Attracting High Technology Investment

Intel's Costa Rican Plant

Debora Spar

Foreign Investment Advisory Service
a joint facility of
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Washington, D.C.
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Library of Congress Cataloging-in-Publication Data

Spar, Debora L.
Attracting high technology investment / Debora Spar.
p. cm. — (Occasional paper ; 11)
Includes bibliographical references.
1. Intel Corporation. 2. Semiconductor industry—Costa Rica.
3. Investments, American—Costa Rica—Case studies. 4. Industrial promotion—Costa Rica—Case studies. I. Title. II. Series:
Occasional paper (Foreign Investment Advisory Service) ; 11.
HD9696.S44I567 1998
332.67'3'097286—dc21 98-17580
CIP
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Abstract

The announcement that Intel was going to spend $300 million to construct a semiconductor assembly and testing plant in Costa Rica came as a surprise to many. The small country of 3.5 million people was an unlikely choice from the list of contending locations that included, among others, Brazil, Chile, Indonesia, Mexico, the Philippines, and Thailand. An examination of Intel and its site selection process, which closely examined Costa Rica and its strategy to target the electronics industry for investments, reveals the basis for Intel’s decision. Building on a foundation of political stability, a general commitment to economic openness, and an excellent education system, Costa Rica marketed itself to Intel on the premise that “small is beautiful”. Their size gave them the ability to mobilize support in the political and business communities and respond to Intel’s requests for information and assistance in very short periods of time. The development of an electronics strategy and the promotion and facilitation work undertaken by CINDE, Costa Rica’s national promotion agency, the Costa Rican President’s stewardship and support of the project, and the Ministry of Foreign Trade’s coordination of all government interaction with Intel were a few of the other factors that greatly impressed the semiconductor giant. The notable absence of firm-specific concessions for Intel, side-deals, or large government grants stands in contrast to the tactics many countries use to land large investments like this one. The interaction of Intel’s site selection procedure and Costa Rica’s investment promotion efforts provides a rare glimpse of the investment decision process in action. The general lessons derived from studying this case can assist other countries in plotting their own investment promotion strategies.
Acknowledgements

This paper benefited from the efforts and enthusiasm of many people. The Foreign Investment Advisory Service developed the concept for the study and sponsored all of the research. In Costa Rica, research was conducted by Abhi Ingle, Matt Munger, and Allen Thorpe; at Intel, research was conducted by Nisha Desai, Lisa Lambert, and Malinda Wash. All of these individuals contributed a great deal to the analysis contained in this paper. Work on the project was also substantially furthered by the administrative and research assistance of Irene Root. Additional background research was conducted by Steve Arbuthnot, Diane Cambourelis, Kathia Campos Alfaro, Marcus Collardin, Brian Cook, Tom Corra, Stacy Donohue, Jeronimo Enriquez, Ernesto Gonzalez-Quattrini, Chaitri Hapugalle, Xavier Ponce de Leon, Ravi Potharianka, Yann Risz, Paul Teague and Edmund Wingate. At FIAS, Joel Bergsman, Ben Rowland, Damien Shiels, and Dale Wiegel provided invaluable support and assistance. At Harvard Business School, Lou Wells and David Yoffie offered excellent commentary on earlier versions of this paper. Finally, this research could not have been conducted without the cooperation of both Intel Corporation and various agencies of the Costa Rican government. The author is exceedingly grateful to all those people from Intel and Costa Rica who gave so generously of their time and energy.
Introduction

In November of 1996, Intel Corporation announced plans to construct a $300 million semiconductor assembly and test plant in Costa Rica. The announcement came as a triumph to Costa Rican authorities, who had worked for months to attract the U.S.-based technology powerhouse. It also aroused considerable interest in the broader foreign investment community. With annual revenues of over $20 billion Intel is one of the world’s largest and most profitable corporations. It is a central player in the global electronics industry and has set the pace for technological innovation in the semiconductor and computer markets. A typical Intel plant can cost upwards of $1 billion and requires state-of-the-art engineering skills and cleanroom operations. Costa Rica, meanwhile, is a tiny country. With a population of 3.5 million and only limited development in electronics and other high technology sectors, it was in many ways an unlikely choice for Intel. Construction funds for the semiconductor facility will represent six times Costa Rica’s annual foreign direct investment, and exports from the plant will double the country’s exports by the year 2000. Indeed, the entire GNP of Costa Rica is only one third of Intel’s annual worldwide revenues.

So why, and how, did Intel choose Costa Rica? The ramifications extend far beyond this particular plant and this single decision. Costa Rica (like many developing countries) explicitly targeted the electronics sector as an area of high potential growth. Like other countries, it also set its sights on increasing flows of foreign investment to the country and created an investment promotion agency to attract and convince potential investors. But whereas other countries have seen industry-specific promotion efforts stagnate or stumble, Costa Rica appears to have succeeded quite brilliantly.

Thus the Intel investment provides a compelling platform to discuss how countries can gradually improve their climate for foreign investment and the design of their investment promotion strategies. Intel’s decision to invest in Costa Rica serves as a rich example of how a small country with no domestic market can still lure a world class, high technology firm. It also provides an opportunity to examine at close range the two parallel dynamics that drove this decision: Intel’s criteria and site selection process and Costa Rica’s investment promotion activity and approach to Intel. Viewed together, these two lines of analysis underscore a critical point: that investment promotion is an interactive process, involving not just the activities of the investment promotion agency but also the actions and needs and interests of the potential investor. They also provide a rare glimpse of investment promotion, and the investment decision process in action—a picture that can assist other countries in plotting their own investment promotion strategies.

The analysis that follows is divided into four major sections. The first provides background on the international semiconductor market and Intel’s role and competitive position within that market.
The second follows the actual decision-making process that surrounded Intel's selection of Costa Rica, as well as Costa Rica's direct efforts to market itself to the Intel selection team. The third section describes how Costa Rica was ultimately able to win the Intel investment; the fourth concludes with some general lessons to be drawn from Costa Rica's success.
Intel and the International Semiconductor Industry

What's better than dominating a market? Dominating a market that's fast growing and high margin. That's the formula behind No. 1 Intel, whose microprocessors reside inside PC's everywhere. Despite its near monopoly position, Intel leaves nothing to chance. It's vigilant in guarding against incursions by rivals, and its marketing prowess is legend. Witness the Intel inside campaign, which created a brand identity for a product that consumers never see and only vaguely understand.¹

The International Semiconductor Industry

In 1971, the Intel Corporation introduced the 4004 chip, the world's first microprocessor. This introduction revolutionized the computer industry and set off the phenomenal growth that both the industry and Intel have enjoyed ever since. In 1995, the worldwide production of computers was valued at $237 billion, up 13.5% from the 1994 total. Semiconductor sales alone were valued at $123 billion, and were predicted to continue growing at 20% a year between 1995 and 2000.² These growth figures are driven by the diverse and increasingly pervasive applications of microprocessors, the advanced and complex semiconductors that form the core of Intel's business.

Essentially, microprocessors are the "brains" that drive most electronic computing functions. They are integral to the function of mainframe computers, personal computers (PCs), wireless communications, and a host of consumer electronics products. Because of their growing applicability, microprocessors are generally regarded as a key component of industrial growth—and a symbol of economic and industrial prowess. Thus although firms from the United States and Japan continue to dominate the industry, the governments of Republic of Korea, Taiwan (China) and Singapore have all actively supported the development of their home-grown semiconductor companies, and China, Ireland, Israel, and Malaysia have eagerly pursued investment from leading foreign firms. For developing countries, the semiconductor industry carries perhaps the ultimate promise of positive externalities—of jobs and technological innovation and the kind of long-term returns that have made Intel one of the most profitable companies in the world.

