external) and the school goals has taken place in the last two years (OCQ9, teacher response, individual statement taken as a separate variable).

Expense behavior change variables

Behavioral change at school comes hand in hand with organizational change. For this section, we should ask, how is the school behaving differently? What practices have changed? What has it stopped doing now that the LEA and MOE are no longer dictating how the school should be run?

Very little data are available regarding behavior changes of the school. What is available comes from the school's financial data, namely changes in what the school is spending its money on, based on the school's own priorities, rather than the priorities of the LEA, which was responsible for all of the school's expenses prior to SBM.

I have constructed three variables based on the expenditure data collected from the schools:

1. Expense mix change- The expenses of every school are categorized into one of 30 odd categories, which can be grouped roughly into four groups:
   i. Utilities- including electric; water; telephone & internet; and heating gas bills.
   ii. Administration- including postal & delivery services; refreshments & on-duty travel; bank & credit commissions; and accounting services.
   iii. Maintenance & equipment- including maintenance of the school building; maintenance & renewal of printers, scanners, faxes and photocopy machines; maintenance & renewal of air conditioners and heaters; maintenance & renewal of staff computers; maintenance & renewal of furnishing; gardening; photocopying; educational materials; cleaning materials; library books & bookcases; first-aid materials; physical education equipment; office equipment.
   iv. Pedagogical expenses- including activities; technology & computerization; training & instruction for the staff; pedagogical support staff & instructors.

   The data regarding pre-SBM per-capita expenditure for each of these categories exist in the original allocation files. Some of the data exist per school, while some exist per LEA. All of the pre-SBM data were coded into the four categories, in order to get the percentage of each of the four categories from the entire expenditure. Next, the current expenditures were also coded into the four categories, and their percentages from the entire expenditure were retrieved. The variable is comprised of the sum of the absolute deltas of each of the four categories, giving an index ranging from 0 to 2, with 0 representing no change whatsoever in the weight of each expense category, and 2 representing a complete change of expenditures.

   There were difficulties in constructing this variable. Many LEAs did not keep detailed records of their expenses prior to SBM, forcing the Directorate staff to use estimations of the breakdowns into categories, as well as breakdowns into separate schools. Information of utility expenses was generally readily available, but information of other expenses often was not. Almost all schools had maintenance expenses documented prior to SBM, while many schools from weaker socio-economic backgrounds did not have administration or pedagogical expenses documented. The absence of these two categories of expenses may have skewed the “Expense mix change” grade upwards in these schools, if these two categories did exist but were undocumented.

   In order to avoid inaccuracies stemming from the fact that some of the pre-SBM expenditure data were from documented expenses, while some came from estimates, all the schools were marked either as “documented” data or “estimated data”. A set of correlations was made, broken down into these two data-type categories. The correlations were found to be similar in strength. Therefore, the two types of pre-SBM expenditure data were used together for the next stages of the study.

2. Increase in educational expenses- This variable equals the current annual per capita expenditure of a school on pedagogical expenses minus the annual per capita expenditure prior to SBM (an absolute per capita sum).

3. Increase in total expenses- This variable equals the current annual per capita total expenditure as a percentage of the annual total per capita expenditure prior to SBM (a percentage).

All three variables measure similar things. The "Increase in educational expenses" variable gives us a sense of a school's emphasis on pedagogical change. The "Increase in total expenses" gives us a sense of how much change has occurred in the availability of resources in the school's efforts to fulfil its goals. The "Expense-mix-change" variable gives us a sense of how much a school's priorities have changed under SBM, as seen through the lens of a school's expenditure.

Outcome variables

As Wohlstetter & Odden (1992) have prescribed, system-wide goals should be set at the top of the system. The outcomes that are measured by the central office are the outcomes that are expected of schools in the system. The act of measuring them itself is what turns them into goals for schools to fulfil. Therefore, it is not difficult to find measurements of school outcomes, because they are what is measured. They are to be found in the MEITZAV exams and the school-climate questionnaire. It is noteworthy that the MOE publishes yearly goals for the entire system, sometimes giving schools a number of goals to choose from. However, if these are not measured, while other things are, the effectiveness of setting these goals at the top of the system is called into question.

Not all of the climate-questionnaire questions represent outcomes. Some of them represent processes or ways of doing things, some of which have already been presented here as organizational-culture variables. As there are many questions asked in the climate questionnaire, it was necessary to choose those questions that represent outcomes that are most likely to be affected by a change to SBM and discard those that seem unrelated. Therefore, the variables that were chosen are these:

1. The mother-tongue MEITZAV exam- represented as the delta between the latest exam score and the last exam score prior to joining SBM. Jewish schools take the exam in Hebrew, while Arab, Bedouin and Druze schools take the exam in Arabic. The two exams have different average test scores, and the use of the delta, measuring improvement, rather than the school's absolute average grade, neutralizes these differences, allowing us to use Jewish and Arabic-speaking schools as one population. The drawback of using deltas rather than absolute grades is that population groups that traditionally have lower MEITZAV grades and have more room for improvement, will be shown to improve more than population groups that traditionally have higher grades and less room for improvement.
2. The math MEITZAV exam- represented as the delta between the latest exam score and the last exam score prior to joining SBM.

3. The English-language MEITZAV exam- represented as the delta between the latest exam score and the last exam score prior to joining SBM.
   The science MEITZAV exam was not used, because it is taken only in the eighth grade, and only a small minority of State-elementary schools continues to the eighth grade.
4. General positive feeling towards the school among students[23]- (Q1) represented both as the school score and as the delta between current school score and the last score prior to joining SBM. Includes the following statements, student responses:
   - I like being in school.
   - Even if I could, I would not transfer to another school.
   - The school is good for me.
5. Close and caring relationship between teachers and students- (Q2) represented both as the school score and as the delta between current school score and the last score prior to joining SBM. Includes the following statements, student responses:
   - I have good and close relationships with most of my teachers.
   - When I'm sad or feeling bad, I feel comfortable talking about it with one of my teachers.
   - Most of the teachers care about me and about what happens to me, and not only about my studies.
   - It is very important to most of the teachers to know how I feel at school and in general.
6. Positive relationships between students and their peers- (Q3) represented both as the school score and as the delta between the current school score and the last score prior to joining SBM. Includes the following statements, student responses:
   - My class is tight-knit as a group.
   - Most of the students in my class have who to be with during recesses.
   - Most of the students in my class find it important to help one another.
   - The students in my class care about each other.
   - There is a good atmosphere among the students in my class.
7. Students feeling unsafe- (Q4) represented both as the school score and as the delta between the current school score and the last score prior to joining SBM. Note that for this variable, as it represents a negative phenomenon, lower scores represent a more desirable situation. For the purpose of the regression analyses only, the scale of this variable was reversed in order to fit with the other variables. Includes the following statements, student responses:
   - I sometimes am afraid to go to school, because there are students there who act violently.
   - I sometimes prefer to stay in the classroom during recesses, because I'm afraid I will be hurt.
   - There are places in school that I am afraid to go to.

[23] This and the following variables are translated from the original Hebrew.

8. Involvement in violent incidents- (Q5) represented both as the school score and as the delta between current school score and the last score prior to joining SBM. Note that for this variable, as it represents a negative phenomenon, lower scores represent a more desirable situation. For the purpose of the regression analyses only, the scale of this variable was reversed in order to fit with the other variables. Includes the following statements, student responses:
    - In the past month, a student pushed me.
    - In the past month, I was hit, or kicked, or punched by a student who wanted to harm me.
    - In the past month, a student used a stick, a stone, a chair, or another object in order to hurt me.
    - In the past month, a student hit me hard.
    - In the past month, a student threatened to hurt me either in school or after school.
    - In the past month, a student extorted money, food, or other valuables from me.
    - In the past month, a student attempted to convince other students not to talk to me or not to be friends with me.
    - In the past month, a student spread false rumors about me in order to harm me (for example, on the internet, or gossip behind my back).
    - In the past month, I was boycotted: a group of students did not want to talk to me or play with me.
9. The school's efforts to encourage feeling safe- (Q6) represented both as the school score and as the delta between the current school score and the last score prior to joining SBM. Includes the following statements, student responses:
    - When there are violent incidents in school, the teachers know about it.
    - The school takes much action to prevent violence and to treat it.
    - In recess times, there is always a teacher or teachers in the yard who is in charge of making sure that there is no violence.
10. Proper behavior of students in class- (Q7) represented both as the school score and as the delta between the current school score and the last score prior to joining SBM. Includes the following statements, student responses:
    - It is rare that students make noise and cause a ruckus in class and interrupt studying.
    - There are no students in my class who are rude to teachers.
    - The students in my class respect the teachers.
    - The teachers do not need to wait long at the start of a lesson for the students to stop making noise.
11. Teaching viewed as interesting and clear- (Q8) represented **only** as school score as there were not enough available data points in order to calculate a delta grade. Includes the following statements, student responses:
    - Most of the teachers explain the subject matter clearly.
    - Most of my teachers teach in a way that helps me understand the subject matter.

- Most of my teachers know how to teach well.
- Most of the teachers teach in an interesting way that causes students to want to listen to them and to learn.
- Most of the teachers teach in a way that encourages me to think about the subject matter and to delve deeper into it.

12. Receiving feedback from the teachers that is conducive to learning- (Q9) represented both as the school score and as the delta between the current school score and the last score prior to joining SBM. Includes the following statements, student responses:
    - Most of the teachers explain to each student individually exactly what they must do in order to improve in their studies.
    - When students have a hard time understanding the subject matter, most of the teachers explain to them what to do in order to better understand.
    - When the teachers return an assignment or an exam, most of them write the correct answer next to our answers, and what needs to be improved.
    - Most of the teachers make sure to update me about my academic situation.
    - Most of the teachers make sure that the students understood the subject matter before continuing to the next subject.
13. Teacher satisfaction at school- (Q10) represented both as the school score and as the delta between the current school score and the last score prior to joining SBM. Includes the following statements, **teacher** responses:
    - You are satisfied with your job as a teacher.
    - You do not feel that you are tired of teaching.
    - You do not feel like your workload is too heavy.
    - You are satisfied with the conduct of the school.
    - The school takes much action in order for it to be a comfortable place for the students to be in.
    - The school takes much action in order for it to be a comfortable place for the teachers to be in.
    - The school tries to create the circumstances that will allow me to succeed at my job.

Background variables

In addition to the four sets of variables listed above, there are six background variables to be taken into account. While Carr-Hill et al. (2016) have listed more background variables that could be taken into account, these six are the variables that fit the Israeli SBM model, are available, and may have the most bearing on its outcomes.

1. Sector- for want of a better term[24], this variable refers to the community that the school belongs to. The Israeli school system is divided along religious and ethnic lines, with each separate "sector" having a separate school "system". The Jewish population has three separate state school "systems", based on religious affiliation. The three groupings are

[24] In Hebrew, the term is "Migzar".

secular, religious, and ultra-orthodox[25]. The Arab schools are also divided into three ethnic groups, "Arab", "Bedouin" and "Druze"[26]. When referring to the three groups collectively, from here on, they will be referred to as "Arabic-speaking", as to not confuse them with the "Arab" schools.

