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Abstract

Israel enacted the Encouragement of Capital Investments Law (ECIL) in order to develop its production capacity. The law awards grants and other benefits to those who establish enterprises or expand existing ones, foremost in peripheral areas. This study examines the effect of the grants on manufacturing productivity in 1990–1999 and the effect of the expansion grants and tax benefits on investment and employment. We use a unique plant-level data base—containing information on all grants and tax subsidies given under ECIL auspices—and additional information about the activity of a representative sample of manufacturing enterprises. We find that capital originating in expansion and construction grants is no less productive than non-subsidized capital and, consequently, that the grants do not distort macro-level capital allocation. We also find, however, that the expansion grants do nothing to increase investments and employment. Although simple estimations show that an expansion grant of USD 35,000–USD 50,000 (in 1999 prices) results in the creation of one new job, the use of the districts and the share of exports as instrumental-variables does not reject the hypothesis that the expansion grants have no upward effect on employment.

השפעת החוק לעידוד השקעות הון בתעשייה על התוצר, התעסוקה וההשקעה: ניתוח אמפירי בנתוני מיקרו

גיא נבון ורוני פריש

תקציר

החוק לעידוד השקעות הון נחקק במטרה לפתח את כושר הייצור של המשק. לשם כך הוענקו מענקים והטבות אחרות למי שמקים או מרחיב מפעל קיים, בעיקר בפריפריה. המחקר בוחן את השפעת המענקים על הפריון בתעשייה בשנים 1990-1999, ואת השפעת מענקי ההרחבה והטבות המס על סך ההשקעה והתעסוקה במפעלי התעשייה. אנו משתמשים בקובץ נתונים ייחודי ברמת המפעל - קובץ המכיל מידע על כל המענקים שניתנו במסגרת החוק - ובמידע נוסף על פעילות מדגם מייצג של מפעלי תעשייה. נמצא שהפריון של ההון שמקורו במענקי ההרחבה וההקמה אינו נופל מזה של ההון שאינו מסובסד, ומכאן שהמענקים אינם מביאים לעיוות בהקצאת ההון במשק. לעומת זאת מצאנו שמענקי ההרחבה אינם תורמים להגדלת ההשקעה והתעסוקה. באמידות פשוטות נמצא שמענק הרחבה של 35 עד 77 אלף דולרים (במחירי 1999) מביא ליצירת משרה חדשה אחת, אך אמידות אלו מוטות בשל בעיית השמטת המשתנה הזדמנויות ההשקעה של המפעל. מפעל שלא ימצא הזדמנות השקעה רווחית לא יגיש בקשה לקבלת סבסוד ולא ישקיע, ואילו מפעל שימצא הזדמנות השקעה יגיש בקשה ובהסתברות גבוהה יקבל סבסוד וישקיע. פתרון בעיה זו באמצעות המחוזות ושיעור היצוא מסך המכירות כמשתני עזר אינו מאפשר לדחות את ההשערה שלמענקי ההרחבה אין כל תרומה לגידול בתעסוקה.

1. Introduction

The Encouragement of Capital Investments Law (hereinafter: ECIL) was enacted in 1959 "to encourage economic enterprise and capital investments" for the development of production capacity, improvement of the balance of payments, immigrant absorption, population dispersion, and job creation. The ECIL awards grants and other benefits to those who establish or expand manufacturing, agriculture, and tourism enterprises, with emphasis on investments in National Priority Areas, which correspond to the development areas in the peripheries. In Israel's early years, the ECIL was an instrument for the development of industry countrywide; later on, it became an instrument for the development of industry in the periphery. However, its importance has diminished in recent years, its grant programs have been downscaled,[1] and its tax benefits have been expanded.[2]

To justify the subsidization of capital investments, one has to deviate from the assumptions of perfect competition, since under these assumptions such subsidization has one of two undesired outcomes: the performance of ventures that are unprofitable for the firm (and for the economy) and the subsidization of ventures that would be profitable (and performed) even without the subsidy. This aside, collecting taxes from the public to finance the subsidy creates an extra burden and the financing of the bureaucracy that disburses the subsidies does the same. According to the same approach, subsidizing capital only in peripheral areas will result in overinvestment of capital in the periphery—capital that earns a lower return than it would in the center. One may justify the regional subsidization of capital if the investments are intended to

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1 The outlay for grants under the ECIL fell from 0.4 percent of GDP in the mid-1990s to 0.1 percent of GDP in 2003–2006. See Box B3 in the Bank of Israel *Annual Report* for 2006.

2 Since 2005, the tax benefits have been administered by the Israel Tax Authority and not by the Investments Center.

create positive externalities at the regional level[3]—in other words, if some of the results of the investment accrue not to the developer but to other players in the region (firms, labor, municipal government, etc.). Such externalities may trace mainly to diversity advantages and scale economies in a given geographic region. Thus, the construction of a plant in a faraway and sparsely populated area may enhance the welfare of the area's entire population, including those not employed by the plant, because the plant helps to diversify regional employment, consumption, and leisure opportunities. Accordingly, an enterprise in the distant periphery does more for the economy than a similarly profitable enterprise in the center of the country, where employment opportunities are numerous and diverse.

Many studies have investigated the effect of the ECIL and most researchers have expressed doubts about its effectiveness. Several studies focused on examining the effect of the subsidization on the benefactee firm's activity (disregarding the regional externalities of the investment). These studies found that the subsidy results in the performance of ventures that are unprofitable to the firm by creating surplus capital stock in enterprises (Litwin and Meridor, 1982); that the subsidized capital has a relatively low utilization rate (Moravetz, 1976; Bregman, 1986); that the subsidy causes production inefficiencies (Bregman, Fuss, and Regev, 1999); and that it leads to the construction of plants that have scanty prospects of survival (Lavy, 1994). Other studies that examined the contribution of the ECIL to the development of peripheral areas in a broader context found that it furthers the development of traditional industry only: that the plants constructed in peripheral areas are intensive in unskilled labor (Gradus and Krakover, 1976; Shefer and Frenkel, 1989; Razin and Schwartz, 1992); that the ECIL encourages mainly investments in traditional and

[3] One may justify a general subsidization of capital if the firms suffer from a liquidity constraint.

unstable industries in development towns that do not enhance the variety of inhabitants' employment opportunities (Schwartz, 1993); and that the ECIL is effective in attracting investments to the edges of large metropolitan areas but not to faraway places (Razin and Schwartz, 1992). It was also found that the awarding of capital grants under the ECIL to enterprises in development localities does not reduce the rate of unemployment-compensation and income-maintenance benefactees in the locality (Moav and Reingewirtz, 2006; Bank of Israel *Annual Report* for 2006, Box B3, 2007).

The present study asks whether, and to what extent, the capital grants awarded by the Investments Center increase investment and employment in peripheral areas and whether the subsidized capital is less productive than non-subsidized capital. It is important to estimate these parameters in order to determine the optimum rate of capital subsidization in the national periphery. One presumes that the optimum rate of subsidization is the one that aligns the marginal cost of the subsidy with its marginal utility. Marginal utility stems from the spread that the subsidization creates between marginal productivity per unit of capital in the periphery and that of a unit of capital in the center (and from the cost of transferring sources from taxpayers to investors—the marginal extra burden occasioned by the collection and distribution of taxes). The marginal utility of the capital subsidy is derived from the existence of externalities; the more the subsidy contributes to an increase in investment and employment in the periphery, the more significant the externalities will be. In this study, we first estimate the spread in marginal capital productivity between plants in the periphery and those in the center, and afterwards we estimate the contribution of the capital grants to the increase in investment and employment in manufacturing plants, focusing on the

periphery. The study does not estimate the external effects of the increase in employment on the development of the peripheral area.

To test the effect of the capital subsidy on the productivity of the subsidized capital (relative to that of non-subsidized capital), we adopted the basic approach of Bregman, Fuss, and Regev (1999, hereinafter: BFR). Like BFR, we estimated a enterprise-level production function that estimates product as a function of physical-capital services, labor input, workers' schooling, R&D-capital services, and additional control variables, plus the variable of concern in this study: the rate of the capital subsidy in capital services. This allows us to examine the effects of an increase in the capital subsidy on enterprise productivity, all other factors held constant. Unlike BFR, we estimate the production function in two stages (TSLS) because direct estimation (OLS) is prone to a bias occasioned by the omission of relevant variables. An example of an omitted variable is distance from the center: since the government prefers to subsidize the capital of enterprises in outlying areas, and since outlying enterprises incur a heavier burden of transport expenditure, we may mistakenly charge these enterprises' low productivity to the capital subsidy even though it actually originates in the extra cost of distance. The two-stage estimation allows us to surmount the bias resulting from the omission of variables such as distance from the center, quality of regional infrastructure, quality of human capital, and additional variables that determine both the likelihood of receiving a capital grant and the firm's productivity.

The empirical part of the study also examines the effect of receiving expansion grants on the enterprise's investments and employment. The problem of omission of variables recurs in estimating the investment and employment equation. The omitted variable here is the enterprise's investment opportunities: enterprises that do not find a

profitable investment opportunity will not apply for a subsidy and will not invest, whereas enterprises that find such an opportunity will apply and are very likely to receive the subsidy and make the investment. To surmount the problem of omitted variable (and the resulting bias of the estimates), we compare enterprises that differ from each other in their probability of receiving a subsidy (as opposed to comparing enterprises that received subsidies with those that did not). For this purpose, we use the TSLS method to estimate the equations. First, we estimate the probability of receiving a subsidy on the basis of enterprise characteristics and instrumental variables that include interactions among the seven geographic regions of the country and the share of exports in total sales; afterwards, we analyze how this estimate affects plants' employment and investment.

The study is structured as follows: Chapter 2 briefly describes the ECIL and its amendments over time; Chapter 3 surveys the literature on the effect of the ECIL; Chapter 4 presents basic facts about the economic disparity between Israel's center and periphery (with emphasis on manufacturing); Chapter 5 describes the database; Chapter 6 presents the empirical method; Chapter 7 reports the results of the study; and Chapter 8 concludes.

2. The Encouragement of Capital Investments Law

The Encouragement of Capital Investments Law was enacted in 1959 to encourage economic enterprise and investment of foreign and domestic capital in the development of national production capacity, improvement in the balance of payments, immigrant absorption, population dispersion, and job creation. The ECIL

awards grants and additional benefits to those who establish enterprises or expand existing ones.

The ECIL, initially an instrument for the development of industry at large and the encouragement of foreign direct investment, gradually evolved into an instrument for the development of the national periphery. In 1967, it was amended to define the grant as a percentage of the investment and enterprises in National Priority Areas (mainly development areas) were given preference. The rates were set at 38 percent of recognized investment in Class A Priority Area and 17 percent in Class B Area. The implementation of the law was tasked to the Investments Center, an agency subordinate to the Ministry of Industry and Trade (today the Ministry of Industry, Trade, and Labor). To be recognized as an "Approved Enterprise," an enterprise has to satisfy several conditions. The main one is its geographic location—in a Class A development area, a Class B area, or the center of the country—which also determines the size of the benefits. However, approval of the grant is not automatic; applicants must present the Investments Center with a business plan and a forecast of the contribution of the venture to employment and exports, and these considerations count in deciding which investments to approve.

Over the years, the ECIL has been amended many times in regard to its criteria and benefit programs. In the 1970s and the 1980s, Approved Enterprises received a "basket" of benefits including capital grants and nonindexed development loans. The development loans were abolished in 1986 and replaced by an additional tax-benefit program, termed the "alternative program," in which the enterprise could convert its eligibility for a grant into a tax benefit: several years' full exemption from corporate income tax on undistributed income. In the alternative program, the applicant firm had to finance at least 30 percent of the approved investment and perform the investment

within three years of approval. In 1990, when it became urgently necessary to create jobs for newly arrived immigrants, the benefits were temporarily extended to investments in the center of the country as well. Two provisional benefit programs were added: state-guaranteed loans (given in all parts of the country) and a "composite program"— a state-guaranteed loan plus a grant (in National Priority Areas only).

In the second half of the 1990s, a process of cutting back on grants and expanding tax benefits got under way. In 1997, the rates of the grants were reduced to 24 percent in Class A Priority Area and 10 percent in Class B Area; in 2001, the rate of grants in the Negev was raised to 32 percent under special legislation pertaining to the Negev.[4] In 2004, the law was amended significantly in order to add two new programs: an exemption from corporate tax and dividend tax for especially large investments and a reduced rate of corporate and dividend taxes in the Class A Priority Area. The benefits under these programs are administered by the Israel Tax Authority and not by the Investments Center. The grant program was also revised that year: 70 percent of the grant was made conditional on the enterprise's meeting the employment targets that it presented to the Investments Center. In 2005, a condition was added that the Approved Enterprise had to export at least 25 percent of its output—a change that significantly lowered the share of plants in peripheral areas that qualified for assistance.

[4] The area south of the 100th parallel, which runs south of Sederot and Kiryat Gat and north of Beersheva and Rahat.

3. Review of the literature

Bregman, Fuss, and Regev (1999) examined the effects of the ECIL on the output of manufacturing enterprises in 1990–1995, using longitudinal panel data on 620 manufacturing enterprises, some of which had received capital grants. The file included enterprise-level data on the size of the capital grants and output, product, labor input, physical-capital services, proportion of well-educated staff, R&D investment, economic industry, shift labor, and other parameters. Estimating a production function, BFR found that, other variables held constant, subsidized enterprises generated less output per employee: the per-employee output at a plant that derived 10 percent of its total capital from capital grants (the average subsidy rate the firms in the sample) was 3 percent lower than that at a plant that did not receive a grant.[5] BFR cited the many distortions that existed in the ECIL[6] and noted that the map of National Priority Areas was revised frequently for political reasons.

Lavy (1994) examined the survivability of ECIL on firms that received grants (hereinafter: grantee firms). According to the raw data that he used (administrative data from the Investments Center that contained information about firms that received capital grants), non-grantee firms had a higher survival rate than those that received construction grants and a lower survival rate than firms that received expansion grants. Lavy did not content himself with the gross comparison because he found that the capital grants were not distributed randomly: unless both groups of firms received grants, the survival prospects of the non-recipient group were different from those in

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[5] A firm that enjoyed a 30 percent subsidy rate (the accepted subsidy rate for Approved Enterprises in Class A National Priority Areas) produced 9 percent less per employee than non-subsidized enterprises did.

[6] "The subsidization system [...] is full of discriminations: by destination—between production for local markets and exports; by ownership—between local and foreign investors; by industry—manufacturing industry versus services; by area, by type of asset (equipment versus structures), and in practice, also by size."

the group of grantee firms. To contend with the selection problem, the probability of a firm's receiving a construction grant given its observed characteristics—industry, employment, share of exports in sales, geographic location, etc.—was estimated in the first stage. In the second stage, a survivability function was estimated with the receipt of a grant and the firm's characteristics (including those that influenced the selection process) as givens. The results showed that even after selection in receiving a grant is taken into account, construction grants had a negative effect on firms' prospects of survival and expansion grants had a positive effect.

Litwin and Meridor (1982), estimating the implicit subsidization rate in the ECIL, found very high rates—40–60 percent of the investment—in 1974–1979. Much of the subsidy had been unforeseen; it happened due to the acceleration of inflation in those years. This part of the subsidy had no effect on the size of the investment; it amounted to a gift to the investors. The foreseen portion of the capital subsidy did cause national investment to increase—but the upturn inflicted a loss of sources on the economy (overinvestment) due to diminishing marginal output.[7] Estimating the loss to the economy on the assumption of unit elasticity of the investment demand function, Litwin and Meridor found that the subsidy in 1974–1979 caused the loss of 0.5 percent of GDP each year.

