

## ***Policy Watch***

### **Governments at the Bidding Table**

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*The New Zealand government has recently indicated it will scale back its subsidy program for foreign firms investing in the country, except for screen productions, and divert the budgeted funds to an outward investment strategy. In sharp contrast, local governments have lately shown a much greater willingness to subsidize cultural or sporting events in order to boost local economic activity. I evaluate under what circumstances it makes sense for a government to subsidize private investments, paying particular attention to interjurisdictional competition. I show what factors determine equilibrium subsidy levels when governments enter a bidding war, and derive the expected welfare gain.*

*JEL codes: F2, H2, D44*

*Keywords: FDI, externalities, interjurisdictional competition, subsidy*

*“New Zealand needs to attract more and better quality foreign direct investment. [...] The above suggests a clear role for government to [...] attract investment with desirable characteristics through guaranteed access to government services*

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*and, where necessary, incentives that are closely aligned with the generation of spillover benefits.”*

Economic Development Minister, Jim Anderton (May 10, 2004)

*“We are therefore going to fine tune the inward investment programme. [...] Specifically, we will discontinue the major grants and loan guarantees element of the Strategic Investment Fund. [...] The second step, which I am announcing today, is a new focus on assisting firms to undertake outward investment.”*

Economic Development Minister, Trevor Mallard (August 30, 2007)

## **1. Introduction**

An amazing thing happened on August 30, 2007 when Economic Development Minister Trevor Mallard announced a major policy change. The Minister noted that “Research done by government officials shows that our stock of inward foreign direct investment (FDI) is similar, as a proportion of GDP, to those in other small developed economies. However, our stock of outward investment has declined and is now significantly below half of the OECD average.”<sup>1</sup> In response, he announced a change in government focus. It will scrap the major grants and loan guarantees element of its Strategic Investment Fund, set up to lure foreign investors to New Zealand, and instead provide support to companies that expand offshore. In layman’s terms, funds are redirected from subsidizing foreign firms that invest in New Zealand to subsidizing New Zealand firms that invest overseas.

This sounds like a tough sell with voters. Moreover, the change in policy comes at a time when 71 countries have made 208 changes to FDI laws; in 90% of the cases favourable to attracting FDI.<sup>2</sup> Does the Minister know something that the rest of us don’t? At least he has done his homework. The change in policy was initiated after a review of Investment New Zealand’s (INZ) programmes, which is discussed below. The review revealed that over the last six years some programmes were unlikely to have provided good bang for the buck.

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<sup>1</sup> Speech of the Honorable Trevor Mallard, Minister for Economic Development, to the Auckland Chamber of Commerce on August 30, 2007.

<sup>2</sup> Numbers refer to 2001 and are taken from Scott-Kennel (2004).

In sharp contrast, local governments do not seem to share the Minister's reluctance to chase private investment dollars. On November 19, 2007, Christchurch became the latest city council to make headlines with an aggressive move to attract a major event, luring the Ellerslie International Flower Show away from Auckland. Christchurch residents are surely asking themselves whether the rumoured one to three million dollars purchase price is really the best use of public funds.<sup>3</sup>

This is exactly the question that I have been posed countless times in Canada over the past years; often by journalists, but also by fellow economists, friends, and even government officials. In Canada, the issue arose most frequently in response to large investment subsidy packages for the automotive industry, but the question is universal. Under what circumstances, if any, is it good public policy subsidizing a private firm's investment or more generally offering tax dollars to attract economic activity?

Several papers in the economics literature have studied this very question, but the nature of academic research forces authors to limit attention to very specific situations and study just one or two specific factors. In contrast, in this article I intend to first provide an overview of the literature, which spans the fields of industrial, public, regional, and international economics, and zoom in on the question under what circumstances investment incentives can be defensible. I then introduce competition between jurisdictions and analyze a situation where governments engage in a bidding war to attract a private investment project.

To preview the results, there are three important issues I want to highlight. To my fellow economists, who tend to be highly sceptical of government handouts like this, I would like to point out that a company's location choice for a new investment can best be viewed as a Nash equilibrium in a game where different jurisdictions compete. Even though one locality might be the ideal place for the project, if it does not offer any subsidies at all it might very well lose the project to a more aggressive jurisdiction. Though one might deplore this type of tax competition, there is nothing that local officials can do about another jurisdiction's behaviour.<sup>4</sup>

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<sup>3</sup> The exact amount paid has not been disclosed, but reports in the media are in the quoted range (see various articles posted on [www.stuff.co.nz](http://www.stuff.co.nz) on Nov 24, 2007).

