

Are incentives a good investment for the host country? An empirical evaluation of the Czech National Incentive Scheme

Thaddeus J. S. Mallya, Zdenek Kukulka and Camilla Jensen*

This article discusses the relative merits of investment incentives in the light of the current competition for foreign direct investment among economies in transition. The case of the Czech National Incentive Scheme is evaluated in terms of three major interrelated issues: “crowding in” additional foreign direct investment, cost-benefit considerations and quality of investment. It may be hard to meet by these criteria establishing *ex ante* conditions for investors applying for incentives. The Czech scheme has “crowded in”, at best, 10% more foreign direct investment than in a hypothetical case of no incentives. The decisive question is really whether the programme has succeeded in improving the quality of investment. The findings of this article suggest that screening rules as applied by the Government of the Czech Republic may have been successful in this respect. However, as the scheme is being scaled up, quantity targets start to threaten quality concerns. A simple cost-benefit calculation suggests that, under a worst-case scenario of maximum tax relief to foreign investors, the absence of spillovers and capture of comparative advantages by investors, the social price may be in excess of \$40,000 per job created. This price can be compensated only by such opportunity costs as the burden of unemployment outlays, or losses due to not attracting higher-quality foreign direct investment.

Key words: foreign direct investment, incentives, crowding-in, upgrading, Czech Republic

* The authors are, respectively, Senior Lecturer, Brno University of Technology, Brno, Czech Republic, Manager, Czech Republic and Assistant Professor, Center for East European Studies, Copenhagen Business School, Copenhagen, Denmark. They are greatly indebted to Professors Klaus Meyer and Rajneesh Narula (Copenhagen Business School) and an anonymous referee, for helpful comments to earlier versions of this article. Contact: cj.cees@cbs.dk.

Introduction

Before 1989, foreign direct investment (FDI) in Central and Eastern Europe (CEE) was limited to a few joint ventures, with State-owned firms being the only local partners. Since then, the CEE countries have undergone a fast transformation and are now competing for FDI flows along with other European countries and developing countries. No other mechanism of international technology transfer appears to offer the same number of benefits to these host countries. This has been a decisive factor behind the launching of recent investment incentive programmes that target foreign investors in particular all over CEE (World Bank, 2002; Anderson, 2001; Hirvensalo, 2000; DAW, 2002).

The time series for FDI flows into economies in transition are not yet long enough to draw strong conclusions about the relationship between FDI and growth in economies in transition since these flows started to intensify only by the mid- to late 1990s. Meanwhile, there has been little or limited evidence on the presence of technology spillovers from foreign affiliates to domestic firms in economies in transition (Bosco, 2001; Zemplerova and Jarolím, 2001; Smarzynska, 2001; Jensen, 2003). FDI as an alternative to other channels of international technology transfer may also come at long-term costs. These problems shed doubts over the merits of the recent wave of expensive incentive schemes launched by the Governments of CEE countries (Mitra and Stern, 2002).

The question whether FDI incentives are effective as an instrument of development or industrial policy in host countries is an issue of increasing importance. It is a concern for policy makers at the local, national, regional and global levels (UNCTAD, 2003; Blomström and Kokko, 2003; Narula and Dunning, 2000; Oman, 2000; Lall, 1996; UNCTAD, 1996). The literature offers limited conclusions on the issue, and views often diverge on the merits of incentive programmes. Part of the controversy results from the different levels of analysis these studies apply.

To resolve this analytical and policy debate, more country case studies are needed to throw further light on the costs and benefits of incentives. This article examines the case of the Czech National Incentive Scheme (NIS), launched by a then new Social Democrat Government in 1998. It examines whether the incentives resulted in more benefits than costs for the host country. The following section reviews the literature on investment incentives. It looks at three major aspects of the issue: crowding in, cost-benefit considerations and the quality of FDI. A more consistent interpretation of the relationship between these approaches is given at the end of that section, along with a number of hypotheses to be tested in the rest of the article. The next section examines the methodological issue that will be relevant for the empirical test. The subsequent section tests the four hypotheses raised. It is followed by a discussion on the results of the article, as compared to the findings of previous literature. The analysis is wrapped up in a concluding section.

Analysis and evaluation of incentive programmes

This section reviews selected and recent literature on incentives. It starts with broader global and regional issues such as the question of whether incentive programmes crowd-in additional FDI. Then the survey turns to the issue of the relative merits, or costs and benefits, of offering incentives at the national level. The last issue is microeconomic in nature: can incentive programmes shift the profile and quality of individual FDI projects to higher levels?

Crowding-in issues

The most fundamental question posed to incentive programmes is whether they crowd in¹ additional FDI. The answer may not be the same depending on the level of analysis: local, national, regional or global. Moreover, a high degree of

¹ With crowding-in defined as a situation in which incentives succeed in attracting investment projects that would not have taken place in the absence of incentives, e.g. they do not substitute for FDI that would have taken place irrespective of the availability of incentives.

sensitivity surrounds this crowding-in issue (Oman, 2000). While it is possible that incentive programmes do crowd in FDI at both the national and global levels, they also are potentially part of a beggar-thy-neighbour policy. Research on the United States economy (of FDI across United States regions) suggests that incentives do matter, especially when selecting among locations presenting marginal differences in other aspects of locational advantages and costs (Fisher and Peters, 1997). The results suggest that trade-offs may exist in cases in which incentives do make a difference in the final investment decision.

Dirk te Velde (2001) chooses two highly successful cases of having combined incentives with FDI: Ireland and Singapore. These country case studies suggest that incentive programmes can be successful in achieving their target. Te Velde (2001) shows apparent commonalities between the programmes in these two countries. They may have been successful in crowding in FDI because of their emphasis on alleviating informational constraints rather than only offering tax holidays.

But many studies, even at the national or local level, suggest that incentive programmes generally fail to crowd-in FDI (Morriset and Pirnia, 2000; Oman, 2000). Country case studies tend to be inconclusive in this respect. A time-series study of Indonesia by Louis Wells and Nancy Allen (2001) shows that, despite changes in government policy, the presence or absence of incentives had little impact on cumulative FDI inflows.

J. Beyer (2002), in a panel analysis of the economies in transition, concludes that the announcement of incentive programmes among other factors in CEE countries has had little impact on their ability to attract FDI. An earlier review of tax incentives in economies in transition by David Holland and Jeffrey Owens (1996) also concludes that incentives appear to play a marginal role in attracting FDI. Milan Semidhradsky and Stansilav Klazar (2001) even find a negative correlation between annual inflows of FDI into the Czech Republic, Hungary and Poland. They take this as a sign of distribution wars among similar locations in CEE.

Cost-benefit considerations

The cost-benefit analysis of incentives looks at not only crowding in but also at the relative merits of incentive programmes. Because of the potential transfer of technology resulting from FDI, the latter may create a social multiplier over and above what has been created by domestic projects channelled through wage and tax payments in the host country. Benefits should in principle also include spillovers or externalities that may impact positively on the productivity and competitiveness of domestic firms (Blomström and Kokko, 1993).

On the top of the cost-benefit research agenda is the issue of the costs of incentive programmes (Morriset and Pirnia, 2000). Various social costs may result from these programmes, ranging from administrative costs and loss of foregone taxes, to the actual neglect of other important legislative issues. Charles Oman (2000) argues that incentive programmes of using fiscal incentives are popular in environments that offer low legal protection of firms and that are plagued with red tape and corruption. Holland and Owens (1996) also argue that other impediments to FDI should be tackled, instead of the great importance attached to tax incentives.