Schwartz (1993, 1994, 2002a, 2002b) performed an extensive examination of the effect of the ECIL on development towns from theoretical and empirical perspectives. She focused on the "locality incentives" that were designed to set the periphery generally, and the development towns specifically, on a solid economic footing. Schwartz characterized development towns as places far from the center, small in population (with the exception of Beer-Sheva), and, with few exceptions, lacking in

[7] Litwin and Meridor assumed, in effect, that investments have no externalities.

occupationally strong population. This places development towns at a relative disadvantage in ventures based on professional and diverse human resources and in those entailing close relations with a large number of suppliers and the provision of customer service (because suppliers and customers congregate mainly in the center of the country). To surmount the development towns' structural drawbacks, the government offers short-term locality grants (for initial-investment costs only), but their financial magnitude is not known with certainty[8] and is hard to quantify. Due to this method of incentivization, preference goes to ventures projects in traditional industries, firms that aim their output at the domestic market, entrepreneurs who lack experience and equity, the construction of new plants (as opposed to the expansion of existing ones), and ventures in which the investment matures quickly (even before the tax benefits run out).[9] Therefore, the ECIL tends to encourage the construction of unstable enterprise in the periphery and brings other undesired effects in train, such as low capital utilization.

In the empirical part of her study, Schwartz found that while most approved investments for traditional industries did in fact accrue to enterprises in development areas (77 percent in 1977–1983), only a small portion of the investment in growth industries (electronics and machinery) went there (32 percent). By implication, Schwartz, says, "The locality incentives provided by the law [. . .] have not brought about the desired change in the characteristics of the investments, especially in terms of the structure of the industries involved."[10] Another important finding in Schwartz'

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[8] The extent of the subsidy depends on the inflation rate, cost of capital, marginal tax rate, and many other factors.

[9] We should emphasize that, contrarily, the tax benefits give more profitable enterprises a greater incentive to build plants in peripheral area.

[10] This conclusion is not surprising because the development-area incentives diverted ventures from the center of the country to the periphery—something that abetted change in the structure of industries in the periphery (toward ventures in which the development towns are at a comparative

research is that manufacturing employment in development towns does not correlate statistically with the extent of approved investments in the towns, implying that the ECIL has a relatively minor effect.[11] Nevertheless, one may find oblique evidence of the effect of approved investments on manufacturing employment in the fact that the rate of manufacturing employment increased faster in more isolated development towns and those with low levels of schooling than in other development towns. Investigating the brief history of three development towns—Ofakim, Migdal Ha-'Emek, and Ma'alot—Schwartz inferred that the ECIL itself does not suffice to turn a development town around; complementary actions are needed—establishing a leading enterprise, setting up a manufacturing support system, improving the locality's quality of life, etc. This was done in Migdal ha-'Emek and Ma'alot, which managed to develop solid manufacturing bases, but not in Ofakim.

Borochov (1989) discussed the development of manufacturing in development towns in 1976–1983. First he noted the high unemployment rates in these towns and their acute reliance on manufacturing industries: in the mid-1970, 40 percent of the labor force in development towns was employed in manufacturing as against 25 percent on national average. Then Borochov found that the pace of growth in manufacturing in development towns slowed severely in 1976–1983 and stated that this process might continue because the traditional industries on which the towns relied were declining steadily whereas the advanced industries, which were growing steadily, congregated mainly in the center of the country.

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disadvantage) but also led to the launching of ventures that would not have been established in Israel without subsidization: those in which the development towns have a comparative advantage. The latter increased the intensivity of traditional industry (e.g., textiles and clothing) in the development towns.

[11] Importantly, insofar as the Investments Center is more liberal in approving investments in development areas where manufacturing enterprises have closed and manufacturing employment has fallen, the approved investments will in fact increase manufacturing employment.

Borochov divided the reasons for the slowdown of growth in the development towns into objective factors and government policies. The objective difficulties had to do with the towns' being small and far from large population centers, i.e., from customers, suppliers of intermediates and business services, ready supplies of labor with specific skills (allowing firms to respond quickly to an increase in demand for their products), and research institutes. In Borochov's opinion, these factors are especially obstructive to the development of knowledge-intensive industry. As for government policies, Borochov, like Schwartz, believes that the ECIL attracts two kinds of ventures the periphery: risky ones that depend on government funding and those with poor prospects of survival. Since Approved Enterprise status is awarded to enterprises that channel their output to export **or** to enterprises in peripheral areas, the ECIL attracted to the periphery, in the main, enterprises that produce for the domestic market and have no growth potential. Just the same, Borochov believes that the law made a large contribution to the development of industry in the development towns: "Were it not for the incentives given under this law, such industry as exists in these towns would not have developed."

Razin and Schwartz (1992) examined the factors behind the standstill in manufacturing activity in Israel's outlying areas. They argued that the way modern industry develops acts to the disadvantage of such areas (even though it makes haulage expenses less important). Modern industrial activity, foremost the knowledge-intensive kind, requires more and more interaction with suppliers, customers, and other players, and such interaction entails transaction costs—negotiation, coordination, etc. Since transaction costs depend on distance, a firm in a small and faraway development town incurs higher costs for the creation of new connections and the maintenance of existing ones. The intensification of corporate

communication increases the concentration of industry in a given area around which suppliers, skilled labor, marketers, and others set up shop. (Examples are Silicon Valley, the film industry in California, and the auto industry in Detroit.) Another process that is harmful to the periphery is an inverse process of spatial dispersion of firms' activities: administrative, marketing, and R&D activities tend to concentrate in metropolitan areas while routine production takes place in the periphery. This trend was conspicuous in the development of Israel's electronics industry: at first, the industry congregated the Central District and metropolitan Haifa; later on, routine production moved to nearby peripheral regions on the edges of the large metropolitan areas.

Razin and Schwartz associate the halt in the development of industry in Israel's periphery in the 1980s with additional processes, including the decline of enterprises owned by the Histadrut, which had been committed to developing the periphery; the government's inability to disperse the defense industries; and the absence of perceptible wage disparities between periphery and center. Razin and Schwartz found that the relative incentivization of capital investments in the periphery decreased in the 1990s because the urgent need to create jobs amid mass immigration led to the extension of investment benefits to the center as well, and because the incentivization of R&D investment, which does not correlate with location, increased rapidly, However, "The prospects of a more aggressive dispersion policy are slim in any case and the economic gaps between the center and the distant peripheries will not be narrowed significantly by incentives for industrialization only." Razin and Schwartz are also cautious about reliance on a large enterprise in a knowledge-intensive industry because "This has not always led to the expected momentum in the economy of the development towns." Furthermore, they believe that focusing on the

improvement of transport between periphery and center, absent any other form of action, might result in greater regional specialization, so that the well-schooled and those on the upper rungs of economic performance (R&D, management, etc.) would gravitate to central areas and routine functions and weak populations would become typical of the periphery.[12]

Shefer and Frenkel (1989) examined employment in six development towns: Kiryat Shemona, Hatsor, Arad, Dimona, Yeroham, and Mitspe Ramon. In the 1980s, these towns were typified by negative migration,[13] low standard of living (with the exceptions of 'Arad and Mitspe Ramon), a high rate of vacant housing, a poorly schooled population, and a large proportion of manufacturing workers. Between 1979 and 1987, manufacturing employment declined by 9 percent in these towns while it increased by 11 percent in the economy at large. The main decrease in employment occurred in traditional industries—clothing, basic metal, and nonferrous minerals. Only one-fourth of enterprises in the periphery belonged to industries defined as growth industries; the others belonged to low-growth industries (37 percent) or sunset industries (36 percent). Shefer and Frenkel, conducting a comprehensive survey among all enterprises in and near development towns, found that the main consideration behind the construction of plants in the development towns was the ECIL. Additional but secondary considerations were proximity to raw materials (mainly in the mining and mineral industries) and availability of land, buildings, and infrastructures. When the Approved Enterprises[14] were asked directly about the effect

[12] Another argument is that the infrastructure of transport between periphery and center opens up new markets for manufacturers in peripheral areas but also exposes them to tougher competition. This argument is not valid in regard to manufacturing enterprises in Israel's development towns because they do not rely on the market in the periphery.

[13] Those migrating to the development towns were mainly production workers, teachers, and members of the armed forces.

[14] Some 65 percent of enterprises in the sample were Approved Enterprises.

of the locality grants, the responses indicated that 43 percent would not have been established had it not been for the incentives, 12 percent would have been established in the center of the country, and 43 percent would have been established in their present location. The main considerations against building a plant in a development town related to the unavailability of skilled and technical labor. Concurrently, Alfandari and Shefer (1992) identified lack of employment as the main reason for the out-migration of strong population from development towns.[15] The contrast between the difficulties encountered by firms in development towns in recruiting skilled personnel (Shefer and Frenkel) and the difficulties that skilled workers have in finding work (Alfandari and Shefer) shows how very hard it is to arrange appropriate matches between skilled workers and firms in small, far-flung development towns.

Moav and Reingewirtz (2006), examining twelve localities in the Southern District, asked whether the extent of investment approvals affects the number of unemployment-compensation and income-maintenance benefactees. The advantage of their study is that it directly challenges the main justification for the ECIL and studies the ECIL's effect on the development of employment in the relevant areas. They found that investment approvals in development localities do not lower local rates of unemployment-compensation and income-maintenance benefactees, even after enough time passes for one to expect the approvals to have matured into going concerns. A similar probe by Tzur, published in the 2006 Bank of Israel *Annual Report* (Box B3), examined the effect of ECIL benefits on employment and unemployment rates in fifteen natural regions in southern and northern Israel and

[15] They found that out-migrants from development towns had a higher socioeconomic profile than in-migrants did—a process that they called "negative selection." Braude and Navon (2007), using Population Census data (1983 and 1995), found a stronger profile among migrants from development towns than among people who stayed there. Both studies document the out-migration of strong population from development towns to nearby localities due to considerations of housing quality.

found that the benefits had hardly any effect on employment. This investigation had two advantages: first, it focused on a spatial labor market and not on a local one only, because an increase in investments in one locality may improve employment in another locality nearby. Second, the employment rate is a better indicator of employment than the share of unemployment-compensation (and income-maintenance) benefactees because jobseekers exhaust their eligibility for unemployment compensation within the brief span of up to six months. Another study, by Tavor, Ltd. (2007), found that an increase in investment per inhabitant lowers a district unemployment rate[16] but has relatively little effect on the national unemployment rate. Investments under ECIL auspices lowered the Southern District unemployment rate by 2 percentage points but the approved investment per capita was very large in this district. Notably, all three studies overlooked the possibility that an increase in investment would express its contribution in an increase in wages and not in a decline in unemployment (or an increase in employment). Another difficulty traces to the possibility that the Investments Center's approvals are influenced by the expectation of a decrease in local employment; if this is the case, there would be a negative correlation between approvals and the employment rate.

4. Basic facts

a. Employment and wages in Israel's periphery and center

This chapter presents basic descriptive statistics on employment and wages in Israel's Southern and Northern districts, which largely overlap the national priority areas.

[16] Since the Haifa and Northern districts and the Tel Aviv and Central districts were merged, the actual number of districts investigated was five, including Judea-Samaria.

Table 1 shows gross-income disparities between households in the Northern and Southern districts (hereinafter: the periphery) and households in the other districts (hereinafter: the center), according to the Israel Central Bureau of Statistics Household Expenditure Survey. In 2005 (the last year in which data are available), the average income in the periphery was one-fourth lower than the average income in the center. The disparity in total income in favor of households in the center reflects a similar gap in labor income (24 percent) and a much larger disparity in pension and provident-fund income.[17] Income from social insurance benefits (which are progressive in nature) is larger in the periphery. Since households are larger in the periphery than in the center, the disparity between periphery and center in standard of living (per-capita income) is wider than the gap in total household income.

Table 1: Monthly Gross Financial Income per Household, 2005, by Source of Income and Area of Residence, NIS

	Countrywide	Center	Periphery	Income gap	Northern District	Southern District
Total income	11,680	12,578	9,476	-25%	9,063	9,953
Labor income	8,940	9,609	7,296	-24%	6,977	7,665
Thereof: wage labor	7,673	8,301	6,130	-26%	5,918	6,375
Breadwinners (N)	1.2	1.2	1.1	-	1.1	1.0
Household size	3.3	3.2	3.6	-	3.8	3.3

Source: *Household Expenditure Survey,* 2005.

The disparity between periphery and center in labor income (24 percent) reflects a wide gap in wage per employee post and a difference in the number of breadwinners per household (14 percent).[18] The Income Surveys for 2004–2006 found on average a 20 percent wage disparity between periphery and center among wage-earners aged

[17] A small portion of the gap is explained by the younger population in the periphery, on average, than in the center.

[18] This does not mean that equality in the number of breadwinners per household would narrow the periphery–center income gap to 10 percent due to the potential wage of non-workers is lower than that of workers.

25–54. The disparity is slightly lower in terms of wage per hour worked and among Jews only[19]; thus, the wage gap per hour worked by Jewish employees is 16 percent.

Table 2: Average Monthly Gross Wage per Employee Post,[1] by District and Gender, 2004–2006 (NIS)

	Men			Women		
	Excl. North and South	North and South	Wage gap	Excl. North and South	North and South	Wage gap
Monthly wage	10,325	8,245	-20%	6,778	5,477	-19%
Hourly wage	49.8	40.3	-19%	40.5	34.0	-16%
Monthly wage—Jews	10,809	9,015	-17%	6,847	5,601	-18%
Hourly wage—Jews	51.8	43.3	-16%	40.7	33.8	-17%

1. Employees aged 25–54, employed full-time, who worked at least 20 days in the relevant month.

Some of the wage gaps between periphery and center originate in disparities in formal schooling. Appendix Table 1 illustrates the wide schooling gaps between the labor force in the periphery and that in the center. The share of persons with 13+ years of schooling in the periphery labor force is 11 percentage points smaller than in the center. Among the Jewish population only, the formal-schooling gap is also large at 8.6 percent.

Table 3: Monthly Gross Wage Disparity of Employees in Periphery and Center, by Schooling—Israel-Born Jews aged 25–54, 2004–2006 (percent)

Last school attended	Men		Women	
	Periphery	Distant periphery	Periphery	Distant periphery
Primary or junior high	-1	-1	-16	-10
High school without matriculation	-1	5	-18	-26
Matriculation	-6	0	-6	-10
Post-secondary—non-academic	-2	6	-11	-8
First degree	-15	-21	-21	-24
Second-degree	-24	-21	-21	-18

* Income Surveys, 2004–2006; employees who worked at least 20 days in the relevant month.

[19] The large majority of non-Jews live in the periphery.

The disparities in formal schooling do not explain the entire wage gap between periphery and center. Table 3 reveals wage disparities among employees who have similar formal schooling, measured in terms of the certificate most recently earned (high-school graduation, matriculation, first degree, etc.). For comparison purposes, we limited the sample to a relatively homogeneous population group: Israel-born Jewish employees aged 25–34 who worked at least twenty days in the relevant month.[20] We found that the wage gap between women in the periphery and those in the center hardly narrowed when the women being compared had similar levels of formal schooling. Among men, in contrast, differences in schooling levels did explain some of the disparities: the wage gaps between inhabitants of the periphery and those of the center almost disappeared among non-degree-holding men who had similar schooling, whereas very substantial wage differences existed among degreed men.[21]

The large wage disparities among degree-holding men in the center and the periphery, coupled with the minuscule difference between the regions among men who do not hold degrees, stood out even more when we examined employees who lived in the distant periphery. We defined as the distant periphery the southernmost subdistrict of the Southern District —the Beer-Sheva Subdistrict, and the eastern subdistricts of the Northern District—Safed and Kinneret—which are far from metropolitan Haifa.[22] The share of employees who live in these subdistricts and work elsewhere does not exceed 10 percent and is much smaller than in the near periphery (25 percent). The labor market in the distant periphery offers poorly and medium-schooled men a wage that does not fall short of that available in the center but

[20] By focusing on Israel-born Jews, we neutralize differences between immigrants and nonimmigrants in human-capital quality, discrimination against non-Jews in the labor market, etc.

[21] The large wage gaps among degreed men may originate in differences in disciplines studied (engineering vs. humanities) and the like, as opposed to a lack of jobs in the periphery.

[22] The near-periphery sub districts include the Ashkelon Subdistrict in the south and the Acre and Jezreel subdistricts in the north.

provides a much lower average wage for women and men who hold academic degrees. This is evidently related to the structure of industries in the periphery, which is intensive in manufacturing and agriculture.