<sup>4</sup> Explicit coordination is sometimes suggested as a solution, but this is not in the interest of all the parties involved. Clearly, the losing jurisdiction will want to defect from a universal no-bidding strategy.

To the voting public, who tend to view efforts to safeguard employment or attract economic activity more favourably, I would like to point out that there is an opportunity cost associated with government subsidies and with all other resources that will be consumed in the subsidized activity. If these types of interventions are to be welfare improving, they should not be zero-sum. There have to be externalities that raise the value of the resources devoted to these projects over and above their value in alternative uses.

Finally, even if a project is expected to create an externality that a local government values, competition from other jurisdictions will force a transfer of some of the benefits to the investing firm. I will show that the fraction of the benefits that the winning jurisdiction can expect to hold on to equals its unique advantage. Only to the extent that the project is uniquely suited to one locality, for example because (private) input costs are lower or because local (social) externalities are stronger, will the winning jurisdiction realize a new welfare gain from the bidding game. While the absolute size of the externality can be large, the net welfare gain is likely to be much smaller.

These considerations lead me to the following three policy conclusions. First, given the strategic interaction with competing jurisdictions, it is not necessarily wasteful or inefficient for governments to bid for a private investment project. Second, given that the expected net welfare gain is determined by a location's unique advantage, a pure 'rules-based' policy is unlikely to always identify the appropriate strategy. Some discretion is valuable. Third, given that bidding is driven by the total externalities, but net welfare only by location-specific factors, overbidding can readily lead to a welfare loss. Governments should only enter the bidding game if they are confident to have estimated the benefits accurately.

The remainder of the paper is organized as follows. In Section 2 the case for intervention is reviewed, discussing the type of externalities proponents often anticipate and a number of concerns to caution the overzealous government. In Section 3, competition with other jurisdictions is introduced and the *relative* attractiveness, in terms of intrinsic costs and location-specific spillovers, takes centre stage. In Section 4, I review three important New Zealand policy areas in light of this analysis. Section 5 concludes.

## 2. The case for intervention

Governments at all times and of all stripes have seen it within their mandate to try attracting economic activities to their area of jurisdiction. Incentive packages for large industrial investment projects are on offer the world over. Local governments are also keen on using tax dollars to subsidize cultural or sports events, sometimes in the form of venues or promotional support, but often also as direct subsidies.

Predictably, tax conservatives oppose such initiatives, while beneficiaries lobby hard. Economists are by and large sceptical of the possibility to realize welfare improvements in this way. Clearly, if input factors used in the production of the subsidized activity are rewarded at their true economic cost, including opportunity costs, and if firms are able to capture the entire value they generate, there is no role for subsidies. However, as I will discuss, either condition can fail in many circumstances.

To argue credibly in favour of government intervention and justify handing over taxpayers' money to a firm, one has to identify likely 'externalities'—defined as unintended effects that are not captured in market prices. These might appear on the input side, if markets are pricing input factors incorrectly, or on the output side, if some benefits spill over to neighbouring firms or to the workforce as non-pecuniary benefits (Haaland and Wooton, 1996).

Market prices for capital, labour, or land can diverge from their shadow costs because of regulation or excess capacity in a cyclical downturn. For example, existing government interventions, such as employment insurance, mandatory minimum wages, or workplace regulations, can lead to an undervaluation of benefits from employment. Neven and Siotis (1993) refer to investment subsidies as a way of overcoming 'strong distortions' in the E.U. labour market. Barros and Cabral (2000) consider a situation where unemployment problems lead to a shadow wage below the nominal wage as an impetus for governments to subsidize FDI.

Economic activities frequently generate spillovers that cannot all be captured by the firms. Again, these can exist on the input or on the output side. Take the automotive industry, one of the most visible recipients of investment subsidies, as an example (Molot, 2005). On the input side, workers receive training in high-tech manufacturing activities, enhancing the local skill-pool and future employment prospects. In addition, wage rates in this industry are substantially above manufacturing wages in similar locations, with the difference too large to be explained entirely by

human capital differences. The usual explanation is that the well-organized unions have been able to appropriate some of the market power rents in this oligopolistic industry. This mirrors arguments from the strategic trade literature: as there are economic profits in oligopolistic or monopoly industries, the created value exceeds the resource costs and one would expect countries to compete to attract these industries (Brander and Spencer, 1981).