The full dataset includes 690 Jewish-secular schools, 307 Jewish-religious schools, 4 Ultra-Orthodox schools[27], 223 Arab schools, 87 Bedouin schools, 36 Druze schools and 1 Circassian school, for a total of 1348 schools, out of approximately 1900 state-elementary schools in Israel.

2. SBM year- as it has been shown that results of SBM only start to appear after a number of years (Bruns et al., 2012; Car-Hill et al., 2016), it is important to analyze the data based on the time elapsed since a school has joined SBM. **Table 4** details the schools in the dataset based on the number of years they have been operating under SBM, at the time of the collected data[28].

Table 3- schools in the dataset by SBM year

Years	Number of schools in the dataset
0[29]	8
1	152
2	343
3	378
4	287
5	133
6	47

3. SBM wave- 523 of the schools in the dataset had taken part in the first wave of SBM. It is unclear whether or not the principles of SBM persisted in these schools, or how much autonomy was left to them after the MOE abandoned the first reform. However, it is reasonable to expect differences in the implementation of the second wave of SBM, which is

[25] The Ultra-Orthodox community has only recently begun taking part in the state school system, and at the time of data collection, comprised of less than 30 state elementary schools. Furthermore, as these schools were not state-run prior to the SBM reform, there is no available data regarding their spending, their organizational culture or their outcomes prior to SBM. They have therefore, not been included in this study as a separate group. They have, however, been included in the full dataset as to contribute to the overall correlations and regressions.

[26] There is a fourth group, Circassians, which includes only one state-elementary school, and was therefore not included in this study as a separate group. It has, however, been included in the full dataset as to contribute to the overall correlations and regressions.

[27] One of the four has income and spending information and some climate measurements, while the other three have income and spending information only.

[28] In some cases, the last available data could not be used, for reasons that will be discussed in the next section, and data from a previous year was used instead.

[29] Schools in the year of joining SBM.

the subject of this study, between schools that had already undergone a full or partial transition to School Based Management prior to the implementation of the current reform, and schools undergoing the change for the first time.

4. Socioeconomic decile- There are two socio-economic classification systems in use at the MOE. One is a classification defined by the Central Bureau of Statistics, unrelated to the education system, which ranks all of the 256 local governments on a scale from 1 to 10, 1 being the weakest socio-economic level and 10 being the strongest. This ranking refers to the entire city, local council or regional council and is often used for the purpose of differential budgeting. The MOE has a separate ranking which is calculated per student, based on various demographic data, including the parents' education. Each school receives a grade according to the accumulated socio-economic levels of its students. This grade is also on a scale from 1 to 10, but in the opposite direction: 1 being the strongest demographic and 10 the weakest. For some calculations, the MOE uses the grade itself, while for others it uses equally sized deciles. This work will use the deciles, because they are equally sized, giving them similar weight in the correlation and regression calculations.
   It is noteworthy that there are big differences in the socioeconomic levels of the different sectors, which may have an effect on the way SBM is integrated into schools. **Table 5** details the number of schools in the dataset per socio-economic decile for each sector.

Table 4- number of schools in each socioeconomic decile per sector

Socio-economic Deciles	Jewish-secular	Jewish-religious+ UO	Arab	Bedouin	Druze + Circassian	Total in dataset
1	171	15				**186**
2	121	33				**154**
3	89	48	1			**138**
4	66	55	2			**123**
5	51	44	17		1	**113**
6	47	38	22		4	**111**
7	43	36	20		10	**109**
8	33	23	42	5	11	**114**
9	39	9	67	22	5	**142**
10	30	10	52	60	6	**158**

5. School size- The size of a school could have a significant impact on many aspects of its operation, from major differences in per-capita costs to differences in organizational culture. The dataset has been broken up into five equally sized quintiles, based on the number of students in the school. However, the Directorate has found evidence in the past, of significant differences in spending patterns among very small schools. These are often schools that have recently been founded and have much larger per-capita costs than even

slightly larger schools. Therefore, the bottom 2% have been separated out of the smallest quintile as a separate group. **Table 6** lists the number of students in each size-group.

Table 5- number of students per size-group

Size-group	Number of students
Bottom 2%	70-146
1st quintile (3%-20%)	147-280
2nd quintile	281-369
3rd quintile	370-458
4th quintile	459-568
5th quintile	569-1178

6. Principal seniority- SBM places a good deal of responsibility on the principal's shoulders. Under SBM, the principal and his/her leadership have an even more central place in the running of the school than before. Nir & Piro (2007) have found that the leadership style of the principal is central to the success or failure of SBM. While there are no means within the scope of this paper for measuring the quality of the principal's leadership, information on the number of years each principal has held his or her position at the school is available. **Table 7** lists the number of principals per years on the job.

Table 6- number of years principals have held their positions

Years	Number of principals in the dataset
First year on the job	118
1	132
2	119
3	114
4	121
5 years or more	744

Figure 1- The research model: stages and questions

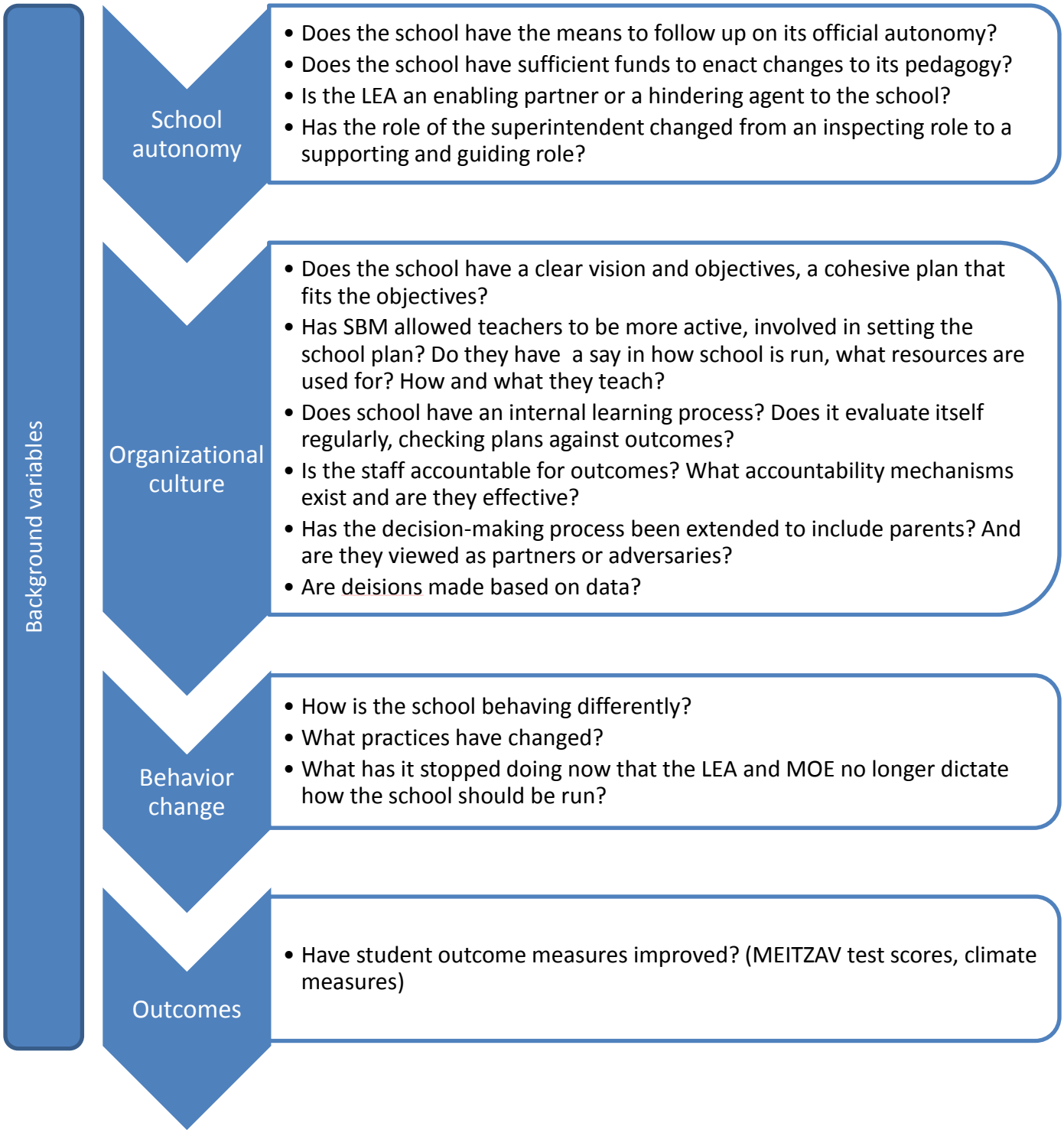
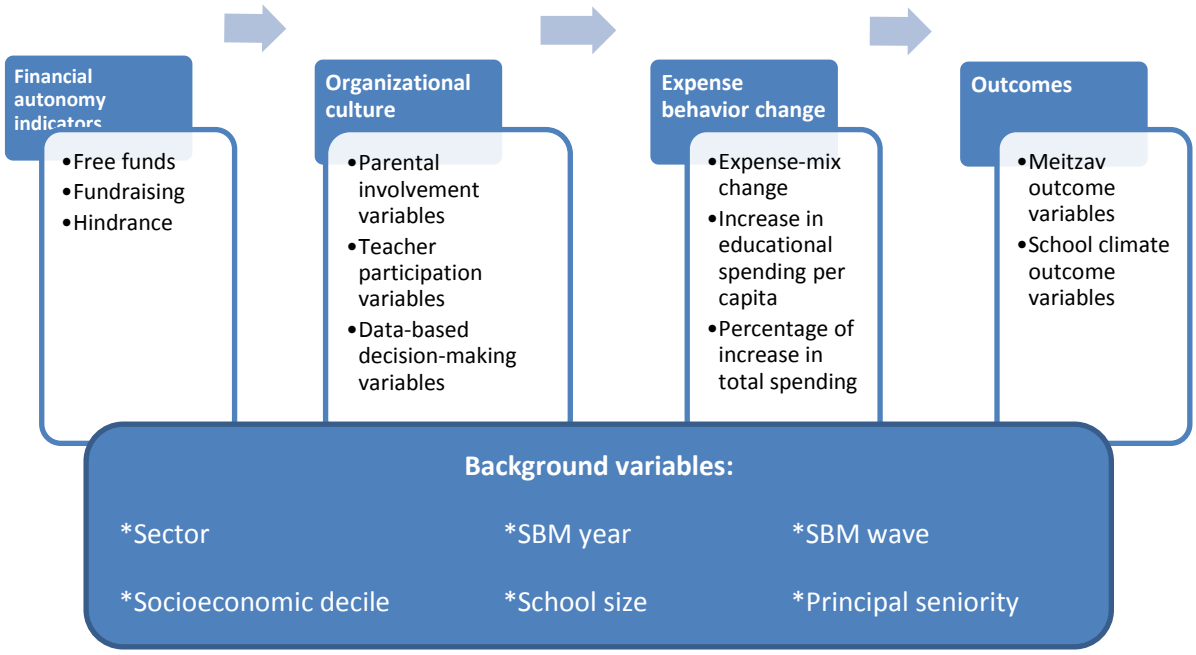


Figure 2- The research model: variables



Schools not included in the dataset

The newest data used is from the 2017-2018 school year. Schools were removed from the dataset in the following cases:

- Schools that had not yet joined SBM by the 2017-2018 school year, or schools that joined in the 2018 school year, but had not yet received training from the MOE[30]: 44 schools.
- Schools that were founded after or in the year of the LEA joining SBM, and therefore do not have any data prior to SBM for comparison: 144 schools.
- Other schools with no available pre-SBM data: 6 schools.
- Schools that had obvious accounting mistakes in the data, such as negative expenses, or expenses of over 2 million[31] NIS in one expenditure area-
    - 3 schools reverted from 2018 data to 2017 data.
    - 1 school reverted from 2017 data to 2016 data.
    - 4 schools removed from the dataset entirely.
- Schools that submitted reports with no data (all fields are 0) were treated as mistakes-
    - 1 school reverted from 2018 to 2017 data.
    - 2 schools removed from the dataset entirely.