Table 4: Employment by Place of Residence and Economic Industry,[1] 2005 (percent)

	Manufacturing	Constr.	Agric.	Bus. and financial services	Ed. and public admin.	Public and other services*	Wholesale and retail trade
Periphery	**21.1**	6.8	4.5	11.2	17.0	14.0	12.1
Periphery—men	**26.5**	11.5	6.3	11.6	9.8	7.1	11.8
Periphery—women	**13.9**	0.4	2.0	10.7	26.7	23.2	12.4
Countrywide	**15.8**	5.1	2.0	16.9	17.4	17.1	13.6
Men	**21.3**	8.8	3.1	15.2	10.1	9.2	14.8
Women	**9.5**	0.9	0.8	8.4	25.7	26.2	12.2

* Health, welfare, and relief services; community, social, and personal services; and household services.

1. Excluding three industries: transport and communications, hotels and restaurants, and electricity and water—in which periphery and center have similar employment rates. The periphery is defined as the Northern District (2) and the Southern District (6).

The industrial structure of the periphery is intensive in manufacturing and scanty in services. Thus, a large proportion of employed persons in the Northern and Southern districts work in manufacturing, construction, and agriculture, and a relatively small share work in business and financial services, other services (including high-tech services), and trade (Table 4). The industries that are typically intensive in the periphery characteristically employ a large majority of men, whereas the "other services" industries, which are not strongly represented in the periphery, employ a majority of women. The distribution by occupations points to the same phenomenon: the periphery has a relatively large share of employed men who are skilled workers in manufacturing and agriculture (10 percentage points more than in the center) and a relatively small share of persons employed as sales agents and salespeople (5 percentage points less than in the center—Appendix Table 2). One may surmise that the combination of intensivity of manufacturing in the periphery and the

dearth of service activity in the same region improves the relative situation of men—above all, men who have poor or medium schooling—who constitute the main labor force in manufacturing.

b. Manufacturing in the periphery[23]

Some 40 percent of Israel's manufacturing product in 2005 was generated in the Northern and Southern districts. Manufacturing product per employee is 15 percent greater in the periphery than in the center and 9 percent above the national average (Table 5). The main reason for strong per-employee product in the periphery is that capital per employee is greater there: 38 percent above the average in the rest of the country, according to our calculations. Per-employee product per unit of capital—total productivity—is slightly (4.4 percent) higher in the periphery than in the rest of the country.[24] Given the strong productivity in the periphery, we may infer that the efficiency of production generally and of capital utilization specifically are in no way inferior in the periphery than in the center, even though manufacturing plants in the periphery received much larger capital subsidies than those in the center did.[25] When calculating productivity, one should take into account not only physical capital and labor but also the quality of human capital, R&D services (which are more ample in the center than in the periphery), and utilization of natural resources (mainly in the mining and quarrying industry, which we include in manufacturing).

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[23] Main source of data in this section: Central Bureau of Statistics, Manufacturing Surveys.

[24] To calculate capital stock, we used a capital-services survey that was conducted in manufacturing plants in 1992 and the annual manufacturing surveys that have been performed since then, which itemize investments in manufacturing enterprises each year (by geographical region). Capital stock at the beginning of each year was calculated as capital stock at the beginning of the previous year plus total investment in the previous year, less wear and tear. We assumed that annual wear and tear is equivalent to 5 percent of the previous year's capital services.

[25] Notably, capital stock is measured in terms of the accrual of investments in previous years (and not the capital actually available to the firm). Therefore, if rash investments were made in the past and were lost (and were subtracted prematurely from de facto capital stock), this will be reflected in low productivity.

Table 5. Distribution of Manufacturing Product, Employee Posts, and Capital in Periphery and Center, Productivity and Wage in Periphery and Center Relative to National Average, 2005

	Product	Employ-ee posts	Capital	Capital per employee	Product per employ-ee[1]	Wage per employee	Total factor product-ivity[1,2]
	Share (percent)			Relative to national average (percent)			
Periphery	39.3	36	43	21	9	–4	2.9
Excl. periphery and Judea-Samaria	59.7	63	56	–12	–5	2	–1.5

1. Product per employee and total productivity in the district relative to the average among all districts.
2. Total factor productivity was calculated on the assumption of a Cobb-Douglas production function with 0.67 elasticity of labor and 0.33 elasticity of capital.

From 1995 to 2003, total factor productivity (TFP) grew twice as quickly in the periphery as in the center,[26] giving further evidence that production efficiency in the periphery was not low (in 2003). The perceptible increases in product and product per employee in the periphery were not occasioned by an exceptional increase in capital; after all, center and periphery reported similar rates of increase in physical-capital services. The increase in per-employee productivity in the periphery in 1995–2003 is impressive because the traditional industries, on which manufacturing in the periphery relied, declined during this time.[27] The decline of Israel's traditional industries was reflected in a decrease in employment and sluggish growth of per-employee product: between 1995 in 2007, employment in the traditional industries contracted by 14 percent and per-employee product increased by only 22 percent. In the electronics industries—which were situated mainly in the center—employment increased during this time by 40 percent and per-employee product surged by 50 percent.[28]

[26] Some of the data were not updated after 2003 in order to prevent inaccuracies due to replacement of the sample of enterprises in the 2004 *Manufacturing Survey*.

[27] The decline of traditional industries in Israel is related, among other things, to growing domestic and global openness to international trade and the strong improvement in third-world countries' comparative advantage in this level of manufacturing.

[28] Other industries were noted for gentle growth of employment—11 percent—and a rapid increase in productivity.

Manufacturing productivity in the periphery climbed even though the traditional industries were experiencing hardships. Furthermore, employment in the periphery did not decrease despite a 10 percent downturn in manufacturing employment countrywide.

Table 6: Growth of Manufacturing Activity, 1995–2003,[1] by Region (Percent)

	Product	Employee posts	Capital	Capital per employee	Product per employee	Total product-ivity
Periphery	44	1	54	54	43	26
Excl. periphery and Judea-Samaria	8	-15	29	51	27	13
Countrywide	20	-10	39	55	33	17

Source: Manufacturing Surveys, 1995–2003.

1. The Manufacturing Survey sample was replaced in 1995 and 2004 (resulting in continuity in 1995–2003).

The composition of manufacturing tilts more to knowledge-intensive industries, in which per-employee product is relatively high, in the center than in the periphery. However, the difference is not great and is offset by higher per-employee product in the periphery within the industry (in most industries). The difference in the composition of manufacturing between periphery and center is not enormous: the share of employment in the electronics industry is only slightly lower in the periphery than in the center, and employment in the (traditional) food and wood industries is not greater there (Table 7). A larger share of workers in the periphery than in the center is employed in textiles and clothing, plastics and rubber, and industries that rely on mineral deposits that are located in the periphery—mining and quarrying, nonferrous minerals, and chemicals. A small proportion works in the paper, publishing, and printing industry (most of which is concentrated in the Tel Aviv District) and the defense industries (most of which are knowledge-intensive). A comparison between center and periphery in specific manufacturing industries shows that the per-employee product in the periphery is greater in food, metal and metal products, mining and

quarrying, and wood and wood products; similar in most other industries; and much lower only in chemicals, plastics, and rubber. In the electronics industry, there is no disparity between periphery and center in per-employee product but there is a large per-employee wage gap. This reflects the return to the R&D-capital production factor, which is an externality for the enterprises (Intel, Motorola, Tower Semiconductor, etc.).

The basic facts point to a dissonance between the success of manufacturing enterprises in the periphery in keeping up with enterprises in the center in terms of productivity, and the failure of the economy in the periphery to keep up with the standards of living and wage levels that the center offers. The dissonance stands out in manufacturing wages: while a manufacturing job in the periphery pays only 4 percent less than the same job in the center (*Manufacturing Survey,* 2005), the wages of manufacturing workers who live in the periphery are 25 percent lower than those of peers who live in the center[29] (*Income Survey,* 2005). The gap is especially wide in the Southern District, where a job in a manufacturing enterprise pays 13 percent more than in the center while the wages of manufacturing workers who live in the south are 26 percent lower than in the center.[30] The disparity traces to the fact that enterprises in the periphery make extensive use of skilled workers who live outside the periphery.[31] According to the Labor Force Surveys (2003–2007), one-fourth of degree-holders who are employed in manufacturing plants in the periphery (men and women) do not

[29] Processed from the 2004–2006 Income Surveys. The disparity described is the gross difference in wages of all employees in manufacturing who worked at least twenty days in the relevant month (irrespective of religion and gender).

[30] The high pay for manufacturing jobs in the south traces almost entirely to the chemical and mining-and-quarrying industries in the Beersheva Subdistrict and the electronics industry in the Ashkelon Subdistrict (which includes the Intel facility in Kiryat Gat); these enterprises account for 38 percent of total employment in Southern District enterprises.

[31] The employment of workers from the center reduces the external contribution of the periphery enterprises to the economy of the periphery but may also enhance their survivability and efficiency.

live in the periphery. Some 43 percent of Intel staff live north of Kiryat Malakhi (Razin, 2005). According to several views, this illustrates the paltry effectiveness of a government policy that focuses on encouraging capital investments in industry in order to improve the economic situation of those who live in the periphery. (See, among others, Schwartz, 2002a; Razin and Schwartz, 1992; and Gabai Committee.) However, one cannot overlook the relative success of manufacturing in the periphery in the past decade, and the ECIL may have contributed to it.

Table 7: Distribution of Product, Employment, and Per-Employee Product in Manufacturing Industries in Periphery and Center, 2005 (Percent)

	Share in manufacturing in periphery		Share in manufacturing in center		Periphery/center difference	
	Employ-ment	Product	Employ-ment	Product	Employ-ment	Product
Electrical and electronic equipment	19	23	21	29	0	-21
Food	17	11	16	10	22	2
Chemicals, plastics, and rubber	16	25	11	23	-11	2
Metal and metal products	14	14	14	9	89	15
Textiles and clothing	8	4	5	3	1	10
Mining, quarrying, and minerals	6	10	3	3	70	11
Paper, publishing, and printing	5	3	13	8	2	-11
Wood and wood products	5	3	5	2	34	25
Transport vehicles	3	4	5	6	23	-33
Machinery and equipment	3	3	5	5	-7	-20
Jewelry, goldsmithing, and silversmithing	3	1	2	1	-5	-1
Total manufacturing	36	39	64	60	19	-6

Source: *Manufacturing Survey,* 2005
Long-term capital services per employee and share of employment in manufacturing—Labor Force Surveys.

5. Database and descriptive statistics

a. Database

To examine the effect of the ECIL, we used a unique database that combines administrative data from the Investments Center with a longitudinal panel of manufacturing enterprises. The database for the study is an unbalanced panel of some 2,500 manufacturing plants that were sampled at least once in 1990–1999 and employed five persons or more—13,827 annual observations in all. Among the enterprises, 490 received assistance from the Investments Center.

The panel of manufacturing enterprises (Griliches-Regev Longitudinal Panel)[32] contains detailed information on some 5,900 manufacturing enterprises that were active in 1955–1999. The information was gathered by the Central Bureau of Statistics on the basis of the annual Manufacturing Surveys, capital stock surveys, and other data. The unit of investigation in the panel is the enterprise, which is defined as an economic unit that engages in production activity. As a rule, an enterprise is situated in one location and engages in one economic activity. The panel is a representative sample of the country's manufacturing enterprises. For an expanded discussion, see Navon (2009).

The manufacturing panel is an unbalanced sample. Each year, it samples some 2,000 industrial enterprises that employed five persons or more. Enterprises may enter the sample by being established or due to the replacement of the sample and may exit the sample by closing down, due to replacement of the sample, or for other technical reasons (not responding to the survey). The panel contains data from the many

[32] For a detailed description of the panel and how it was devised, see Regev (2006).

sources and blends surveys, administrative data, and internal processing of data specially prepared by the Central Bureau of Statistics.

We limited the review period to 1990–1999 because the information about enterprises was continual and richer during these years and because the historical data are not reliable: the data preceding 1975 relate to an incomplete sample of enterprises and those for the 1980s are unreliable due to the high inflation rate. The panel contains data on some 4,200 manufacturing enterprises that, as stated, operated in 1990–1999, with data on capital stock and investments for around 2,520 of them.

The Manufacturing Surveys provide information about value of gross output,[33] expenditure on raw materials, domestic and export sales, number of employees, labor cost, share of exports in output, and investments, as well as other general enterprise characteristics: industry, location (district and subdistrict), year of formation, and structure of ownership (public limited-liability, government-owned, Histadrut, kibbutz, and private or other).

The enterprise's capital was calculated as its flow of capital services, as computed by Haim Regev of the Central Bureau of Statistics using a formula that defines capital services as equal to annual depreciation plus 5 percent of net capital and expenditure on rental of buildings, equipment, and machinery. The net capital-services estimates are based on a 1992 capital services survey and continual investment data gathered in the Manufacturing Surveys. Capital services were calculated separately for buildings, equipment, and motor vehicles. Capital services in R&D were calculated the same way.

[33] According to the definitions in the *Manufacturing Survey,* gross output is revenue from manufacturing activity and other revenue plus the change in finished-product and unfinished-product services. The index is the wholesale index and the export price index, weighted by the proportions of export and domestic sales.

The manufacturing panel includes additional enterprise characteristics that were obtained from administrative sources and special data processing by the Central Bureau of Statistics. These data includes technology intensivity, industry concentration, and penetration of competing imports in the industry. The quality of enterprise human resources was also calculated as a function of the share of engineers and technicians in total employment.

Investments Center data—a file containing complete administrative data on 4,700 corporations in manufacturing, hotels, and agriculture, for which investments were approved by the Investments Center in 1967–1999; 2,800 of them received approval in 1990–1999. The basic unit in the datafile is the investment plan. For each plan approved, the datafile provides the name of the applicant corporation, the year in which the application was approved (year of original letter of approval), whether the application was for the construction of a new plant or the expansion (or renovation) of an existing one, the program applied for (grants, alternative, state-guarantee), and National Priority Area (A, A+, B, center of country).

Each approved application contains updated annual information about the size of the investment performed that year. The investment grants are given out as a percentage of the investment that is relevant from the standpoint of the ECIL. For this purpose, the Investments Center separates investments into three types: recognized, non-recognized—such as those reported by the firm but found after the Center's review to have been unperformed—and neutralized, i.e., those that are not relevant for

the purposes of the ECIL (e.g., those unrelated to buildings and equipment).[34] We used the grant data to calculate "subsidized-capital services." The calculation was based on the perpetual-inventory method and Regev's estimates of capital services. We assumed the same depreciation rate for subsidized capital as for total capital.

Although the Investments Center data also include complete information about tax benefits that the enterprises received, we were unable to estimate the financial value of the benefits. To test the effect of tax benefits on real activity, we used a dummy variable for the obtaining of a tax benefit in the empirical part of this study.

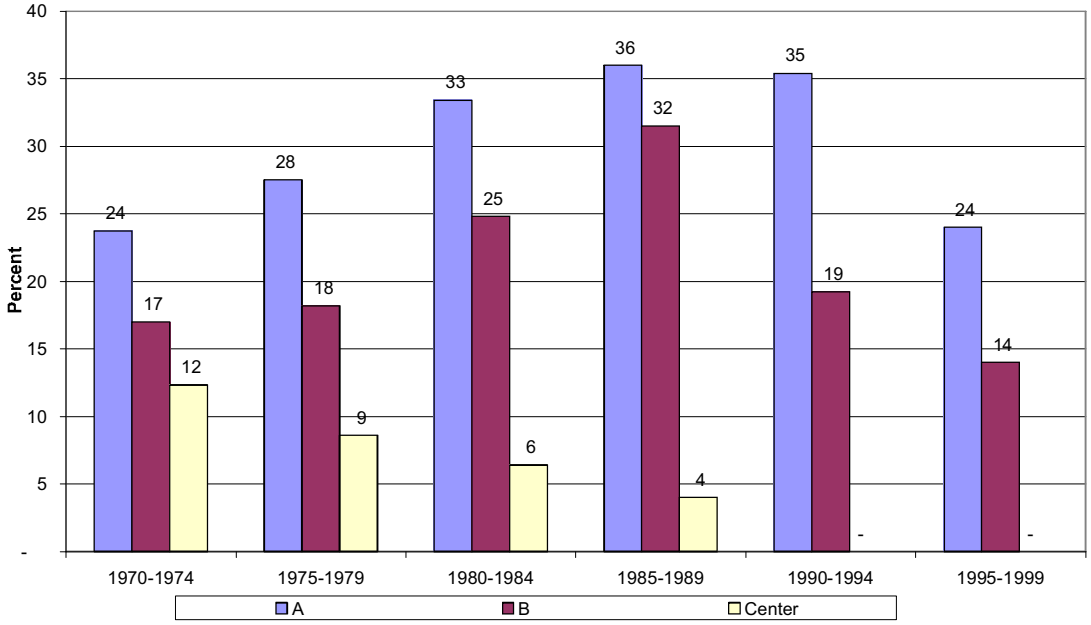
The Central Bureau of Statistics provided us with data on all enterprises from the Investments Center database that were identified in the panel of manufacturing enterprises in 1990–1999 and for which data about location exist. In the resulting sample that merged 2,520 enterprises, 659 were identified in the Investments Center database, meaning that they were grantees at least once in 1990–1999. Since the Investments Center data were complete, we were able to infer that enterprises not detected in the Investments Center data had not received ECIL benefits.

b. Descriptive statistics — the Investments Center data

A preliminary analysis of the Investments Center database illuminates several clear trends in 1970–1999: the grants are concentrated in National Priority Areas, especially in the periphery, and their rate varies over time and among different National Priority Areas.