On the output side, there is a multiplier effect as the establishment of an assembly plant creates additional jobs in the parts sector. Given the importance of just-in-time inventory systems, supplier plants cannot locate far away. Further agglomeration economies—e.g. availability of infrastructure, support services, or thick labour markets—will make the location more attractive for investments by other firms (Haaland and Wooton 1999). The automotive industry is also very R&D intensive and uses lots of advanced equipment. This creates demand for highly skilled support staff and can create direct benefits for nearby firms as advanced technology spills over, raising the productivity of neighbouring firms (Greenstone, Hornbeck, and Moretti, 2008).

Even if one can be confident that externalities are present, caution is required. At least five concerns can be identified. First, firms are surprisingly capable at internalizing externalities. This is particularly relevant for the technology spillover arguments. To the extent that workers acquire skills that are not firm-specific, their employers might be able to reduce wages as workers realize an investment benefit from working for a high-tech firm. Locating near a high-tech firm in the hope of benefiting from technology spillovers also runs the risk that talented employees are lost to the high-tech rival employer.

Second, even if sizable externalities are expected, they might not materialize *ex post*. Blomström and Kokko (2003) discuss a wealth of evidence, often from developing countries, that local firms can fail to absorb the technology and skills from the advanced firms attracted by investment incentives. They conclude that incentives are an inefficient instrument to raise the local technology level.

Third, the argument in support of government subsidies to attract investment also applies in reverse: existing firms will apply for subsidies in order not to locate away. Once a government acquires a reputation for being amenable to the provision of subsidies, local firms might try to exploit this even if they are not seriously contemplating to relocate. A frequent response is to tie incentives to pre-established rules, but this limits government's ability to seek out the most valuable projects or leads to public money crowding out private investment dollars.

Fourth, measuring the size of externalities is extremely tricky, since by their very nature they are not captured in prices. Cost-benefit analyses to evaluate the expected benefits tend to be hotly debated and estimates of likely benefits often span a wide range. Greenstone and Moretti (2003) recently developed an ingenious way to estimate spillover effects of investments on a local economy, doing away with the need for distinguishing between the market price and shadow cost of factor inputs. They exploit the fact that local property values will capture the present discounted value of the expected profit stream of living in a locality. By matching the locations that were selected as the site of a large industrial project with the runner-up locations that (narrowly) lost out, they construct a natural experiment set-up. The maintained assumption is that after a protracted site selection process, the final round choice between the two remaining locations is random, due to idiosyncratic factors. It is thus assumed that in the absence of the investment project the two locations had the same future prospects.

In a sample of 92 counties, the authors find that increases in property values are approximately 1.1% to 1.7% higher in ‘winning’ versus ‘losing’ counties and that the difference is statistically significant. Some net benefits of attracting these investments seem to exist, taking all relevant costs into account. The authors also find a 1.5% relative trend break in labour earnings in the new plant's industry in winning counties, suggesting at least one channel for the benefits. The results undermine the critics’ view that the provision of local subsidies to attract large industrial plants has reduced local residents’ welfare in these instances. Unfortunately, this approach cannot be used to estimate possible benefits *ex ante*.

The fifth and final concern is that especially in situations where externalities are large and less uncertain—and the previous concerns are of lesser importance—an interested government is likely to face competition. In such a competitive situation, the externality-argument has to be qualified. Rather than the total size of the externalities, which has been the focus of the literature, it is the fraction of externalities that is unique to a particular location that really matters. I discuss this in detail in the next section.

### **3. Competition for projects**

If an investment project is expected to generate local benefits over and beyond its resource costs, it is likely to be pursued by many. Jurisdictions will engage in a bidding war to attract the project, offering competing

incentive packages to increase the relative attractiveness of their locality. As a result, some of the potential benefits (externalities) will be competed away, or rather, will be transferred to the firm making the location decision. As outright cash grants to companies are a hard sell with voters, incentives often take the form of tax breaks, land grants, provision of infrastructure, or training subsidies.

A number of papers have studied the competition for FDI or other large investment projects in a strategic framework using noncooperative game theory. One of the first is Black and Hoyt (1989) who argue that the average cost pricing of public services through taxation exceeds the marginal cost of providing the services, providing a role for subsidies, in terms of tax cuts or additional service provision, to achieve efficient location decisions.<sup>5</sup> Barros and Cabral (2000) illustrate that even though an outcome with jointly determined first-best subsidies dominates the Nash equilibrium in terms of aggregate welfare (combining both bidders), individual bidders will want to defect. It is thus a typical prisoner's dilemma situation.