The Intel Corporation

Within the semiconductor industry, Intel's position is legendary. With 85% of global microprocessor sales, Intel is by far the world's leading producer. In 1996, Intel recorded revenues of $20.8 billion and net income of $5.1 billion. Since 1987, the company's average return to investors has been roughly 44% a year; its cutting-edge chips were selling in early 1997 at gross profit margins of nearly 60%.³ As Table 1 indicates, this performance dwarfs even the industry average.
Table 1. Intel and the Semiconductor Industry

<table>
<thead>
<tr>
<th>Measure</th>
<th>Industry Average</th>
<th>Intel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market value ($ mill)</td>
<td>11,681</td>
<td>120,115</td>
</tr>
<tr>
<td>One-year returns (%) [to mid-1997]</td>
<td>26.1</td>
<td>147.5</td>
</tr>
<tr>
<td>Three-year returns (%) [to mid-1997]</td>
<td>92.4</td>
<td>329.3</td>
</tr>
<tr>
<td>1996 sales ($ mill)</td>
<td>5,851</td>
<td>20,847</td>
</tr>
<tr>
<td>1996 growth of sales (%)</td>
<td>8</td>
<td>29</td>
</tr>
<tr>
<td>1996 profits ($ mill)</td>
<td>399</td>
<td>5,157</td>
</tr>
<tr>
<td>1996 profit growth (%)</td>
<td>(19)</td>
<td>45</td>
</tr>
<tr>
<td>Return on capital (%)</td>
<td>9.4</td>
<td>31.8</td>
</tr>
</tbody>
</table>


Even more impressive, though, than Intel's numbers is its undeniable position as the industry's technological and strategic leader. Nearly since its founding in 1968, Intel has been the first to introduce the latest and fastest lines of microprocessors. Driven by founder Gordon Moore's well known "law" that the power of these computer chips doubles every 18 months, Intel has consistently created successive generations of ever more powerful chips. Its competitors, meanwhile, simply follow Intel's engineering lead, imitating new designs (called "architectures" in the trade) without having to invest the massive research and development funds that support each Intel launch. These competitors then compete with Intel almost exclusively on price. And as this rivalry inexorably drives its own prices and margins down, Intel moves on to the next generation of processors.

In recent years, Intel has also worked aggressively on the demand side of its industry. Rather than risking a downturn in demand for its new, more powerful chips, Intel encourages other companies, such as Microsoft, to design software that requires faster processing capabilities. This encouragement creates a unique but profitable dynamic, described by one Intel executive as akin to "a wrestling match and a dance that occur simultaneously." Intel helps create the demand for its product and enables its partners to share in its extraordinary success. In 1996, the company spent $500 million to fund software start-ups and to prod the development of other potential users of new-generation microprocessors. This investment came on top of its own $5 billion expenditure for capital projects and research and development.

Operations and Expansion

Intel's distinctive position in the semiconductor industry has led it to pioneer an equally distinctive strategy for operations and investment. Essentially, the strategy is driven by cutting-edge technology and blistering speed. Every nine months or so, Intel builds a new plant. Nearly all of these plants are constructed to meet future, rather than existing, demand. As Craig Barrett, the company's newly-installed president acknowledges, "We build factories two years in advance of needing them, before we have the products to run in them, and before we know the industry's going to grow."

Such optimism is rational, even required, in the fast-paced semiconductor market. For this is an industry where producers reap the bulk of their profits early, usually in the first six months following a product's introduction. During that time, manufacturers can charge up to $1,000 per chip. After six months, however, lower-cost imitations tend to exert significant downward pressure on prices, customarily pushing them towards around $200. For Intel, this basic cycle implies a constant need to innovate, and to ramp up production capacity as quickly as possible for each new generation of processor.

This logic of expansion has also led Intel to develop an impressive string of overseas facilities. By the time it began contemplating what would become an investment in Costa Rica, the company already had wafer fabrication plants in Ireland and Israel, and assembly and test plants in Malaysia, China and the Philippines. (For a description of the differences between the two types of plant, see Annex 1). Unlike many other firms, Intel customarily does not invest abroad in order to service local markets or to reduce transportation costs. It simply doesn't need to. Because a case of microprocessors is worth more than its weight in gold, the cost of transporting chips is a minute percentage of final costs and semiconductor manufacturers have little incentive to reduce these costs by locating their production facilities close to regions of high chip demand. Instead, investment abroad, like investment in general, is motivated by a desire to build large amounts of new capacity as quickly and cost-effectively as possible and to reduce risk by producing in several different plants.

Speed in particular is critical. For Intel, a chip fabrication plant (fab) typically requires two years to construct and costs upwards of $1 billion. Yet once this plant is up and running, the chips it produces will almost certainly be cloned by Intel's competitors within a year or two, forcing Intel to move on to the next generation of
chips. This, in turn, requires Intel to upgrade existing plants or in the case where expansion is no longer feasible, to develop a new site. The "ramping-up" of new production capacity must be rapid and blend seamlessly with existing capacity if Intel is to maintain its technological lead and earn the returns to which the company has grown accustomed. Intel cannot afford to waste any time in the planning or construction of its facilities. Or as one Intel manager explained, "A delay of just one week can cost tens of millions of dollars in lost sales—and a critical lead over rivals."6

In addition to speed, Intel (like other cutting-edge technology firms) relies on a dependable and well-educated labor pool. Although chip fabrication and test and assembly are essentially capital-intensive operations, the plants nevertheless demand specific and fairly complex manufacturing skills. Consequently, Intel will only build plants where it is assured of access to a highly technical and highly trainable supply of labor. And once it has invested in this work force, Intel is unlikely to leave, even as the technology in its plants quickly becomes obsolete. Instead, the company traditionally has preferred to re-invest in existing sites, using its trained work force to launch production at a revamped facility as quickly as possible. Or as the company’s president Barrett explains, it is "considerably easier to phase in future generations of chips at existing facilities with experienced staff rather than starting from scratch with new and untested people."9

Table 2. Intel’s Overseas Facilities

<table>
<thead>
<tr>
<th>Location</th>
<th>Original Manufacturing Investment</th>
<th>Most Recent Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penang, Malaysia</td>
<td>1972: first overseas plant</td>
<td>1996: $100 million for new facility in nearby Kulim Hi Tech Park</td>
</tr>
<tr>
<td>Jerusalem, Israel</td>
<td>1981: first overseas fabrication plant</td>
<td>1996: $1.6 billion for new fab in nearby Kiryat Gat</td>
</tr>
<tr>
<td>Manila, Philippines</td>
<td>early 1980s: assembly test facility</td>
<td>1996: $530 million expansion</td>
</tr>
<tr>
<td>Leixlip, Ireland</td>
<td>1989: broke ground on system board manufacture plant</td>
<td>1997: $1.5 billion for second fab</td>
</tr>
<tr>
<td>Shanghai, China</td>
<td>1996: assembly and test of flash memory chips</td>
<td></td>
</tr>
</tbody>
</table>

Evidence of this preference is obvious. In 1972, Intel opened its first overseas manufacturing facility in Penang, Malaysia. For the next 25 years, even as it was growing at a record-setting pace, the company continued to expand and retrofit the plant at Penang. In 1996, acknowledging that at last they had "basically exhausted the available work force in Penang," Intel built a $100 million green field facility—25 miles away in Kulim Hi Tech Park. A similar pattern appears in Ireland, where a 1989 system board manufacturing facility was followed, in 1997, by a $1.5 billion fabrication plant.

In choosing sites for its overseas plants, Intel is also apparently not immune to the enticements of capital incentives. Semiconductor fabrication, assembly and testing are, after all, extraordinarily expensive; and between 1994 and 1997 the price tag for these facilities has tripled. Unlike its competitors, moreover, Intel tends to build these expensive facilities before demand for its product has even emerged. This implies, potentially at least, a very risky investment strategy, and one which Intel is eager to mitigate through incentive packages from local governments. Early in the 1990s, for example, when Intel was seeking locations for two new fabrication facilities, it sent formal requests for proposals (RFPs) to several western U.S. states; according to an Oregon newspaper report, "at the time, Oregon couldn’t offer major tax incentives. Intel chose Rio Rancho, New Mexico, which offered to waive all property taxes on Fab 11, which then was valued at $1 billion." While this particular account may bear the geographical bias of its source, Intel’s systematic practice of soliciting RFPs for potential locations does in any case suggest an eagerness to solicit the best possible "offers" once it has compiled a short list of acceptable sites.

For Intel, these incentives can occasionally determine the economic feasibility of an investment, especially for fabrication plants, which are considerably more capital intensive than assembly and test facilities. In 1981, for instance, Intel broke ground for its first foreign fab, located in Jerusalem, Israel. That same year, for the first time, Intel watched its revenues fall. As the semiconductor market continued to drop into the mid-1980s, and the capacity of the Israeli plant lay dormant, Intel was forced to rely upon Israeli government capital grants. As president Barrett recalls, "We were also short of cash, which made the capital grants there very attractive." More recently, Intel has announced its interest in building a new $1.6 billion fab in Kiryat Gat, an Israeli
special economic zone. According to a pre-existing incentive package passed by the Israeli government, investment in this zone would qualify for a grant covering 38% of the investment—worth in this case approximately $600 million.

Notes
4. Interview, April 1997.
6. See Kirkpatrick, p. 63.
11. Quoted in Millward.
Choosing Costa Rica: Inside Intel

We are betting on products that have not been designed and markets that do not exist. Our fabs are fields of dreams. We build them and hope people will come.