[34] The data in the file may be different from those officially reported by the Investments Center because they include retroactive updates and because the reporting year is the year in which the grant is received and not that in which investment plan was approved.

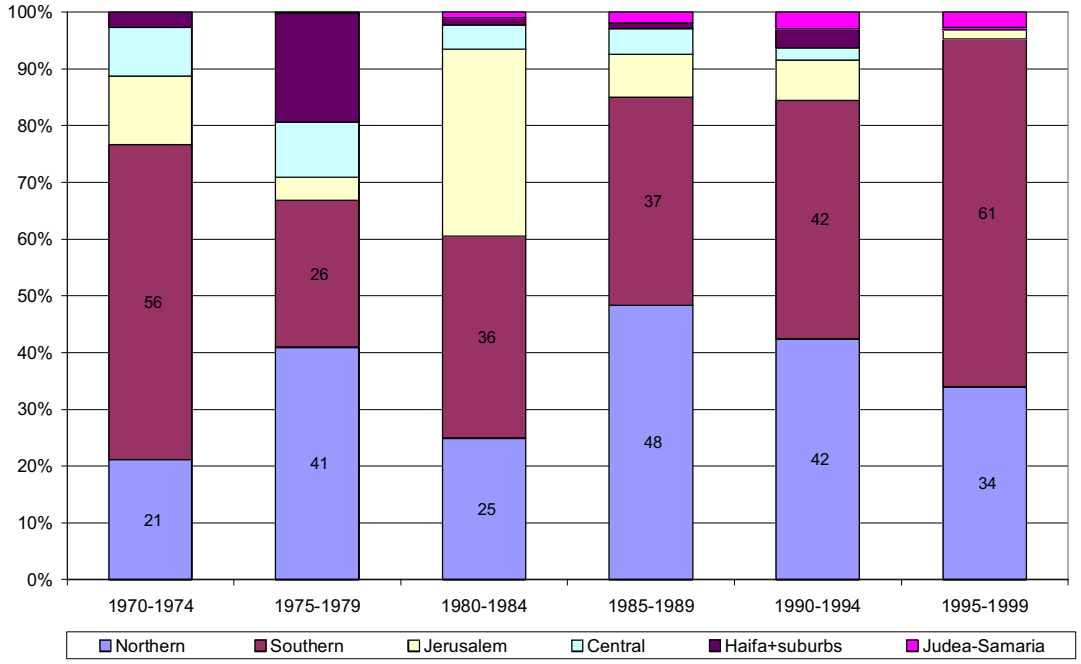
Figure 1: ECIL Expansion Program, Share of Grants in Investment, by National Priority Areas* (Five-Year Averages)



.Total grants divided by investments approved by Investments Center, according to year of receipt of approval *
Source: Investments Center

The share of grants in total investment increased until the second half of the 1980s and declined steadily afterwards. Figure 1 shows the average share of grants in total recognized investment for the expansion of plants under the ECIL grants program. The rate of grants in Class A National Priority Area (including A+) climbed from 24 percent in the early 1970s to 36 percent on average by the second half of the 1980s. In the 1990s, the size of the grant and its share in total investment receded, bringing the average share back to 24 percent by the end of the period rate fell back. A similar process took place in Class B National Priority Areas. In the center of the country, the share of grants in total investment was small to begin with and fell precipitously.

Figure 2: Capital-Investment Grants by Districts, 1970–1999
(Five-Year Averages)



The definitions of National Priority Areas have changed over time in accordance with changes in policy. Figure 2, plotting the distribution of investment grants by district in 1970–1999, shows that the policy focus shifted over time in the direction of encouraging the periphery. In the early 1970s, the share of grantee enterprises in the Southern and Northern districts was 77 percent. The average proportion declined to 61 percent in the first half of the 1980s, and a rather large share of grants was awarded to enterprises in the Jerusalem District. From then on, a change in policy occurred and the investment grants were redirected to the subsidization of enterprises in the periphery. Thus, the share of the periphery in investment grants climbed steadily and came to 95 percent in the late 1990s.

In the 1990s—the years that we chose as our focal point in this study—836 firms performed 1,732 investment plans that the Investments Center had approved. The average grant per plan during these years was NIS 4.5 million. Most of the grants were given for the expansion of existing enterprises in the periphery: 86 percent of the

annual grants were given for the expansion of existing enterprises (expansion grants); 63 percent of the investment plans were in Class A Priority Areas and 13 percent were in Class B areas. Table 8 shows that the grants accrued mainly to enterprises in Class A areas and that their share in the total has been growing steadily over time. In 1999, nearly all grants were given to such enterprises.

Table 8: Distribution of Grants by National Priority Areas and Years (NIS Millions, Current Prices and Percent).

	A		B		Center of country		Total
	NIS millions	% of total grants	NIS millions	% of total grants	NIS millions	% of total grants	
1990	202	83	20	8	21	9	243
1991	251	79	30	10	36	11	317
1992	427	88	27	6	33	7	487
1993	626	86	32	4	67	9	725
1994	703	92	39	5	25	3	768
1995	795	95	35	4	7	1	837
1996	919	95	45	5	6	1	971
1997	1,060	98	23	2	4	0	1,086
1998	809	98	16	2	1	0	826
1999	1,620	99	15	1	—	—	1,635
Total	**7,412**	**94**	**282**	**4**	**200**	**3**	**7,894**

Source: Investments Center. The data do not necessarily correspond to those published by the Center.

c. *Descriptive statistics—capital grants, investments, and employment*

This section presents descriptive statistics from our database in order to gauge the connection between the receipt of investment grants and the grantee enterprises' activity and characteristics. Table 9 divides the manufacturing enterprises that were sampled in 1990–1999 (except those in the mining and quarrying industry[35]) into grantee enterprises (those that receive grants from the Investment Center) and non-grantee enterprises (those that did not receive grants) in the review years. The table illuminates two important facts. First, grantee enterprises have different

[35] From here on, all mining-and-quarrying firms are omitted from the investigation because the production process in this industry is materially different from that of other manufacturing enterprises.

characteristics than non-grantees: they are larger, generate more product per employee, are more likely to be located in the periphery, have a larger share of exports, employ a better schooled labor force, etc. Second, enterprises that received capital grants (for construction or expansion) made much larger investments than non-grantee enterprises did and increased their employment at a faster pace. For example, the private investment of grantee enterprises (i.e., total investment outside of the grant) was 2.3 times greater than the investment of non-grantee enterprises, and the disparity in the annual growth rate of employment was 5.7 percentage points.

Table 9: Characteristics of Enterprises, 1990–1999 Average (1999 USD Thousands)

	Total sample	Thereof:		
		Non-grantees	Grantees	Grantees/ non-grantees
Product per employee	35.6	33.3	46.0	38
Employment	99.0	75.4	195.5	159
Exports/sales (percent)	14.6	9.9	31.5	21.6
Percent of enterprises in periphery	31.1	22.0	68.3	46.3
Labor force quality (index)	1.06	1.05	1.09	0.04
Enterprise age (years)	24.2	22.9	29.2	6.3
Enterprises in sample (N)	2,498	2,008	490	—
Change in employment (percent points)	-1.3	-2.5	3.2	5.7
Investment	2,717	1,490	7,354	394
Thereof: Private investments	2,540	1,490	4,905	229
Expansion grants	177	0	2,449	—

Table 10 shows the disparity in investments and employment between enterprises that received expansion grants and those that did not, by enterprise size (large, medium, small). The large-enterprise group is composed of those with 100+ employees, medium enterprises employ 50–99 persons, and small enterprises are those with fewer than fifty people on their payroll. Since the table examines the effect of the receipt of **expansion** grants in the 1990s, we omitted all enterprises established after 1986 (including those that received construction grants).

Table 10: Characteristics of Enterprises, by Size and Receipt/Non-Receipt of Expansion Grant, Annual Averages, 1990–1999 (1999 USD, Thousands)

	Large		Medium		Small	
	Non-grantee	Grantee	Non-grantee	Grantee	Non-grantee	Grantee
Change in employment (Percent)	1.4	2.6	-1.0	2.4	-4.2	-1.2
Investment	6,919	15,802	990	1,582	178	610
Thereof: Private investment	6,919	14,045	990	1,372	178	532
Expansion grants	0	1,757	0	210	0	78
Per-employee product	47.2	54.5	36.3	42.6	26.4	42.0
Employment	307	382	71	75	18	30
Percent of enterprises in periphery	22	63	24	69	21	75
Percent of exports in sales	21	41	14	28	6	18
Labor-force quality (index)	1.08	1.09	1.06	1.08	1.04	1.08
Enterprise age (years)	39.0	36.7	29.0	30.5	17.6	26.1
Enterprises in sample (N)	326	171	311	122	1,322	79

We found that the expansion grantees increased their employment rate more quickly and made larger investments than non-grantee enterprises in the same size group. The differences in the growth of employment within the size group, however, are smaller than those previously found (Table 9): the increase in employment among plants that received expansion grants was 1.2 percentage point greater among large enterprises than among similarly sized enterprises that did not receive such grants during the sample period. Among medium enterprises, we found a disparity of 3.0–3.4 percentage points between grantees and others. A simple calculation of the ratio of the size of expansion grants given to enterprises in the different size groups (annual average) to the increase in employment at these enterprises (relative to non-grantees) shows that small and medium enterprises needed an expansion grant of $45,000–$47,000 to create one job, whereas large enterprises needed a grant that was five times as large—$253,000.

As for investments, grantee enterprises invested much more than non-grantees did: twice as much among large enterprises and 3.5 times and 1.5 times as much among medium and small enterprises, respectively. A simple calculation of the ratio of the size of grants awarded to enterprises in the various size groups (annual average) to the increase in their investments (relative to non-grantees) shows that a $1 grant increased the total investment of large and small enterprises by $5 and that of medium enterprises by $2.80.

Another way to test the effect of the grants on investments and employment is by comparing enterprises in the periphery with those in the center, since the former are much more likely to receive capital grants. Table 11 shows the difference in the growth rate of employment and investment between periphery enterprises (a large proportion of which received expansion grants) and similar-sized enterprises in the center (few of which received expansion grants). Among large enterprises, there is no perceptible different between periphery and center in the extent of investment and the pace of employment growth, even though periphery enterprises received much larger expansion grants than the others did. Thus, in 1990–1999, large enterprises in the center of the country increased their employment by 0.7 percent and invested $8.1 million (annual averages) whereas those in the periphery bolstered their employment by 1.5 percent and invested $8.5 million (including the investment covered by the expansion grants). Larger disparities in favor of the periphery were found among medium and small enterprises: medium enterprises in the periphery increased their employment by 1.9 percentage point beyond those of the center and invested 11 percent more. As for the perceptible gap in investment and employment growth that was found among small enterprises, the grants are unlikely to be at fault for the disparity because few small enterprises in the periphery received grants (11 percent).

The comparison of enterprises in the periphery with those in the center in terms of the development of employment and investments (Table 11) is not optimal for two reasons. First, enterprise location may affect not only the likelihood of receiving a grant but also, directly, the extent of increase in investments and employment. Second, the levels of investment and employment may also be affected by differences between periphery enterprises and center enterprises in share of exports, industries, and additional factors, some of which are unobserved.

Table 11: Characteristics of Enterprises by Location and Size, Annual Averages, 1990–1999 (1999 USD, thousands)

	Large		Medium		Small	
	Center	Periphery	Center	Periphery	Center	Periphery
Change in employment (Pct.)	0.7	1.5	-0.7	1.2	-4.5	-2.5
Investment	8,091	8,460	1,035	1,285	173	270
Thereof: Private investment	7,942	7,630	1,016	1,159	172	259
Expansion grants	149	830	19	126	1	11
Per-employee product	48.7	50.2	36.1	41.1	27.4	27.2
Employees	340	298	71	73	18	20
Percent of grantee enterprises	9	46	6	34	3	11
Percent of exports in sales	24	36	15	23	6	6
Labor-force quality (index)	1.08	1.08	1.06	1.08	1.04	1.04
Enterprise age (years)	40	35	29	30	18	18
Enterprises in sample (N)	304	167	270	155	1,060	329

* The comparison pertains to enterprises that were established before 1987 and that did not relocate in subsequent years.

A third way of testing the effect of the grants on the activity of a given enterprise is by comparing the development of employment and investments in years when the expansion grant was received with the same indicators in non-grant years. This method has the advantage of controlling for observed differences (enterprise size, quality of labor force, etc.) and some unobserved variables because a specific enterprise is being monitoring over time. Table 12 shows investments and employment at 252 sampled enterprises that received expansion grants only in some of the years during the 1990–1999 period. (Enterprises that received no expansion grants at all, those that received grants in all years, and those established after 1987

were deleted from the sample.) The table compares the average change in the enterprises' investment and employment in grant years with their performance in non-grant years. For each enterprise, we calculated the average investment in grant years and non-grant years. Then we calculated the average of averages and obtained the average investment in the case of receiving a grant and in the case of not receiving one. We performed a similar calculation for the change in the level of employment.

The comparison in Table 12 shows that employment increased by 2.4 percent in grant years and contracted by 2.1 percent in non-grant years—a difference of 4.5 percentage points. Investment, in turn, was $1.6 million greater in grant years than in non-grant years, a spread of 37 percent.

Table 12: Change in Investment and Employment in Grant and Non-Grant Years among Enterprises that Received Expansion Grants in Some Years between 1990 and 1999

	Investment (USD ,000s)	Change in employment (percent)
Grant years	5,956	2.4
Non-grant years	4,340	–2.1
Difference	1,617 (37%)	4.5

Enterprises sampled: 252.

The comparison of changes in employment and investment between expansion-grant years and non-grant years is less than optimal because employment is affected not only by the receipt of a grant but also by differences in enterprises' "investment opportunities." A firm that encounters a profitable investment opportunity applies to the Investments Center for a grant and has a good chance of receiving one and making the investment, whereas a firm that does not encounter a profitable investment opportunity will not apply for grant and will not invest. Absent information about firms' investment opportunities, the outcomes of this comparison may be regarded as an upper limit of the effect of the grants.

6. Empirical method

The empirical part of this study is divided into two sections. First we examine the effect of the grants (expansion grants and construction grants) on product by estimating an enterprise-level production function. Second, we examine the effect of the expansion grants and tax benefits on employment and private investment.