The model in Head, Ries, and Swenson (1999), where U.S. states compete to attract Japanese firms' investments in North America, provides a set-up similar to mine. While they focus on agglomeration effects and model externalities endogenously, I will simply posit differences in relative costs and externalities for two jurisdictions and derive the equilibrium bids and location choice.

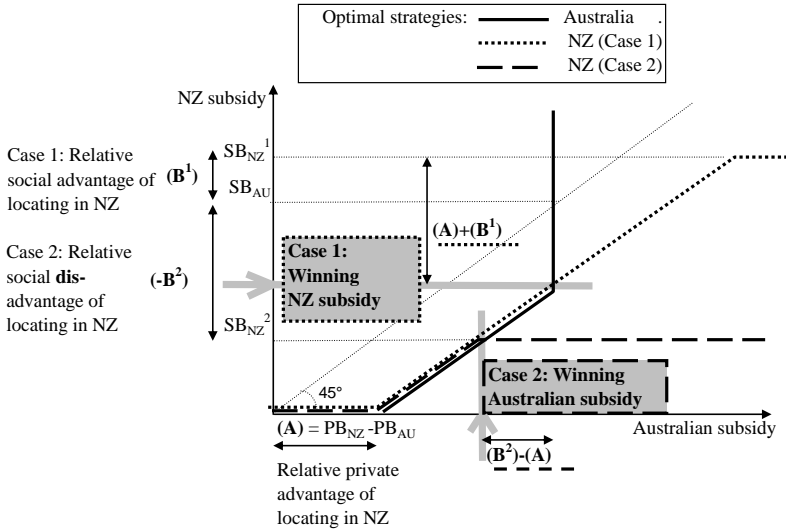
Figure 1 provides a graphical illustration of the equilibrium of a typical bidding game. Consider a situation where New Zealand and Australia are competing to attract the production of a large budget motion picture. Two differences are crucial to derive the optimal bidding strategies of the competing jurisdictions: (i) the relative intrinsic value of both locations to the firm, i.e. the difference in net private values; and (ii) the relative size of the externalities, the difference in social benefits associated with the project.

In this hypothetical example, I will assume that the private value of the project is higher in New Zealand than in Australia, for example because of lower wages. The difference is denoted by  $A$  on the horizontal axis. In the absence of subsidies the producer prefers to shoot the picture in New Zealand.

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<sup>5</sup> Several papers in the public finance literature subsequently studied the relative efficiency of competition in taxes or service provision, see for example Bayindir-Upmann (1998). Haaparanta (1996) provides a more sophisticated treatment of the bidding game in a common agency set-up, with firms competing in menu auctions.

Figure 1: Equilibrium subsidies when New Zealand (Case 1) or Australian (Case 2) externalities (SB) dominate



(A)+(B<sup>1</sup>): Case 1: spillovers that NZ can hold on to

(B<sup>2</sup>)-(A): Case 2: spillovers that Australia can hold on to

It is also assumed that the production of the motion picture generates local externalities, indicated on the respective axes, which exceed the intrinsic cost difference  $A$ . As a result, the Australian government has an incentive to attract the production by offering an incentive package of at least  $A$ . In the first case considered, I assume that these externalities are even higher in New Zealand ( $SB_{NZ}^1 > SB_{AU}$ ), perhaps because the shadow price of labour is lower, such that the New Zealand government has an incentive to trump any rational Australian bid.

Figure 1 illustrates the best response functions for both governments, i.e. the optimal bidding strategy as a function of the other government's bid. These are similar to Bertrand-Nash optimal price strategies discussed in any industrial organization textbook. The best response function for the Australian government is indicated by the solid black line. It bids  $A$  more than New Zealand up to the value of its own local externalities, the vertical solid line at  $SB_{AU}$ . The New Zealand government is only compelled to offer incentives if the Australian package is sufficient to outweigh its own intrinsic advantage of  $A$ . Above this level it matches its

rival's offer cent for cent, indicated by the short-dashed line, up to its own local social benefit level  $SB_{NZ}'$ , the horizontal section of the New Zealand best response function.

The intersection of the two best response functions gives the equilibrium subsidy. The winning jurisdiction does not have to offer its entire surplus, only enough to make the firm indifferent between itself and the alternative location. The runner-up jurisdiction, however, only drops out of the bidding war after offering the entire surplus it could have expected from the investment.