Andy Grove, Intel CEO

The Decision to Expand

The decision that ultimately brought Intel to Costa Rica was more of an ongoing process than a discrete event. Because Intel expands capacity so frequently, it is essentially always in the midst of reviewing possible sites and evaluating investment alternatives. The Costa Rican facility emerged from one of these ongoing rounds.

Early in 1996, executives at Intel decided to research sites for a new assembly and test plant. They convened a team of functional experts, composed primarily (though not entirely) of people who had significant experience with site selection. The team was headed by Chuck Pawlak, Intel’s Vice President for International Site Selection. The other key management team members were Frank Alvarez, Vice President of the Technology and Management Group; Bob Perlman, Vice President of Finance and Director Tax, Customs and Licensing, and Ted Telford, International Site Selection Analyst. The team also included functional experts from the departments of operations, environmental health and safety, human resources, legal, finance, administration, and public relations. The job of these members was to research and evaluate potential sites from the perspective of their particular department.

Before asking the team to begin the process of site selection, Intel executives had already determined the precise contours of the planned investment. It was to be a plant of 400,000 square feet, employing up to 2,000 people to assemble and test the latest Pentium microprocessors. This type of plant, known as an ATP (assembly and test plant), is one of the two types of plant that constitute Intel’s manufacturing base. The first type, a fabrication plant (or fab) is where the heart of the microprocessor is produced. Essentially, fabs take thin layers of silicon, known as wafers, and use a highly advanced process of photolithography to etch layers of electronic circuitry on each 8-inch wafer. This process requires an ultra-clean environment and staggering levels of capital and technical expertise. (A more elaborate description of the fabrication process is contained in Annex 1.) Once the fab process has been completed, the wafers are sent to the ATP. There, the wafers are thinned to reduce internal stress, then cut into anywhere from 300 to 500 individual chips, or integrated circuits. The chips are then mounted onto a lead frame and attached to thin gold wires that will eventually connect them with the other elements of the computer. In the final stage of the manufacturing process, the chips are encapsulated in either ceramic or plastic packaging and subjected to a rigorous series of tests.

Compared to fabrication plants, ATPs are relatively inexpensive and labor-intensive. The
plants cost roughly $100 to $300 million to construct and usually employ between 1,500 and 4,000 people. Wage costs are the most important variable cost for these facilities, typically accounting for 25–30% of total operating costs. To run the new ATP as cost-effectively as possible, Intel knew it had to find a low cost, yet highly trainable work force. It would also have to find a spot where highly qualified engineers were available, and where employee turnover could reasonably be kept to a minimum.

Before formally launching the site selection process, Intel executives had also decided to make this ATP a new plant in a new country, rather than an expansion of existing capacity. This decision stemmed from management’s determination to diversify its asset base geographically, and to avoid concentrating more than 30% of its revenues from any product category at any one facility or in any single geographical region.

The Site Selection Process

Once the basic criteria had been laid out, Pawlak’s site selection team went to work. They began, as is customary at Intel, with a long list of possible host countries. Because the company is continually searching for locations in both emerging and developed markets, decision makers such as Pawlak maintain a perpetual long list of countries that could conceivably support Intel’s assembly and testing facilities. It is a fluid list, with countries added or dropped along with their changing circumstances and Intel’s perception of its needs. But it is a useful starting point, especially when site selection decisions are driven by the short lead times that prevail in the semiconductor industry. For this decision, Pawlak’s team was planning to spend no more than 6 to 9 months.

In these early days, Costa Rica was not seen as a particularly strong contender. It had gotten on the list, in fact, almost by accident. For two years, CINDE (la Coalición Costarricense de Iniciativas para el Desarrollo) had been actively targeting and approaching large, U.S.-based electronics firms. In the late 1980s, CINDE had explicitly decided to follow a focused strategy of attraction, marketing itself to a specific group of potential investors, rather than spreading its fairly limited resources across a hodgepodge of ambiguous leads. For several years, this focus had been textiles, but as Costa Rican wage levels rose and competition from lower-wage emerging markets mounted, CINDE shifted quite abruptly out of textiles and concentrated instead on electronics. With a high level of technical knowledge in the country, relatively low labor costs (for this industry), and an abundance of bilingual workers, Costa Rica seemed to mesh well with the needs of the growing global electronics industry. And so, ever since 1993, CINDE had been assiduously courting Intel and the other “big fish” of the electronics industry. In November of 1995, Intel at last responded with interest, and invited the current director of CINDE’s New York office, Armando Heilbrón, to its headquarters in Santa Clara, California. Almost immediately after hearing of Intel’s interest, Egloff assigned three investment officers exclusively to the “project”. The trio, headed by Danilo Arias, CINDE’s director of investment promotion, also included Julissa Bravo and Marcela Mora. Each took charge of specific areas pertinent to the investment process; Arias covered legal regulation, taxation, and free zone issues, Bravo dealt with human resources and education, and Mora covered real estate, construction and permitting. It was several months after the first meeting in Santa Clara, and after CINDE staff sent Intel a detailed and extensive information package, that Costa Rica made it to Intel’s long list of possible investment sites. At this point, the other countries on Intel’s long list included Argentina, Brazil, Chile, China, India, Indonesia, Korea, Mexico, Puerto Rico, Singapore, Taiwan (province of China) and Thailand.

The team began with basic desk research, looking for obvious reasons to exclude countries from the long list of potential candidates. The process at this stage was not intended to be particularly scientific or formal. Rather, it consisted of a broad attempt to identify the most relevant characteristics of each country, to confirm these with other investors and outside experts and to build a general consensus within the Intel group about which countries were most worth pursuing. To reach this consensus, team members evaluated a host of country-level criteria, with each member focusing on the particular interests of his or her functional area. These criteria were never officially ranked, but they generally included the following considerations:

Stable economic and political conditions

To be considered a serious contender, the country in question had to have positive economic
conditions, an established and reliable political system, and a relatively transparent operating and legal environment.

**Human resources**

The country needed to have a sufficient supply of professional and technical operators and a non-union work environment.

**Reasonable cost structure**

Countries had to present a workable financial situation for Intel. This was driven in large part by the cost of labor and overhead, taxation rates, tariffs, customs fees, and the ease of capital repatriation. Because all the plant’s products were intended for export, tariffs and customs fees were particularly important.

**A “pro-business” environment**

Loosely defined, countries had to have governments interested in assisting economic development and foreign investment. Some signs of economic liberalization also had to be apparent.

**Logistics and manufacturing lead time**

Given, again, the time pressures under which Intel generally operates, it had to ensure that products coming from its plants could move efficiently from the plant to an international departure point, and then expeditiously through customs and any other export procedures.

**Fast track permit process**

Before investing in any country, Intel had to be assured of receiving all necessary permits within 4–6 months. Any delay in the permitting process could seriously compromise the project’s very tight schedule.

On the basis of these rough criteria, team members slowly winnowed down their list. At this stage, they were less interested in picking winners than in eliminating losers—discarding countries that, for one reason or another, presented problems that could conceivably become deal breakers. They also considered the candidates in light of Intel’s broader strategic position, examining potential locations with regard to the company’s overall geographical mix, its regional staffing capacities, public relations, desire to spread geographic risk, and so forth.

By the end of this process, the original list of twelve had been narrowed to seven. In addition to Costa Rica, the remaining candidates included Indonesia, Thailand, Brazil, Argentina, Chile and Mexico. With the aim of increasing regional diversification of its operations and the confidence that at least one of the other candidates would suffice as a site for the new assembly and test plant, the East Asian contenders were dropped from the list and the focus shifted to Latin America. The top runners among this group, apparently, were Brazil, Chile, Costa Rica, and Mexico.

During the spring of 1996, Intel’s site selection team launched the second phase of their site-specific research. For this phase, they left their desks and went directly to visit the countries under consideration, seeking to glean an “insider’s” perspective on business conditions and state practices within each potential host. Team members conducted lengthy interviews with consulting firms, government officials and other U.S. corporate executives. They met with accounting and law firms, ran in-depth analyses of key factors such as workforce capability and waste water infrastructure, and tried to solicit the opinions and experiences of other foreign investors.

Costa Rica received its first visit in April. The two-day tour began with an overview presentation by CINDE, which also coordinated many of the subsequent meetings. The Intel team then spoke with representatives from Citibank, to inquire about the adequacy of the country’s financial infrastructure, and with executives from international accounting firms KPMG Peat Marwick, Price Waterhouse and Ernst and Young to examine the reliability and transparency of Costa Rica’s legal and financial institutions. Closed-door meetings with enthusiastic executives of DSC Communications, the largest U.S. electronics company with operations in Costa Rica, as well as with several other manufacturers, apparently gave the Intel representatives additional confidence in the country’s general business climate and its capacity to process and convert weekly flows of several million U.S. dollars.