[30] Due to bureaucratic holdups in contracting with financial and organizational advisors, the SBM Directorate did not supply training to newly joined schools and LEAs in the 2017-2018 school year. Training was given in the following year.

[31] The annual income of an average sized SBM school is approximately 300,000-500,000 NIS.

- Schools with no financial report for the 2018, 2017 and 2016 school years: 167 schools.
- Schools that did not submit reports past their first year of SBM: 3 schools.
- Schools that were reverted to a previous year, in order to be aligned with their outcome data year-
    - Schools reverted from 2018 data to 2017 data: 360 schools
    - Schools reverted from 2018 data to 2016 data: 354 schools
    - Schools reverted from 2017 data to 2016 data: 68 schools
    - Schools that when reverted to a previous year in order to be aligned with the outcome data were reverted to the year of joining SBM were removed from the dataset: 92 schools.
- Schools with no outcome data from the years 2016 to 2018 were removed from the dataset: 51 schools.

Processing of data

After collecting and constructing the dataset, I conducted preliminary correlations between the five sets of variables, in the following groups:

1. Background variables with Financial autonomy indicator variables
2. Background variables with Organizational culture variables
3. Background variables with Expense behavior change variables
4. Background variables with Outcome variables

5. Financial autonomy indicator variables with other financial autonomy indicator variables[32]
6. Financial autonomy indicator variables with Organizational culture variables
7. Financial autonomy indicator variables with Expense behavior change variables
8. Financial autonomy indicator variables with Outcome variables

9. Organizational culture variables with Expense behavior change variables
10. Organizational culture variables with Outcome variables

11. Expense behavior change variables with Outcome variables

Each set of correlations was tested for the full population of the dataset, as well as breakdowns by the six background variables. Calculations were done using STATA. Pairings that included an ordinal variable were correlated using a Spearman correlation. Other pairings were correlated using a Pearson correlation.

[32] This particular correlation is additional to the research model, but may yield results that could be of interest to decision-makers at the MOE.

Next, I conducted factor analysis on the variables in each stage-group, in order to narrow down the amount of variables to a more-manageable number. The analyses found it possible to create six factors with Eigenvalues greater than 1, while keeping variables from different categories separate.

For the first stage, the "Free funds" and "Fundraising" variables were averaged to form the "f1_autonomy" factor variable, while "Hindrance" remains a separate variable.

For the second stage, OCQ1 (general parental involvement) remains a separate variable, while OCQ2-OCQ4 (parental involvement in the school vision, curriculum and social program) were averaged to form the "f2_OCQ_parentsinv" factor variable. OCQ5 (school teamwork) remains a separate variable. I decided to discard OCQ6 (teacher involvement in the school plan) from this stage of the analysis entirely, as it had very little variance (over 80% of the sample had a perfect 100% score). OCQ7-OCQ9 (variables regarding data-based decision making in school) were averaged to form the "f3_OCQ_DBDM" factor variable. Finally, OCQ10 (teacher autonomy) remains a separate variable. This allows analysis of this stage to be conducted using 5 variables, rather than 10.

For the third stage, no factors were found to have an Eigenvalue larger than 1, leaving all three variables separate.

For the fourth stage, all three MEITZAV delta scores were averaged to create the "f4_delta_MTZV" factor variable, and climate questions 1 to 9 were averaged into factors, both for the deltas and for the actual scores ("f5_delta_climate" and "f6_climate")[33], leaving the tenth variable, teacher satisfaction, separate, both for the delta and for the actual score.

Finally, I ran regression analysis for each stage-set of variables as the dependent variables in the following manner (**table 8**):

Table 7- regression analyses conducted

Dependent variables	Independent variables
Financial autonomy indicator variables (1st stage)	1. Background variables
Organizational culture variables (2nd stage)	1. Background variables 2. Background variables + 1st stage variables
Expense behavior change variables (3rd stage)	1. Background variables 2. Background variables + 1st stage variables 3. Background variables + 1st stage + 2nd stage variables
Outcome variables (4th stage)	1. Background variables 2. Background variables+ 3rd stage variables 3. Background variables + 2nd stage variables 4. Background variables + 1st stage+ 2nd stage + 3rd stage variables

[33] For the purpose of these two factors, the direction of variables Q4- feeling unsafe and Q5- involvement in violent incidents was reversed, as a decrease in the value of these two variables indicates improvement, unlike the other variables.

When looking at the above table, it may seem like there is a discrepancy between the treatment given to the 3rd stage variables and the 4th stage variables. However, this was done purposely. The 1st and 3rd stages are based on financial data, while the 2nd and 4th stages are based on the school climate data. While one would expect that each stage would show the strongest connections with the stage immediately prior, the correlations conducted in the first part of my analysis have shown very little connection between financial and non-financial data. Therefore, after conducting regression analysis between stage 4 and stage 3 variables, I then do the same with stage 4 and stage 2 variables, which have been found in the correlations to have stronger connections, and then finally I analyze the stage 4 variables against the entire dataset. Similarly, when analyzing the stage 3 variables, I first analyze them against the stage 1 variables, shown to have stronger connections, and then against the entire set of variables in the stages prior.

Additionally, the preliminary correlations pointed to some interactions between variables that merited further investigation. Some further regression analyses were conducted using interactions between these specific variables.

Note: for the purpose of the regression analyses, the sector background variable was coded into dummy variables.

Weaknesses of the model

The model has a number of weaknesses. First, the data is not taken from a random sample, but rather for the entire group of schools for which data is available. Furthermore, there is no control group against which to compare the results of the SBM schools, because SBM was enacted in almost all of the state primary schools. The only schools in which SBM was not enacted were in 5 LEAs that refused to join the SBM reform, meaning that their characteristics may be inherently different from those of the schools that did join. Second, the income and expenditure data from the schools, which is the basis for the variables in the 1st and 3rd stages, were created by the school secretaries, who are in charge of bookkeeping. They have been given basic training in keeping the books at school, but are not professionals in that area, leaving the data susceptible to some level of mistakes. Third, most of the 2nd stage (organizational culture) data exist only for some of the schools, and only once for each school, shrinking the sample size when dealing with the data for this stage, as well as making it impossible to know the deltas of these variables. However, as these variables represent organizational states that are expected to be present at SBM schools, according to the reform's own guidelines, it is less important to know if these states have been strengthened due to SBM, rather than if they are present at all at SBM schools. Additionally, comparing the organizational culture variables from schools at different stages of the reform- first wave vs. second wave, as well as different years, can point to changes over time. Finally, and most importantly, the variables used in this research are not representative of the complete process of autonomy → organizational culture change → behavioral change → outcomes. They represent some aspects of each stage in the process, but they do not draw a complete picture. For instance, Insight into the planning process could be an invaluable source of information for understanding the inner workings of a school under SBM, as Gamage (2009) has pointed out the

importance of the planning process to SBM[34]. For that reason, the variables used for the "autonomy" stage are dubbed "financial autonomy indicator" variables, as they can only give us an indication of whether or not a school has autonomy, and only financial autonomy, while the concept of autonomy encompasses a lot more than just the financial aspects. Similarly, the organizational culture variables give us a picture of parental involvement, teacher participation and data-based decision making, but not of other aspects of organizational culture that are part of the SBM concept, such as the leadership style of the principal, which is likely to be quite an important factor. A school's behavior is by no means limited to its expenses, and therefore the variables in this stage were dubbed "financial behavior change", as there are many other areas in which behavioral change can occur at an SBM school.

[34] A source of information that was considered for this research was the school planning system, in which schools prepare their annual plans. However, the system was only launched in 2017 and included documented plans of only a small number of schools planning the 2018 school year, which is the last year represented in this study. Therefore, this source was deemed not yet ripe enough for use in this study. Furthermore, Malen et al. (1990) note that gauging the quality of the planning process uses ambiguous criteria. Creating a system by which to size up the quality of planning in schools from their annual plan poses a significant challenge that would not be possible to achieve within the scope of this work. Perhaps future research could consider this source for further understanding the inner-workings of SBM schools

Findings

Descriptive statistics

First, in order to understand the correlations and regressions between the various variables, it is important to see some basic descriptive statistics of the population, broken down by the background variables.

Due to the number of columns, the following tables per background variable have been split into three tables each.

Data by sector

As can be seen in **tables 9-11,** the largest group in the dataset is Jewish-secular schools. This group also includes the largest percentage of first wave schools, and has the strongest socioeconomic background. Jewish-religious and Jewish-secular schools were found to have a much higher average of free funds per capita, as well as a much higher median amount of funds raised per capita than schools from other sectors, as represented by factor variable "f1_autonomy".

General parental involvement was found to be at similar levels for all sectors, except Bedouin schools, which had lower levels of involvement. Parental involvement in decision making (school vision, curriculum and social program), as represented by the "f2_OCQ_parentsinv" factor variable, was found to be slightly higher for Jewish and Druze schools and slightly lower in Arab and Bedouin schools. Teamwork (OCQ5) was reported as stronger in Arabic-speaking schools. Teacher involvement in the school plan (OCQ6) is reported as almost 100% for all sectors, leaving little variance in this variable to show correlations, and therefore was discarded from the regression analyses. Data-based decision-making variables were also very high for all sectors.

Jewish schools showed much greater increases than Arabic-speaking schools to their educational spending as well as their overall spending. Arabic-speaking schools made bigger improvements in their MEITZAV exams than Jewish schools, which is understandable, as Jewish schools had higher scores to begin with. On average, Arabic-speaking schools also had slightly more improvement in school-climate scores than Jewish schools, and have higher overall scores in most of the climate variables.