In the particular situation of case 1, the equilibrium is for New Zealand to attract the investment, offering an incentive package worth  $SB_{AU} - A$ . The net welfare gain from the project to the New Zealand economy will thus equal  $SB_{NZ}'$  diminished by its bid or  $A+B'$ . In equilibrium, the winning jurisdiction is expected only to retain the difference between its own private and social benefits and the corresponding benefits in the runner-up location.

Two crucial insights can be taken away from this example. First, even though the value to the local economy of the project might be large, a significant fraction of it will accrue to the firm making the investment in the form of incentives offered. The net welfare gain for New Zealand falls short of the full social surplus by the amount of surplus that would potentially be generated in Australia, minus the intrinsic New Zealand cost advantage.

Still, in their study of welfare effects associated with the attraction of "million dollar plants," Greenstone and Moretti (2003) explicitly mention that they expected jurisdictional competition to have competed away all welfare benefits. They were surprised to find some remaining positive effects. My analysis suggests that if spillovers exist, a fraction equal to the unique advantage of the location, either a private benefit to the firm or a local economy-specific social benefit, will remain as a net local welfare gain.

Second, even if one jurisdiction is the logical place for the project in the absence of competition, it does not mean that abstaining from the bidding war is the optimal strategy. In the current example, New Zealand has an intrinsic cost advantage and even spillovers will be larger, but without a New Zealand bid an Australian incentive package worth  $A$  would succeed in attracting the project, for a net welfare gain over there.

An additional insight can be gained by considering a minor change to the example. If externalities in Australia were larger than in New Zealand, for example because of idle capacity in production studios there, New Zealand would have to bid more aggressively to attract the project.

The relative size of the private difference, favouring New Zealand, and the social difference, favouring Australia, would then determine which country succeeded in attracting the project. As long as the difference between the Australian and New Zealand externality is less than  $A$ , New Zealand still attracts the project for a net welfare gain of  $A + B$  or  $A - |B|$ , as  $B$  still defined as  $SB_{NZ} - SB_{AU}$  would now be negative.

Externalities in Australia might even be sufficiently large to outweigh the intrinsic private advantage of locating in New Zealand, a situation represented by 'Case 2' in Figure 1. The new best response curve for New Zealand, indicated by the long-dashed line, now turns horizontal much earlier, at  $SB_{NZ}^2$  (which is below the earlier  $SB_{NZ}^1$ ). The winning Australian bid becomes  $SB_{NZ}^2 + A$ , and the net welfare gain for Australia is  $-(A + B^2)$  or  $|B^2| - A$ . Crucially, while the surplus generated might be quite large, only a minor fraction will accrue to the Australian economy. The majority is now transferred to the firm.

The third insight is that while bids are based on the absolute level of social benefits, the net welfare gain, factoring in the incentives, is determined by the difference in values for the two jurisdictions. With uncertainty about the absolute level of benefits, overbidding even by a small percentage can easily lead to a reduction in local welfare.

Note that in our set-up only the winning jurisdiction has to pay its bid. Government competition can also take the form of an all-pay auction if the competition process is costly itself. For example, cities that compete to host the Olympic Games will spend millions presenting a case and courting officials, even though only one will be successful. The welfare analysis is more complicated in such a situation, as it becomes important to model participation explicitly – see Klemperer (1999) for a discussion.

If externalities are generated endogenously, one can imagine an equilibrium situation as follows. A new investment creates positive externalities that are increasing in the level of local activity, for example through technology spillovers on existing firms. At the same time, the induced labour demand pushes up local wages more if the local activity level is high, for example because of capacity constraints in the labour market. Compared to locating an investment project in a sparse area, a firm that chooses a dense area generates higher social benefits ( $B > 0$ ), but incurs larger private costs ( $A < 0$ ).

In order to entice any firm to locate in the dense area, the local government needs to offer some of the externalities as an incentive package. In equilibrium, the full value of the externalities will be offered, with an optimal bid equal to  $B$  and  $|A|$ , and firms will be indifferent where to locate. The distribution of economic activity is then determined by the

nature of demand and spillover effects, i.e. how rapidly these increase with the local activity level and when diminishing returns set in. Head *et al.* (1999) is one illustration of such an equilibrium.