Only a small number of studies have conducted actual evaluations of the cost-benefit profiles of incentive programmes. Peter Fisher and Alan Peters (1997) review the studies connecting the level of regional taxes with regional growth or investment rates in the United States. They conclude that the relationship between taxes and growth depends mainly on how taxes are spent on regional development objectives. Wells and Allen (2001) investigate the cost-benefit profile of the Indonesian incentive programme and find that costs have by far outweighed the benefits. Te Velde (2001) estimates the costs of the Irish incentive programme per job created and sustained; they declined from above Irish £ 30,000 per job in the 1980s to £ 10,000 in the 1990s. However, this study offers no calculation of benefits to offset or partially offset this cost.

Selection biases and screening rules affecting the quality of FDI

The last issue to be reviewed is FDI quality. This is a relevant topic at all levels of analysis, even though it is rarely discussed at the global level in which the distributional issue tends to dominate (Oman, 2000). However, increasingly rules-based competition undertaken within the framework of national and international rules could help improve the overall quality of FDI.

The quality of FDI² matters a lot in the cost-benefit analysis of incentives. In other words, concerns over quality should take precedence over quantity targets when designing incentive programmes. According to Sanjaya Lall (1996) and John H. Dunning and Rajneesh Narula (2000), this is a key consideration, and hence there is no “one-size-fits-all” advice to be given to developing countries on how to use incentive programmes. Lall (1996) also points to the importance of specific policy objectives when understanding and evaluating individual country cases. Some countries may target quantity, others quality, or both. Quality targets may relate to upgrading through inter-industry (moving between industries) or intra-industry goals (deepening of capabilities, improving quality, increased value added), or both. According to Lall (1996), the upgrading of the FDI profile itself is one avenue for intervention. The externalization of technology transfer is another possible strategy such as placing equity restrictions on foreign ownership. Te Velde (2001) suggests that countries successful with incentive programmes maximize the benefits and minimize the costs by targeting specific types of projects. Ireland, for example, specifically targeted human-capital-intensive industries. Both Ireland and Singapore adopted a national linkage programme

² The quality of FDI is defined as a three-dimensional vector, made up of direct effects (social multiplier – further discussed below), indirect effects (various spillover effects such as training, diffusion of technology and creation of backward linkages) and, finally, the capture of comparative advantage in strategic industries (with above normal returns to capital accumulation).

complementing their incentive programmes to maximize spillover benefits.

On the basis of ill-adopted policies and screening rules in four countries of the Association of South-East Asian Nations, Stephen Thomsen (1999) demonstrates how incentive programmes can be directly harmful and costly to the host country. Too much focus on incentives given to export-oriented FDI only resulted in losing many of the potential benefits that FDI could have had as regards disciplining domestic industries.

There is no general consensus on the merits of using screening rules and other selective approaches to FDI. The European Bank for Reconstruction and Development (EBRD) (2002) and other international institutions, for example, advocate that incentive programmes be combined with a hands-off approach to selection, due to the dangers of the Government picking winners. UNCTAD (2002) advocates the targeting of quality benefits through attracting export-oriented FDI that improves the comparative advantage of the host country (UNCTAD, 2003). The Organisation for Economic Co-operation and Development (OECD) advocates (Oman, 2000) an approach to incentive programmes that is rules-based rather than competition-based.

In practice, selection biases (such as natural self-selection among applicants) and screening rules combined, may decide what type of FDI is attracted with incentive programmes. Selection biases can be discussed in general terms, whereas screening rules reflect political realities behind individual programmes. But it is also difficult to evaluate the success of a given programme without taking into account the policy objectives even though one could disagree with those objectives (Thomsen, 1999).

Several natural selection biases are highlighted in the literature on incentives. Ram Mudambi (1998) shows that there may be a selection bias in favour of new and greenfield FDI. Several authors suggest a natural selection bias in favour of more

footloose projects since these types of investors are more likely to be affected in their cost calculation by tax holidays (Fisher and Peters, 1997; Bergsman, 1999; Morriset and Pirnia, 2000). Attracting FDI that is likely to relocate anew within the near future poses unnecessary structural problems for a host economy. To give incentives to such investors may incur larger long-term costs for society than those immediately incurred with the provision of incentives. A similar argument applies to declining or sunset industries. In general, export-oriented projects are more cost- and incentive-sensitive than domestic-market-seeking projects (Te Welde, 2001; Thomsen, 1999).

The literature review of Jacques Morriset and Neda Pirnia (2000) also suggests that small firms may be more cost-sensitive and hence more likely to be affected by incentives. Fisher and Peters (1997) on the contrary suggest that incentives are relatively more important in global industries involving very large projects. However, the two arguments do not exclude one another. The type of incentives given to large projects will typically be on a case-by-case basis, whereas smaller projects may more likely be affected by rules-based incentives.

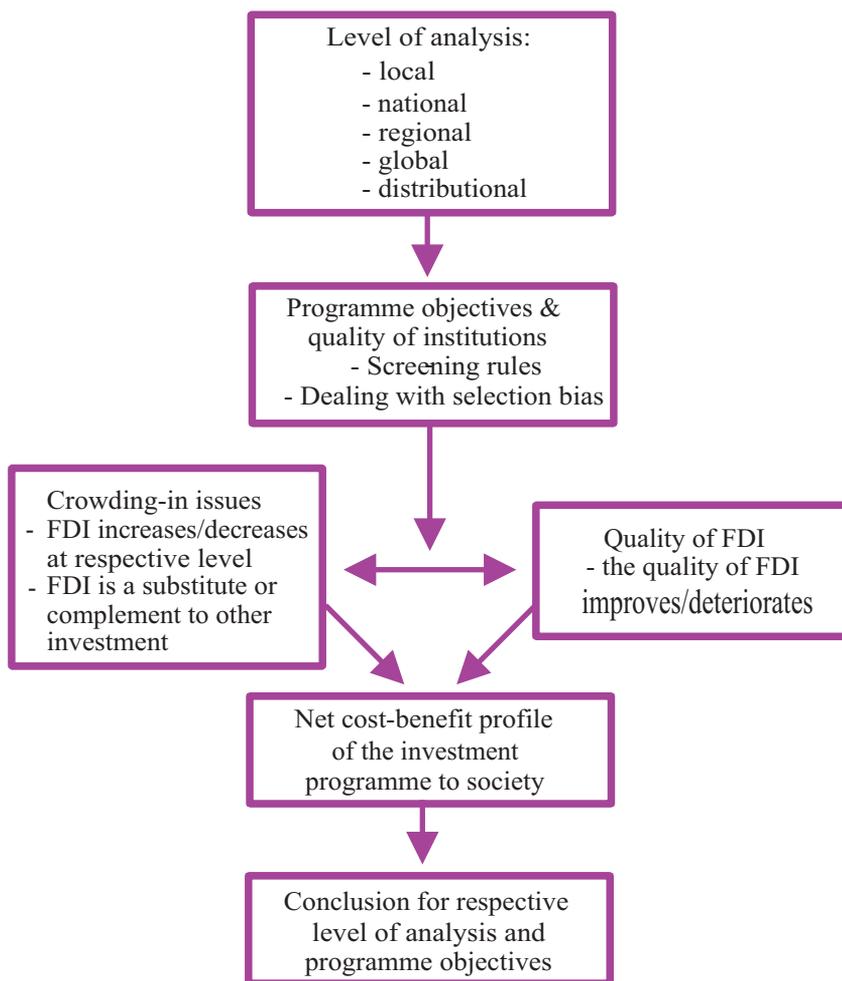
Natural selection biases may endanger the benefits of the programmes as they could reduce, rather than increase, the quality of FDI. Hence active policy rather than a *laissez-faire* approach would appear to be important for avoiding unnecessary harm. For this reason, incentive programmes should not generally be pursued if not combined with other national policies aiming at upgrading FDI, as well as national competences and comparative advantages (Lall, 1996; Dunning and Narula, 2000; Blomström and Kokko, 2003).