During this preliminary visit, CINDE had also arranged for the site selection team to meet with Jose Rossi, Costa Rica’s Minister of Foreign Trade, as well as with Jose Maria Figueres, the country’s president. Since November, Figueres
had been kept informed of CINDE's interaction with Intel, and had continually expressed interest in helping with the project. The young, Harvard-educated president, in the middle of his one and only presidential term, was keenly aware of the potential impact Intel could have in helping to lead the country's growth. He took a strong personal interest in relations with Intel, and was a critical element of Costa Rica's eventual success. During the initial visit, he spent two and a half hours with the Intel representatives, during which he pledged to "do whatever was necessary" to make Costa Rica competitive in the race. He was engaged, enthusiastic, and energetic in his pitch, and responded directly to Intel's concerns. When the team expressed doubts about the quality of the workforce and the adequacy of technically-trained graduates in the country, Figueres suggested the idea of an enhanced training program the government could create to meet Intel's needs. In what would become a critical move, Figueres also appointed Rossi to manage the Intel project for the Costa Rican government. CINDE would remain a key contact for Intel, and a facilitator for any subsequent meetings or negotiations, but Rossi, a high-ranking and well-respected government official, would serve as the central point of coordination within the Costa Rican government.

Following the meeting, Intel's Perlman commented that the President's involvement and attitude were "extraordinary, and totally unexpected from someone in his position." Likewise, Minister Rossi impressed the visitors, who appreciated his active involvement and understanding of the firm's business needs. Rossi himself had been a businessman, running a sizable family-owned holding company before he joined the Figueres administration. He recognized the importance of speed, and the value Intel would derive from an expedited process and clear, consistent communication from the government.

Apparently, the Intel team had come to Costa Rica with relatively low expectations about the general level of development and sophistication of the tiny nation. When they left, however, Costa Rica had climbed toward the top of their list.

Intel's Choice

Over the next several months, Intel representatives visited Costa Rica every week.¹ There were different representatives each time, and different concerns to address, but CINDE remained the lead agency throughout the visit and negotiation period, ushering Intel executives around the country and working to find, or create, mutually acceptable solutions to each of their concerns. By July, the Costa Ricans knew that Intel's short list was down to only two contenders, themselves and Mexico. Both of the South American locations were excluded from further consideration for different reasons. Chile's lack of emphasis on the electronics sector and air transportation logistics² made it an awkward strategic fit for Intel. Brazil, on the other hand, had a lot to offer but Intel felt the business environment, at that time, would not be suited to the type of operations they were considering.

This last stage of the process, though, was in many ways the most intense, both for Intel and for CINDE. Factors that had been generally addressed up to this point now had to be explicitly defined and resolved. Intel had to be very clear about any potential problems it foresaw in Costa Rica, and CINDE and Rossi had to be very direct in either allaying these concerns or fixing the underlying problem. All of this occurred, moreover, according to Intel's rigidly fast time schedule. This final and most critical phase of site selection was slated to take only two months.

During this time, several major concerns emerged. The first was simply Costa Rica's size, especially compared to a behemoth such as Intel. Company representatives worried that Intel would overwhelm the country, and that it would demand an unsustainable fraction of Costa Rica's total resources. Intel's Perlman, for example, expressed concern that Intel investing in Costa Rica was akin to "putting a whale in a swimming pool." Initial projections indicated that the planned ATP might require up to 30% of Costa Rica's power capacity.³ Cargo facilities were also a worry to Intel, since the entire production of the plant would need to be exported by air, at frequent and inflexible intervals. The physical infrastructure of Costa Rica's airport at San Jose was more than adequate, but the frequency of flights and efficiency was not.

Costa Rica's educational system created a second major area of concern. Though renowned for its commitment to basic education and its high level of literacy, Costa Rica did not generate sufficient numbers of the kind of technically-trained graduates that Intel demanded. In particular, the company worried that there was not enough educational capacity in Costa Rica to train the
800 technicians that an ATP would require. There were also some gaps in English skills among technical students, and general competencies in physics and chemistry were lower than Intel would like to have seen. At a more advanced level, the country lacked any advanced curriculum in semiconductor manufacture.

A final broad concern came from the financial context of the proposed investment. In locations where the inherent cost structure was deemed too high to be competitive, Intel customarily required tax exemptions and other incentives. While the company was inordinately careful never to accept any under-the-table payments, it was also quite aggressive in seeking out the most favorable investment conditions. And on this score, Costa Rica fell somewhat short. The country offered a standard package of exemptions to foreign investors in its several free zones, but not any additional government grants. (See Annex 3 for a description of Costa Rica’s incentive package.) Mexico, by comparison, was apparently offering land, lower than normal electricity rates and special employee training schemes.

In the end, however, Costa Rica emerged as Intel’s front runner. Mexico, which reportedly had held the top position on the list, was compromised by its recent currency crisis and a system of mandatory union rules. For Intel, union-free in all its manufacturing facilities, the presence of a Mexican union might have created a significant culture clash within the plant and even within the company. Mexican authorities offered to make an exception to the rules for Intel, as it had for other major multinational investors. Yet their very offer made Intel wary of the way business policy was formulated in Mexico and ironically helped, in part, to eliminate Mexico from consideration.

And thus, on November 13, Intel announced its decision to build its next assembly and test plant in Costa Rica. As is customary with Intel, the announcement was conditional: it declared that the project would be located in the chosen country only if the government delivered on the provisions of an agreed-upon contract. In Costa Rica’s case, these provisions included the completion of Intel’s registration in an authorized free trade zone, the awarding of a series of environmental and construction permits, and a government commitment to enhance technical curricula and training facilities at several institutions for students studying electronics.

For the next several months, various Ministries, CINDE and Intel worked to prepare the relevant documentation and finalize the arrangements of their deal (refer to Annex 4 for a diagram of the parties to this process). In April of 1997, construction on the new ATP began.

Notes
1. Presumably, this same process occurred in the other countries that remained near the top of Intel’s short list.
2. Its distance from Intel’s major markets and the small number of non-stop flights.
Explaining Costa Rica: Lessons and Analysis

We view our relationship with Costa Rica as a marriage. We are going through the early years now. If we can make it through these early years, the rest of our marriage together will be a success.

Intel VP Chuck Pawlak

So why, in the final analysis, did Costa Rica win? How did CINDE and the Costa Rican Government address Intel's various concerns and lure the multinational away from more obvious investment sites? What factors pushed the tiny country to the top of Intel's list? And what lessons, if any, can be drawn for other developing countries and other promotion agencies?

The discussion below suggests that the answers, and the lessons, fall into three broad categories: country factors, negotiation tactics, and specific concessions. Some of the factors that made Costa Rica attractive to Intel were inherent within the country. They came from its political system, its economic agenda, its legal system, and so forth. While clearly reflecting policy choices made by Costa Rica's leadership, they were not policy decisions that had anything to do with this particular investment situation, or even necessarily with foreign direct investment in general. They were instead the result of much broader political decisions and economic strategies, many with a long history of implementation.

Other factors that contributed to Costa Rica's success, however, did emanate directly from this decision, and from the country's current leadership. These are the negotiating tactics that CINDE used to woo Intel, and the specific concessions that the Costa Rican government ultimately made in order to allay Intel's concerns and enhance the attractiveness of their own country as an investment locale. As the following discussion will make clear, Costa Rica certainly did not sell out the state to lure Intel. But they did compromise where necessary, and adjust wherever possible to meet Intel's needs without undermining their own.

Country Factors

At some very basic level, the Intel executives decided to invest in Costa Rica because they liked the country. Part due diligence, part sheer intuition, they felt comfortable with Costa Rica and confident in its long term stability, prosperity, and development. Intel was investing for the long term—and they liked Costa Rica’s long term prospects. Four elements in particular appear to have impressed the site selection team: political and social stability; a commitment to economic openness and liberalization; an explicit focus on economic development in the electronics sector; and a receptive climate for foreign investors.

Political and Social Stability

Occasionally described as the “Switzerland of the Americas,” Costa Rica has a long history of political and social stability, rare commodities in most
of Central and South America. The country has been a full-fledged democracy since 1948, and has none of the uprisings or civil unrest that plague many of the its neighbors. It is difficult to overestimate the importance of this environment to Intel: political and social stability formed the basis of Costa Rica's appeal to Intel, and directly influenced many of the other factors that drew the company to this tiny state.

In Costa Rica, political stability and peaceful democracy manifest themselves in an open and accessible government—one that has the trust of the populace and a well-accepted mandate to spur economic growth. This openness combines with a transparent legal structure to give foreign investors confidence in the overall legitimacy and integrity of a country's institutions. Civility, property rights and the rule of law are solidly established in the country, which has only seen two periods of armed conflict (1917-1919 and 1948-1949) since declaring its independence in 1838. Unique in the world, Costa Rica has not had a military since its turn to democracy in 1948.