## 4. Applications

### 4.1 Review of Investment New Zealand

In 2007, the Ministry of Economic Development reviewed the Investment New Zealand (INZ) activities to promote inward investment. The principal finding was that “there is a well founded role for government in assisting firms to attract quality investment that can generate positive spillovers. The evaluations have found, however, that Investment New Zealand’s performance to date has been modest, although its investment attraction model is sound.” (p. 1, MED Cabinet Paper 2007)

In response, the Major Grants and Loan component of the Strategic Investment Fund was discontinued and the funds will be used to support feasibility studies into proposals that will support economic transformations. One area that is actively pursued is the support of outward investment activities by New Zealand firms.<sup>6</sup>

This retreat comes only a couple of years after the original program was rolled out with high level support and great expectations. A Boston Consulting Group report in 2001 stressed that all other small countries actively targeted FDI into a few sectors and suggested two areas where New Zealand had high potential. More recently, the New Zealand Institute highlights “attracting FDI” as one of the prime areas where the New Zealand government should take action to position itself for competition in the weightless economy. Other notables and institutions—Professor Michael Porter, the WTO, and the OECD—have weighed in positively on the issue of attracting FDI.<sup>7</sup>

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<sup>6</sup> The Visitor Investment Program and the Feasibility Studies components are continued unchanged.

<sup>7</sup> These endorsements can be found online at <http://www.nzinstitute.org> (New Zealand Institute), [http://www.isc.hbs.edu/caon\\_new\\_zealand\\_2001\\_presentation\\_08-04-01\\_ck1.pdf](http://www.isc.hbs.edu/caon_new_zealand_2001_presentation_08-04-01_ck1.pdf) (Michael Porter) [http://www.wto.org/english/tratop\\_e/tpr\\_e/tp214\\_e.htm](http://www.wto.org/english/tratop_e/tpr_e/tp214_e.htm) (WTO). The 2003 OECD Economic Survey on New Zealand recommended the creation of a more favourable tax treatment of FDI, the 2005 survey suggested lessening restrictions on foreign ownership, and the 2007 survey highlighted the risk of currency volatility as a deterrent of FDI.

One would expect that the review must have unearthed some heady stuff to lead to such a dramatic policy reversal. While it is clearly commendable that the program received an early review and that the government acted quickly to implement its suggestions, reading through the actual evaluation (MED, 2007) instills much less confidence in the decision making.

After a well-argued discussion of the potential benefits of FDI—highlighting externalities—and a few interesting case studies, the bulk of the review amounts to a simple accounting exercise describing the different projects that were funded with some summary statistics. The dollars and cents picture that emerges is the following: taking the varying degree of involvement into account, the Major Grants and Loan component of INZ can be held responsible for \$155 million worth of investments out of the \$600 million total invested.<sup>8</sup> Given its total cost of approximately \$60 million, this is unlikely to be a good return on investment. End of the quantitative part of the review.

As for identifying the externalities or spillovers associated with investments, the recipients of the funds are asked to report to what extent their investments had a “significant potential to enhance the productive capacity of the New Zealand economy.” Not surprisingly high scores abound. It is reminiscent of the final reports academics have to submit on research grants. Funding agencies often ask to report whether the research was “top notch” and whether the received funds were “crucial in completing the research program.” Few say no.

This seems a far cry from the much more sophisticated approach of Greenstone and Moretti (2003) that was reviewed above. One would hope that the agency itself does a more thorough investigation of the potential spillover effects before committing money. Which leads to the question why the reviewers never used the internal information that was gathered by INZ before funding was awarded? Or even more to the point: why is there no discussion in the review of the quality of INZ’s methodology for estimating expected future benefits?

It is only mentioned that, for the program to break even, each investment project should generate externalities at a rate of 13 cents for each dollar invested for three years.<sup>9</sup> No attempt is made to assess the

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<sup>8</sup> To arrive at that number, the revealed importance (through interviews) of INZ in attracting the investment is used to assign a fraction of the total investment to the agency: 90% if its role was critical, 20% if large, 5% for a minor role.

<sup>9</sup> A return of 39% ( $3 \times 13\%$ ) on an investment of \$155 million is just sufficient to recoup the \$60 million expense.

difference in likely spillovers from the 49% of the total investment that went into wood processing versus the investments in specialized manufacturing, biotechnology, ICT, and R&D. Given a projected investment value of \$3.4 billion for the cases still under active management by INZ, a more thoughtful tallying of expected benefits seems valuable.

In particular, the analysis in the previous section suggests that assuming that likely externalities would be proportional to the amount of money invested makes bidding for these projects a dicey proposal. If the externalities that New Zealand anticipates are similar to those that would be generated in competing countries vying to attract the project, the analysis suggests that the net welfare gain will be close to zero. Overbidding will directly lead to a reduction in national welfare.