Analytical framework and hypothesis

Based on this literature review, an analytical framework is developed in this article. In the evaluation of incentive programmes, it is necessary to distinguish local and national objectives from global ones. The focus of the rest of the article is on the national level. Some of the basic questions to be raised

are: what particular screening rules exist, if any? How does the programme intend to deal with selection biases? Based on this information, the incentive programme's performance can be evaluated in regard to crowding in, cost-benefit considerations and the quality of FDI (figure 1).

Figure 1. The analytical framework of evaluating FDI incentive programmes



Source: authors.

The analytical framework stresses that these factors are difficult to evaluate in isolation. A good cost-benefit analysis should take into consideration both the issues of crowding in and the possible impact the programme has on upgrading FDI. Both of these factors should in principle feed back into the cost-benefit analysis when asking questions such as: are public funds spent unnecessarily to attract FDI that would have taken place anyway? Or: are public funds spent in a meaningful way whereby attracting FDI actually coincides with other development objectives of the host country? Based on this analytical framework, the following research hypotheses are investigated with empirical data in the subsequent sections of this article:

H1 The NIS crowds in FDI inflows into the Czech Republic.

H2 The NIS leads to a natural selection bias in favour of smaller, cost- and export-oriented investors from traditional industries.

H3 Specific screening rules under the NIS have a partially offsetting and hence the positive effect on the quality of FDI.

H4 The social benefits of the NIS outweigh its social costs.

Methodology

To investigate the above hypotheses, secondary data from Czech statistical sources such as CzechInvest and the Czech Statistical Office were combined with primary data collected through a focused survey questionnaire. The questionnaire method was selected because it provided such information on the recipients of incentives that was not available from any other secondary or primary sources. Two techniques were used during the survey. The first set of semi-structured interviews (pilot study) had two types of questions giving respondents the

freedom to express their opinion and feelings concerning the subject at hand. Secondly, scaled items were used in a formal questionnaire, in which respondents were required to identify their views with statements of pre-determined responses.

The questionnaire (see annex) was attached to an e-mail message explaining the objectives of the study. The questionnaire was made available in both the Czech and English languages. Investors who did not reply in the first round were contacted in a second wave with a new e-mail; finally, a third wave of telephone calls was made to increase the number of respondents.

The questionnaire was sent to 341 large foreign affiliates in the Czech Republic. The number of returned questionnaires was 155 – representing a good response rate (45%). Half of the respondents were expatriate managers sent to the Czech Republic; the rest were local managers of the foreign affiliates. Because some of the respondent firms were from service industries that did not have access to the NIS until 2002, the number of observations was further reduced to 135. Out of these 135 firms, 22 firms receive incentives, reflecting well the proportions of the entire population receiving incentives (table 1). There were however some deviations, in particular in terms of the size, industry distribution and entry mode, where there appears to be significant biases in the sample. However, no full picture of the whole foreign affiliate population is available. The population in table 1 was from a selected list of foreign affiliates in the Czech Republic, as published by CzechInvest. This list is biased in the favour of larger projects. In part this may explain why, for example, firms in “other manufacturing” and services were over-represented. This corresponds well to the fact that the survey results were drawing on a population with a higher number of smaller affiliates and typically engaged in auxiliary manufacturing activities and services.

Based on the questionnaire survey, a number of variables were constructed for the descriptive and statistical analysis. Annex table 1 provides an overview and description of these variables. The first variable concerns the information based on

Table 1. Sample compared to population characteristics
(Number of projects)

	Sample	Population	Deviation ^a
1. Industry			
Total ^b	133	938	
-Food and tobacco	4%	5%	-
-Textiles and apparel	4%	3%	+
-Wood and paper	4%	3%	+
-Chemicals	11%	16%	-
-Nonmetallic products	17%	14%	+
-Machinery and equipment	21%	36%	--
-Electronics	11%	14%	-
-Other manufacturing	14%	2%	++
-Commercial & o. services	14%	7%	++
2. Entry mode			
Total	134	390	
-Greenfield	42%	33%	++
-Acquisition/JV	54%	52%	+
-Expansion project	4%	15%	--
3. Project size			
Total	125	697	
-Small firms (L<50)	26%	9%	++
-Medium-sized firms (50<L<250)	34%	40%	-
-Large firms (L>250)	40%	51%	-
4. Year of investment			
Total	134	602	
-1995 or before	53%	49%	+
-1996	6%	5%	+
-1997	10%	7%	+
-1998	9%	8%	+
-1999	10%	8%	+
-2000	5%	7%	-
-2001	6%	11%	-
-2002	1%	5%	-
5. Incentives			
Total	134	974	
-with incentives	16%	19%	-
-without incentives	84%	81%	+

Source: CzechInvest, 2002, and primary survey data.

^a “Deviation” marks a negative or positive deviation of the sample from “population” characteristics according to CzechInvest’s list of “Selected Foreign Investors”. Note that this list is biased towards large investors in the Czech Republic.

^b “Total” denotes the number of available observations that the characteristics are based upon. The total sample size is 135 and the population size is 974, but observations on some characteristics are missing. Hence, totals are not equal across the various characteristics.

which a firm decides to invest in the Czech Republic, where a dummy of 1 was assigned to firms relying on local networks (*LOCNET*). Three dummy variables were used for the entry mode: cooperative (*COOP*), greenfield (*GREEN*) and follow-up (*FOLUP*) projects. Firms are differentiated by size according to their number of employees as captured by the variable (*SIZE*). Further, a dummy was included for export market orientation (*EXP*), applied to firms that not only cater to domestic or regional CEE markets but to wider European or global markets. Also, a dummy reflects whether firms have a long-term orientation towards operating in the Czech Republic, namely when answering whether they plan to reinvest in the future (*REINV*). Additional dummies reflect whether firms applied for incentives (*APINC*), and a dummy for motives: cost-oriented firms were classified under the variable *COST*. The *AGE* of the affiliate was adopted as a numerical variable. Finally, a dummy variable was adopted to differentiate foreign affiliates by the nationality of their management team, where a value of 1 is assigned to firms with a local Czech team (*LOCALM*).

Evaluation of the NIS

In this section, the four hypotheses are discussed and tested against the data for the Czech incentive programme. But before turning to the specific issues of the hypotheses, the objectives of the NIS and its institutional setting are introduced.

Programme objectives and institutional quality

Since 1998, the Czech Republic has been offering an incentive package to foreign and domestic investors based on the principle of national treatment. However, *de facto*, the scheme has targeted large foreign investors with the aim of stimulating a massive inflow of FDI into new greenfield projects.³ Some incentive packages were also offered prior to

³ However, acquisitions may also be involved as CzechInvest distinguishes between acquisitions and so-called brownfield investments (a brownfield investment is regarded more as a greenfield investment since it involves a very low purchase price and an almost 100% remake of the plants involved).

1998, but on a very selective basis (Anderson, 2001). The most recent law on the NIS is from 2000 (the Investment Incentive Act).⁴ Under this law, enterprises enjoy corporate tax relief for up to 10 years, can import inputs duty free and are exempted from paying the value-added tax on new machinery. Companies may also deduct (on top of depreciations) 10-15% of the costs of new machinery and technologies from their tax base, provided that they are the first owners or leaseholders. Also offered are job creation grants ranging from Czech crown (CZK) 80,000 to CZK 200,000 per employee and re-training grants covering up to 35% of training cost per employee. The re-training grants depend on regional unemployment levels. However, the size of grants in practice also depends often on the availability of funds in the local labour office (MPO, 2002; CzechInvest, 2002). Land and designated infrastructure at less than commercial prices is also part of the NIS.