By estimating the production function, we examine the productivity of the subsidized capital (relative to non-subsidized capital). Enterprise *iI* generates its added value (Y) at time t by using of a Cobb-Douglas production function that uses labor (L) and capital (K) as inputs. Capital services originate in the enterprise's own investment and in grants; the ratio of grant stock to capital stock is the enterprise's rate of subsidized-capital stock (S_i). Following BFS' model, we include the rate of subsidized-capital services in the production function and test the effect of the subsidized capital on productivity on this basis.

$$\ln Y_i = \alpha_1 \ln L_{i,t} + \alpha_2 \ln K_{i,t} + \alpha_3 S_{i,t} + \alpha_4 X_{i,t} + \varepsilon_i \quad (1)$$

The control variables in Equation (1) include enterprise age (longevity), an indicator for labor-force quality, a dummy variable for an enterprise that engaged in R&D in the past seven years, and the extent of industry concentration (expressed in percent). We also use a dummy-variable vector: four dummy variables for type of enterprise ownership, three for technology intensivity, six for district, sixteen for two-digit economic industry, and nine for years between 1991 and 1999.[36]

Estimating Equation (1) using the ordinary least-squares (OLS) method may bias the estimator of the rate of capital subsidy due to the (endogenous) correlation

[36] Labor-force structure varies widely among firms even in the same industry and the same district. Thus, in all estimations we used standard deviations that were corrected by the White-Huber-Sandwich method, making the SDs of the coefficients independent among enterprises.

between the subsidized-capital rate and unobserved productivity (ε_i). This is because grants are not handed out at random; the Investments Center apportions them among enterprises by criteria established in law and after performing viability checks. There may be a correlation between meeting these criteria and the enterprise's productivity. Since we do not have all the information that the Investments Center used (e.g., the results of viability tests), the Equation (1) estimation may elicit a skewed estimate of the subsidization rate. For example, enterprise location is one of the most important criteria in the awarding of grants, but it also affects the enterprise's production costs and level of productivity. If Equation (1) does not include accurate information about enterprise location, our estimate of α_3 will be biased.

An accepted way of coping with the problem of endogeneity is to perform the estimate in two stages, i.e., to use the Two Stage Least Squares (TSLS) method.[37] The first-stage equation estimates the selection process that the Investments Center uses to determine which enterprises will receive subsidies (and at what rate); the explained variable in the first stage is the endogenous variable (S_i)**.** In the second stage, we estimate the enterprise's product as a function of the **estimate** of the rate of the capital subsidy ($\hat{S}_{i,t}$), obtained in the first stage, and of the control variables ($X_{i,t}$) (including labor input, physical capital, and R&D capital. Accordingly, one may describe the system of equations using the TSLS approach by terming Equation (2) the first-stage equation and Equation (3) the second-stage equation:

(2) $$S_{i,t} = \beta Z_{i,t} + \gamma X_{i,t} + u_{i,t}$$

[37] Another way to tackle this problem is by adding variables that tie the subsidized-capital rate directly to the production function. Lavy (1994) included several variables that were found to have an effect on the probability of obtaining a subsidy: share of exports, National Priority Area, distance from center, and employment.

(3) $$\ln Y_{i,t} = \pi_1 \hat{S}_{i,t} + \delta X_{i,t} + \varepsilon_{i,t}$$

where (Z) is a vector of the instrumental variables in the first-stage equation and X is a vector of the explanatory and explained variables and the control variables in Equation (1). The instrumental variables that are used for identification in the first-stage equation must satisfy two conditions—they must be correlated with the endogenous variable and non correlated with the residuals of Equation (3)—$\text{cov}(z_{i,t}, \varepsilon_{i,t}) = 0$—i.e., lack of any direct effect on the explained variable of the second stage, Y_i.

Since the Investment Center's selection process prefers the periphery and exporters over others, the natural candidates for instrumental variables are enterprise location and share of exports in total sales. However, due to concern that enterprise location and share of exports correlate with productivity (the residuals of Equation 3), we prefer to use interactions between the share of exports and location (slope dummies) as instrumental variables. The combination of the manufacturing panel and the Investments Center data allows us to identify these data.

A standard linear estimation of the production function encounters another problem: some shocks to enterprise productivity are observed by the enterprise's managers but not by researchers. If these shocks affect the level and allocation of factor inputs, the estimates of the capital and labor inputs will be skewed. An empirical solution to this problem (Olley and Pakes, 1999) requires information that we do not have (separate price indices for each enterprise, information about the

reason for the exit of the enterprise from the sample[38]). For expanded treatment of the matter, see Navon (2009).

In the second part of the empirical section, we examine the effects of the expansion grants and tax benefits on change in employment in the year after the benefit is received ($L_{i,t+1}$) and the effect on investment ($I_{i,t}$) among existing enterprises, i.e., those established before 1987. In estimating the employment and investment equation, we again encounter an endogenous problem: an enterprise that finds a profitable investment opportunity in a given year will apply to the Investments Center and will most likely receive a grant and make an investment, while an identical enterprise that does not encounter a similar investment opportunity will not apply to the Center and will not invest. Lacking information about enterprises' investment opportunities (a latent variable), we cannot base ourselves on a comparison of a given enterprise's investments and its increase in employment between grant years when the enterprise receives a grant and years when it does not.

To solve the endogeneity problem, we estimate the model in two stages (TSLS). The first-stage equation in this section estimates a logistic equation of the **probability** of Enterprise *i* receiving a grant or a tax benefit in Year *t*. The explained variable in the first stage is a dummy variable that receives the value of 1 for an enterprise that received grants from the Investments Center or a tax benefit that year and 0 otherwise ($D_{i,t}$), and the instruments are a third-order polynomial of the share of exports in total sales, enterprise location, the interactions between them, and district-differentiated dummy variables for non-exporting enterprises. In the second stage, we estimate the dependent variable (the **change** in employment and in investment in logs) as a

[38] There is also very severe variance in enterprises' investments over time. Navon (2009) shows that one-third of the time manufacturing enterprises make no investments at all.

function of the dependent variable (at a lag) of the estimator of the probability of receiving a subsidy ($\hat{D}_{i,t}$) and of enterprise characteristics (X_i).

(4) $$P(D_{i,t} = 1) = \beta Z_{i,t} + \gamma X_{i,t} + u_{i,t}$$

(5) $$d \ln L_{i,t+1} = \pi \hat{D}_{i,t} + \lambda d \ln L_{i,t} + \delta X_{i,t} + \varepsilon_{i,t}$$

(5') $$\ln I_{i,t} = \pi \hat{D}_{i,t} + \delta X_{i,t} + \varepsilon_{i,t}$$

7. Estimation results

a. Effect of capital subsidization on enterprise productivity

This chapter examines the productivity of capital subsidized by means of ECIL grants relative to non-subsidized capital. Table 13 presents the results of the estimation of the enterprise-level production function (Equation 1) by means of OLS regressions. The estimation relates to a panel of manufacturing enterprises in 1990–1999, excluding those in the mining and quarrying industries. The explained variable in all regressions is the (log) product of Enterprise *i* in Year *t*. The data are expressed in thousands of 1999 USD.

In Column 1, the explained variable is estimated as a dependence on the variables of (log) labor, (log) physical-capital services, (log) R&D-capital services, and the share of subsidized capital in capital services. These variables will appear in all the estimations that follow. We find that the share of subsidized capital in an enterprise's capital services has a significant positive effect on its product. This outcome clashes with the hypothesis in economic theory that an increase in subsidized capital dampens productivity. In Column 2, control variables are added—labor-force quality, industry concentration, sixteen dummy variables for the various industries, three dummy variables for plant technology intensivity, four dummy variables for the type of

enterprise ownership, a dummy for enterprises engaging in R&D, and 9 dummy variables for the years. The contribution of subsidized capital to product remains positive and significant but lower than that shown in Column 1. The addition of district variables (Column 3) amplifies the contribution of subsidized capital; this happens because periphery enterprises (in the Southern and Northern districts) that enjoyed relatively high subsidy rates typically achieved lower productivity than enterprises in the other districts. The relative productivity of periphery enterprises, estimated in Column 4, is 8 percent lower than that in the center[39] (in 1990–1999).

Table 13: OLS Estimation of Plant-Level Production Function, 1990–1999

	[1]	[2]	[3]	[4]	[5]	[6][1]
Share of grants						
	0.06**	0.03*	**0.04***	..	0.02	0.05**
	0.02	*0.02*	***0.02***		*0.02*	*0.02*
Employment (log)	0.65**	0.66**	0.67**	0.66**	0.60**	0.68**
	0.02	*0.02*	*0.02*	*0.02*	*0.03*	*0.02*
Physical-capital services (log)	0.45**	0.41**	0.41**	0.41**	0.42**	0.40**
	0.02	*0.02*	*0.02*	*0.02*	*0.02*	*0.02*
R&D-capital services (log)	0.06**	0.02*	0.02*	0.02**	0.01	0.02*
	0.01	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*
Dummy for periphery	–	–	–	-0.08**	–	–
				0.03		
Control variables[2]	–	+	+	+	–	+
Dummy for districts[3]	–	–	+	–	–	–
Observations (N)	13,659	13,659	13,659	13,659	4,502	12,699
R-squared	0.87	0.88	0.88	0.88	0.88	0.88
Sample period	1990–99	1990–99	1990–99	1990–99	1990–94	1990–99

Note: the dependent variable in all estimations is (log) enterprise product each year. For a full presentation of the detailed results, see Appendix Table 3. (1) Column 6 relates to a downsized sample excluding enterprises that received construction grants from 1987 onward. (2) The control variables include enterprise age (longevity), labor-force quality, a dummy variable for an enterprise that engaged in R&D in the past seven years, and industry concentration (expressed in percent), four dummy variables for type of enterprise ownership (public limited-liability, government-owned, Histadrut, and kibbutz), three for technology intensivity, sixteen for two-digit economic industry, and nine for years between 1991 and 1999. (3) Six dummy variables for district.
* denotes significance at 5% level; ** denotes significance at 1% level.

[39] Regression 4 shows that productivity is lower in the Northern District than in the Southern District and that productivity in the Southern District resembles that in Haifa District but falls short of that in the Central and Tel Aviv districts.

Investments Center grants are given in much greater part for expansion. To test the effect of these grants separately from the effect of construction grants, we excluded from the sample all enterprises that received construction grants during or shortly before the investigation period (1987 and thereafter). The results, shown in Column 6, show that subsidized capital has an effect that is positive and also larger than that of the overall sample (Column 2). Notably, the positive effect of subsidized capital on product persisted even after chemical and electronics enterprises were removed from the sample.

The results (Table 13) differ from those reported by BFR (1998): BFR found the coefficient of subsidized capital negative and significant; we find it positive and significant. When we narrow the sample period to 1990–1994, include the mining and quarrying industry, and omit the district dummy variables—as BFR did in their estimation—the effect of the subsidy ceases to be significant but remains positive. Several factors may explain the difference between the results in Column 5 and those of BFR: the Investments Center data in our possession are based on the Center's reportage whereas BFR's data are based on reports from enterprises. This aside, several controlling variables from a number of sources were available to BFR but not to us (a dummy variable for shift labor, the share of new capital in physical capital, and the closure and opening of firms). The manufacturing panel was updated over the years (foremost in regard to the capital-services calculations); we used the most recent version. It is also noteworthy that BFR estimated enterprise output whereas we estimate enterprise product.

Table 14 presents the results of the TSLS estimation. This method eliminates concern about bias due to a correlation between the rate of capital subsidy and the unobserved productivity of the enterprise (the residuals from the production function

estimation using the OLS method). The explained variable in the first stage equation is the share of subsidized capital in the enterprise's capital services; the explanatory variables are enterprise characteristics; and the instrumentals are the share of exports in sales and interaction between this parameter and districts. The explanatory power of the instrumentals only is 17.4 (F-statistics); that of the first-stage equation with all explanatory variables is 22.9 (F-statistics).

In the second-stage, we estimated enterprise product as a function of the estimated rate of subsidized capital in capital services and of the following variables: **share of exports in sales, dummy variable for district,** employment, physical-capital services, R&D-capital services, labor-force quality, and dummy variables for firms engaging in R&D, concentration in industry, industry, technology intensivity, type of ownership, and years. **We found that an increase in the rate of subsidized capital has no significant effect on enterprise productivity** (Column 1): subsidized capital is not less productive than other capital. This finding clashes with the outcome that economic theory would want us to expect.

The results of the estimation are sensitive to the choice of instrumentals: the instrumentals in Column 1 are the interaction variables only. In Column 2, which also uses districts and share of exports as instrumentals, we found that subsidized capital has a negative effect on productivity. However, the use of the dummy variables and share of exports as instrumentals is mistaken because these variables correlate with productivity. (See Appendix Table 5.) The instrumental variables in Column 3 include the interaction variables and the share of exports. Although the effect of the subsidy was not found to be significant, here, too, the share of exports correlated with productivity, ruling out its use as an instrumental.

Column 4 tested examined effects of the rate of subsidized capital on the productivity of enterprises that received neither construction grants nor tax benefits in 1987–1999. Here, too, we found no significant effect of capital grants on productivity.

Table 14: TSLS Estimation of Plant-Level Production Function

	[1]	[2]	[3]	[4][1]
Rate of subsidized capital	**-0.63**	-0.18*	0.25	0.12
	0.55	*0.*08	*0.24*	*0.37*
Employment (log)	0.67**	0.66**	0.67**	0.67**
	0.03	*0.02*	*0.02*	*0.02*
Physical-capital services (log)	0.38**	0.40**	0.41**	0.40**
	0.03	*0.02*	*0.02*	*0.02*
R&D-capital services (log)	0.02*	0.02**	0.02*	0.02
	0.01	*0.01*	*0.01*	*0.01*
Share of exports	0.19*	-	-	0.06
	0.09			0.07
Control variables[2]	+	+	+	+
Dummy for districts[3]	+	-	+	+
Observations (N)	13,659	13,659	13,659	12,699
R-squared	0.83	0.87	0.88	0.88
F-test for explanatory power of instrumentals	17.4	24.4	15.8	19.6

Note: the dependent variable in all estimations is (log) enterprise product each year. For a full presentation of the detailed results, see Appendix Table 4. (1) Column 4 relates to a downsized sample excluding enterprises that received construction grants from 1987 onward. (2) The control variables include enterprise age (longevity), labor-force quality, a dummy variable for an enterprise that engaged in R&D in the past seven years, and industry concentration (expressed in percent), four dummy variables for type of enterprise ownership (public limited-liability, government-owned, Histadrut, and kibbutz), three for technology intensivity, sixteen for two-digit economic industry, and nine for years between 1991 and 1999. (3) Six dummy variables for district.
* denotes significance at 5% level; ** denotes significance at 1% level.

b. Effect of grants and tax benefits on investment

In this section and the following, we examine the effect of grants and tax benefits for existing enterprises on the extent of change in the enterprises' investments and employment. This section tests the effect of existing-enterprise benefits that expand the enterprises' production capacity; these are the most common investment benefits that the ECIL offers. The sample in our possession allows us to test the effect of the benefits on expansion because it includes a representative sample of enterprises that

have the potential of expanding (and of receiving expansion grants). Some of them decided to expand; others decided not to.[40]

Table 15 presents the results of the estimation of the short-term investment equation. The explained variable in all estimations is the enterprise's total annual investment. Column 1 shows the outcome of the estimation using the OLS method, in which the explanatory variables are enterprise characteristics, dummy variables for districts and years are provided, and the endogenous variable is a dummy variable for the receipt of a grant or a tax benefit from the Investments Center. We find that the receipt of benefits from the Center has a significant upward effect on the enterprise's total investment in the relevant year and that (Column 2) the effect exists in both ECIL programs—grants and tax benefits.

Columns 3 and4 show the results of estimations using the fixed-effect (FE) method. By using a fixed effect for each enterprise, we can control for unobserved differences in the control variables using the OLS; this is its advantage. The explanatory variables, apart from the fixed effects and the dummy for an enterprise that received a grant, are dummy variables for years, enterprise employment, physical capital, R&D capital, labor-force quality, industry concentration, and enterprise age. Column 3 shows that receiving a benefit from the Investments Center increases an enterprise's investment significantly, although the intensity of the effect is lower: the increase in investment in the year of receipt of grant came to 35 percent according to this estimation as against 65 percent in the OLS method. Column 4 shows that the effect of the benefits traces to capital grants only and that the tax benefit has no such

[40] The sample does not allow us to gauge the effect of construction grants because potential enterprises that were not launched (and would have been launched had they received larger construction grants) are not represented in it. To examine the effect of the expansion benefits, all enterprises established from 1987 onward, including those that received construction benefits from 1987 onward, were removed from the sample.

effect. Examining the effect of the grants on total enterprise investment apart from the grants (not shown), we found that receiving a grant increases total private investment by 26 percent.