One interesting feature of the investments with INZ involvement is that all completed projects were of the “brownfield” variety, i.e. foreign investors buying up existing assets or infusing new money in existing businesses. This type of investment is often deplored in the media as a loss of control of the domestic industry. However, Javorcik (2004) argues that brownfield FDI in the form of a merger or joint venture could maximise the potential for technology spillovers. The review explicitly mentions positive effects in terms of generating global market outlets and access to better management, but it does not dig deeper. This seems one area where a more thorough look at the nature of the externalities could have addressed a popular misperception.

Another thing one does learn from the review is that there simply is not a whole lot of action on the FDI front in New Zealand. Over a four year period, 19 projects were brought to fruition, excluding screen productions but including unverified investments, for a total investment of \$600 million. In contrast, in 2004 the Canadian province of Ontario launched a five-year fund to dish out \$500 million CAD (\$650m NZD) to subsidize automotive investments in the province at a rate of 10%; an amount that was later doubled by a similar federal program. Investments of less than \$300 million CAD (which would include all investments in the INZ review) or involving less than 300 jobs need not apply. In a mere two years all the funds had been committed.<sup>10</sup>

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<sup>10</sup> While these funds were not limited to foreign firms, the bulk was taken up by investments in new or existing foreign-owned assembly plants.

#### 4.2 *Movie subsidies*

One important sector where New Zealand has been successful in attracting foreign projects is in the screen productions industry. Most (in)famously, the filming of the *Lord of the Rings* trilogy not only put the New Zealand industry on the map, but also generated an extremely large tax break for New Line Cinema—estimated in the \$300-400 million range by the OECD. In 2003, the ad hoc tax shelter was replaced by the Large Budget Screen Production Grant scheme, providing direct subsidies to moviemakers subject to a number of conditions, most notably a minimum scale and New Zealand local content rules. From 2003 to 2006, nine major projects were attracted at a total subsidy cost of \$90.4 million.

New Zealand has always faced competition from other countries in attracting these projects. The scheme even explicitly targets large productions as these are likely to be more willing to relocate internationally in response to incentive packages. The establishment of a similar Refundable Film Tax Offset program in Australia started something of a bidding war. When the Australian program was improved (and renamed Location Rebate) the New Zealand government quickly responded, making its own program more generous as well. In particular, the subsidy rate was increased from 12.5% to 15%, bundling of projects to reach the minimum threshold was allowed, and the domestic content rules were relaxed.

In press statements, the government is quick to point out that these projects “contribute a lot of jobs” and represent a lot of economic activity touching on many sectors. In more thoughtful reviews, the focus is on the likely spillovers, but it is clearly difficult to assess how large the externalities could be. Moreover, the preceding analysis suggests that from a welfare point of view it is even more important to assess to what extent the benefits—private or social—are unique to New Zealand.

Two arguments stand out. A first is an infant industry argument, invoking a market failure. New Zealand might have a comparative advantage in this activity, but foreign production companies do not know this (initially). Government subsidies have the potential to jumpstart the industry, with big, successful productions having a demonstration effect. This logic would suggest that the subsidies could be phased out after a while.

The emergence of a vibrant and reputed industry in New Zealand boosts the intrinsic value of filming in the country, the *A* quantities in Figures 1 and 2, which reduces the subsidy required to attract a new project. The review of INZ did suggest that the market failure argument has increasingly less bite and that the marginal benefit of further

expenditure in the screen production industry has become smaller. This did not stop the government from pouring more money into the granting scheme, which operates independently of the INZ programmes, and from extending its timeline.

Alternatively, one could envision a dynamic equilibrium where current investments build on past investments to generate endogenous spillovers, but continuous subsidies are needed to overcome a private cost disadvantage. The model of positive agglomeration externalities combined with negative labour market effects in Head *et al.* (1999) is one such example. In the screen productions case, subsidies could be needed in perpetuity to overcome a distance disadvantage; while large demonstration projects contribute to a (depreciating) reputation for the New Zealand film industry and generates spillovers for future projects in this way.

A second argument is that attracting motion pictures has the additional benefit of showcasing the country as an attractive tourist destination. There is no doubt that the filming of the *Lord of the Rings* trilogy has boosted New Zealand's reputation as an attractive holiday destination, but in comparison with total annual appropriations for tourism of around \$80 million, the subsidies look enormous. In addition, this argument would suggest that the content of the film should feature in the decision process, which naturally is a road the government is reluctant to go down.