Table 8- data by sector: background characteristics and financial autonomy indicator variables

Sector	Total schools	Median SBM year	Percentage of schools from 2nd wave	Median socio-economic decile	Average number of students	Average F1_autonomy factor variable (NIS)	Average hindrance score (0-3)
Arab	223	3	91%	9	446	306	0.73
Bedouin	87	2	84%	10	502	224	0.34
Druze	37	3	86%	8	376	317	0.57
J. Religious	307	3	60%	5	338	462	0.39
J. Secular	689	3	47%	3	461	490	0.27
J. UO	4	2	100%	4.5	232	-	1.25

Table 9- data by sector: school organizational culture variables and expense behavior change variables

	Parental involvement		Teacher participation		Data-based decision making	Expense Behavior change		
Sector	Avg. OCQ1	Avg. F2_OCQ_ parentsinv factor variable	Avg. OCQ5: team-work	Avg. OCQ10: teacher auton.	Avg. F3_OCQ_ DBDM factor variable	Avg. Exp. mix change	Avg. ed. Exp. Increase (NIS)	Avg. Total exp. Increase %
Arab	0.83	0.42	0.89	0.88	0.95	0.77	185	2.05
Bedouin	0.71	0.42	0.83	0.86	0.96	0.76	199	1.81
Druze	0.87	0.50	0.92	0.91	0.96	0.75	232	1.86
J. Religious	0.89	0.50	0.73	0.91	0.91	0.82	328	2.59
J. Secular	0.87	0.49	0.76	0.89	0.93	0.68	303	2.37
J. UO	-	-	-	-	-	0.75	166	3.12

Table 10- data by sector: MEITZAV, delta-climate and climate outcomes

	MEITZAV Outcomes	Climate outcomes- delta scores		Climate outcomes- scores	
Sector	Avg. f4_delta_ MTZV factor variable	Avg. f5_ delta_climate factor variable	Avg. ΔQ10-teacher satisfaction	Avg. f6_climate factor variable	Avg. Q10 – teacher satisfaction
Arab	33.51	0.06	0.02	0.63	0.72
Bedouin	44.62	0.05	0.03	0.60	0.71
Druze	32.63	0.05	0.04	0.63	0.76
J. Religious	22.25	0.02	0.00	0.55	0.75
J. Secular	3.84	0.01	-0.01	0.52	0.74
J. UO	-	-	-		-

Data by SBM year

By SBM year **(tables 12-14)**, schools that have been in SBM for 5-6 years have more free funds and raise more funds per capita than schools that joined more recently. There do not seem to be any significant differences in school organizational culture: in parental involvement, teacher participation or data-based decision making. Spending on educational issues as well as overall spending is higher for veteran SBM schools, while there does not seem to be much of a difference for outcomes.

Table 11- data by SBM year: background characteristics and financial autonomy indicator variables

SBM year	Total schools	Percentage of schools from 2nd wave	Median socio-economic decile	Average number of students	Average F1_autonomy factor variable (NIS)	Average hindrance score (0-3)
0	8	100%	2	372	371	0.50
1	152	74%	6	432	412	0.29
2	343	66%	5	436	351	0.43
3	378	63%	5	441	470	0.39
4	287	49%	5	419	386	0.32
5	133	56%	5	399	576	0.37
6	47	45%	6	462	633	0.87

Table 12- data by SBM year: school organizational culture variables and expense behavior change variables

	Parental involvement		Teacher participation		Data-based decision making	Expense Behavior change		
SBM year	Avg. OCQ1	Avg. F2_OCQ_ parentsinv factor variable	Avg. OCQ5: team-work	Avg. OCQ10: teacher auton.	Avg. F3_OCQ_ DBDM factor variable	Avg. Exp. mix change	Avg. ed. Exp. Increase (NIS)	Avg. Total exp. Increase %
0	0.93	-	0.76	-	-	0.67	169	1.36
1	0.85	0.43	0.77	0.88	0.93	0.96	218	1.99
2	0.85	0.47	0.80	0.89	0.95	0.72	244	2.06
3	0.85	0.49	0.80	0.89	0.91	0.74	323	2.21
4	0.87	0.48	0.76	0.89	0.92	0.66	273	2.77
5	0.87	0.52	0.75	0.91	0.92	0.70	316	2.61
6	0.86	0.47	0.81	0.90	0.95	0.66	359	2.69

Table 13- data by SBM year: MEITZAV, delta-climate and climate outcomes

	MEITZAV Outcomes	Climate outcomes- delta scores		Climate outcomes- scores	
SBM year	Avg. f4_delta_ MTZV factor variable	Avg. f5_ delta_climate factor variable	Avg. ΔQ10- teacher satisfaction	Avg. f6_climate factor variable	Avg. Q10 – teacher satisfaction
0	-22.83	0.01	0.03	0.51	0.75
1	12.74	0.00	-0.01	0.53	0.73
2	18.31	0.02	0.00	0.56	0.74
3	20.50	0.03	0.00	0.56	0.74
4	10.71	0.04	-0.01	0.55	0.74
5	17.46	0.03	0.02	0.55	0.76
6	18.70	0.07	0.03	0.56	0.75

Data by SBM wave

There are noticeable differences between schools of the first and second waves of SBM **(tables 15-17)**. On average, the first wave comes from a stronger socio-economic background, has more free funds, raises more funds (both represented by the "F1_autonomy" factor variable), and has less hindrance from the LEAs. There is no discernable difference to school organizational culture, but the first wave schools have increased their average spending on education more than the second wave schools, while their total expenditure has increased less, probably because they have less need to increase spending in other areas after having SBM for some years, as well as receiving less new funds[35]. Average outcomes of the two waves are similar.

Table 14- data by SBM wave: background characteristics and financial autonomy indicator variables

SBM wave	Total schools	Median SBM year	Median socio-economic decile	Average number of students	Average F1_autonomy factor variable (NIS)	Average hindrance score (0-3)
1	523	3	4	425	475	0.22
2	825	3	6	433	404	0.50

[35] SBM schools in the first wave received additional funds from the MOE. Schools that joined the second wave (including first wave schools) received both the increase given to the first wave schools as well as a budgetary increase for second wave schools. Therefore, the recent increase to the first wave schools was smaller, since they were already receiving the original first wave sum.

Table 15- data by SBM wave: school organizational culture variables and expense behavior change variables

	Parental involvement		Teacher participation		Data-based decision making	Expense Behavior change		
SBM wave	Avg. OCQ1	Avg. F2_OCQ_ parentsinv factor variable	Avg. OCQ5: team-work	Avg. OCQ10: teacher auton.	Avg. F3_OCQ_ DBDM factor variable	Avg. Exp. mix change	Avg. ed. Exp. Increase (NIS)	Avg. Total exp. Increase %
1	0.86	0.48	0.76	0.89	0.94	0.67	302	2.20
2	0.85	0.47	0.80	0.89	0.92	0.77	266	2.40

Table 16- data by SBM wave: MEITZAV, delta-climate and climate outcomes

	MEITZAV Outcomes	Climate outcomes- delta scores		Climate outcomes- scores	
SBM wave	Avg. f4_delta_ MTZV factor variable	Avg. f5_ delta_climate factor variable	Avg. ΔQ10- teacher satisfaction	Avg. f6_climate factor variable	Avg. Q10 – teacher satisfaction
1	11.33	0.02	-0.00	0.55	0.75
2	20.13	0.03	0.02	0.56	0.74

Data by Socioeconomic decile

There are noticeable differences in the amount of free funds and funds raised between the socioeconomic deciles **(tables 18 to 20)**. Parental involvement is stronger in the stronger deciles, while school-teamwork is stronger in weaker deciles. Data-based decision making also appears slightly stronger in the weaker deciles. Spending on education has increased more for the stronger deciles, but outcomes have improved more for the weaker deciles, which have higher scores to begin with for most of the school-climate variables.

Table 17- data by socioeconomic decile: background characteristics and financial autonomy indicator variables

Socio economic decile	Total schools	Median SBM year	Percentage of schools from 2nd wave	Average number of students	Average F1_autonomy factor variable (NIS)	Average hindrance score (0-3)
1	186	3	58%	560	547	0.20
2	154	3	56%	480	439	0.45
3	138	3	54%	434	462	0.33
4	123	3	57%	406	493	0.33
5	113	3	65%	404	472	0.35
6	111	3	59%	374	402	0.37
7	109	3	58%	367	425	0.43
8	114	3	71%	384	341	0.46
9	142	3	69%	397	331	0.61
10	158	3	67%	407	364	0.42

Table 18- data by socioeconomic decile: school organizational culture variables and expense behavior change variables

	Parental involvement		Teacher participation		Data-based decision making	Expense Behavior change		
Socio economic decile	Avg. OCQ1	Avg. F2_OCQ_ parentsinv factor variable	Avg. OCQ5: team-work	Avg. OCQ10: teacher auton.	Avg. F3_OCQ_ DBDM factor variable	Avg. Exp. mix change	Avg. ed. Exp. Increase (NIS)	Avg. Total exp. Increase %
1	0.87	0.50	0.72	0.89	0.92	0.69	358	2.21
2	0.88	0.51	0.75	0.89	0.92	0.66	288	2.20
3	0.88	0.51	0.76	0.89	0.92	0.86	296	2.60
4	0.88	0.47	0.77	0.92	0.91	0.71	326	2.28
5	0.87	0.50	0.75	0.88	0.92	0.71	319	2.30
6	0.88	0.51	0.81	0.90	0.95	0.70	267	2.17
7	0.86	0.47	0.79	0.89	0.94	0.72	243	2.18
8	0.85	0.46	0.83	0.92	0.95	0.77	226	2.59
9	0.82	0.40	0.85	0.88	0.94	0.78	242	2.29
10	0.75	0.42	0.82	0.87	0.95	0.77	211	2.38

Table 19- data by socioeconomic decile: MEITZAV, delta-climate and climate outcomes

	MEITZAV Outcomes	Climate outcomes- delta scores		Climate outcomes- scores	
SBM wave	Avg. f4_delta_ MTZV factor variable	Avg. f5_ delta_climate factor variable	Avg. ΔQ10- teacher satisfaction	Avg. f6_climate factor variable	Avg. Q10 – teacher satisfaction
1	2.15	0.00	-0.02	0.50	0.73
2	7.41	0.00	-0.01	0.52	0.73
3	7.16	0.01	-0.00	0.52	0.75
4	16.71	0.02	0.00	0.54	0.75
5	18.50	0.02	0.00	0.55	0.74
6	20.28	0.03	-0.00	0.58	0.76
7	16.77	0.04	0.00	0.58	0.75
8	23.53	0.04	0.01	0.60	0.75
9	22.07	0.04	0.02	0.60	0.73
10	32.96	0.05	0.02	0.59	0.72

Data by school size

There are no obvious patterns in the descriptive data by school size to show that larger schools are better off than smaller schools in SBM or vice versa **(tables 21-23)**.