Table 15: Estimation of Enterprise Investment Equation, 1990–1999

	[1]	[2]	[3]	[4]	[5]	[6]
Estimation method	OLS		FE		TSLS	
Receipt of expansion benefit	0.65** *0.06*		0.35** *0.07*		-0.51 *0.27*	-0.22 *0.17*
Receipt of capital grant		0.68** *0.07*		0.46** *0.09*		
Receipt of tax benefit		0.47* *0.10*		0.08 *0.09*		
Control variables[1]	+	+	+	+	+	+
Dummy for districts[2]	+	+	+	+	+	-
Observations (N)	10,120	12,120	10,120	12,120	10,120	12,120
R-squared	0.60	0.60	0.03	0.03	0.60	0.60
Pseudo R^2 for explanatory power of instrumentals	—	—	—	—	0.27	0.30

Note: the dependent variable in all estimations is (log) enterprise product each year. The sample is comprised of enterprises that did not receive construction grants from 1987 onward. For a fully detailed presentation, see Appendix Table 9; for the first-stage results, see Appendix Table 5. (1) The control variables include, apart from the constant, the lagged change in employment, (log) employment, (log) physical-capital services and (log) R&D-capital services, enterprise age (longevity), labor-force quality, a dummy variable for an enterprise that engaged in R&D in the past seven years, industry concentration (expressed in percent), four dummy variables for type of enterprise ownership (public limited-liability, government-owned, Histadrut, and kibbutz), three for technology intensivity, sixteen for two-digit economic industry, and nine for years between 1991 and 1999. (2) Six dummy variables for district.
* denotes significance at 5% level; ** denotes significance at 1% level.

The results of the OLS and FE estimations (Table 15) attest to a clear correlation between receiving expansion grants and making larger investments: $1 of expansion grant corresponds to a $9.4 percent increase in investment (FE estimate) or a $13.8 increase (OLS estimate). This is because the receipt of the capital grant correlates with a 46–68 percent increase in investment and because the average grant in the sample is $190,000 and the annual average investment is $3.9 million.

Since the distribution of investments does not accept negative values, we estimated the investment equation by using a Tobit econometric model that allows us

to censor the distribution of the investment. The results obtained (not shown) were very similar.

The results elicited by the OLS and the FE estimations show a statistical correlation between receiving a grant and making larger investments but do not necessarily indicate a causal relationship. To test for a causal relationship, we estimated the investment equation by the TSLS method. Columns 5 and 6 of Table 15 present the results. The first-stage equation estimates **the probability of an enterprise's receiving an expansion benefit** (capital grant or tax relief) **in Year *t*** as a function of the instrumentals—a third-order polynomial of share of exports, district, and the interaction between them—and of the other explanatory variables that are included in the second stage. The explained variable in the second stage is the change in the enterprise's investments between Year *t* and Year *t*–1; the explanatory variables are the probability of receiving a benefit, estimated in the first stage, and additional explanatory variables[41] including share of exports and dummy variables for district. The coefficient of the expansion benefits was not found to be significant: government benefits for existing enterprises did not increase the enterprises' total investment[42] (Column 5). In the separate estimations, neither program (capital grants tax benefits) was found to have made a significant contribution to an increase in investment. Furthermore, no significant effect was found in any size group (small, medium, and large enterprises) and at any level of technology intensivity (high-tech / traditional tech). In Column 6, too, we did not find that a change in the probability of receiving a

[41] Lagged change in labor input, lagged change in physical-capital services, lagged change in R&D-capital services, labor input, physical-capital services, R&D-capital services, labor-force quality, industry concentration, and dummy variables for industry, technology intensivity, type of ownership, company engaging in R&D, districts, and years.

[42] The variables that were included in both stages, apart from the rate of subsidized capital (estimated in the first stage), were lagged investment, labor input, physical-capital services, R&D-capital services, industry concentration, and dummy variables for district, industry, technology intensivity, type of ownership, company engaging in R&D, and year.

benefit from the Investments Center affects the enterprise's total investment. This estimate is different from that shown in Column 5 because it also uses a vector of dummy variables for district as an instrumental for use in identifying the probability of receiving a subsidy. (The dummy variables for districts are included only in the first-stage equation.)

The results of the TSLS estimation show that the positive effect on investment that was found in the OLS and FE regressions (which do not control for the endogeneity problem) is false. The correlation between receiving a capital grant and investment tells us nothing about cause and effect because the enterprises that are interested in investing are the ones that approach the Investments Center and, in some cases, receive grants, while enterprises that do not detect a worthwhile investment opportunity do not contact the Center, do not receive grants, and do not invest. The two-stage estimation surmounts this problem by examining the correlation between the **probability** of receiving a grant and investment—a correlation that was not found positive. The level of investment by enterprises in the periphery and by export enterprises, which have a higher probability of receiving grants, is not significantly different from that of other enterprises that have less access to grants. Notably, the strong explanatory power of the first-stage equation alleviates concern about a weak-instrument problem.

We also estimated the effect of the expansion benefits (grants and tax benefits) on enterprise investment to a longer term of five years. This estimation has an advantage over estimation at annual frequency: it is not susceptible to measurement errors originating in the difference in time between the recording of the benefit and the recording of the investment. Table 16 presents the results. The sample includes latitudinal cross-sectional data on 1,350 enterprises that were sampled in the 1995–

1999 Manufacturing Surveys. The dependent variable is (log) total enterprise investments during the five years 1995–1999. The explanatory variables in the OLS regressions (Columns 1 and 2) are dummy variables for the receipt of a capital grant or a tax benefit in one year at least and a vector of control variables. In Column 1, we use OLS to examine the effect of receiving a benefit from the Investments Center (grant or tax relief) on the level of investment and find the effect to be positive and significant. This effect recurred in both the grants program and in the benefits program (Column 2). It was found to be somewhat less intense than that elicited by the estimation of the short-term investment equation (the OLS estimates in the previous table). Nevertheless, it is very large: an expansion grant of $1 increases total investment by $8.3. Importantly, the estimates obtained were upward-biased because the problem of omitting the "investment opportunities" variable persisted in the five-your estimation, since most enterprises that received capital grants during those five years received several of them. As stated, the use of OLS generates false results that ignore the endogeneity problem. To obtain a bias-free estimate of the contribution of the grant to an increase in investment (a causal relationship), we used the TSLS method to estimate the investment equation (Columns 3–5). First we estimated the probability of receiving a grant from the Investments Center as a function of the share of exports in the total sales of the enterprise, geographic location (district), and the interaction of these two parameters; in the second stage we tested the effect of this probability on the enterprise's total investments in 1995–1999. The second-stage estimates, which include all control variables in our possession,[43] show that receiving

[43] The estimates in Columns 3, 4, and 5 included control variables for district, share of exports, enterprise age, and labor-force quality; dummy variables for enterprises that engaged in R&D in the past seven years, industry concentration, type of ownership, technology intensivity, and economic industry.

a benefit from the Investments Center (capital grants or tax relief) also has no significant effect on the firm's total investments in the medium term. In Column 3, the instrumental variables included district and the interaction between district and share of exports in sales. In Column 4, the instrumentals included the interaction variables only (third-order polynomial). In Column 5, we estimated in the first stage the probability of receiving a grant and (separately) the probability of receiving a tax benefit, and in the second stage we estimated the investment equation as a dependence on the estimated probability of each of these. In no case did we find a significant contribution to an upturn in investments in the medium term.

Table 16: Medium-Term Investment Equation—Cross-Sectional Data for 1999

	[1]	**[2]**	**[3]**	**[4]**	**[5]**
Estimation method	OLS	OLS	TSLS	TSLS	TSLS
Receipt of grant or tax relief	0.39**		0.16	-0.28	
	0.08		*0.18*	*0.27*	
Receipt of capital grant		0.39**			-0.38
		0.08			*0.25*
Receipt of tax benefit		0.31**			-0.25
		0.11			*0.32*
Control variables[1]	+	+	+	+	+
Dummy for districts	+	+	-	+	+
Observations (N)	1,351	1,351	1,351	1,351	1,306
R-squared	0.74	0.74	0.73	0.74	0.74
F-test for explanatory power of instrumentals		..	0.33	0.31	0.35 and 0.23

Note: the dependent variable in all estimations is total enterprise investment in five years (1995–1999). For a fully detailed presentation of the results, see Appendix Table 6. (1) The control variables include, apart from the constant, enterprise age (longevity), labor-force quality, a dummy variable for an enterprise that engaged in R&D in the past seven years, industry concentration (expressed in percent), four dummy variables for type of enterprise ownership (public limited-liability, government-owned, Histadrut, and kibbutz), three for technology intensivity, sixteen for two-digit economic industry, and dummy variables for districts.
* denotes significance at 5% level; ** denotes significance at 1% level.

c. *Effect of grants and tax benefits on employment at the enterprise level*

This section examines the effects on enterprise employment of benefits that existing enterprises receive in order to expand their production capacity. The explained variable in all estimations is the (log) change in enterprise level of employment from

the year in which the grant is received to the following year.[44] The explanatory variables are enterprise characteristics and a dummy variable for the receipt of an expansion grant through the grants program or the alternative program. Table 17 shows the results of the estimations.

Table 17: Employment Equation, 1990–1999

Estimation method	[1] OLS	[2] OLS	[3] FE	[4] FE	[5] TSLS	[6] TSLS	[7] TSLS
Receipt of expansion benefit	0.033** *0.007*		0.020 *0.012*		0.01 *0.02*	0.02 *0.03*	
Receipt of capital grant		0.034** *0.007*		0.024 *0.014*			0.01 *0.03*
Receipt of tax benefit		0.028* *0.014*		0.012 *0.017*			0.02 *0.08*
Control variables[1]	+	+	+	+	+	+	+
Dummy for districts[2]	+	+	+	+	-	+	+
Observations (N)	10,468	10,468	10,468	10,468	10,468	10,468	10,468
R-squared	0.05	0.05	0.17	0.17	0.04	0.04	0.04
Pseudo R^2 for explanatory power of instrumentals	—	—	—	—	0.28	0.27	0.30 0.17

Note: the dependent variable in all estimations is (log) change in employment in Year *t*+1 in the Year 1 equation. The sample includes all enterprises that did not receive construction grants from 1987 onward. For a fully detailed presentation of the results, see Appendix Table 7. (1) The control variables include, apart from the constant, the lagged change in employment, the change in R&D-capital services and physical-capital services, (log) employment, (log) physical-capital services and R&D-capital services, enterprise age (longevity), labor-force quality, a dummy variable for an enterprise that engaged in R&D in the past seven years, industry concentration (expressed in percent), four dummy variables for type of enterprise ownership (public limited-liability, government-owned, Histadrut, and kibbutz), three for technology intensivity, sixteen for two-digit economic industry, and dummy variables for the nine years between 1991 and 1999. (2) dummy variables for six districts.
* denotes significance at 5% level; ** denotes significance at 1% level.

The results of the OLS estimation of the employment equation are shown in Columns 1 and 2. We found that receiving a benefit from the Investments Center has a positive and significant effect on employment—a 3.3 percent increase in enterprise employment (Column 1)—and that each benefit separately (capital grant / tax relief) has a positive and significant effect on employment (Column 2).

[44] Notably, the effect of the grant on an increase in the level of employment in the same year the grant was given was found to be weak.

When we estimate the investment equation using the fixed-effects (FE) method, which controls for unobserved fixed variables, we find a weaker effect of benefits (Columns 3 and 4): receiving a grant or a tax benefit in Year *t* increases enterprise employment by 2 percent. As for the level of significance, one may reject the hypothesis that these benefits have no significant effect on employment at the 10 percent significance level but not at the 5 percent significance level. The hypothesis that tax benefits have a positive effect on employment may also be rejected. The FE and OLS estimates show that receiving a capital grant increases enterprise employment level by 2.4 percent and 3.4 percent (respectively). Comparing the estimation results for employment and investments (the FE and OLS estimations), we find that receiving a benefit correlates with a very steep increase in investments (by hundreds of percent) as against a much more modest upturn in employment (around 3 percent). To get a sense of how strongly capital grants affect employment, we should note that the average grant in the sample was $183,000 and the average number of employees per plant in the sample was 153. Thus, it takes an expansion grant of $35,000–$50,000 to create one new job (all in 1999 USD).

In the TSLS estimates, the effect of capital grants and tax benefits on employment was found to be insignificant (Columns 5–8). The first-stage equation in Columns 5 and 6 estimates **the probability that an enterprise will obtain a benefit in Year *t*** with the help of a vector of dummy variables for districts, share of exports, and the interaction between them, as well as additional variables. (See Appendix Table 7) The second-stage equation estimates the extent to which a change in this probability affects enterprise employment **in Year *t*+1**. We found that a change in the probability of receiving a benefit from the Investments Center has no significant effect on employment. We obtained the same results when the instrumentals were the

interaction variables only, excluding districts (Column 6). Estimating separately the effect of the probability of receiving both kinds of benefits (capital grants and tax relief), we found that neither benefit has a significant effect (Column 7).

As noted above, the analysis of enterprises' decisions on the extent of investment at an annual frequency may suffer from errors in measurement and in the correlation between applying for (and receiving) the grant and making the investment, originating in the omission of the "investment opportunities" variable. Therefore, we tested the effect of expansion benefits (grants and tax relief) on enterprise employment to a longer term of five years (Table 18). The method closely resembles that used in the section on investment.

The sample includes a cross-section of enterprises sampled in the 1999 and 1995 Manufacturing Surveys. The dependent variable in all estimates is the (log) change in enterprise employment between 1995 and 1999. The explained variables in all estimates are enterprise characteristics and the two endogenous variables—a dummy variable for receiving an expansion grant in the grant program in 1995–1999, a dummy variable for receiving a tax benefit in the alternative program during the same years, as well as an additional vector of control variable. The equation was estimated first by OLS and, due to concern about a bias caused by the endogeneity problem, by TSLS as well.

Estimating the employment equation using the OLS method, we found that the increase in employment at enterprises that received a benefit from the Investments Center in 1995–1999 (expansion grant or tax benefits) was 12 percent greater than at similar firms that did not receive a benefit. Receiving a capital grant was associated with a substantial increase in enterprise employment in the medium term (8 percent on average). Thus, it took $77,000 in grants to create a job that had a lifespan

exceeding 2.5 years.[45] When we used the TSLS method, which solves the endogeneity problem, we found that the benefits had no effect on employment to a five-year term. Testing the effect of the grant and tax-relief benefits separately, we found that neither program has a significant positive effect on employment.

Table 18: How Receiving Expansion Grants Affects Manufacturing Enterprises' Labor Input—Cross-Sectional Data for 1999

	[1]	[2]	[3]	[4]	[5]
Estimation method	OLS	OLS	TSLS	TSLS	TSLS
Receipt of grant or tax relief	0.12**		0.03	0.00	
	0.04		0.08	0.12	
Receipt of capital grant		0.08			-0.06
		0.04			0.12
Receipt of tax benefit		0.13*			-0.30
		0.06			0.19
Control variables[1]	+	+	+	+	+
Dummy for districts	+	+	-	+	+
Observations (N)	1,377	1,377	1,337	1,337	1,330
R-squared	0.15	0.15	0.14	0.14	0.14
F-test for explanatory power of instrumentals in the first stage equation		..	0.32	0.31	0.35 and 0.23

Note: the dependent variable in the estimations is (log) change in employment between 1995 and 1999. The sample is comprised of enterprises that did not receive construction grants from 1987 onward. For a fully detailed presentation of the results, see the Appendix Tables. (1) The control variables include, apart from the constant, employment at a five-year lag, share of exports, enterprise age (longevity), labor-force quality, a dummy variable for an enterprise that engaged in R&D in the past seven years, industry concentration (expressed in percent), four dummy variables for type of enterprise ownership (public limited-liability, government-owned, Histadrut, and kibbutz), three for technology intensivity, sixteen for two-digit economic industry, and six for district.
* denotes significance at 5% level; ** denotes significance at 1% level.

[45] The average employment among enterprises in the sample of relevance for Table 18 is 135, and the average grant per firm during the five-year period was $126,000.