Paradoxically, perhaps, Costa Rica's single term presidency also seems to have been a significant contributor to the country's record of policy consistency. A system of non-career politicians has made it difficult for any single administration to modify the country's fundamental institutions. Since 1948, power in the country has shifted between two political parties, but ideological differences between them are narrow, and power tends to change hands without incident. Stability of this sort is exceedingly rare in a developing nation—and was extremely important in motivating Intel's decision.

Economic Openness and Liberalization

In the decades following World War II, Costa Rica embarked upon a familiar path of economic development. It adopted aggressive policies for import substitution and industrialization; and raised its general standard of living through relatively large government investment in social programs and education. As in many developing countries, the bulk of economic activity remained concentrated in the agricultural sector—here, in the coffee and bananas that had first brought some measure of prosperity to the country. In the 1970s and 1980s, this model came under increasing strain, first from the oil shocks and then from the resulting burden of debt. By 1982, Costa Rica (like much of Latin America) was in a severe debt crisis.

Since that time, however, Costa Rica has moved quite dramatically away from its prior policies of import substitution and embraced instead a relatively aggressive program of economic liberalization. While debt levels remain fairly high, the government has privatized a number of state enterprises, opened the capital account, lifted all restrictions on capital repatriation, and made the domestic currency freely convertible. It has joined a number of regional and global trading arrangements (GATT, WTO, a Free Trade Agreement with Mexico) and made clear its intention to subject Costa Rican firms to the rigors of international competition. It is also a beneficiary of the Caribbean Basin Initiative, which grants partial duty exemptions to Costa Rican products entering the U.S. market. (CBI only requires that products be direct-shipped to the United States and have at least 35% value added in Costa Rica.)

On the investment side, Costa Rica has been particularly energetic. Not only has it accepted the idea of foreign investment, but it has also taken discrete measures to attract and sustain investors. It established a series of free trade zones beginning in 1981, and bundled them with financial and operational benefits designed to lower the hurdles for potential investors. Firms investing in these zones were to receive tax holidays, on-site customs, simplified licensing, and high-quality telecommunications and transportation infrastructure. (See Annex 3 for more details). More importantly, perhaps, Costa Rica made clear that foreigners invested in the country would be subject to precisely the same laws as Costa Ricans. There is no legal distinction in Costa Rica between foreigners and local citizens with respect to property ownership and business operations. Foreigners can legally own and control corporations and assets in all areas, except in a handful of sectors such as utilities and telecommunications.

For the semiconductor assembly and test facility that Intel intended to construct, these demonstrations of openness and liberalization were critical. While Costa Rica may not have had the most attractive incentive package of all the contenders, it had a clear and credible track record of liberalization and fair treatment. The country had undeniably committed itself to an open economy and established strong trading relationships in the international marketplace. This commitment
was essential to Intel, especially because its operations depend so heavily on unconstrained product and capital flows.

**Focused Development in the Electronics Sector**

Once a developing country has liberalized its economy and begun to attract foreign investment, it is easy to fall into the trap of looking at each foreign investment as an isolated incident. States can fail to appreciate the positive spill-over effects the right kinds of investments can generate, and the competitive power of industry clusters. Costa Rica seems to have combated this tendency by conceiving of a longer term economic vision of the country's development and then evaluating the impact of each foreign investment in light of the country's overall strategy.

In the 1980s, Costa Rica focused its investment promotion efforts on the apparel industry. Yet as higher wage levels quickly rendered this strategy uncompetitive, government officials shifted gears, working to build instead upon more sustainable sources of competitive advantage. They chose, and then explicitly targeted, two: the country's natural biodiversity and its well-educated workforce. Biodiversity subsequently led to a focus on ecotourism, biotechnology and several related industries, none of which will be discussed at length here. Realization of the value of the country's well-educated workforce, however, became the centerpiece for a strategy focused on electronics, and specifically designed to attract investment from medium- and high technology foreign firms.

To some extent, a strategy of attracting high technology FDI is not particularly novel. Many developing countries have indicated a similar interest in attracting these firms and reaping from them the purported benefits of good jobs, significant capital inflows, and the possibility of technological spill-overs. Costa Rica, though, has taken this obviously attractive strategy several steps further. Most importantly, for Costa Rica the goal of attracting these firms is entirely feasible. The country already has not just a low wage labor pool, but a very well educated low wage labor pool. This is a central and critical distinction. Costa Rica has always invested heavily in education and technological training. The country consistently spends around 5% of its GDP on education and has an active bilingual ESL (English as a second language) curriculum. Computers were introduced into elementary schools as early as 1988, and have achieved fairly wide rates of classroom penetration.

Once the commitment to technological development was made explicit, moreover, efforts were expended to raise even further the overall level of technological preparedness. High schools and colleges were urged to develop higher technology curricula, with a focus on electronics. Yet Costa Rica never tried to define precisely what the schools should teach. Instead, the government's implicit strategy was to wait for firms from a particular sub-industry (for instance, semiconductors or disk drives) to come to the country, and only then to focus additional promotion and training efforts in those areas. This enabled the country to fully utilize and expand its educated labor potential, without risking all its resources on a single, narrow specialty.

With this strategy in place, CINDE succeeded between 1992 and 1995 in attracting a number of small investments in the electronics manufacturing area. This established base made it relatively easy for Intel to consider investing in the country.

**Receptive Investment Environment**

In recent years, many developing countries have professed their openness to foreign direct investment, and their hospitality to foreign investors. What appears to have separated Costa Rica from this very large pack is that Costa Rica clearly practiced what it preached: without exception, the foreign investors in the country supported and endorsed the government's proclamations. Indeed, it was other multinational firms that provided Intel with the most enthusiastic recommendation for investment in Costa Rica.

Because it is so small, and its investment promotion activity relatively recent, Costa Rica did not boast a huge number of foreign investors in the early 1990s. Yet, as it improved its general business climate and targeted high technology development, a small base of multinational firms began to make moderate investments. Companies such as DSC Communications, Motorola, Connair, and Baxter Healthcare all came to take advantage of overall conditions in Costa Rica and the government's liberal free zone incentives. In its visits, Intel interviewed a number of these companies to assess Costa Rica's record in delivering on its promises.

In particular, Intel met repeatedly with management at Baxter Healthcare and relied heavily
on Baxter's opinion in making its final assessment. Coincidentally, Baxter and Intel had operations in many of the same countries, and shared a common employment of "clean-room" technologies. This made it easier to compare operations across various countries and to judge the relative advantages and disadvantages of Costa Rica. Intel inquired about many aspects of operating in Costa Rica, from energy costs to expectations of management stock option plans. As Baxter is 100% staffed and managed by Costa Ricans, Intel was also interested in the speed at which their operation could become locally self-sufficient from a human resources perspective. Reportedly Baxter gave a glowing report on all measures. It also related its plans to double operations with a $30 million expansion.

More generally, foreign expatriates in Costa Rica universally seemed pleased with their operations, their relations with the government, and their basic quality of life. The importance of this issue to Intel was underscored by the fact that its due diligence included visits to supermarkets, shopping centers, bars, restaurants, and residential neighborhoods to validate what it had heard about the high quality of life in the country. In all these venues, existing investors became vocal and enthusiastic supporters of further investment in the country.

Thus because Costa Rica was diligent in supporting and cooperating with its foreign investors, the country's investment promotion authorities were eventually able to use these firms to help market the country to other potential investors. Their corroborating evidence enhanced Costa Rica's attractiveness and Intel saw that it was not getting a one-sided view from CINDE and the government.

Negotiating Tactics

The four factors described above were essentially in place well before the Intel team flew into San Jose to perform its initial site visit. They are all factors that are completely amenable to policy choice, all factors that could be repeated—in some form and over some period of time—by other developing countries. But they were not created in response to Intel's potential investment, and they fell far beyond the organizational capacity of CINDE or any other single governmental agency. They resulted, instead, from a long-term and deep-seated social and political commitment.

These factors, however, do not account for the full measure of Costa Rica's success. Instead, there were many actions taken by the Costa Rican authorities during the decision-making process, many bargains struck and problems fixed. These were specific responses to Intel's concerns and demands, often though not entirely conducted under CINDE's far-reaching auspices. These responses were critical in completing the final stage of negotiations with Intel and in convincing the company to plant its stake in Costa Rica. They are also generalizable tactics, which could easily be modified to fit other countries and other foreign investment situations.