Table 20- data by school size: background characteristics and financial autonomy indicator variables

School size	Total schools	Median SBM year	Percentage of schools from 2nd wave	Median socio-economic decile	Average F1_autonomy factor variable (NIS)	Average hindrance score (0-3)
Very small	27	3	70%	8	496	0.33
Small	243	3	58%	6	474	0.43
Small-medium	269	3	60%	6	433	0.34
Medium	268	3	59%	5	388	0.38
Medium-large	270	3	66%	4	407	0.42
Large	271	3	61%	3	452	0.39

Table 21- data by school size: school organizational culture variables and expense behavior change variables

	Parental involvement		Teacher participation		Data-based decision making	Expense Behavior change		
School size	**Avg. OCQ1**	**Avg. F2_OCQ_ parentsinv factor variable**	**Avg. OCQ5: team-work**	**Avg. OCQ10: teacher auton.**	**Avg. F3_OCQ_ DBDM factor variable**	**Avg. Exp. mix change**	**Avg. ed. Exp. Increase (NIS)**	**Avg. Total exp. Increase %**
Very small	0.85	0.40	0.72	0.86	0.91	0.77	322	1.94
Small	0.86	0.47	0.74	0.91	0.92	0.74	367	2.41
Small-medium	0.86	0.49	0.78	0.89	0.92	0.70	255	2.24
Medium	0.86	0.48	0.80	0.92	0.95	0.79	230	2.39
Medium-large	0.85	0.48	0.80	0.88	0.93	0.73	251	2.31
Large	0.85	0.48	0.79	0.87	0.92	0.73	302	2.29

Table 22- data by school size: MEITZAV, delta-climate and climate outcomes

	MEITZAV Outcomes	Climate outcomes- delta scores		Climate outcomes- scores	
School size	**Avg. f4_delta_ MTZV factor variable**	**Avg. f5_ delta_climate factor variable**	**Avg. ΔQ10- teacher satisfaction**	**Avg. f6_climate factor variable**	**Avg. Q10 – teacher satisfaction**
Very small	10.67	0.03	0.02	0.56	0.75
Small	17.02	0.02	0.01	0.55	0.74
Small-medium	20.10	0.03	0.01	0.56	0.75
Medium	16.54	0.03	0.00	0.56	0.75
Medium-large	16.68	0.03	0.00	0.56	0.73
Large	12.73	0.02	-0.01	0.54	0.72

Regression Analyses

1. Financial autonomy indicator variables

Financial autonomy indicator variables (first stage) were analyzed together with the background variables, the results of which are presented in **table 24**. Only coefficients that were found to be significant are included in the table, highlighting the independent variables that affect the dependent variables.

Table 23- regression analysis of financial autonomy indicator variables

Dependent variable (Y)	variables included	Obs.	R^2	Adj. R^2	Prob > F	Const	Independent variables (X)								
							Sector dummies				Background variables				
							Arab sector	Bedouin sector	Druze Sector	JR sector	SBM_ YEAR	SBM_ WAVE	SOCIO_ LEVEL	SCHOOL _SIZE	PRINC_ SENIORITY
HINDERANCE	Background only	1343	0.0566	0.0502	0.0000		0.3312				0.0408	0.2128			
f1_autonomy	Background only	1343	0.0548	0.0484	0.0000	453.784	-148.62	-205.97	-152.80		31.75				

The independent variables found to be affecting hindrance are SBM year and SBM wave, as well as the Arab-sector dummy variable. This means that hindrance is higher in LEAs that joined SBM in the second wave, that have been operating under SBM for longer and that are in the Arab sector. It is unsurprising that the second wave schools would face greater hindrance than those of the first wave, as the first wave LEAs have had almost two decades to get used to the new way of doing things. It is also unsurprising to find more hindrance in the Arab sector, which is likely due to cultural differences. It is unexpected that hindrance would increase the longer an LEA has operated under SBM. However, the coefficient for SBM year is quite weak. Furthermore, it is important to stress that "hindrance" as a variable is based on subjective and incomplete data.

The f1_autonomy factor includes the "free funds" and "fundraising" variables, which are both measured in NIS per capita. The independent variables found to be significant are SBM year, with a strong positive coefficient, and the three Arabic-speaking sector dummy variables, all three of which have large negative coefficients.

The R squared for both analyses is only just over 5%, meaning that the background variables entered into the regression analyses explain only a very small portion of the variance.

2. Organizational culture variables

Organizational culture variables (second stage) were analyzed twice, first together with the background variables only, and a second time together with the financial autonomy indicator variables (first stage) added. The results of the analyses are presented in **table 25**. Only coefficients that were found to be significant are included in the table.

The analyses show that there is no connection between the financial autonomy indicator variables from stage 1, and the organizational culture variables of stage 2. Sector dummy variables are significant as

independent variables for OCQ1 (parental involvement) and OCQ5 (school teamwork), while the Jewish-religious (JR) sector dummy variable is significant also for the data-based decision-making factor variable. SBM year is significant only for the parental involvement factor variable, and SBM wave is significant only for the data-based decision-making factor variable, and only when the background variables are taken alone, without the stage 1 variables. Socioeconomic decile is significant as an independent variable for all of the stage 2 variables, except the data-based decision-making factor variable. However, the coefficient is positive for the school teamwork regression, meaning that there is more teamwork at schools from weaker socioeconomic deciles, and it is negative for the other regressions, meaning more parental involvement and more teacher autonomy at schools from stronger socioeconomic deciles. School size is significant for all three individual (non-factor) variables. Finally, principal seniority is significant for school teamwork and for the two factor variables. R squared is higher than 0.2 for the analyses of variables OCQ1 (parental involvement) and OCQ5 (school teamwork), but only around 0.05 or less for the other three variables.

Table 24- regression analysis of organizational culture variables

Dependent variable (Y)	variables included	Obs.	R^2	Adj. R^2	Prob > F	Const	Independent variables (X)											
							Sector dummies				Background variables					Stage 1- financial autonomy indicators		
							Arab sector	Bedouin sector	Druze Sector	JR sector	SBM_ YEAR	SBM_ WAVE	SOCIO_ LEVEL	SCHOOL _SIZE	PRINC_ SENIORITY	HINDERANCE	f1_ autonomy	
OCQ1	**Background only**	1192	0.2329	0.2270	0.0000	0.897		-0.1214	0.0318	0.0224			-0.0065	0.0000				
	Background+ stage 1	1192	0.2346	0.2274	0.0000	0.901		-0.1234	0.0306	0.0222			-0.0066	-3E-05				
f2_OCQ_ parentsinv	**Background only**	1038	0.0654	0.0573	0.0000	0.485					0.011		-0.0113		0.0098			
	Background+ stage 1	1038	0.0666	0.0566	0.0000	0.489					0.0115		-0.0112		0.0098			
OCQ5	**Background only**	871	0.2450	0.2371	0.0000	0.677	0.1055		0.1657	-0.0204			0.0059	0.0001	0.0099			
	Background+ stage 1	871	0.2468	0.2372	0.0000	0.683	0.103		0.1649	-0.0207			0.0058	0.0001	0.0099			
f3_OCQ_ DBDM	**Background only**	613	0.0738	0.0600	0.0000	0.933				-0.0229		-0.0143			0.0061			
	Background+ stage 1	613	0.0831	0.0663	0.0000	0.937				-0.0226					0.0061			
OCQ10	**Background only**	613	0.0376	0.0232	0.0057	0.921							-0.0039	-0.0001				
	Background+ stage 1	613	0.0389	0.0213	0.0127	0.922							-0.004	-0.0001				

3. Expense behavior change variables

Expense behavior change variables (third stage) were analyzed three times, first together with the background variables only, a second time together with the background variables and the financial autonomy indicator variables (first stage), as the third stage and first stage variables are both based on financial income and expenditure data and are expected to be closely connected. The third regression analysis included the background, first stage and second stage variables. The results of the analyses are presented in **table 26**. Only coefficients that were found to be significant are included in the table.

None of the organizational culture variables were found to be significant as independent variables. The F1_autonomy factor variable, made up of the "free funds" and "fundraising" variables, is significant as an independent variable, while, surprisingly, "hindrance" is not. Of the background variables, Arabic speaking sector dummies are significant only for "total expense growth" and their coefficients are negative. The Jewish-religious sector dummy is significant for "Expense mix change" only. SBM year is significant as an independent variable for all three dependent variables. However, for "education expense growth", the coefficient is positive when using only the background variables, but is negative when adding the stage-2 variables (as adding the stage-2 variables causes the sample size to be much smaller, thus changing the balance of the different variables). SBM wave is significant for "expense mix change" and "total expense growth", but not for "education expense growth". Socioeconomic decile is significant for "Education expense growth" and "total expense growth", but only when using the larger sample size. School size is significant for "total expense growth", for the full sample size. Principal seniority is significant only for education expense growth, with the smaller sample size. The R^2s for the analyses of the full sample were generally very low, and much higher for the analyses that included the stage 2 variables, and thus a much smaller sample.

Table 25- Regression analysis of expense behavior change variables

Dependent variable (Y)	variables included	Obs.	R^2	Adj. R^2	Prob > F	Const	Independent variables (X)																
							Sector dummies			Background variables						Stage 1- autonomy indic		Stage 2- OrgCulture					
							Arab sector	Bedouin sector	Druze Sector	JR sector	SBM_ YEAR	SBM_ WAVE	SOCIO_ LEVEL	SCHOOL _SIZE	PRINC_ SENIORITY	HINDERANCE	f1_ autonomy	OCQ1	f2_OCQ _parentsinv	OCQ5	f3_OCQ _DBDM	OCQ10
EXPENSE_ MIX_CHANGE	Background only	1343	0.0224	0.0158	0.0004	0.594				0.1237	-0.0437	0.0816										
	Background+ stage 1	1343	0.0416	0.0337	0.0000	0.505				0.1276	-0.0509	0.0791					0.0002					
	Background+ stage 1+stage 2	238	0.2304	0.1747	0.0000							0.1251					0.0003					
ED_EXPENSE _GROWTH	Background only	1343	0.0268	0.0203	0.0000	338.343					20.1211		-9.9894									
	Background+ stage 1	1343	0.2045	0.1980	0.0000	159.7554											0.3995					
	Background+ stage 1+stage 2	238	0.4619	0.4230	0.0000	1223.365					-71.224				29.4915		0.7533					
TOTAL_EXPENSE _GROWTH	Background only	1343	0.0482	0.0418	0.0000		-1.017	-1.329	-1.119		0.2099	0.5305	0.1167	0.0009								
	Background+ stage 1	1343	0.0667	0.0590	0.0000		-0.8937	-1.1846	-0.9998		0.1896	0.5456	0.1204	0.0009			0.0007					
	Background+ stage 1+stage 2	238	0.1838	0.1247	0.0001							1.249					0.0017					

4. Outcome variables

The outcome variables (fourth stage) were analyzed four times, first together with the background variables only, a second time together with the background variables and the expense behavior change variables (third stage), the third time together with the background and second stage (organizational culture) variables and finally a fourth time with the full set of variables (background and stages 1-3). The results of the analyses are presented in **tables 26 and 27**. Only coefficients that were found to be significant are included in the table. The analysis includes the MEITZAV factor variable; the climate delta factor variable, which is made up of the deltas of Q1 to Q9; the climate score factor variable, made up of the scores for Q1 to Q9; the delta of Q10 (teacher satisfaction) and the score for Q10. In addition, the regression analyses also included the separate variables Q1 (general good feeling towards school), Q2 (close and caring relationships between teachers and students), Q4 (feeling unsafe) and Q5 (involvement in violent incidents), which are the four variables used by the MOE, besides the MEITZAV grades, for diagnosing schools to join the "Marom" program[36].