8. Conclusion

The Encouragement of Capital Investments Law was enacted in 1959 in order to develop Israel's production capacity, improve its balance of payments, absorb immigrants, disperse the population, and create jobs. The law awards grants and other benefits to those who establish or expand manufacturing enterprises and to investors in agriculture and tourism. Since the mid-1960s, the ECIL has shown a perceptible preference for investments in the periphery and has played a central role in economic development there.

Since the Investments Center's capital grants lower the cost of capital in the preferred areas, one would expect them to increase the quantity of capital in the periphery and reduce capital productivity in these regions. Studies that investigated the ECIL stressed the distortions that the law has created in national capital allocation and expressed doubt about its contribution to increasing and diversifying employment in the periphery. It has been found that the subsidy generates excess capital stock in enterprises, that the utilization rate of the subsidized capital is poor, and that the ECIL encourages the establishment of enterprises that have scanty prospects of survival, does not encourage investment in technology-intensive industries, and does not diversify employment opportunities in development towns. Its contribution to lowering the proportion of inhabitants of development towns who receive unemployment-compensation and income-maintenance benefits has been found negligible.

Examining the state of manufacturing in the periphery in 2005, we find that a very high rate (40 percent) of Israel's manufacturing product is generated there; that manufacturing plants in the periphery are no less productive than those in the center of the country, and that the composition of industries in the periphery is not as skewed

toward traditional industries as in the past. Manufacturing is immensely important in the economy of the periphery and generates a rather high share of employment there. The predominant population group that works for manufacturing enterprises is composed of men who lack academic training—the wage gap between center and periphery among members of this group is negligible and much narrower than the gap in other groups (women and degree-holding men).

This study examines whether, and to what extent, the capital grants and tax benefits enhance investment and employment in the periphery and whether the subsidized capital is less productive than non-subsidized capital, all of which using micro data at the enterprise level.

The study used a unique database that combines a longitudinal sample of manufacturing enterprises with administrative data from the Investments Center. The database for the study is an unbalanced one, including some 2,520 manufacturing enterprises that were sampled at least one year in 1990–1999 and had five or more employees. Among these enterprises, 490 received assistance from the Investments Center. In all, the sample contained 13,827 annual observations of enterprises.

The empirical chapter of the study was divided into two sections. In the first section, we examined the effect on product of the rate of subsidized capital in total physical capital. Adopting the basic approach of Bregman, Fuss, and Regev for this purpose, we estimated an enterprise-level production function—an estimation of product as a function of physical-capital services, labor input, workers' schooling, R&D-capital services, and additional control variables, and also of the variable that constitutes the object of this study: the share of subsidized capital in the firm's capital stock. Unlike BFR, we estimated the production functioning in two stages (TSLS) and found that the rate of subsidized capital has no adverse effect on productivity.

If we estimate the rate of subsidized capital directly, we may obtain a biased estimate due to an endogenous correlation between the rate of subsidized capital and unobserved productivity. This is because the distribution of the grants depends on meeting specific criteria that are enshrined in the law, and there may be a correlation between meeting these criteria and the enterprise's productivity. A conventional way of coping with the problem of endogeneity is by two-stage estimation: the first-stage equation estimates the process of selection that the Investments Center uses to determine which enterprises will receive subsidies (and at what rate), and in the second stage we estimate product as a dependence on the control variables and the first-stage estimate of the rate of subsidized capital. Natural instrumental variables are enterprise location, share of exports in total sales, and the interaction of the two. Our two-stage estimation found that the capital grants have no significant effect on enterprise productivity.

In the second part of the empirical chapter, we examined the effect of **expansion grants** and tax benefits on changes in enterprise employment and investment. The endogeneity problem exists here as well: an enterprise that encounters a profitable investment opportunity in a given year will tend to apply for (and receive) a capital grant and make the investment that year or shortly afterward, whereas enterprises that do not encounter such opportunities will not apply for grants, will not receive them, and will not invest. To cope with the endogeneity problem, we tested the effect of the receipt of grants across a longer period of time: five years. This method mitigates the bias of the coefficient but does not eliminated altogether. The resulting estimates showed that $1 worth of expansion grant induces an $8.3 increase in investment and that it takes a $77,000 expansion grant to create one job (that has a lifespan of at least

2.5 years). As stated, these estimates are upward-biased and may represent the upper limit of the effect.

To obtain a bias-free estimate of the effect of the grants on changes in enterprise employment and investment, we compared enterprises that were similar in all respects other than the probability of receiving capital grants. For this purpose, we used the TSLS method: the first-stage equation is a logistic equation of the enterprise's probability of receiving a grant; the second-stage equation asks how the change in the **probability** of receiving a grant affects enterprise investment and employment, other factors being constant. We found that an increase in the probability of receiving an expansion benefit (capital grant / tax relief) has no upward effect on either parameter.

References

Hebrew sources

Alfandari, T., and Shefer, D. (1992). Immigration into and from development towns. Haifa: Shmuel Ne'eman Center, the Technion.

Bank of Israel (2007). *Annual report for 2006,* Box 3b, "The Encouragement of Capital Investments Law and its effect on employment in development towns," 64–67.

Bank of Israel (various years), *Annual report,* chapter on industry.

Borochov, A. (1990). "Industry in development towns and its problems." *Economic Review 40* (141), 260–271.

Braude, K., and Navon, G. (2006). *Internal migration in Israel.* Bank of Israel, Research Department, Discussion Articles 2006.07.

Bregman, A. (1986). *Industry and industrialization policy in Israel.* Bank of Israel, Research Department.

Gabai, Y., et al. (1996). Report of the exploratory committee on complementary tools for the Encouragement of Capital Investments Law.

Gradus, Y., and Krakover, S. (1976). "The level and characteristics of industrialization in the central and development areas." *Economic Review 23* (88–89), 66–78.

Griliches, Z,. and Regev, H. (1989). "Research and development, government support and productivity of the manufacturing enterprises in Israel, 1975–1994." *Economic Review 46* (November), 335–358.

Litwin, A., and Meridor, L. (1982). "Estimate of the implicit 'gift' in investment encouragement in Israel." *Bank of Israel Review 54,* 3–24.

Moav, O, and Reingewirtz, Y. (2006). *The Encouragement of Capital Investments Law in Israel, employment in development areas in 1984–2004.* Shalem Center.

Moravets, D. (1976). "Liquidity in manufacturing." *Economic Review 90,* 182–194.

Razin, E. (2004). "Places of residence of workers at the new industrial park in Kiryat Gat," in *Local and regional effects of the new industrial park in Kiryat Gat.*

Razin, E., and Schwartz, D. (1992). "Evaluation of the dispersion of industry policy in Israel in view of changing conditions." *Economic Review 44* (153), 236–276.

Schwartz, D. (1985). "The effective implicit incentive in the Encouragement of Capital Investments Law." *Economic Review 32* (124), 12–21.

Schwartz, D. (1988). "Effect of the Encouragement of Capital Investments Law on manufacturing investment in development towns," in *Studies in Economics,* Israel economics society, 227–250.

Schwartz, D. (1993). "Effect of the Encouragement of Capital Investments Law on the industrialization of the development announced." Center for Development Studies.

Schwartz, D. (1994). "Should the Encouragement of Capital Investments Law the amended?" Position Paper no. 1, Ministry of Economics and Planning, National and Economic Planning Authority.

Schwartz, D. (2002). "Review of the literature—the Encouragement of Capital Investments Law and locality incentives." Negev Institute for Regional Development, Ben-Gurion University of the Negev, Paper no. 20A.

Schwartz, D. (2002). "Direct incentives for encouragement of investment in manufacturing, the international experience." Negev Institute for Regional Development, Ben-Gurion University of the Negev, Paper no. 20B.

Schwartz, D., and Frenkel, A. (1987). *Creation of alternatives for socioeconomic development of development towns in Israel: Stage A*. Samuel Neaman Institute, the Technion.

Shachar, A., Gradus, Y., Razin, E., Krakover, S., and Felsenstein, D. (2005). *Global development in a local town—local and regional effects of the new industrial park in Kiryat Gat.* Institute for Urban Regional Studies, the Hebrew University of Jerusalem, and Negev Institute for Regional Development, Ben-Gurion University of the Negev.

Shefer, D., and Frenkel, A. (1989). "Job creation in development towns." Samuel Neaman Institute, the Technion.

Tavor Economics and Finance, Ltd. (2007). "The Encouragement of Capital Investments Law—the grants track—examination of the economic advisability of the law," for the Israel Manufacturers Association.

English sources

Bregman, A. (1985). "The slowdown of industrial productivity—causes, explanations, and surprises." Bank of Israel, *Economic Review 56*.

Bregman, A., Fuss, M., and Regev, H. (1991). "High-tech and productivity: evidence from Israeli industrial firms*." European Economic Review*. 35, 1191–1221.

Bregman, A., Fuss, M., and Regev H., (1998). "The effects of capital subsidization on Israeli industry." NBER Working Paper No. W6788.

Griliches, Z., and Regev, H. (1995). "Firm productivity in Israel industry 1979–1988." *Journal of Econometrics 65* (1), 175–203.

Regev, H. (2006). "The Griliches-Regev Longitudinal Panel of Israeli Manufacturing Firms 1995–1999." mimeo.

Lach, S. (1999). “Labor productivity in the Israel manufacturing sector, 1990–1994.” *Bank of Israel Review 72,* 23–49.

Lach, S. (2002). “Do R&D subsidies stimulate or displace private R&D? Evidence from Israel.” *Journal of Industrial Economics 50,* No. 4, 369–390.

Lavy, V. (1994). *The effects of investment subsidies on the survival of firms in Israel.* Discussion Paper 94.04, The Maurice Falk Institute for Economic Research in Israel, The Hebrew University of Jerusalem.

Navon, G. (2009). *Human capital spillovers in the workplace: labor diversity and productivity.* Bank of Israel, Discussion Paper 2009.05.

Appendices

Appendix Table 1: Share of Persons with 13+ Years of Schooling in 2005 in the Civilian Labor Force, by Religion, Gender, and district of Residence (Percent)

	Population at large		Jews only	
	periphery	Center	periphery	Center
Total	44.7	55.9	49.3	57.9
Men	38.2	51.7	44.9	55.3
Women	53.3	60.6	54.0	60.5

Appendix Table 2: Employment, by District of Residence and Occupation, 2005 (Percent)

	Men			Women		
	In total population	Northern District	Southern District	In total population	Northern District	Southern District
Skilled workers in manufacturing, construction, and other	**30.3**	**41.6**	**40.9**	**4.3**	**9.4**	**6.9**
Agents, sales, services, and white-collar	24.9	20.6	20.9	50.5	44.9	49.3
Academic and managerial	21.6	15.8	13.1	18.0	15.3	12.1
Liberal and technical professions	11.8	8.1	9.9	19.2	20.0	18.6
Skilled workers in agriculture	2.5	5.0	4.2	0.3	0.9	0.7
Unskilled workers	8.9	9.0	11.1	7.8	9.5	12.3

Appendix Table 3: OLS Estimation of plant level Production Function

	[1]	[2]	[3]	[4]	[5]	[6]
Share of grants in physical-capital services	0.06**	0.03*	0.04*	..	0.02	0.05**
	0.02	0.02	0.02		0.02	0.02
Log employment	0.65**	0.66**	0.67**	0.66**	0.61**	0.68**
	0.02	0.02	0.02	0.02	0.03	0.02
Log R&D-capital services	0.06**	0.02*	0.02*	0.02**	0.42**	0.40**
	0.01	0.01	0.01	0.01	0.03	0.02
Log physical-capital services	0.45**	0.41**	0.41**	0.41**	0.02	0.02*
	0.02	0.02	0.02	0.02	0.01	0.01
Labor-force quality		0.38**	0.38**	0.38**	0.20	0.42**
		0.10	0.10	0.10	0.22	0.1
Dummy variable for R&D enterprise		0.05	0.05	0.05	0.08	0.06
		0.04	0.04	0.04	0.05	0.04
Enterprise age		0.00**	0.00**	0.00**	0.00*	0.00**
		0.00	0.00	0.00	0.00	0
Industry concentration		0.00*	0.00*	0.00*	0.00	0.00*
		0.00	0.00	0.00	0.00	0
Dummy for periphery				-0.08**		
				0.03		
Dummy for Northern District			0.04			
			0.05			
Dummy for Haifa District			0.10			
			0.05			
Dummy for Central District			0.15**			
			0.05			
Dummy for Tel Aviv District			0.15**			
			0.05			
Dummy for Southern District			0.12*			
			0.06			
Dummy for Judea-Samaria-Gaza			0.10			
			0.09			
Dummy for public limited-liability co.		0.04	0.05	0.04	0.03	0.03
		0.04	0.04	0.04	0.05	0.04
Dummy for Histadrut enterprise		0.08	0.10	0.10	0.02	0.05
		0.05	0.05	0.05	0.06	0.05
Dummy for kibbutz enterprise		0.14**	0.17**	0.17**	0.15**	0.13**
		0.04	0.04	0.04	0.05	0.04
Dummy for govt.-owned company		0.15	0.15	0.14	0.10	0.17
		0.10	0.09	0.10	0.10	0.1
Dummy for high-tech industry		0.40**	0.40**	0.40**	0.31*	0.34**
		0.09	0.09	0.09	0.13	0.09
Dummy for medium–high tech industry		-0.06	-0.06	-0.05	-0.02	-0.05
		0.08	0.08	0.09	0.11	0.09
Dummy for medium-low tech industry		0.10	0.09	0.09	0.08	0.09
		0.07	0.07	0.07	0.10	0.07
Constant	2.13**	1.66**	1.55**	1.67**	2.07**	1.62**
	0.04	0.12	0.12	0.12	0.23	0.12
Observations (N)	13,659	13,659	13,659	13,659	4502	12699
R-squared	0.87	0.88	0.88	0.88	0.88	0.88

Note: The dependent variable in all estimations is the (log) product of the enterprise each year. Column 6 relates to a downsized sample excluding enterprises that received construction grants from 1987 onward. The control variables also include 16 dummy variables for two-digit economic industries and 9 dummy variables for years 1991–1999.

* denotes significance at 5% level; ** denotes significance at 1% level.

Appendix Table 4: TSLS Estimation of Plant-Level Production Function

	[1]	[2]	[3]	[4]
Share of grants in physical-capital	-0.18*	0.25	-0.63	0.12
services	0.08	0.24	0.55	0.37
Log employment	0.67**	0.67**	0.67**	0.67**
	0.02	0.02	0.03	0.02
Log R&D-capital services	0.40**	0.41**	0.38**	0.40**
	0.02	0.02	0.03	0.02
Log physical-capital services	0.02**	0.02*	0.02*	0.02*
	0.01	0.01	0.01	0.01
Labor-force quality	0.42**	0.34**	0.48**	0.43**
	0.10	0.11	0.15	0.11
Dummy variable for R&D enterprise	0.05	0.05	0.04	0.05
	0.04	0.04	0.04	0.04
Enterprise age	0.00**	0.00**	0.00**	0.00**
	0.00	0.00	0.00	0.00
Industry concentration	0.00*	0.00*	0.00	0.00*
	0.00	0.00	0.00	0.00
Share of exports in total sales			0.19*	0.06
			0.09	0.07
Dummy for Northern District		-0.01	0.17	0.02
		0.08	0.13	0.09
Dummy for Haifa District		0.11*	0.06	0.10
		0.05	0.07	0.06
Dummy for Central District		0.16**	0.09	0.15*
		0.05	0.07	0.06
Dummy for Tel Aviv District		0.17**	0.10	0.16**
		0.05	0.07	0.05
Dummy for Southern District		0.09	0.21*	0.11
		0.07	0.11	0.06
Dummy for Judea-Samaria-Gaza		0.04	0.27	0.02
		0.11	0.18	0.14
Dummy for public limited-liability	0.04	0.05	0.04	0.04
corporation	0.04	0.04	0.04	0.04
Dummy for Histadrut enterprise	0.10	0.10	0.12*	0.07
	0.05	0.06	0.06	0.06
Dummy for kibbutz enterprise	0.17**	0.15**	0.21**	0.16**
	0.04	0.04	0.07	0.06
Dummy for govt.-owned company	0.15	0.15	0.13	0.17
	0.10	0.09	0.10	0.10
Dummy for high-tech industry	0.41**	0.39**	0.41**	0.32**
	0.09	0.09	0.11	0.09
Dummy for medium–high tech	-0.04	-0.08	-0.03	-0.08
industry	0.09	0.09	0.11	0.09
Dummy for medium-low tech	0.11	0.08	0.08	0.07
industry	0.07	0.07	0.08	0.07
Constant	1.66**	1.54**	1.62**	1.50**
	0.12	0.13	0.15	0.13
Observations (N)	13,659	13,659	13,659	12,699
R-squared	0.88	0.88	0.83	0.88

Note: The dependent variable in all estimations is the (log) product of the enterprise each year. Column 4 relates to a downsized sample excluding enterprises that received construction grants from 1987 onward. The control variables also include 16 dummy variables for two-digit economic industries and 9 dummy variables for years 1991–1999.