Several features of the screening rules under the NIS may reduce a natural selection bias. A special feature of this programme is for example that it does not target greenfield investors only, but also firms investing in existing plants according to Section 2 of the Investment Incentive Act. However, special capital requirements also related to the granting of full tax holidays should indirectly lead to a bias favouring greenfield investors.

Other aspects of screening rules deal with FDI quality. The acquisition of new machinery with up to 40% of the total value of assets is a requirement under the NIS. Projects must be environmentally friendly, in line with the most recent Czech laws. Size requirements regarding total assets also apply, even though these requirements are reduced in the case of investments into high-unemployment regions.

⁴ The Investment Incentives Act (72/2000 Coll.) is officially called the “Act on Investment Incentives and the Amendment of Certain Acts, as amended by Act No. 453/2001” (adopted by the Parliament of the Czech Republic). For a non-legal presentation see KPMG, 2001.

Services were not covered by the NIS until 2002, except for certain “strategic” services such as research-and-development (R&D) facilities (KPMG, 2001). Furthermore, capital and size requirements together may act as a deterrent for incentives being given to service projects.⁵ Specific mention is made of certain manufacturing industries in the Investment Incentive Act, with emphasis on the more technology-intensive⁶ ones. This suggests that the NIS aims to upgrade FDI towards certain strategic industries.

CzechInvest is the main institution implementing the NIS, as well as providing information about potential local suppliers. However, some specific aspects of the incentive package are negotiated independently between the investor and the relevant part of the State apparatus, such as the local authorities.

Does the NIS crowd in national investment?

The Czech Republic is one of the most successful economies in transition in attracting FDI (UNCTAD, 2003). Has the NIS been an important factor for this success? After the introduction of the incentive programme, annual FDI inflows have more than doubled compared to their previous levels in the early 1990s. This section discusses the hypothesis (H1) about a causal relationship between the NIS and the recent jump in inflows.

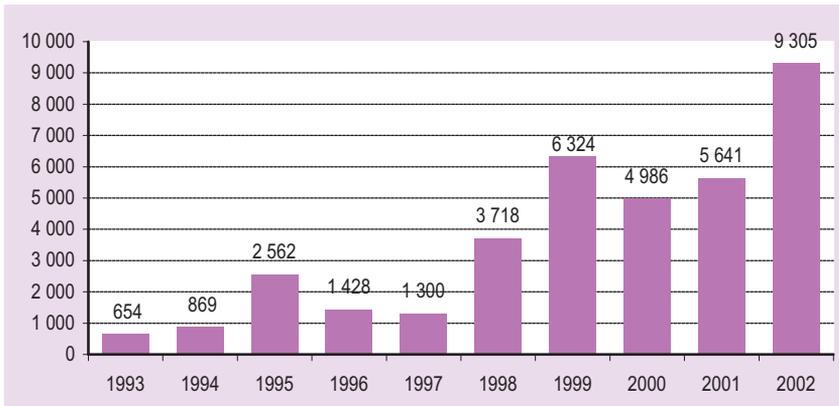
FDI inflows into the Czech Republic increased from \$3.7 billion in 1998 to \$6.3 billion in 1999 (figure 2). However, coinciding with this, there was a turnaround in privatization policies that until 1998 discriminated against foreign investors. Before 1998, to get around certain legal restrictions on property ownership and reduce start-up costs, many foreign investors preferred going into joint ventures with local partners rather than to undertake greenfield investments (ILO, 1995). This all

⁵ As amended by changes to the NIS introduced after 2002.

⁶ With technology-intensive industries defined as those using physical and/or human capital intensively.

changed when a new Social Democrat Government came into power in 1998 (Anderson, 2001). But according to information from the National Property Fund (NPF, 2001), most new privatizations that were taking place with foreign capital in 1998-2001 were in the form of “brownfield” FDI (acquisition of Czech firms and brands).⁷ Also, an important part of recent investment projects was the expansion of existing facilities (stimulated by the NIS initiative).

Figure 2. FDI inflows into the Czech Republic, 1993-2002
(Million dollars)



Source: CNB, 2003.

When FDI projects with and without incentives are compared against each other by industry and in terms of size of investments (table 2), one finds that the incentive programme might have crowded in a few extra projects, especially over time. This is seen by the fact that the ratio between subsidized and total projects reached 1 by 2001, implying that by 2001 less than 10% of all new investments in manufacturing took place beyond the NIS. However, a large and increasing segment of FDI inflows was in service industries, not affected by the NIS until 2002.

⁷ These data contain only FDI-related privatization revenues flowing to the responsible government agency, hence underestimating the real level of privatisation-related FDI.

Table 2. FDI projects with and without affiliates by industry
(Million dollars)

	Cumulative FDI	Inflows		Inflows		Inflows		Cumulative FDI	
	End 1998	SP ^a	1999	SP	2000	SP	2001	SP	End 2001
Primary sectors	108		255		85		48		496
Service sectors	4 401		4 061		2 851		3 435		16 748
Manufacturing	4 022	692	2 008	525	2 050	1 334	1 433	1 328	9 513
Hereof in percentage:									
-Food and tobacco	18	-	18	-	9	3	6	1	14
-Textiles and apparel	4	7	2	13	3	1	6	1	4
-Wood and paper	7	-	10	-	3	4	10	4	7
-Chemicals	15	-	20	-	14	13	13	25	15
-Nonmetallic prod.	13	-	16	12	6	9	9	7	12
-Basic metals and products	10	-	9	-	12	1	6	3	10
-Machinery and equipment	30	93	23	75	51	69	48	59	36
-Recycling and other n.e.s.	3	-	2	-	2	-	2	-	2

Sources: CNB, 2002; CzechInvest, 2002.

^a Subsidized projects in million dollars for manufacturing FDI, and percentage distribution by industry.

The survey also shows that few investors entered the country or chose to expand their existing operations because they were offered incentives. According to the survey, only 5 respondents (4% of all respondents, 22% of respondents with incentives or 10% of respondents investing in 1998 or after) were directly motivated by the availability of incentives. According to the sample data, it was somewhat more than marginally the case that incentives were a co-determining factor of choosing to invest in the Czech Republic among those firms receiving incentives in the manufacturing sector.

But while the macroeconomic data presented here also seemed to indicate a strong correlation between the NIS and the jump in inflows of FDI into the Czech Republic from 1999 onwards, the correlation may still not be as strong as appears from these data, for several reasons. Firstly, the NIS was introduced along with radical changes in Czech policies due to a change in Government. The most important changes concerned the opening up of the privatization process to outsiders and the general attitude and political climate with respect to welcoming FDI. Secondly, among all investors that entered the

manufacturing sector, only around 10% appeared to be attracted specifically by the provision of investment incentives. Thirdly, and most importantly, the NIS supports an increasing share of manufacturing investment over time, culminating in almost complete participation of FDI projects in the NIS in 2001. Hence the conclusion is that some crowding in occurred, but it was not a dominant phenomenon since actual crowding in is only around 3%⁸ when taking into consideration that the bulk of FDI is now taking place in service industries.

Does the NIS improve the quality of FDI?

Table 2 also provides some initial observations on industry upgrading in FDI. Compared to the total sample, the population of subsidized projects here shows that the industry structure was not neutral. Most of the projects involving engineering and technical skills fell into the category of subsidized projects. Also, the chemical industry received increasing FDI mainly within the NIS. This suggests that the programme has been somewhat successful in terms of its industry upgrading objective. Possibly also by aiming for agglomeration effects, these industries captured dynamic comparative advantages in areas in which the Czech Republic may have an obvious potential in terms of human skills.

The rest of this section draws on the primary survey data, discussing further the next two hypotheses (H2 and H3) about the impact that a natural selection bias and screening rules may have had on the quality of FDI. Among the investors interviewed, only 38% expressed any interest in the NIS,⁹ and only 19%

⁸ Calculated as 10% of one third of all investors when including FDI into services.