Less obvious is the absence of any criteria linked to the facilitation of "skills development and technology transfer within the local screen production industry," an explicit objective of the granting scheme. The recent loan agreement given to the company *Right Hemisphere* to support the local 3D digital content and graphics industry is more in line with this objective, but this seems to have been an ad hoc initiative. Another recent step in this direction was to allow productions undertaking only post, digital, and visual effects in New Zealand limited access to the granting scheme.

#### *4.3 Local government competition*

A third area of government policy that fits the framework of this paper is the competition between local governments to stage sporting or cultural events.<sup>11</sup> New Zealand has recently witnessed several examples of

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<sup>11</sup> Local governments subsidizing sports stadiums are a perennial favourite in this type of local bidding games.

interjurisdictional bidding to attract these events and they are invariably followed by a public outcry over the appropriate use of local tax dollars.

The most striking example was the successful bid of the Christchurch city council to lure the Ellerslie International Flower Show away from Auckland. The actual (purchase) offer was not disclosed, but almost certain to have exceeded \$1 million (see footnote 3). In previous years, the Auckland regional council had provided annual subsidies to the show of \$90,000 in the form of a sponsorship and support in kind. Hamilton was another locality considering putting together a bid for future hosting rights as the contract with Auckland was up for renewal.

Other examples include the Wellington city council's attraction of the Montana World of WearableArts (WOW) Awards Show from Nelson in 2005, in return for venue and marketing support. The same council contributed a subsidy, rumoured to be around \$300,000, for the 2007 exhibition soccer game between the Wellington Phoenix and David Beckham's Los Angeles Galaxy. Mayor Prendergast indicated that two other New Zealand cities had expressed interest to host the match. The Hamilton city council managed to secure the exclusive New Zealand hosting rights for a V8 Supercar event for seven years (2008-2014) beating out national and international competitors. Previously, an economic impact assessment for the race had been carried out for the Wellington area.

To assess the wisdom or folly of these bidding wars, one again has to contemplate to what extent likely benefits—private or social—are unique to one jurisdiction. Mayor Michael Redman said “there is no reason to believe the return for Hamilton would be any less than the amount forecasted in the Wellington economic impact assessment,” which seems exactly to be missing the point. It only means that in a bidding war with Wellington, Hamilton is competitive, but it does not point to any possible welfare gains from winning the war.

In some other instances, the uniqueness of spillovers entered the debate explicitly. The Wellington city council indicated it considered itself a better fit than other jurisdictions both for the WOW awards, given its international airport and upscale city reputation, and for the Beckham game, given the (future) local fan base for the Wellington Phoenix. So even if the private value of hosting the event in Wellington was similar to that for other locations, it would be beneficial to offer some incentives to swing the decision in its favour and capture the externalities.

Mayor Bob Parker also referred to Christchurch's “garden city” reputation as a natural fit to host the pre-eminent New Zealand gardening show. While the social externalities, in terms of reputation and tourism,

might be highest, the open discontent from many firms expecting to display at the show suggests that there might be an intrinsic cost disadvantage as well for the South Island locality. As such, the situation would correspond to that of Case 2 in Figure 1, with Christchurch in the role of Australia. While the positive difference in social benefits might exceed the negative difference in private benefits, the risk of overpaying is especially great in a situation like this.

## 5. Policy Conclusions

The practice of governments bidding for private investment dollars is clearly not going away. From an individual jurisdiction's perspective, this is not necessarily a bad thing, at least if demonstrable externalities are at stake. While not offering incentives is certainly ideal as long as the project is not lost to a competing jurisdiction, any package up to the full value of expected externalities is rational if it is needed to retain the project. Even if coordination to avoid so-called "wasteful tax competition that transfers social benefits to firms" were possible, it would not necessarily be optimal as competition leads to more efficient location decisions.

For governments engaging in these bidding wars, I would like to highlight two practical lessons one can take away from the analysis. First, even though the absolute level of the optimal incentive package can be as large as the total value of externalities, the winning jurisdiction will only be able to capture the fraction of externalities that corresponds to its unique local advantages. Overestimating the value of externalities can easily lead to a welfare loss. If a government is not committed to getting the estimates right, it should stay out of the game.

Second, while government discretion is often viewed with suspicion on political economy grounds, it is unlikely that a pure 'rules-based' approach will generate many benefits in these situations. The net welfare gain from the subsidy game amounts to the location-specific portion of the private and social benefits. It is hard to imagine a fixed set of rules being able to identify projects in which a locality has a particular advantage and to determine the optimal bidding strategy. If government discretion is not tolerated, entering a bidding war can easily lead to the winner's curse: only those projects will be won for which the ex post externalities fall below those predicted by the ex ante rules.

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