* denotes significance at 5% level; ** denotes significance at 1% level.

Appendix Table 5: Estimation of Investment Equation for Years 1991–1999

	[1] OLS	[2] OLS	[3] FE	[4] FE	[5] TSLS	[6] TSLS
Dummy variable for receipt of capital grant	0.68**		0.46**			
	0.07		0.09			
Dummy variable for receipt of tax benefit	0.47**		0.08			
	0.10		0.09			
Dummy variable for receipt of capital grant and/or tax benefit		0.65**		0.35**	-0.51	-0.51
		0.06		0.07	0.27	0.27
Log employment at 1-year lag	0.46**	0.46**	0.60**	0.60**	0.46**	0.46**
	0.05	0.05	0.10	0.10	0.05	0.05
Log R&D-capital services at 1-year lag	0.84**	0.84**	-0.09	-0.10	0.90**	0.90**
	0.05	0.05	0.06	0.06	0.05	0.05
Log physical-capital services at 1-year lag	-0.05**	-0.05**	-0.06*	-0.06*	-0.03	-0.03
	0.02	0.02	0.03	0.03	0.02	0.02
Labor-force quality	0.41	0.41	0.15	0.16	0.41	0.41
	0.23	0.23	0.38	0.38	0.24	0.24
Dummy variable for R&D enterprise	0.12	0.12	0.00	0.00	0.11	0.11
	0.08	0.08	0.00	0.00	0.08	0.08
Enterprise age	-0.00*	-0.00*	0.00	0.00	-0.01**	-0.01**
	0.00	0.00	0.00	0.00	0.00	0.00
Industry concentration	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00
Share of exports in total sales	0.30**	0.30**	0.69**	0.68**	0.56**	0.56**
	0.10	0.10	0.26	0.26	0.12	0.12
Dummy for Northern District	0.21	0.22			0.42**	0.42**
	0.13	0.13			0.14	0.14
Dummy for Haifa District	0.35*	0.34*			0.24	0.24
	0.14	0.14			0.14	0.14
Dummy for Central District	0.48**	0.48**			0.35*	0.35*
	0.13	0.13			0.14	0.14
Dummy for Tel Aviv District	0.23	0.22			0.14	0.14
	0.13	0.13			0.13	0.13
Dummy for Southern District	0.29*	0.29*			0.32*	0.32*
	0.14	0.14			0.14	0.14
Dummy for Judea-Samaria-Gaza	0.35	0.36			0.42	0.42
	0.25	0.25			0.26	0.26
Dummy for public limited-liability corp.	0.18*	0.18*			0.17*	0.17*
	0.08	0.08			0.08	0.08
Dummy for Histadrut enterprise	-0.12	-0.12			-0.08	-0.08
	0.13	0.13			0.13	0.13
Dummy for kibbutz enterprise	0.15	0.15			0.22*	0.22*
	0.09	0.09			0.09	0.09
Dummy for govt.-owned company	-0.68*	-0.67*			-0.77*	-0.77*
	0.32	0.32			0.32	0.32
Dummy for high-tech industry	0.03	0.03			0.16	0.16
	0.20	0.20			0.22	0.22
Dummy for medium–high tech industry	-0.12	-0.11			0.03	0.03
	0.17	0.17			0.18	0.18
Dummy for medium-low tech industry	-0.09	-0.09			0.01	0.01
	0.15	0.15			0.17	0.17
Constant	-1.56**	-1.56**	3.40**	3.41**	-1.67**	-1.67**
	0.30	0.30	0.55	0.55	0.31	0.31
Observations (N)	10,120	10,120	10,120	10,120	10,120	10,120
R-squared	0.60	0.60	0.03	0.03	0.60	0.60

Note: The dependent variable in all estimations is (log) enterprise investment. The sample is comprised of enterprises that did not receive construction grants from 1987 onward. The control variables also include 16 dummy variables for two-digit economic industries and 9 dummy variables for years 1991–1999. * denotes significance at 5% level; ** denotes significance at 1% level.

Appendix Table 6: Medium-Term Investment Equation— Cross-Sectional Data for 1999

	[1] OLS	[2] OLS	[3] TSLS	[4] TSLS	[5] TSLS
Dummy variable for receipt of capital grant [a]		0.39**			-0.38
		0.08			0.25
Dummy variable for receipt of tax benefit [a]		0.31**			-0.25
		0.11			0.32
Dummy variable for receipt of capital grant and/or tax benefit [a]	0.39**		0.16	-0.28	
	0.08		0.18	0.27	
Log employment at 4-year lag	0.35**	0.35**	0.35**	0.36**	0.40**
	0.08	0.08	0.08	0.08	0.07
Log R&D-capital services at 4-year lag	0.87**	0.87**	0.89**	0.91**	0.88**
	0.07	0.07	0.07	0.07	0.07
Log physical-capital services at 4-year lag	-0.03	-0.03	-0.03	-0.02	-0.02
	0.02	0.02	0.02	0.02	0.02
Labor-force quality	0.18	0.18	0.21	0.15	0.16
	0.28	0.28	0.28	0.28	0.28
Dummy variable for R&D enterprise	0.18	0.18	0.18*	0.16	0.16
	0.09	0.09	0.09	0.09	0.09
Enterprise age	0.00	0.00	-0.01*	-0.01*	-0.01*
	0.00	0.00	0.00	0.00	0.00
Industry concentration	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00
Share of exports in total sales	0.27*	0.28*	0.36**	0.50**	0.47**
	0.12	0.12	0.14	0.15	0.14
Dummy for Northern District	0.21	0.2		0.31	0.29
	0.16	0.16		0.17	0.16
Dummy for Haifa District	0.16	0.16		0.09	0.02
	0.17	0.17		0.17	0.17
Dummy for Central District	0.27	0.26		0.16	0.07
	0.16	0.17		0.17	0.17
Dummy for Tel Aviv District	-0.02	-0.02		-0.11	-0.19
	0.17	0.17		0.17	0.16
Dummy for Southern District	0.26	0.25		0.27	0.23
	0.17	0.17		0.17	0.16
Dummy for Judea-Samaria-Gaza	0.52*	0.52		0.66*	0.61*
	0.27	0.27		0.29	0.28
Dummy for public limited-liability corp.	0.11	0.11	0.14	0.12	0.14
	0.10	0.10	0.10	0.10	0.10
Dummy for Histadrut enterprise	0.04	0.05	0.12	0.12	0.13
	0.15	0.15	0.15	0.15	0.15
Dummy for kibbutz enterprise	0.09	0.09	0.17	0.12	0.11
	0.10	0.10	0.10	0.10	0.10
Dummy for govt.-owned company	-0.66	-0.67	-0.72	-0.88	0.00
	0.6	0.6	0.61	0.62	0.00
Dummy for high-tech industry	0.04	0.04	0.12	0.18	0.20
	0.21	0.21	0.21	0.22	0.23
Dummy for medium–high tech industry	-0.20	-0.19	-0.09	-0.06	-0.02
	0.18	0.18	0.18	0.19	0.19
Dummy for medium-low tech industry	-0.02	-0.02	-0.01	0.03	0.03
	0.16	0.16	0.15	0.16	0.16
Constant	1.13**	1.13**	1.17**	1.03*	1.17**
	0.40	0.40	0.37	0.41	0.40
Observations (N)	1,351	1,351	1,351	1,351	1,306
R-squared	0.74	0.74	0.73	0.74	0.74

Note: The dependent variable in all estimations is total enterprise investment in a five-year period (1995–1999). The sample is comprised of enterprises that did not receive construction grants from 1987 onward. The control variables also include 16 dummy variables for two-digit economic industries and 9 dummy variables for years 1991–1999. * denotes significance at 5% level; ** denotes significance at 1% level. a. The dummy variables receive the value of 1 if the enterprise received a benefit at least one year during 1995–1999, and 0 otherwise.

Appendix Table 7: Estimation of Employment Equation for Years 1991–1999

	[1] OLS	[2] OLS	[3] FE	[4] FE	[5] TSLS	[6] TSLS	[7] TSLS
Dummy for receipt of capital grant		0.03**		0.02			0.01
		0.01		0.01			0.03
Dummy for receipt of tax benefit		0.03*		0.01			0.02
		0.01		0.02			0.08
Dummy for receipt of capital grant	0.03**		0.02		0.01	0.02	
and/or tax benefit	0.01		0.01		0.02	0.03	
Log employment	-0.04**	-0.04**	-0.32**	-0.32**	-0.04**	-0.04**	-0.04**
	0.01	0.01	0.02	0.02	0.01	0.01	0.01
Log R&D-capital services	0.03**	0.03**	-0.01	-0.01	0.03**	0.03**	0.03**
	0.00	0.00	0.01	0.01	0.01	0.01	0.01
Log physical-capital services	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.01	0.01	0.00	0.00	0.00
Labor-force quality	-0.05	-0.05	-0.10	-0.10	-0.05	-0.05	-0.05
	0.03	0.03	0.08	0.08	0.03	0.03	0.03
Dummy variable for R&D	-0.01	-0.01	0.00	0.00	-0.01	-0.01	-0.01
enterprise	0.01	0.01	0.00	0.00	0.01	0.01	0.01
Enterprise age	-0.00*	-0.00*	0.00	0.00	-0.00**	-0.00*	-0.00*
	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Industry concentration	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Share of exports in total sales	0.02	0.02	0.02	0.02	0.03	0.02	0.03
	0.01	0.01	0.04	0.04	0.01	0.01	0.02
Dummy for Northern District	0.02	0.02				0.02	0.02
	0.01	0.01				0.02	0.02
Dummy for Haifa District	0.03	0.03				0.03	0.03
	0.01	0.01				0.01	0.01
Dummy for Central District	0.03	0.03				0.02	0.02
	0.01	0.01				0.01	0.01
Dummy for Tel Aviv District	0.01	0.01				0.01	0.01
	0.01	0.01				0.01	0.01
Dummy for Southern District	0.01	0.01				0.01	0.01
	0.02	0.02				0.02	0.02
Dummy for Judea-Samaria-Gaza	-0.01	-0.01				-0.01	-0.01
	0.03	0.03				0.03	0.03
Dummy for public limited-liability	-0.01	-0.01			-0.01	-0.01	-0.01
corp.	0.01	0.01			0.01	0.01	0.01
Histadrut enterprise dummy	-0.02	-0.02			-0.01	-0.02	-0.02
	0.01	0.01			0.01	0.01	0.01
Dummy for kibbutz enterprise	0.03**	0.03**			0.04**	0.03**	0.03**
	0.01	0.01			0.01	0.01	0.01
Dummy for govt.-owned company	-0.03	-0.03			-0.03	-0.03	-0.03
	0.02	0.02			0.02	0.02	0.02
High-tech Dummy for high-tech	0.04	0.04			0.05	0.04	0.04
industry	0.03	0.03			0.03	0.03	0.03
Dummy for medium–high tech	0.00	0.00			0.01	0.01	0.01
industry	0.02	0.02			0.02	0.02	0.02
Dummy for medium-low tech	-0.01	-0.01			-0.01	-0.01	-0.01
industry	0.02	0.02			0.02	0.02	0.02
Constant	0.12**	0.12**	1.46**	1.46**	0.13**	0.12**	0.12**
	0.04	0.04	0.11	0.11	0.04	0.04	0.04
Observations (N)	10,468	10,468	10,468	10,468	10,468	10,468	10,468
R-squared	0.05	0.05	0.17	0.17	0.04	0.04	0.04

Note: The dependent variable in all estimations is change in (log) employment in Year *t*+1 relative to Year *t*. The sample is comprised of enterprises that did not receive construction grants from 1987 onward. The control variables also include 16 dummy variables for two-digit economic industries and 9 dummy variables for years 1991–1999. * denotes significance at 5% level; ** denotes significance at 1% level.

Appendix Table 8: Medium-Term Employment Equation— Cross-Sectional Data for 1999

	[1] OLS	[2] OLS	[3] TSLS	[4] TSLS	[5] TSLS
Dummy variable for receipt of capital grant [a]		0.08 0.04			-0.06 0.12
Dummy variable for receipt of tax benefit [a]		0.13* 0.06			-0.30 0.19
Dummy variable for receipt of capital grant and/or tax benefit [a]	0.12** 0.04		0.03 0.08	0.00 0.12	
Log employment at 4-year lag	-0.17** 0.03	-0.17** 0.03	-0.17** 0.03	-0.17** 0.03	-0.18** 0.03
Log R&D-capital services at 4-year lag	0.11** 0.02	0.11** 0.02	0.12** 0.02	0.11** 0.03	0.13** 0.03
Log physical-capital services at 4-year lag	0.01 0.01	0.01 0.01	0.01 0.01	0.01 0.01	0.02 0.01
Labor-force quality	-0.29* 0.14	-0.29* 0.14	-0.29* 0.14	-0.30* 0.14	-0.33* 0.14
Dummy variable for R&D enterprise	-0.04 0.05	-0.04 0.05	-0.05 0.05	-0.05 0.05	-0.05 0.05
Enterprise age	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	-0.00* 0.00
Industry concentration	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00
Share of exports in total sales	0.05 0.06	0.06 0.07	0.10 0.07	0.10 0.07	0.15 0.08
Dummy for Northern District	0.08 0.07	0.09 0.07		0.10 0.08	0.10 0.08
Dummy for Haifa District	0.05 0.07	0.04 0.07		0.04 0.07	0.05 0.07
Dummy for Central District	0.10 0.07	0.09 0.07		0.08 0.07	0.07 0.07
Dummy for Tel Aviv District	0.06 0.06	0.05 0.06		0.04 0.06	0.04 0.06
Dummy for Southern District	0.04 0.07	0.05 0.07		0.05 0.07	0.04 0.07
Dummy for Judea-Samaria-Gaza	-0.05 0.12	-0.04 0.12		-0.03 0.12	-0.01 0.13
Dummy for public limited-liability corp.	-0.09 0.05	-0.09* 0.05	-0.09 0.05	-0.09 0.05	-0.06 0.05
Dummy for Histadrut enterprise	-0.04 0.06	-0.03 0.05	-0.01 0.06	-0.02 0.06	0.00 0.06
Dummy for kibbutz enterprise	0.18** 0.04	0.19** 0.04	0.20** 0.04	0.19** 0.04	0.18** 0.05
Dummy for govt.-owned company	-0.04 0.13	-0.05 0.13	-0.08 0.13	-0.08 0.13	0.00 0.00
Dummy for high-tech industry	0.32** 0.09	0.33** 0.09	0.34** 0.09	0.35** 0.09	0.38** 0.10
Dummy for medium–high tech industry	0.10 0.08	0.10 0.08	0.12 0.08	0.12 0.09	0.16 0.09
Dummy for medium-low tech industry	0.03 0.08	0.04 0.08	0.03 0.08	0.04 0.08	0.04 0.08
Constant	0.27 0.16	0.26 0.16	0.30 0.16	0.25 0.17	0.27 0.18
Observations (N)	1377	1377	1377	1377	1330
R-squared	0.15	0.15	0.14	0.14	0.14

Note: The dependent variable in all estimations is change in (log) employment in 1999 relative to 1995. The sample is comprised of enterprises that did not receive construction grants from 1987 onward. The control variables also include 16 dummy variables for two-digit economic industries and 9 dummy variables for years 1991–1999. * denotes significance at 5% level; ** denotes significance at 1% level. a. Dummy variables are valued 1 if the enterprise received a benefit at least one year during 1995–1999, and 0 otherwise.