⁹ The questionnaire (compared to the interview technique) may introduce a bias since the interviewer conveys information about the NIS that the survey does not. Furthermore, the difference between responses of the interviewed and surveyed firms may also relate to the fact that many more firms were self-selected out of the application process to the NIS before 1998 as it was a much more limited incentive programme. Furthermore the data of interest and application are not directly comparable since self-selection separates those firms showing an interest in, from those firms that take steps to apply for, incentives.

applied for incentives (but 50% of firms investing after 1998 applied for incentives). However, most of the firms with incentives entered the country after the incentive programme was introduced in 1998. This is a general problem with the sample since it is skewed in terms of firms having opportunities to invest within the NIS. Among the group of firms within this narrower interest group ending up applying for incentives, only 15% were not finally admitted to the NIS as they probably did not fulfil essential criteria related to screening procedures. (More about this below.) Hence some natural selection took place from a broader interest group of firms to an actual group of firms applying for participation in the NIS. And, secondly, some screening took place among the firms in the sample that applied for incentives to a smaller group of firms finally admitted to the programme.

In several respects the NIS may have had a neutral effect on the structure of FDI projects (table 3). This appears to be the case regarding factors such as investment motives and initial contacts upon entry. However, table 3 also suggests that subsidized projects differ from other projects in most other aspects: notably they are larger, more likely to be greenfield projects, export oriented, having plans to reinvest, and to occur in technology intensive industries. The one-way Anova results in table 3 are largely in accordance with the rather significant Pearson correlation coefficients in annex table 1 for the same firm characteristics.

Some of these differences disappear when only focusing on projects without incentives in 1998 or after as the relevant sub-sample to compare with because of a massive scaling up of the NIS in 1998 (second column in table 3). Hence, the passing of time in itself is likely to have had a rather deep impact in terms of some of the differences observed being attributable to the age of the affiliate and changing production conditions in the host economy. Focusing on the more narrow comparison, it is clear that firm size and indirectly the greenfield entry mode, including lesser probability of having a local Czech manager, are now the most important factors standing out as significantly different for firm characteristics in column 2 and 3 in table 3.

Table 3. Are they better? Comparing projects with and without incentives^a

Item	Projects without incentives for all years (Total 113)	Projects without incentives from 1998 onwards (Total 27)	Projects with incentives (Total 22 ^f)
1. Contacts			
-Local network	46%	37%	45% (0.93, 0.41)
2. Entry mode			
-Co-operative ^b	60%	69%	32% (0.02, 0.01)
-Greenfield	40%	31%	45% (0.66, 0.40)
-Expansion	0%	0%	23% (0.00, 0.00)
3. Size			
-average employment	318	210	574 (0.01, 0.07)
-average investment (CZK million)	146	23	217 (0.00, 0.00)
4. Export orientation	72%	88%	91% (0.06, 0.89)
5. Plans to reinvest	58%	63%	77% (0.09, 0.42)
6. Applied for incentives	7%	22%	100% (0.01, 0.00)
7. Motives			
-Cost related ^c	57%	63%	59% (0.83, 0.41)
8. Age ^d	7.7	2.8	3.9 (0.00, 0.37)
9. Czech management	61%	63%	41% (0.08, 0.05)
10. Hi-tech ^e	35%	48%	55% (0.08, 0.20)

Source: primary survey data.

^a The data in this table report the percentage number of firms in the relevant sample population reporting an affirmative answer to the individual question or category of questions if not otherwise indicated. For further clarification please consult the questionnaire in the annex and annex table A3.

^b "Co-operative" includes joint ventures, acquisitions and so-called brownfield investments.

^c "Cost-related" incentives include all those projects for which a firm reports cost-related factors or investment incentives as being important.

^d Number of years having passed since the investment (2002 minus "year of investment").

^e Industries that are so-called high-technology or use inputs such as human capital and R&D intensively. The current sample includes the following industries as hi-tech: chemicals, machinery and equipment and electronics.

^f One-way non-parametric Anova test of comparing observations in the 1st and 3rd columns and the 2nd and 3rd columns, respectively, are shown in parenthesis after the descriptive statistics in the 3rd column. The numbers in parenthesis indicate, for individual variables, the statistical significance of correctly rejecting the hypothesis that the two samples with and without incentives are identical.

To investigate whether these descriptive statistics can be supported as significant in a multiple regression framework, a probit regression was performed. A secondary purpose was to test whether a selection bias or screening procedure appears to dominate when FDI projects participate in the NIS. In other words, it was investigated whether there was a significant difference (on the various project characteristics) between:

1. the whole sample having invested in 1998 or after;
2. the sub-sample of 1) having applied for incentives; and
3. the sub-sample of 2) ending up receiving incentives.

Even though particular investors may be encouraged or discouraged from applying for incentives depending on the Government's announced screening rules, it is also possible that self-selection applies to the relative importance to the firm of receiving incentives and other practical issues, including those of information. The best results are obtained by focusing only on the part of the sampled firms investing after 1998, for the reasons mentioned earlier. This reduces the number of observations to 38 and 19, respectively; but this sample is still sufficient to undertake the desired tests.

Hence, first the exercise from table 3 was repeated with running the regression on the sample of firms having invested in 1998 or after, as reported with model 2 (table 4). But related hereto, model 1 investigated the probability of firms to apply for incentives in the first place, the difference between models 1 and 2 being those firms that did not receive incentives. Finally, model 3 focused on the selection taking place among the much narrower sample of firms applying for incentives. Hence, models 1, 2 and 3 together tell us something about the screening process that occurs from application to rejection (difference between models 1 and 2) or admission (model 3).

The first two columns in table 4 compare the probabilities of applying for and receiving incentives, respectively. The sample size is sufficiently large to include all possible relevant explanatory variables available with the survey data. As

expected, several of the variables significant in models 1 and 2 are identical (access to local network, larger size, lower age, and expatriate management). This could imply that a lot of selection takes place at the pre-screening stage through self-selection among each other on the basis of the pre-announced

Table 4. Probit regression results, only for firms investing in 1998 or after
(X^2 -statistics are reported in parenthesis)

Dependent variable	Prob (APINC=1) (Model 1)	Prob (RECINC=1) (Model 2)	Prob (RECINC=1) ^a (Model 3)
Explanatory variable			
INTERCEPT	-1.425 (0.65)	-4.428** (2.68)	-3.208* (1.87)
LOCNET	0.983* (2.54)	1.775*** (3.83)	9.694 (0.00)
GREEN	-0.063 (0.01)	1.144* (2.46)	14.134 (0.00)
COST	-0.498 (0.86)	-1.621** (3.32)	-2.173 (1.46)
Log (SIZE)	0.444*** (3.88)	1.238*** (7.23)	1.266** (3.42)
Log (AGE)	-0.954* (2.57)	-1.567*** (4.58)	-3.364* (2.24)
LOCALM	-1.233*** (5.11)	-2.445*** (5.99)	-7.528 (0.00)
EXP	0.421 (0.08)	-0.538 (0.07)	-
REINV (0.15)	-0.226 (0.07)	0.186	-
HI-TECH	0.368 (0.45)	0.036 (0.00)	-
Log likelihood	-18.63	-13.58	-3.12
Goodness of fit (Pearson X^2)	34.35*	24.05	5.93
N	38	38	19

Source: authors' calculation.

* The coefficient estimate is significant at the 20% level.