Unified Response

Most small countries suffer from the impression that they are at a serious disadvantage in attracting FDI by virtue of their relative lack of resources and absence of large internal markets. And to some extent this is true. At the beginning of the site selection process, Intel did indeed harbor serious concerns about the ability of a country as small as Costa Rica to provide the necessary infrastructure and support for the company's sizable investment.

Costa Rica aggressively countered this view, however, by turning its small size into a competitive asset. Employing a "small is beautiful" strategy expounded by President Figueres, promotion officials emphasized the efficiencies and flexibilities that a small country could provide. A key part of this effort was to take advantage of the close-knit government, business, and media communities within the country to create an "all hands on deck" mentality towards the project. Being small was a plus in the government's efforts to communicate more effectively, make decisions more quickly, and exercise more flexibility in meeting Intel's needs.

Throughout the site selection and negotiation process, Costa Rica consistently provided Intel with a unified front. Senior officials were apprised early on of the project's importance and of the relevant issues. Potential conflicts and jurisdictional overlaps were smoothed out before face-to-face meetings with Intel, and high level officials were involved in the meetings as often as possible. This coordinated effort made a deep impression on the Intel team. It also stood in stark contrast to Intel's experience in Mexico, where the regional and central governments
reportedly failed to agree or cooperate on several key issues.

Costa Rica's united front extended as well to the media. Informed by key officials of the ongoing discussions with Intel, the primary media outlets in Costa Rica were willing to abide by a government request that there be no press coverage of the process. Indeed, Costa Rican reporters knew of the negotiations several months in advance of the final decision, but kept the story under wraps for fear of alienating Intel and antagonizing the government. This was a far cry from the situation in Brazil, where several newspaper leaked stories of early Intel visits to the country, denying Intel they secrecy they treasured during the course of their decision making.

Being small probably helped the Costa Rican officials to coordinate their approach to Intel and present a united front. What was critical to this strategy, though, was the role and structure of CINDE. Among investment promotion agencies, CINDE is better structured and more effective than most. As a non-profit, autonomous organization it maintains strong ties to both the government and the business community. It has credibility with foreign investors as the "voice of the country" and access to government as the "voice of the investor." This Janus-like persona—neither government nor business, promoter nor protector—makes CINDE an extremely effective intermediary. It promotes the country to potential investors, and then acts as their advisor in the subsequent process, helping the foreign company understand rules, regulations, and procedures in Costa Rica and working through any substantive issues that might arise.

In the case of Intel, CINDE's role was all-encompassing and all-important. CINDE made the initial contact; established a relationship with some of Intel's people, and became a "one-stop-shop" to facilitate its site selection process. CINDE gathered information for the company, answered its questions, organized meetings with appropriate government officials, and coordinated all of Intel's interactions with the country. Their help effectively insulated Intel from much of the time, cost, complexify and frustration that might otherwise have come from dealing with numerous government bureaucracies.

A simple example illustrates the way CINDE's work smoothed the way for Intel. In June of 1996, the Intel team had a series of questions regarding labor laws in Costa Rica (ability to work three shifts, potential to hire women for the late shift, and so forth), and asked to meet with a representative from the Ministry of Labor on their next visit. CINDE staff members discussed the issue with Jose Rossi (the government's designated coordinator for the project) and concluded that, given its lack of experience dealing with foreign investors, the Ministry would not have the simple, straightforward answers Intel was seeking, and might only confuse the issue during direct talks with Intel. So instead, Egloff called the Minister the following day, researched the issue, and responded the same week with a signed letter from the Minister, in perfect English, detailing the pertinent rules and regulations in place. Over the course of the six month process, there were innumerable similar and more complex examples that each would have taken Intel and the government weeks or months to resolve without an effective coordinator.

From the government's perspective, CINDE was also valuable for its ability to shepherd the project along and formulate a cohesive strategy for dealing with such a demanding foreign investor. Not only was CINDE the catalyst for Intel's initial interest, but it also continued to research the firm and its industry throughout the site selection process, and explicitly educated the government about the firm's likely requirements. In the course of the background research, for example, CINDE officials spoke with someone who had recently dealt with Intel on a similar site selection process. She underscored the high level of sophistication and thoroughness of the Intel team and warned that Intel would make numerous visits, some unannounced, to verify the information it was given. She stressed that it would be critical to be open and honest with them so that Intel would hear a consistent message from multiple sources. This background allowed CINDE to anticipate what Intel was looking for and helped them to coordinate the government's response more effectively.

Extensive Personal Involvement from the Top

From all accounts, President Figueres played a critical role in bringing Intel to Costa Rica. By forcing the project to the top of everyone's agenda, he ensured that the process went as smoothly as possible and that there were no unnecessary bureaucratic delays.

All along, Figueres had taken a personal interest in the project, and wanted to do everything
he could to enhance Costa Rica’s chances. To coordinate the government’s response to Intel, the President placed the Minister for Foreign Trade Jose Rossi in charge of the project, asking him to keep the president abreast of all developments, and to alert him to any problems that arose. As the pace of the negotiations increased, Rossi became essential to the government’s efforts, managing communication between various agencies and ensuring that Intel would not become ensnared in conflicting reports or bureaucratic tangles. Having taken over many of the coordination functions that CINDE had initially assumed, Rossi was much closer to the seats of power in Costa Rica, and thus able to intervene even more efficiently. During the later stages of the process, Intel approached Rossi directly when government interaction was needed. In addition, Figueres himself maintained an open line with Egloff at CINDE and Rossi, speaking with them nearly every week to find out where intervention might be necessary. He impressed upon all of his ministers the importance of the process and, from April to September of 1996, was extremely active, urging ministers to expedite critical matters and authorizing the initiation of new programs designed to close the gaps between what Costa Rica had and what Intel needed. (These projects—in education and infrastructure—are described below.)

On a more personal level, Figueres established a great rapport with the Intel executives and proved himself a fantastic salesman for his country. Outside of formal meetings, the highly personable, bilingual President dined with the Intel executives and entertained them at his home. When visiting Intel VP’s mentioned their interest in seeing Costa Rica’s central valley, Figueres offered to lend them his helicopter if they could be at the presidential hangar at 7:30 the next morning. When they arrived at the airport, Figueres was already waiting for them behind the helicopter’s controls.

In addition, Figueres visited Intel’s plant in Chandler, Arizona. To keep the negotiations with Intel under wraps, he used a Thursday tour of a manufacturing facility in Tennessee as the cover for “personal business” he had to conduct elsewhere in the United States over a long weekend. Arriving in shirt sleeves, he again surprised his Intel counterparts, who had traded in their traditional casual attire for suits to greet the Chief Executive. Moreover, on several occasions, both Minister Rossi and Enrique Egloff undertook trips to Intel’s facilities in the United States. Mexican authorities, by contrast, turned down a similar invitation to tour Intel’s U.S. facilities.

Speed

Particularly for a company like Intel, which competes in a fast-paced industry characterized by short product life cycles, speed and ease of the site selection process are critical. Every month that Intel can save in ramping-up production at a leading edge facility means an extra month’s lead time over its rivals and thus an extra month of premium pricing. Given the magnitude of these amounts—over $150 million for every month of microprocessor leadership—speed alone was worth more to Intel than nearly anything else Costa Rica could have offered.

Here again, the widespread mobilization that occurred in Costa Rica became a clear competitive advantage. With its strong promotion agency and committed government, Costa Rica was able to respond to Intel’s needs rapidly and flexibly. The team became a partner in a problem-solving process, rather than an adversary in a game of negotiating concessions. All Intel had to do was ask for data and the Costa Rica team would deliver it—within days or even hours. This speed was also apparent with respect to more difficult or complex issues, such as education, where Costa Rica rapidly agreed to major curricular changes in order to meet Intel’s technical personnel requirements.

Refusal to Engage in “Extraordinary” Measures

In a competition among nations to secure a coveted investment, there will inevitably be pressure to take the motto of “do whatever it takes to attract them” to the extreme: to illegal arrangements, kick-backs, and shady deals with foreign investors. As a result, citizens of target countries often decry the sweetheart deals their governments grant to investors and question the value of foreign investment that can frequently seem to extract value from lesser-developed countries.

In this case, Costa Rican officials seem not to have offered any dramatic give-aways or extra-legal arrangements—and Intel explicitly never asked for any. The Costa Ricans definitely went out of their way to accommodate Intel and were willing to work with the legislature and government agencies to modify laws, policies, or procedures that would have been unfavorable to the
company’s pending investment. This was especially true in the areas of taxation, education, infrastructure and permitting. Deals were struck and laws creatively altered whenever possible. But all of the provisions Costa Rica made were designed to apply to all foreign investors in the country, and never just to Intel.