There are very few connections between financial data based variables and outcomes. Furthermore, the only significant independent variables for the MEITZAV factor variable are the sector dummies. "School teamwork" (OCQ5) is significant for all of the climate outcome variables, while other organizational culture variables are significant in relation to teacher satisfaction (Q10 and ΔQ10). Teacher autonomy (OCQ10) is significant for ΔQ4 (feeling unsafe) as well. Data-based decision making is significant as an independent variable for the f6_climate factor variable, but only when taken alone, and this finding is not robust when including other independent variables in the regression. The background variables are significant for most of the outcome score variables, and less so for the delta variables. SBM wave and school size are not significant for any of the delta outcome variables. The R^2s for the analyses of the full sample were generally very low, and almost all were much higher for the analyses that included the stage 2 variables, and thus a much smaller sample.

[36] See section on accountability mechanisms in Israeli SBM.

Table 26- regression analysis of outcome variables- deltas

Dependent variable (Y)	variables included	Obs.	R^2	Adj. R^2	Prob > F	Const	Independent variables (X)																			
							Sector dummies				Background variables					Stage 1- autonomy		Stage 2- OrgCulture				Stage 3- expense behavior change			
							Arab sector	Bedouin sector	Druze Sector	JR sector	SBM_ YEAR	SBM_ WAVE	SOCIO_ LEVEL	SCHOOL _SIZE	PRINC_ SENIORITY	HINDERANCE	f1_ autonomy	OCQ1	f2_OCQ _parentsinv	OCQ5	f3_OCQ _ DBDM	OCQ10	EXPENSE_ MIX_ CHANGE	ID_ EXPENSE _GROWTH	TOTAL_ EXPENSE _GROWTH
f4_delta _mtzv	**Background only**	1271	0.1643	0.1584	0.0000		29.3088	41.344	28.4389	17.873															
	Background+stage 3	1271	0.1646	0.1566	0.0000		29.5979	41.7464	28.7872	17.8657															
	Background+stage 2	221	0.1426	0.0843	0.0033		16.4384			10.6711															
	Full set of variables	221	0.1704	0.0920	0.0043		23.1138			12.2373															
f5_delta _climate	**Background only**	1280	0.0742	0.0677	0.0000	-0.0438	0.0415	0.0353			0.0117				0.0032										
	Background+stage 3	1280	0.0748	0.0660	0.0000	-0.0459	0.0424	0.0365			0.0116				0.0032										
	Background+stage 2	220	0.2672	0.2172	0.0000		0.077													0.2396					
	Full set of variables	220	0.2913	0.2240	0.0000		0.0604									0.0174				0.2311					
Delta_ Climate_Q10	Background only	1190	0.0251	0.0177	0.0004			0.0315																	
	Background+stage 3	1190	0.0259	0.0160	0.0019			0.0314																	
	Background+stage 2	228	0.2571	0.2083	0.0000	-0.289	-0.0615						0.0065					0.1925	-0.1018	0.2459		-0.1534			
	Full set of variables	228	0.2930	0.2284	0.0000	-0.3622							0.0069					0.1944		0.2571		-0.1535		0.00006	
Delta_ Climate_Q1	Background only	1280	0.0414	0.0346	0.0000		0.0382	0.0416			0.0088														
	Background+stage 3	1280	0.0421	0.0330	0.0000	-0.0438	0.0391	0.0424			0.0087														
	Background+stage 2	220	0.2154	0.1618	0.0000		0.0956													0.2648					
	Full set of variables	220	0.2370	0.1645	0.0000		0.0762										0.019			0.2542					
Delta_ Climate_Q2	**Background only**	1280	0.0636	0.0569	0.0000	-0.0715	0.0463	0.0399			0.0162				0.0047										
	Background+stage 3	1280	0.0643	0.0554	0.0000	-0.075	0.0473	0.0415			0.0162				0.0046										
	Background+stage 2	220	0.2366	0.1845	0.0000															0.3531					
	Full set of variables	220	0.2517	0.1807	0.0000															0.339					
Delta_ Climate_Q4	**Background only**	1280	0.1025	0.0961	0.0000	-0.0187	0.028	0.0253			0.0058		0.0012												
	Background+stage 3	1280	0.1034	0.0949	0.0000	-0.018	0.0274	0.0247			0.0059		0.0012												
	Background+stage 2	220	0.4301	0.3911	0.0000		0.0668	0.0532		0.0144										0.0576		-0.0649			
	Full set of variables	220	0.4405	0.3873	0.0000		0.0615	0.0527		0.0129										0.0583		-0.0602			
Delta_ Climate_Q5	Background only	1280	0.0885	0.0821	0.0000		0.0277	0.0271		0.0123	0.0087														
	Background+stage 3	1280	0.0888	0.0801	0.0000		0.0273	0.0265		0.0123	0.0087														
	Background+stage 2	220	0.2530	0.2019	0.0000		0.0498			0.0231										0.0812					
	Full set of variables	220	0.3012	0.2349	0.0000		0.0377			0.0193						0.0127				0.0759					

Table 27- regression analysis of outcome variables- actual scores

Dependent variable (Y)	variables included	Obs.	R^2	Adj. R^2	Prob > F	Const	Independent variables (X)																		
							Sector dummies				Background variables					Stage 1- autonomy		Stage 2- OrgCulture				Stage 3- expense behavior change			
							Arab sector	Bedouin sector	Druze Sector	JR sector	SBM_ YEAR	SBM_ WAVE	SOCIO_ LEVEL	SCHOOL _SIZE	PRINC_ SENIORITY	HINDERANCE	f1_ autonomy	OCQ1	f2_OCQ _parentsinv	OCQ5	f3_OCQ _DBDM	OCQ10	EXPENSE_ MIX_ CHANGE	ED_EXPENSE _GROWTH	TOTAL_EXPENSE _GROWTH
f6_climate	**Background only**	1338	0.1985	0.1931	0.0000	0.501	0.0899	0.0533	0.0898	0.019954	0.0042	-0.0119	0.0041		-0.00003										
	Background+ stage 3	1338	0.2003	0.1931	0.0000	0.508	0.0901	0.0537	0.0904	0.0209		-0.0117	0.004		0.0066										
	Background+ stage 2	238	0.4133	0.3764	0.0000	0.247	0.0968	0.1894	0.1093	0.029										0.2848					
	Full set of variables	238	0.4240	0.3738	0.0000	0.2549	0.0853	0.1882	0.1053	0.0283										0.2791					
Current_ Climate_Q10	Background only	1218	0.0460	0.0389	0.0000	0.731	-0.0369	-0.0432																	
	Background+ stage 3	1218	0.0524	0.0430	0.0000	0.733	-0.0332	-0.0386																	0.0035
	Background+ stage 2	238	0.4246	0.3885	0.0000		-0.0761		-0.0699										0.192		0.3563	0.1194			
	Full set of variables	238	0.4410	0.3922	0.0000		-0.0634		-0.0652										0.1744		0.3611	0.1156			0.0046
Current_ Climate_Q1	**Background only**	1338	0.0930	0.0868	0.0000	0.744	0.0647		0.0459		0.0056	-0.0179			0.0077										
	Background+ stage 3	1338	0.0953	0.0871	0.0000	0.751	0.0645		0.0459		0.0053	-0.0172			0.0077										
	Background+ stage 2	238	0.3147	0.2717	0.0000	0.432	0.0907	0.1632						0.00009						0.2775					
	Full set of variables	238	0.3283	0.2697	0.0000	0.451	0.0792	0.1621						0.0001						0.2729					
Current_ Climate_Q2	Background only	1338	0.2446	0.2395	0.0000	0.637	0.1315	0.0775	0.1374			-0.0159	0.0075	-0.00005	0.0087										
	Background+ stage 3	1338	0.2481	0.2413	0.0000	0.649	0.1332	0.0797	0.1398			-0.0161	0.0073	-0.00005	0.0086								-0.0144		
	Background+ stage 2	238	0.4077	0.3705	0.0000		0.1319	0.2204	0.1479				0.0091							0.3686					
	Full set of variables	238	0.4136	0.3625	0.0000		0.119	0.2175	0.1449				0.0096							0.365					
Current_ Climate_Q4	**Background only**	1338	0.2774	0.2725	0.0000	-0.037	-0.0128	-0.0589			0.0035		-0.0026	-0.00002	0.0011										
	Background+ stage 3	1338	0.2781	0.2716	0.0000	-0.036	-0.0132	-0.0592			0.0035		-0.0026	0.00003	0.0011										
	Background+ stage 2	238	0.1621	0.1095	0.0002	-0.0527				0.013	0.0031		-0.0018							0.0429					
	Full set of variables	238	0.1707	0.0984	0.0016	-0.0531				0.0134			-0.0018							0.0429					
Current_ Climate_Q5	**Background only**	1338	0.0596	0.0532	0.0000	-0.104	0.0264		0.0303		0.0042		-0.0019		0.0023										
	Background+ stage 3	1338	0.0608	0.0523	0.0000	-0.103	0.0257		0.0296		0.0043		-0.0018		0.0023										
	Background+ stage 2	238	0.2816	0.2365	0.0000	-0.191	0.0389	0.0894	0.0468	0.0123										0.0656					
	Full set of variables	238	0.2973	0.2360	0.0000	-0.196	0.0352	0.0882	0.045	0.0122										0.0641					

Regression analyses based on interactions between variables

The correlation analyses pointed at a number of interactions between variables that could be of interest for the purpose of this work. Following these indications, interaction variables were created and used in further regression analyses. The results of these analyses are:

- The connection between the mother-tongue MEITZAV delta score and SBM wave is stronger by SBM year (the interaction between SBM wave and SBM year is significant and positive as an independent variable for mother-tongue MEITZAV). This result points to schools in the second wave of SBM improving more than those of the first wave, in the later years since joining SBM. This is a first indication of data from Israeli SBM schools that may confirm Carr-Hill et al.'s (2016) findings on the time it takes for SBM to begin to affect outcomes.
- The correlation analyses indicated a stronger connection between climate outcome variables Q2, Q3, Q5 and Q7 with socio-economic deciles among schools from the second SBM wave, compared to their first wave counterparts. Regression analysis confirms this, but only when including the SBM wave, socioeconomic decile and the interaction between them as the only independent variables. This finding is not robust when including other background variables.
- Schools from weaker socio-economic deciles were found to raise less money (fundraising) than schools in the stronger deciles. However, the interaction between socio-economic decile and SBM year has a negative, while not significant coefficient, suggesting that the connection between fundraising and socioeconomic background could weaken over time.
- F1_autonomy (factor variable comprised of free-funds and fundraising) increases by SBM year, but the opposite is true for schools from the Bedouin sector. Furthermore, while an increase in free funds increases spending and specifically educational spending for other sectors, there is an opposite effect in Bedouin schools.
- There are differences between sectors when it comes to the connection between parental involvement (OCQ1) and MEITZAV deltas. For Bedouin schools, the weakest demographic, the coefficients for all three MEITZAV subjects are negative, but not significant. For Druze schools, the coefficients are either negative or very weakly positive, but not significant. For Arab schools, the coefficient for one subject is negative and not significant, while the other two are positive and significant. For Jewish-religious schools the result is similar, but only one of them is significant. These differences support Carr-Hill et al.'s (2016) finding that involvement of uneducated parents in decision making at school is not always helpful and that involving parents from disadvantaged communities in the decision making at school did not improve outcomes.
- In Bedouin and Druze schools, and to a much lesser extent in Jewish-religious schools, parental involvement is negatively linked to principal seniority, meaning that in these sectors parents are more involved where the principal is new on the job.
- The correlation analysis finds that the connections between the climate outcome variables and general parental involvement (OCQ1) are quite strong per sector, while there is no correlation between them when looking at the entire population. This connection is also entirely absent in the regression analyses. This appears to be an instance of "Simpson's

paradox" (a phenomenon in which a trend appears in several different groups of data, but reverses or disappears when these groups are combined, see figures 3 & 4).