** The coefficient estimate is significant at the 10% level.

*** The coefficient estimate is significant at the 5% level.

^a Model 3 is tested for the somewhat different data sample of firms having applied for incentives.

screening rules. The importance of pre-announced screening rules relates especially to the observation that larger investors are more likely to apply for, and receive, incentives. Natural selection biases may instead relate to information issues, such as access to local networks or the general low age of typically first-time investors applying for these types of incentives.

However, it also appears from the results in table 4 that more of the explanatory factors become significant when exclusively focusing on the group of firms that receive incentives. Firms receiving incentives compared to firms applying for incentives are much more likely to be greenfield investors (obviously because of the application of screening rules), and they are also more likely to be motivated by factors unrelated to overall operational cost or labour cost. At the same time, all of the factors explaining why firms apply for incentives appear to increase in relevance when going from column 1 to column 2 in the table, suggesting that government screening in some areas is unsuccessful in reducing natural selection biases, such as the high propensity of first-time investors to enter these programmes rather than follow-up investors (age is negative), and the importance of access to local knowledge. So is the pre-eminence of firms managed by expatriates in the sample that ends up receiving incentives (since the estimated coefficient for *LOCALM* is significant and negative).

But the results show equally that screening is successful in other aspects: of increasing the size of projects and securing greenfield investment, including a de-selection of firms that may be overtly focused on access to cheap labour. Since coefficients are greater and more significant for these factors in column 2, this should not only be because of self-selection but also because screening rules appear to matter. This suggests that some screening does take place after firms apply for incentives, and that it matters for project quality. This question is further investigated with model 3 in table 4 where the sample size is reduced to firms having applied for incentives, and again focusing on the factors explaining the probability of firms receiving incentives – but now within this much narrower group of firms having applied to the NIS.

This analysis confirms that screening rules do apply through the application process and tend to favour firms of larger size and lower age, in particular. The observations of comparing columns 1 and 2 also hold. However, some of the results for model 3 are problematic due to the low size of the sample. In fact, the results suggest, for those variables for which the parameter estimates now are very large (but insignificant), that only firms with these characteristics end up receiving incentives (with local network, which are greenfield and with an expatriate management team). But the statistical procedure breaks down if there is perfect separation of the sample for dummy characteristics with respect to the dependent variable. This is verified when looking at the raw data: there is perfect or close to perfect separation for these variables.

Overall one can conclude that government screening appears to have been successful in raising FDI quality (with respect to size, attracting greenfield projects and de-selection of overtly cost-oriented investors). In other areas, government screening has not been very successful in terms of raising the quality of FDI (with respect to age and reinvestment, both related to investors with higher durability and to secure investments in hi-tech industries).¹⁰ Therefore the survey data lead to the conclusion that the scaling up of the NIS in 1998 involved a certain trade off between quantity and quality.

Do benefits outweigh costs in the NIS?

Taking into account that the involvement of foreign firms in the economies in transition began from scratch, FDI has undoubtedly contributed to the growth of the workforce in private manufacturing and service enterprises (Mallya, 2001).

¹⁰ The contradictory evidence (compared to table 2) may be because the sample is biased in the aspect of industry composition (see table 1 above). But it may also in part owe to the fact that the incentive programme prior to the new NIS had more effective screening rules in terms of raising this qualitative aspect of FDI with incentives, *re.* table 2 (which registers the cumulative profile on industries with and without incentives both before and after 1998).

Alena Zemplerova and Jana Rajdlova (2001), when comparing the performance of domestic firms and foreign affiliates in the Czech Republic, found that, on average, foreign affiliates outperform domestic enterprises. They also found that foreign affiliates have on average twice as high productivity, higher export per sales ratio and invest five times more per employee than domestic enterprises, and they are more profitable.

Foreign affiliates have also been the driving force behind the Czech Republic's increasing exports. In 1993, foreign affiliates were responsible for a very small percentage of Czech exports. By 1999, they were responsible for producing 65-70% of all manufactured exports and reported strong export growth (CzechInvest, 2002).

These observations suggest that there are considerable social benefits associated with the hosting of FDI projects which may merit providing incentive packages. However, such a type of analysis typically ignores the cost side of providing incentive programmes.

In the following, a cost-benefit analysis is therefore undertaken, in which only some of the above mentioned advantages are accounted for as accruing to domestic society, since gains are split between the investor's home country and the host country (Dunning, 1993). Advantages to the host country come mainly in the form of a social multiplier through the extra wages and taxes accruing to society due to the higher efficiency of foreign compared to domestic firms.

Furthermore, this cost-benefit analysis does not take into account potential spillover effects from e.g. the capture of comparative advantage in specific industries (Lall, 1999) or simply additional and more productive job creation in domestic firms if there are spillovers from foreign affiliates (Dunning, 1994; Blomström et al., 2001; Blomström and Kokko, 2003). Also, the analysis is performed under the assumption that there is full employment in the economy. Hence benefits may be higher than suggested by this analysis.

On the other side of the analysis are some costs also unaccounted for, such as the dynamic impact of rendering tax holidays over a longer time period (Mitra and Stern, 2002). The tax-holiday effect is entirely absent from the cost side. Other costs left unaccounted for are associated with the retraining of workers paid by the national government, including the costs of raising taxes for the financing and administration of the incentive programme and possible bureaucratic losses associated herewith.

The cost-benefit analysis should hence be complemented by observations on the quantity and quality of FDI to give a more complete picture of the impact incentives have on a host country. One should be careful to rely singularly on results of cost-benefit studies since the results are as much a product of the rather static assumptions as of the actual economic situation at hand. This is also the case in the present study since the cost-benefit analysis can only be undertaken making rather strict and simple assumptions.

Tables 5 and 6 show the calculation of costs and benefits associated directly with the NIS. Both tables include a low and high estimate. Furthermore benefits are calculated both as static benefits and dynamic ones, where the dynamic benefits assume a job maintenance rate of 3 years rather than only 1 year.

The low estimate for cost is derived from information by CzechInvest regarding its annual expenses according to the State budget. The high estimate is calculated as the maximum permissible public support (MPPS), which is 50% of the total investment. It is reasonable to believe that the MPPS estimate is realistic since investment incentives are negotiated with several government bodies. Since it is difficult to obtain data on what all these incentives amount to in terms of cost (not to mention administrative and bureaucratic loss), it is simply assumed that the extensive negotiation process exploits the full MPPS.

The low estimate for benefits is derived from the assumption that workers earn wages in the order of 25% above wages in domestic or State owned enterprise. The calculations by Zemplerova and Rajdlova (2001) suggest that in 2000

Table 5. Estimated social costs of providing incentives, 1993 prices
(CZK thousand or million)

Item	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Total, PV
Low estimate ^a (million)	5.15	7.51	12.02	14.83	19.38	22.92	32.32	51.87	84.92	57.06	349.31
High estimate ^b (million)	187	883	871	1 923	2 944	6 785	7 494	17 707	22 388	5 604	74 716
No. of jobs created	570	1 392	1 323	1 995	1 837	5 687	5 268	18 358	14 162	8 289	58 881
Cost per job											
-Low estimate (thousand)	9	5	9	7	11	4	6	3	6	7	6
-High estimate (thousand)	328	634	658	964	1 605	1 193	1 423	965	1 581	676	1 269

Sources: CzechInvest, 2002; EBRD, 2001.

- ^a Calculated as the State budget contribution to CzechInvest in current prices and deflated with the GDP-deflator.
- ^b Calculated as the maximum permissible public support (MPPS), which stands at 46-50% of total investment depending on the region, except for the region of Prague where the MPPS is much lower (20%). However, none of the projects given incentives are located in the region of Prague. Since MPPS is similar and close to 50% for all relevant investment projects the figure is simply calculated as 50% of total investments given incentives. The figures have been converted from dollars to CZK, using the official exchange rate at the end of the year.
- ^c "Total" is calculated as the present value using a discounting rate of 5% per year.