Instead of irritating or alienating Intel, this refusal to engage in extraordinary measures only heightened the team’s respect for the Costa Rican government and the country’s firmly entrenched rule of law. It proved that Costa Rica’s laws and foreign investment procedures were well-established, respected, and largely transparent. Like all investors, Intel wanted to obtain attractive financial and legal terms for its deal—but not by way of special favors or off-the-books arrangements. Thus the fully transparent environment of Costa Rica, the absence of any side deals, became major points in Costa Rica’s favor.

**Opinion Management**

This unwillingness to grant Intel special treatment also helped the Costa Rican authorities to “sell” the Intel deal domestically—to avoid the political turmoil and opposition that frequently surround foreign investment in a developing country. From the start, government officials were aware of Costa Ricans’ sensitivity to foreign domination, due to the legacy of banana republics and a general concern about U.S. economic hegemony. They thus took great care to avoid creating any concessions that could be considered unduly favorable—and then publicly emphasized their refusal to grant even this giant firm any special treatment.

CINDE was also very proactive in smoothing Intel’s relations with Costa Rica’s opposition party and with environmental groups. On their own initiative, CINDE officials coordinated a meeting between Intel and the leading opposition candidate for president; his support gave Intel further assurance that a change in governing party would not adversely affect its project. Likewise, when ruins of a pre-Colombian settlement were discovered on the Intel site, CINDE urged Intel to fund a program to assemble and deploy local archaeologists to search the area and catalog the discoveries. Intel complied, immediately hiring the best available specialists. This strategy worked well, as the National Museum quickly carried out its excavations and gave Intel the green light. What could have been a major public controversy turned into a “good citizen” advertisement for Intel.

**Specific Concessions**

Costa Rica caught the attention of Intel due largely to the beneficial country factors described above. It moved to the top of Intel’s list by dint of CINDE’s convincing negotiating tactics and the speed and consistency of the government’s response. In the end, however, Costa Rica still would not have won the investment if it had not been able to respond to Intel’s specific and most immediate concerns. As late as September 1996, Intel still saw three problems in Costa Rica: its physical infrastructure was inadequate; its educational infrastructure was inadequate; and the financial terms of the proposed investment were less favorable than those being offered elsewhere. To close the deal, Costa Rica had to address these problems.

**Financial Incentives**

Costa Rica’s standard investment incentives and tax policies under the free zone system are well known and accessible to all foreign investors (See Annex 3). They are also extremely attractive, offering investors such as Intel a full exemption from taxes on profits for the first eight years of operation, and a 50% exemption for the next four years. However, at the time of the negotiations, Costa Rica still levied a 1% tax on the total assets of certain corporations. Intel was unhappy about this tax, since its total cost to the company would be substantial: roughly $3 million for its proposed $300 million facility. Complicating matters was that the tax law had temporarily lapsed, leaving some uncertainty as to its application, especially since Intel intended to build on a site not previously developed as a free zone.

After some consideration, the Costa Rican government decided to seek an interpretation by the Attorney General. The law which was originally directed towards labor-intensive Maquiladora-type investors no longer made economic sense. Bearing in mind the country’s new objectives of attracting high technology, capital intensive industries, the resolution of the Attorney General concluded that the tax did not apply to companies under free zone status.

**Infrastructure**

Intel’s problems with Costa Rica’s infrastructure lay primarily in the transportation sector. To meet the demands of its market, Intel’s new facility would be designed to use inputs from any
fabrication plant in the world, and to send products, by air, to any customer. While Costa Rica's location was very attractive in this regard, with access to California or Texas in under three hours, Intel was worried about the frequency of flights and the capacity of San Jose's airport.

Although the overall size of Intel's shipments would be small (about 18 tons/week), they needed to be divided into many batches and sent on several different flights. This was due to the insurance requirements that surrounded the transport of a cargo that was, quite literally, worth its weight in gold. Thus the volume capacity of flights into and out of San Jose was not as important to Intel as the number of flights and their destinations. And here Costa Rica fell short. While there were a number of daily direct flights to Los Angeles, Houston and Miami, there was only limited direct access to Europe and no direct access to the Far East.

Roads were also a source of some concern. The Intel site will be located close to the country's main international airport, along the highway linking the center of San Jose with the airport. The problem did not lie with the quality of the highway, which is more than adequate; rather the access to the main road from the planned location was indirect and convoluted.

As it became clear that transportation issues could stymie the investment, CINDE and President Figueres urged the Ministry of Transportation to find some way of accommodating Intel's needs. And they did. After gathering information and meeting with Intel, the Ministry agreed to grant more licenses to foreign carriers if it were necessary to ensure an adequate numbers of flights. It also apparently accelerated plans for a new cargo terminal, slated to open in May 1997. On roads, the two sides struck an easy compromise. Intel donated some of its own prime land to create an access road for its facility, while the Ministry agreed improve access to the highway by constructing an overpass ramp, and to coordinate traffic patterns and public transportation schedules to make sure suppliers and employees had easy access to the facility.

Energy proved more troublesome. Even though Intel's projected share of total energy consumption fell from original estimates of 30% to a much more manageable 5%, the plant still demanded its own substation. And this substation had to be built and funded by ICE, Costa Rica's state-owned electric company. Initially, ICE estimated that construction on the substation could not even begin for a year and a half—clearly an unsustainable schedule for Intel. To expedite matters, Intel eventually agreed to cede all of the required land to ICE, and to provide funding (through an undisclosed loan arrangement) for the additional power lines and substation. It also agreed to fund a second substation to serve a neighboring industrial park.

Meanwhile, Intel negotiated heavily with the Minister of Energy to secure better rates for the Intel plant. Existing rate structures included only two rates, residential and industrial, leaving Intel with prices of around $0.07 to $0.09 per kilowatt hour (kWh). For an energy-intensive facility such as an ATP, the difference between this rate and the $0.02/kWh that Mexico offered put Costa Rica at a significant disadvantage. So the Ministry worked with the electrical utility company, ICE and its National Regulatory Authority (ARESEP) to develop an innovative two-tier industrial rate structure, giving larger users like Intel more favorable pricing. Under the new agreement, still pending final approval, the cost of power will drop to an average of $0.05/kWh for any users consuming over 12 megawatts.

**Education**

Intel's most pressing concern, and Costa Rica's most interesting concessions, came in the area of education. Although education levels in Costa Rica were already substantially above the norm for developing nations, the country did not have the education infrastructure to support Intel's personnel needs. Both Intel and Costa Rica knew that this gap had the potential to be a deal breaker.

Well aware of this threat, CINDE and the government quickly launched a program to ameliorate Intel's workforce concerns. A team consisting of Intel Human Resources staff, CINDE staff, the Minister of Education, the Minister of Science and Technology, and officials from national institutions of higher education was formed to identify the gaps in Costa Rica's educational system and to submit guidelines for improvement.

The team spent considerable time matching the detailed personnel requirements from Intel against the curricula of the country's technical high schools and advanced training programs. In addition, a group of four professors from the Costa Rican Institute of Technology (ITCR) and two teachers from local technical high schools
made a six-week trip to Intel facilities in Arizona, New Mexico and Santa Clara. By speaking at great length to operators and technicians at the plants, they sought to understand precisely the education and skills required to support an Intel workforce.

Following this review, the team submitted a detailed and extensive list of recommendations to the Ministry of Education:

- **Addition of a one-year “certificate” program.** ITCR would make this program available to either technical high school or academic high school graduates to update their technical skills and physics/chemistry competency on an as-needed basis.

- **Addition of a one-year “Associate Degree” program.** Graduates of the certificate program and qualified graduates of technical high schools would also be able to enter an additional one-year program designed jointly by Intel and ITCR. Initially, these programs would focus on semiconductor manufacturing, although they could be extended over time to include other career tracks as well.

- **Language Training.** ITCR would provide intensive language training courses in Spanish for expatriates from Manila and the United States, and English training to the first group of 50 technicians hired in Costa Rica. This is independent of the degree program and will be done directly on contract with Intel.

Urged by CINDE and President Figueres, the Ministry of Education approved all of the team’s recommendations. ITCR began almost immediately to implement the new curriculum.

Notes
1. In 1995, Costa Rica’s total debt was 39% of GDP, down from 46.4% the previous year.
Conclusions

Like any investment of this size and scope, Intel's selection of Costa Rica is a highly specific, idiosyncratic event. Intel is anything but a run-of-the-mill investor, and its site selection process and investment demands are perhaps unique, even among sophisticated multinational firms. Costa Rica, too, is a unique country: uncommonly stable, uncommonly small.

What, then are we to conclude from this tale of odd fellows? What lessons, if any, can be applied to other developing countries, hoping to lure other high technology firms?