Figure 3- climate outcomes by parental involvement- full population

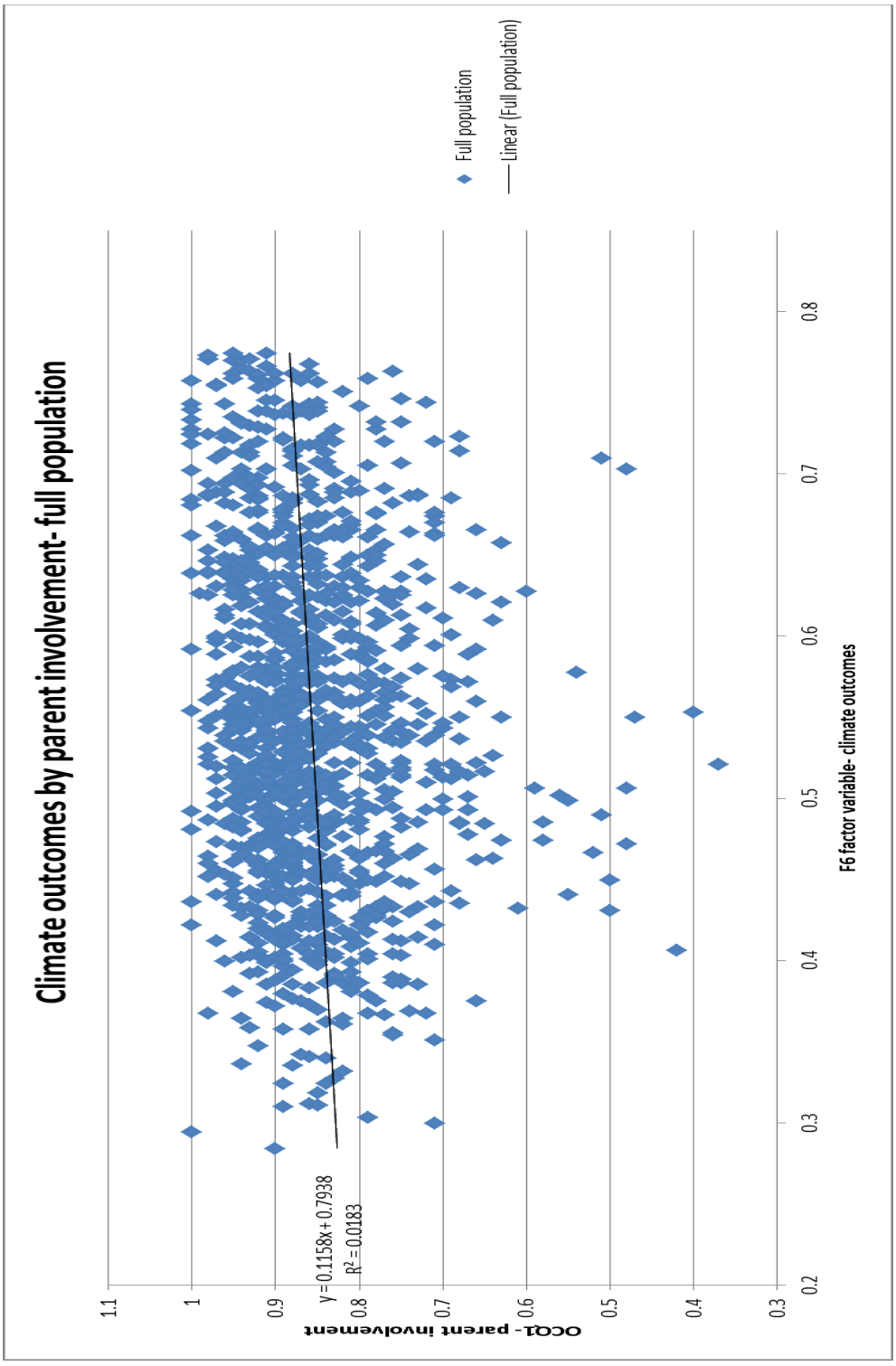
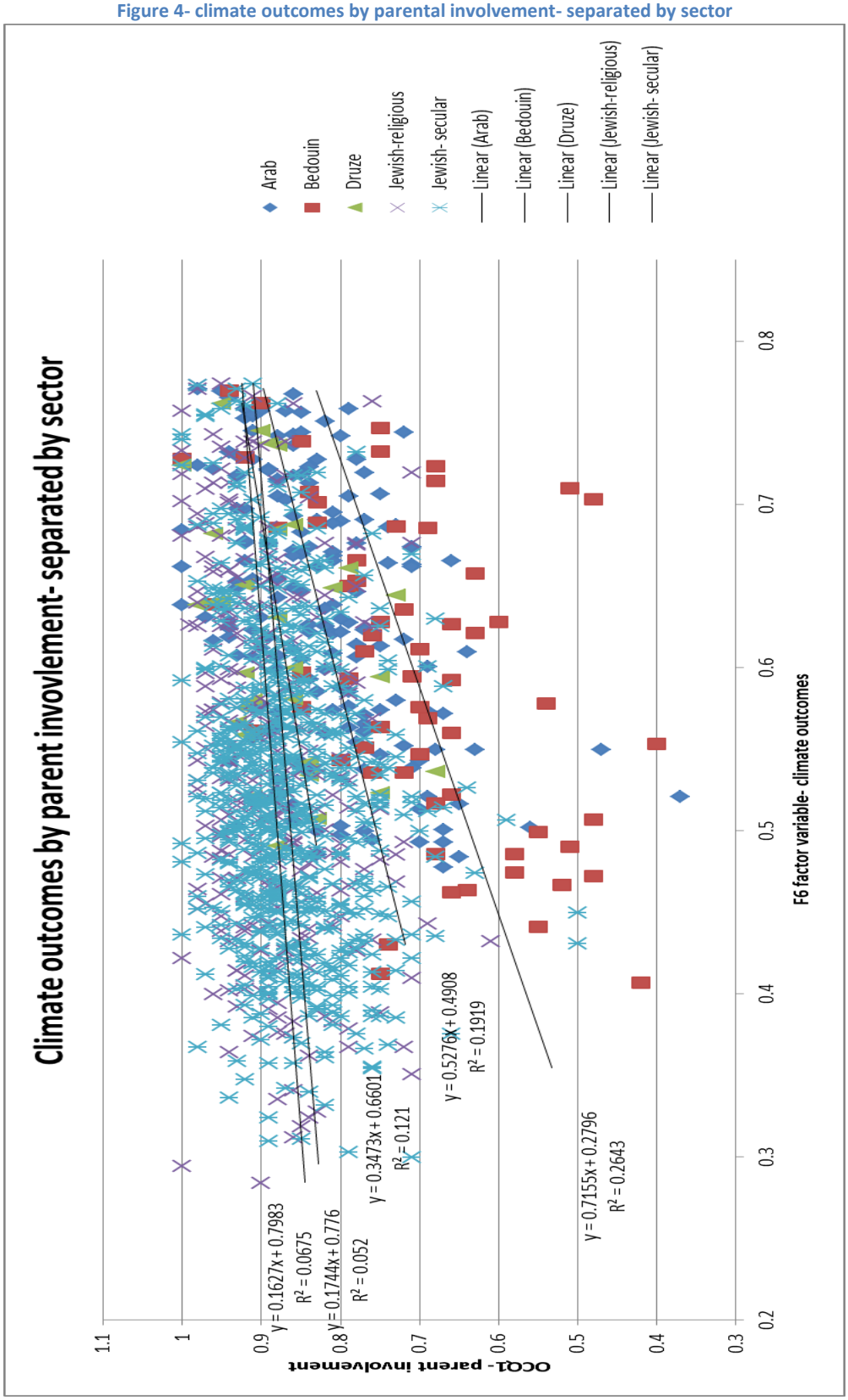


Figure 4- climate outcomes by parental involvement- separated by sector



Discussion

Financial and non-financial data

When the SBM Directorate first started training schools on how to prepare annual school plans, it was important to the Directorate to connect the budgetary plan with the pedagogical plan. Until then, they had been separated, leading to plans being handed in for the sake of being handed in, and not as useful working documents, as they were unrelated to the reality of resources available to the school. A format that connected the two was circulated (Ministry of Education, 2012) and later abandoned, for a simpler format that once again separated budgets from pedagogy[37]. Similarly, the first thing that is very clear from the findings of both the regression analyses and correlations is that the organizational and outcome variables exist in a separate sphere from the financial variables (autonomy and expense behavior change variables). Strong connections do exist within each of these two separate data sources. There are some rare exceptions, but for the most part, the organizational and the financial continue to live in their own separate ecosystems. This also means that financial autonomy and added funding do not necessarily mean better outcomes. Further research may be able to show that they can help, but only when coupled with other factors.

Sadly, this also means that the answer to our third research question, "What can we learn regarding the organizational changes in a school from examining its financial information?" is- very little.

Teacher participation and outcomes

Of the organizational culture variables, the only variable found by the regression analyses to have a significant effect on the climate outcome factors was school teamwork. Teamwork was also found to have weak, but significant, correlations with the MEITZAV outcomes (mother-tongue: 0.1679*; math: 0.1385*; English: 0.1868*), but was not significant as an independent variable in the regression analysis. School teamwork, together with teacher autonomy and parental involvement also positively affects teacher satisfaction.

While Leithwood & Menzies (1998) posited that SBM models that shift the locus of control to teachers are the models most likely to produce improvement in student outcomes, because the teachers are closest to the students and more connected to their academic needs, there is no evidence that adopting SBM had any effect on teacher participation. In fact, RAMA, when evaluating the second Israeli SBM reform, found that SBM had not gone past the doorstep of the principal's office to affect other school staff or students (RAMA, 2014).

Whether SBM increased teacher participation or not, "school teamwork" does affect outcomes, while "teacher autonomy" had a much less clear affect, raising the question that merits further exploration, of what kind of teacher participation is in fact needed.

[37] The "TOM system". "TOM" is a Hebrew acronym for "planning and resources", however, the resources section in this format has been greatly truncated, and disconnected from the rest of the plan.