Table 6. Estimated social benefits of providing incentives, 1993 prices

Item	1993	1994	1995	1996	1997	1998	1999	2000	2001 ⁴	2002 ⁴	Total, PV ⁵
Average real wage rate in manufacturing (CZK per annum)	70 716	72 889	78 158	84 653	88 340	88 755	92 041	97 706	98 825	103 394	-
Social benefit per job (thousand of CZK)											
-Low estimate ¹	17.68	18.22	19.54	21.16	22.09	22.19	23.01	24.43	24.71	25.85	-
-High estimate ²	39.78	41.00	43.96	47.62	49.69	49.93	51.77	54.96	55.59	58.16	-
No. of jobs created	570	1 392	1 323	1 995	1 837	5 687	5 268	18 358	14 162	8 289	58 881
Static social benefit (million CZK)											
-Low estimate	10.08	25.37	25.85	42.22	40.57	126.19	121.22	448.42	349.89	214.26	1 567.58
-High estimate	22.67	57.07	58.16	95.00	91.28	283.92	272.74	1 008.95	787.26	482.08	3 859.67
No. of jobs created and maintained ³	570	1 962	3 285	4 710	5 155	9 519	12 792	29 313	37 788	40 809	-
Dynamic social benefit (million CZK)											
-Low estimate	10.08	35.75	64.19	99.68	113.85	211.22	294.35	716.01	933.60	1 054.85	3 527.05
-High estimate	22.67	80.44	144.42	224.28	256.16	475.23	662.28	1 611.03	2 100.61	2 373.41	8 684.26

Sources: CZSO, 2002; CzechInvest, 2002; EBRD, 2001.

- a Calculated under the assumption that labour earns 25% higher wages in foreign affiliates, and that the social multiplier is 1. Hence the social benefit per job equals $W*0.25$.
- b Calculated under the same assumption that labour earns 25% higher wages in foreign affiliates, but now that the social multiplier is 2.25, where 0.25, is paid out by firms as indirect wages or fringe benefits while a share of 1.0 accrues to society as taxes on the extra capital gain from higher labour productivity in foreign affiliates. Hence the social benefit per job equals $W*0.25*2.25$.
- c Assuming a maintenance rate of 3 years on average per job.
- d Estimated, assuming an annual growth rate of 6% for nominal wages
- e Total is calculated as the present value using a discounting rate of 5% p.a.

wages were 17% above, not taking into account differences between small and medium-sized and large foreign affiliates. The wage premium is typically twice as high in large foreign affiliates as in small ones. Hence, on the basis of recent information on wage differentials, the assumption of 25% may be more realistic (CZSO, 2002). Unfortunately a time series is not available, so it must be assumed that the premium is the same for the whole period. The difference between the low and high estimates is then simply the assumption about the size of the social multiplier setting it to 1¹¹ and 2.25,¹² respectively. Finally, the benefit side of the analysis also makes estimates depending on the assumption about job maintenance rate – e.g. whether jobs are created only for a one-year period or whether they are created as more permanent jobs over time. This is the difference between the static and dynamic estimates in table 6.

Table 7 provides a calculation of the NIS's net benefits based on the above calculations, offering a worst and best case scenario. Since the tax-holiday effect is entirely absent from the cost side, a worst-case scenario (high estimate cost, low estimate benefit) with a very low multiplier is calculated taking into account a scenario of lengthy tax holidays, either in isolation or in combination with other types of incentives. Furthermore, the worst-case scenario uses the purely static benefit for job creation since it is unclear at the present time to which extent jobs created through these incentive programmes are maintained over time.¹³ On the other hand, the best-case scenario is

¹¹ No taxes or extra benefits accrue to the host country or the workers.

¹² Both taxes and extra benefits accrue to the host country and the workers. Note that the social multiplier only includes direct effects referring to the earlier definition of FDI quality (see note 2). Hence the cost-benefit analysis only takes into account one of the three relevant quality vectors.

¹³ According to CzechInvest (2002), 79% of the foreign affiliates surveyed in 1999 indicated that they were planning to increase their staff levels in the near future. However, this argument holds only if they do not have a hidden agenda of exploiting the current available locational benefits and later divest as some of them have done recently. Two major foreign investors have left the south Moravian region and moved to neighbouring locations in CEE, with a significant negative impact on the local labour market. It is hard to predict whether the Government's effort to recover some of the lost revenue due to the incentive packages provided will prove successful.

Table 7. Weighing cost and benefits: worst, medium and best case scenarios

Item	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Total, PV
<i>Worst case</i> (million. CZK) ^b	-177	-857	-845	-1 881	-2 908	-6 659	-7 373	-17 258	-22 039	-5 390	-73 148
-public deficit per job (Thousand CZK)	311	616	639	943	1 583	1 171	1 400	940	1 556	650	1 242
<i>Best case</i> (million. CZK)	18	73	132	210	237	452	630	1 559	2 016	2 316	8 335
-public surplus per job (Thousand CZK)	30	52	100	105	129	80	120	85	142	280	142

Source: tables 5 and 6.

- a Total is calculated as the present value using a discount rate of 5% p.a.
- b Where total cost is the high estimate and total benefit is the static low estimate.
- c Where total cost is the low estimate and total benefit is the high dynamic estimate.

calculated on the basis of the most optimistic assumptions (high dynamic benefit and low cost in combination). The results are shown in table 7.

Depending on the assumption of the analysis, there is a social net loss or gain associated with the provision of incentives, the pivotal questions being those of unemployment and spillovers. For example, if there is high unemployment and a lot of spillover effects associated with FDI, the provision of net incentives per year of CZK 1.2 million (\$40,000) per job may be a rather cheap solution, compared to unemployment benefits and other channels of seeking foreign technology. On the other hand, if there is full employment it would probably be better to invest money in the provision of public goods rather than in investment incentives. Since the Czech unemployment rate is relatively low (the national average being 8.8 in 2001 according to the Czech Statistical Yearbook, 2001), the latter is more likely to be a relevant policy conclusion at present. However, the cost-benefit analysis also suggests that, by taking out the tax holidays from the investment incentive package, leaves it as overall more beneficial to society by bringing the economy closer to a net surplus situation.¹⁴ This makes incentive packages more similar to the provision of public goods (as many of the non-tax incentives are of this type) being beneficial to all types of firms, no matter their origin.

Discussion

This article has presented an analytical framework based on a review of the literature on incentive programmes in host countries. The purpose was to improve the validity of research seeking to evaluate national incentive programmes that target FDI specifically. The overall research question was whether it really pays off in the perspective of host countries to offer these types of incentive programmes.

¹⁴ One should also take into consideration the competitive disadvantage that these policies potentially places smaller or older local firms in Jensen, 2004.

Subsequently, the analytical framework was tested using the Czech NIS as an empirical case, with emphasis on the national level. The overall proposition is that a cost-benefit evaluation of an incentive programme can be strongly improved by enquiring into the interrelated issues of whether the programme succeeds in crowding in FDI in quantitative as well as qualitative terms.

The relationship between these targets is revealed by the fact that quantity matters less as long as quality targets are met. For example, if the quality of FDI is raised either at the local, national or global level it matters less whether an incentive programme succeeds in crowding in FDI. Conversely, if an incentive programme succeeds in crowding in FDI, but at the same time causes a decline in the quality of FDI, then a programme's cost-benefit profile can easily turn negative.

These different propositions were tested with Czech data. The analysis revealed many of the problems that are involved when using cost-benefit analysis. Foremost, it is difficult to judge whether the NIS has really crowded-in additional FDI in the Czech Republic. The analysis suggests an at-best 10% positive crowding-in impact of the NIS on manufacturing FDI in the Czech Republic after 1998. This means that most of the benefits from FDI could be obtained without incurring the sizeable social cost of using incentives.