Parental involvement

The general "parental involvement" variable (OCQ1) is prevalent in a majority of schools with an average score of 85.75%, while parental involvement in the school vision, curriculum and social program (OCQ2-OCQ4) is much less prevalent, with average scores ranging from 28.57% to 64.78%. In Bedouin and Druze schools, rates of parental involvement are higher where the principal is new on the job, suggesting that more experienced principals in those sectors may be less open to involving the parents.

The regression analyses find parental involvement to be significantly connected only to teacher satisfaction and not to other outcomes. However, correlations by sector find strong connections between general parental involvement (OCQ1) and climate outcomes that are not apparent when correlating the entire population and are absent from the regression analyses. This is due to the Simpson paradox, in which the trend of the entire population levels out or even reverses from the trends of each group when viewed separately. This does not occur for the other three parental involvement variables, represented by the "f2_OCQ_parentsinv" factor variable, which remain unconnected to outcomes, leading us to ask, why not? OCQ1 is made up of nine statements, three of which are OCQ2-OCQ4 referring to collective involvement, while the other six refer to individual involvement, such as teachers updating parents on their child's social and academic development in school. The fact that OCQ1 is significantly linked to outcomes, while the other variables are not, raises questions regarding the nature of the relationship between teachers and parents and its potential impact on outcomes, not just from the perspective of parents being collectively more involved in decision making, but also from the perspective of strengthened communications between individual parents and teachers, leading to parents being more directly involved in their child's education, as well as acting as 'consultants' for the teachers regarding their specific child, as reflected in the statements included in OCQ1.

When examining the connection between parental involvement (OCQ1) and MEITZAV outcomes, we find differences between the coefficients, which though not all were significant, do tell us something about the differences between the sectors in how parental involvement is relevant to student outcomes. Only Jewish and Arab schools had any significant positive coefficients, while Druze and Bedouin schools had no significant coefficients. Some of them were negative in Druze schools, and all were negative in Bedouin schools. As seen in **table 5**, the Druze schools, and even more so the Bedouin schools, are situated in the weakest socio-economic deciles, a measurement which is based in a large part on the level of education of parents, supporting Carr-Hill et al.'s (2016) finding that uneducated parents are not always helpful when involved in decision making at school and that involving parents from disadvantaged communities in decision making at school did not improve outcomes. The regression analysis did, in fact, find that the socio-economic decile negatively effects parental involvement. It may be prudent for policy makers to consider coupling future similar reforms that encourage parental involvement, with training for parents from weaker socio-economic groups, as has been shown to be effective (see for example, Duflo et al., 2015; Pradhan et al., 2011).

Leithwood & Menzies's (1998) categorization sees SBM reforms that shift the locus of control to parents as the model most likely to bring about change, as the parents bring a new viewpoint that was previously not represented. The Israeli reform has largely neglected to bring parents into the decision-

making process (although SBM year is a significant independent variable for the parental involvement factor variable, with a weak coefficient). Parental involvement remains an untapped potential for change in the Israeli school system. The strong connections found between teacher satisfaction and parental involvement may suggest that involving the parents is not necessarily the landmine that some fear it to be.

Data-based decision making

SBM's effect on data-based decision making is unclear. SBM wave is a significant, albeit weak, independent variable in the regression for the Data-based decision-making factor[38]. The average scores for data-based decision making are similar across all SBM years and both SBM waves, as seen in **tables 13 & 16**. We do find a significant connection between data-based decision making and climate outcomes, while not robust when including other independent variables, making this a possible example of "failure of implementation", rather than "failure of the model". However, the three data-based decision-making variables include very little variance, making them difficult to use in this work. This is because the questions asked in the climate questionnaire have a very low threshold, asking whether data-based decision-making activities were conducted anytime in the last year or even two years. The Israeli SBM model includes data-based decision making as a central principle. Thus, the existing school climate measurements regarding data-based decision making are not enough to gauge whether this principle is in fact being fulfilled.

Dulling socioeconomic differences

Schools from weaker socio-economic deciles were found to raise less money (fundraising) than their stronger counterparts. There is a negative, but not-significant, interaction, however, between socio-economic decile and SBM year, meaning that the effects of socio-economic decile on fundraising may weaken over time. Furthermore, at least four of the climate outcome variables were less affected by socio-economic decile among first wave schools. However, this finding was not robust when including other independent variables. These findings suggest that SBM may be able to dull the effects of socioeconomic differences on schools' outcomes and access to additional resources, but further investigation is required.

Schools' learning curve

Carr-Hill et al. (2016) found that in SBM reforms, organizational change can take up to five years to take root, while the school staff learns new skills, and up to three more years may pass until outcomes improve. There is support for the idea that schools have to undergo a learning curve before outcomes improve, in that the connection between the mother-tongue MEITZAV and SBM wave grows stronger by year. Improvement is more visible in schools undergoing the transition to SBM for the first time, but only after time has passed. If, as Carr-Hill et al. suggest, there is a learning curve during which schools need to process organizational changes, it stands to reason that there should be a similar learning curve

[38] Amounting to an approximate 1.5% difference in Data-based decision-making rates between the two waves.

during which schools learn to manage their own budgets. Naturally, this curve may be different from country to country, based on the complexity of the budget-managing tasks and responsibilities transferred to the schools. In the existing data, one may find evidence of such a curve in the connection between a school's available funds (free funds) and its changes to spending (expense mix change). Free funds is not significant as an independent variable for Expense-mix-change, even when taken alone, but the correlation between the two becomes stronger and significant from the third year onwards. As the regression analysis is inconclusive, this merits further investigation.

The importance of available funds and the weakest demographics

The findings of this research show that free funds and fundraising are increasing by year for everyone. The exception to this is Bedouin schools. The findings also show that free funds and fundraising are important factors for explaining an increase in education spending in schools. The regression coefficients show that on average, as much as 75% of free funds and fundraising may be going to educational expenses. Assuming that increased educational spending is desired, it is vital to ensure that schools have free funds available.

The findings also show that at Bedouin schools, the more funds are available, the less they spend, on educational expenses or at all. One reason for a school to hoard funds is a lack of trust in its relationship with its LEA. If a school does not trust the LEA and cannot be sure that funds will be transferred regularly, the school will avoid spending on anything but what is absolutely necessary, in order to save funds for a "rainy day" for the basic utilities. Santibañez et al. (2014) have shown that in low income countries, an influx of funds for non-salary (and non-utility) expenses can be very significant for a school, for acquiring equipment and materials that were previously not possible. Bedouin schools are on the weakest socio-economic level, missing much basic equipment, and the hoarding of funds is denying these schools a significant opportunity to bring about material changes. One lesson to be learned from this example is that it is important to tailor the incorporation of such reforms to different sectors, as the data have shown that they behave very differently in their financial behaviors as well as their organizational cultures.

Can Israel's reform be labelled a success?

We can safely categorize Israel's SBM as "Administrative control SBM", according to Leithwood & Menzies' (1998) categorization. Parents and teachers have, for the most part, been left out of the decision-making process, and have no institutional power in the school committees. According to the categorization, administrative control is the least likely to result in change for schools, because it does not change the locus of control or introduce new decision-makers. As we have seen, the school climate measures and MEITZAV scores support the importance of parental involvement to outcomes. Meanwhile, the purpose of "administrative control SBM" is resource efficiency (ibid). And in fact, the original government resolution (Government Secretary, 17/3/2011) mentions nothing of autonomy in the areas of curriculum or staff decisions, nor does it mention the empowerment of teachers or parents.

The document is headed “School Based Management – strengthening the authority of the principal in school”, and discusses budgetary autonomy issues and pooling of resources only. According to Brown (1990), SBM was not introduced in order to cut costs, but rather to allow schools to spend money more efficiently, because they are more aware of costs and are able to carry surpluses over to the next year, allowing them to spend money for actual needs, rather than on a spending frenzy at the end of each budget year. By that definition of resource efficiency, while it may be a disappointing success, as it sets the bar quite low, the mere fact that schools have enforced their own preferences and made changes in what they spend their resources on (represented by the “expense-mix change” variable) and the fact that they are able to transfer surplus funds to the next year are enough to show success.

Durability of the Israeli SBM reform

Ganimian (2016) explores the factors affecting the durability of SBM reforms over time, based on the experiences in Honduras and Guatemala. Small scale reforms and low cost reforms appear to survive longer, as they tend to raise less opposition.

The Israeli reform is far from being small scale or low-cost. It encompasses almost all of the state elementary schools (almost 1900 schools) and costs an approximate 150 million NIS annually[39]. Amid increasing pressure to show results, will the government continue funding such a program for the long term?

In the 2018-2019 school year the MOE attempted to enact a similar program in Israeli junior-high schools (Ministry of Education, 2019C). The program gives funds to schools for educational programs only, but affords very little autonomy in the use of these funds. It is unclear whether this program will be expanded in scope or depth of the reform, but it does appear to constitute a withdrawal from the scope of autonomy afforded to the primary schools under the SBM reform.

Conclusion

The existing research on School Based Management has shown mixed results, because it refers to very different models, all living under the wide and varied definitions of SBM. Research models also often focus on the beginning and the end of a chain of reactions, i.e. a school being in SBM and the student outcomes, while neglecting the nuances of the process of change that an SBM school must undergo before any effects will be evident in the outcomes. This also causes confusion between failure of the model and failure of its implementation. I therefore examined the various “moving parts” of SBM, in the form of income and expenditure data, organizational attributes of schools and learning and climate outcomes as representing four distinct stages in the transition process to SBM, using correlation and

[39] Approximately 42 million USD in April 2019 rates. Based on a calculation of the added funds to schools of between approximately 200 and 350 NIS per capita, depending on the LEAs socio-economic rating (Ministry of Education, 2012).

regression analyses. The results show very little connections between the financial data and the non-financial data, meaning that more money does not necessarily mean better outcomes or organizational change, at least not without other factors. School teamwork and parental involvement, which are both part of the SBM model, are both important for improving outcomes, but were not strengthened by adopting SBM, indicating success of the model, but a failure of implementation in this respect. Furthermore, the type of parental involvement that is more strongly connected to improved outcomes, as well as teacher satisfaction, is an individual involvement based on strengthened communication between teachers and parents, rather than collective involvement of parents in decision making at school. Teacher satisfaction improves the more parents are involved, suggesting that their involvement is not as controversial as some Israeli school districts expect. There is evidence, which needs to be further established, that time passed under SBM may have a dulling effect on socioeconomic differences in schools' access to resources as well as outcomes. Another finding that needs further clarifying is that schools may go through a learning curve in their ability to manage their own budget, alongside the time it takes to fully assimilate organizational changes and for those changes to affect outcomes. Further research should include a wider range of data to represent more aspects of the different stages of autonomy, organizational change, behavior change and outcomes. Designers of similar programs should take into account differences between sectors in the Israeli school system, as well as socioeconomic differences, and tailor programs accordingly in order to achieve the desired outcomes. Furthermore, if increased educational spending is desired, it is imperative that the MOE ensure that schools have free funds available for this and that these funds are not tied down by mistrust and uncertainty about future income.

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