However, the analysis of the quality of FDI under the NIS shows that screening rules have had a certain positive impact, in the sense that screening has an effect especially with regard to both capital investment size and employment creation, offsetting any natural selection bias with respect to attracting small investors. But the analysis also reveals that government screening exacerbates natural selection, because first-time rather than follow-up investors are favoured by the NIS. Screening was found less successful also in obtaining hi-tech investments after the NIS was scaled up in 1998. Furthermore, the quality of FDI in the Czech Republic could also be improved by linking the NIS to the Government's national linkage programme.

However, no data are available to make an evaluation of this question.

Finally, with these lessons in mind a general cost-benefit calculation was made for the Czech NIS. Based on the simple assumption of granting full tax holidays to all foreign investors under the NIS, the cost-benefit analysis suggests a net-cost to society of CZK 0.6-1.2 million per job created through this incentive programme. Opportunity costs such as unemployment benefits in the case of domestic or regional unemployment lying above the natural rate of unemployment may partially offset this cost. More importantly, the analysis confirms that crowding-in is much less important to the evaluation. Crowding in would hardly affect the conclusions of the cost-benefit analysis since more FDI of the same type is likely just to scale up both sides of this societal analysis. But it also suggests that society incurs unnecessary cost by providing incentives in the first place, unless FDI quality is improved. Conversely, if the quality of FDI is improved, there is a large potential gain that can be added only or mostly to the benefit side of the analysis, shifting the conclusions more in the direction of the best-case scenario.

Conclusion

The overall balance of the current NIS programme in the Czech Republic may be negative at present, but with a strong promise to improve the overall quality of FDI, especially if the national linkage programme can deliver the benefit that it aims for. However, it may just be too early to characterize the Czech Republic as a successful case alongside Ireland and Singapore.

The general lessons to be derived from this article are that governments should focus on constructing national incentive programmes that improve the quality of FDI rather than programmes that set quantitative targets. Furthermore, governments should use instruments that are likely to crowd-in domestic investment and spillovers. Tax holidays as policy instruments are in this respect not very useful.

In particular, governments should direct their attention to issues related to the targeting of FDI. But the problem with screening rules is exacerbated by two general factors: the natural selection bias and information problems. The selection bias concerns the fact that below-average quality FDI is likely to be attracted by incentives. Government screening must overcome this problem and furthermore should aim at securing above-average quality FDI. In this respect the information problem may, however, be tantamount. Hence screening is only likely to be successful in relation to predetermined characteristics of an investor that can be observed prior to granting incentives, such as size and industry affiliation. Otherwise, incentives should be tied to *ex post* performance variables such as linkage creation. Incentives granted to training programmes by the local labour offices in the Czech Republic are an example of such ex-post performance related incentives.■

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Annexes

Annex table 1. Qualitative data derived from the survey data

Variable	Description
APINC	Dummy variable for firms having applied for incentives, assuming a value of 1 when a firm applied for incentives.
RECINC	Dummy variable for firms receiving incentives, assuming a value of 1 when a firm receives incentives.
LOCNET	Dummy variable assuming the value of 1 when the first point of contact is related to the local business network in the Czech Republic.
GREEN	Dummy variable assuming the value of 1 when an investment is a greenfield investment.
COOP	Dummy variable assuming the value of 1 when an investment is a joint-venture, acquisition or brownfield investment.
FOLUP	Dummy variable assuming the value of 1 when an investment is a follow-up investment or expansion project.
COST	Dummy variable related to motives, assuming the value of 1 when a firm reports cost-related factors or investment incentives as motives.
SIZE	Size is captured with the number of employees in a firm.
AGE	A cardinal variable reflecting the actual age of an investment, calculated by subtracting the first year of investment from 2002.
LOCALM	Dummy variable for nationality of the top management team, assuming a value of 1 when a firm has a local or Czech top management team.
EXP	Dummy variable for export-oriented firms, assuming a value of 1 when a firm reports its market-orientation to be beyond the domestic and regional (CEE) market.
REINV	Dummy variable for firms planning to invest further in the future, assuming a value of 1 when a firm has plans to invest again.

Annex: Questionnaire for foreign investors

1. Point of first contact with Czech Republic?
 - Local business people
 - Governmental mission abroad
 - CzechInvest
 - Local chamber of commerce
 - Other:.....
2. Main markets for your products?
 - Czech Republic
 - Western Europe
 - Eastern Europe
 - USA
 - Others:.....
3. Main motivating factor for investing in Czech Republic?
 - Geographical position of CR
 - Cost of labour
 - Well skilled and educated labour
 - Low operating cost
 - Governmental investment incentives
 - Previous trade relations with CR
 - My competitors made similar move first
 - Other:.....
4. Did you apply for government investment incentives?
 - Yes
 - No
5. Did you get government investment incentives?
 - Yes
 - No
6. What are the main problems in operating business?
 - Lack of well skilled and educated labour
 - Bureaucracy and corruption
 - Imperfect law
 - Working culture
 - Poor infrastructure
 - Other:.....
7. Do you plan to reinvest in Czech Republic?
 - Yes
 - No
 - Not decided yet
8. What do you think about Czech economical and political situation?
 - Stable
 - Uncertain

Annex table 2. Pearson correlation coefficients

Variable	RECINC	APINC	LOCNET	COOP	GREEN	FOLUP	COST	SIZE	AGE	LOCALM	EXP	REINV	HITECH
RECINC	-	0.825 (0.00)	-0.007 (0.93)	-0.208 (0.01)	0.038 (0.66)	0.443 (0.00)	0.018 (0.83)	0.172 (0.05)	-0.167 (0.05)	-0.150 (0.08)	0.163 (0.05)	0.146 (0.09)	0.152 (0.07)
APINC		-	-0.067 (0.43)	-0.163 (0.06)	0.023 (0.79)	0.365 (0.00)	-0.004 (0.96)	0.186 (0.03)	-0.198 (0.02)	-0.120 (0.16)	0.228 (0.00)	0.170 (0.04)	0.245 (0.00)
LOCNET			-	0.103 (0.24)	-0.064 (0.46)	-0.101 (0.248)	0.055 (0.52)	-0.091 (0.31)	-0.023 (0.78)	0.132 (0.12)	0.044 (0.61)	0.136 (0.11)	-0.097 (0.26)
COOP				-	-0.925 (0.00)	-0.220 (0.01)	0.058 (0.51)	0.044 (0.62)	-0.049 (0.57)	0.024 (0.78)	-0.010 (0.90)	0.007 (0.92)	0.030 (0.72)
GREEN					-	-0.166 (0.05)	-0.034 (0.69)	-0.010 (0.90)	0.103 (0.24)	0.002 (0.97)	0.000 (0.99)	-0.038 (0.661)	-0.064 (0.46)
FOLUP						-	-0.063 (0.47)	-0.084 (0.35)	-0.135 (0.125)	-0.069 (0.43)	0.027 (0.75)	0.078 (0.37)	0.086 (0.32)
COST							-	0.070 (0.43)	-0.124 (0.152)	0.045 (0.59)	0.220 (0.01)	-0.065 (0.45)	-0.064 (0.45)
SIZE								-	-0.012 (0.89)	-0.147 (0.10)	0.035 (0.69)	0.057 (0.52)	0.135 (0.13)
AGE									-	0.091 (0.29)	-0.052 (0.54)	-0.141 (0.10)	-0.144 (0.09)
LOCALM										-	-0.046 (0.589)	0.027 (0.75)	0.016 (0.84)
EXP											-	0.042 (0.62)	0.276 (0.00)
REINV												-0.056 (0.51)	-
HITECH													-

Source: authors.