Several perhaps, the first of which comes directly from the idiosyncrasies of this particular investment. Right from the start, CINDE approached Intel as a special case, a very particular firm with a particular set of needs, interests, and constraints. This micro-targeted approach was an essential element of CINDE's success. CINDE did not approach Intel just because the firm was big and rich and international. They approached Intel because they understood that this firm's investment patterns had the potential to mesh nicely with Costa Rica's existing set of country characteristics. By the time Heilbron had his first meeting with Intel executives, Costa Rica already had much of what Intel needed: a stable political system, a liberalized economy, an educated workforce and a developing electronics sector. This overlap was no coincidence. Costa Rica had chosen an investment promotion strategy that fit its existing competitive strengths and CINDE had targeted companies, including Intel, that meshed with this promotion strategy. The lesson here is clear: choose targets that match your potential.

Once this target had been identified and approached, moreover, CINDE officials assiduously continued to do their homework. Even as the Intel site selection team was performing their due diligence, CINDE was conducting their own extensive research effort. They learned about semiconductors, they learned about Intel, they even learned about the intricacies of Intel's particular site selection process. This enabled them to meet Intel on its own terms, and to conduct negotiations with a fairly detailed knowledge of what the company needed and how the country could provide it. The idiosyncrasies were in many ways what made the interaction between Intel and Costa Rica so fruitful: the match between them made sense, and both sides realized this early on in the process.

At a broader level, another lesson of the Costa Rican plant is that general country factors matter a lot, especially for a high profile and long term investor such as Intel. What drew Intel to Costa Rica, and what was vital in convincing the company to invest, were the basic characteristics of Costa Rica's political and economic system. The country is a democracy, it is stable, it is liberal, and generally committed to economic openness and progress. Its government's attitude toward private enterprise is basically facilitating, rather than harassing. It also has a fully transparent legal system. These are not mysterious characteristics and their underlying virtues are too well known to bear repeating. But the Intel case offers
powerful evidence of how they can also secure the benefits of high technology investment. Note the other locations of Intel’s largest overseas facilities: Ireland, Israel, Malaysia. While clearly different in many respects from Costa Rica, they share a common pool of political and economic assets. They are stable, democratic, and relatively free of the corruption and legal fluctuations that plague many of their neighbors. Other multinationals, to be sure, may be less enamored with these virtues than Intel, and less willing to bear the financial costs they can imply. But high profile, high technology firms are likely to share at least some of Intel’s apparent concerns and political preferences.

A third lesson that emerges from this case is made clear in the description of the previous section: throughout the site selection and negotiating process, both CINDE and the government committee led by Jose Rossi performed masterfully. Officials were consistently well-prepared, well-informed, and eager to view their negotiations with Intel as a positive-sum game rather than an adversarial relationship. Aided by the personal commitment of the country’s top leadership, CINDE was able to take a lead role in orchestrating Intel’s interaction with all levels of Costa Rican government and society. Coordination was absolutely key, and CINDE was given the authority and capability to coordinate. It also had an enviable position vis-à-vis both government and business. Independent of the government, yet closely aligned with it, CINDE had an autonomy and independence of mind that were critical to its eventual success. These are attributes that could be adopted (albeit with local modifications) by other investment promotion agencies.

A fourth lesson concerns the earliest phases of Costa Rica’s selection. All of the things that Costa Rica subsequently did right, all of the factors that made the country a good fit for Intel would have been utterly irrelevant if Costa Rica had not appeared on Intel’s long list of possible contenders. One of the country’s great successes, then, lay simply in its ability to garner a position on Intel’s long list.

How did this happen? Much of the answer lies within Intel’s selection process, and with the extent to which it relies on word-of-mouth perceptions. Like most major multinationals, Intel appears to have a fairly informal process for compiling its long list of possible host countries. While it employs a full range of data sources and quantitative analyses, it also relies heavily on more qualitative, even subjective, sources of information. It polls its senior management about their perceptions of various countries, it tracks where other leading high technology firms are investing, it interacts extensively with other multinational firms. Costa Rica got on Intel’s long list because other investors had already gone there and were beginning to spread word of the country’s attractions. This follow-the-leader process supports what the data on FDI already suggest: it is highly concentrated in a handful of top recipients. Because companies such as Intel rely so extensively on word-of-mouth reports from existing investors, each round of investment seems to generate its own offspring, and success in attracting FDI begets success. Part of this follow-the-leader behavior may be motivated by direct commercial considerations: firms may follow their customers to new markets or lead their suppliers along with them. But the preponderance of investment clusters suggests a more basic driver as well: firms invest in countries that already have a proven track record of attracting foreign investors and treating them well.

So what does it take for countries that are not yet “on the map” to get there? The Costa Rica case suggests several possibilities. The first is marketing. While glossy brochures and investment promotion offices are clearly not sufficient to generate investment, they are one way to raise awareness of a country’s potential and compel investors at least to take a look. Second, any objective publicity about a country appears exceedingly helpful. Stories of an economic boom, for instance, or a novel training program, or a successful privatization tend to catch the eyes and attention of potential investors. So do attractive tourist destinations, simply by exposing would-be investors to the virtues of a possible site. By contrast, reports of corruption or instability or political strife are likely to keep countries far from any investor’s list of possibilities. Third, a preponderance of follow-the-leader investment obvious suggests that attracting the first multinational is particularly critical to a country’s longer-term success. For this investor is likely to bring not only its own capital and technology but also a dramatic ability to market the country to other investors. The first catch, therefore, is a big one, especially for a country with limited natural resources and a small domestic market. Efforts to land that catch—so long as they do not involve
special deals or extra-legal treatment—are almost certain to be well worth their while.

A final, more subtle, lesson comes from the detailed concessions and accommodations that Costa Rica eventually made to Intel. Costa Rica did not, as mentioned earlier, sell out the state. They granted no special favors to Intel, no side deals or firm-specific concessions. But they did make major adjustments—at the airport, the schools, the free trade zones—to accommodate Intel's needs. They had to, or Intel almost certainly would have gone elsewhere. Note, however, that all their accommodations share two common and crucial characteristics. First, they derived from genuine business concerns on the part of the investor. Intel was not holding up the deal to squeeze the country for petty concessions or additional cash. It had serious problems. In other words, Costa Rica was addressing legitimate problems of the company in order to secure the investment. They were undeniably concessions, but they were not unreasonable or capricious. Second, all the adjustments made were generalizable to other investors—and generally good for Costa Rica's economy. Investment in technical education, investment in infrastructure, a cap on taxes in the free zones areas: all are benefits that other investors will undoubtedly appreciate as well. And they will probably bring long term benefits to Costa Rica's own development goals. Costa Rica, therefore, made concessions that made sense. They picked their targets carefully, they picked their battles wisely—and they attracted a high technology investor whose impact is likely to affect the country's development for a long time to come.
Annex 1: The Semiconductor Manufacturing Process

Wafer Production

Creation of Silicon Ingot

Purified polycrystalline silicon is heated to a molten liquid. A seed silicon crystal is placed in the molten liquid and slowly pulled from the liquid to create an ingot of silicon with the same orientation as the seed crystal. The ingot is then cooled and ground to a cylinder with uniform diameter, typically 6 to 8 inches.

Slicing

A diamond saw slices the cylinder into wafers less than one fortieth of an inch thick.

Grinding and Polishing

These wafers are then ground and chemically polished. After a final cleaning, they are sent to the wafer fabrication area to be used as the starting material for semiconductor manufacturing.

Wafer Fabrication

Oxidation Layering

The wafers are exposed to ultra-pure oxygen in a furnace, creating a layer of silicon dioxide (glass) on the surfaces of the wafer. This glass serves as a dielectric, or a material that does not conduct current when voltage is applied to it.

Photoresist Coating

A coating of photoresist is applied, giving the wafer characteristics similar to photographic paper.

Stepper Exposure

The wafer is aligned to a mask containing the design of one layer of the chip’s circuitry. Intense light is then projected through the mask and through reducing lenses onto the wafer, causing the photoresist to react to the light. The term stepper comes from the step-and-repeat action of the equipment, which moves the wafer around to align the mask with individual chip positions on the wafer.

Develop and Bake

The portions of the photoresist that were exposed to the light are chemically washed away, and the wafer is baked to harden the remaining photoresist, which is in the pattern of the mask.

Acid Etch

The wafers are then exposed to acid. The portions of the silicon dioxide covering that are not protected by the hardened photoresist are etched away, exposing the silicon underneath. The remaining photoresist is washed away with the use of additional chemicals, leaving a silicon wafer partially protected by silicon dioxide.
Doping

In this stage, the wafer is exposed to ions with either one less or one more electron than silicon, typically boron or phosphorous. The introduction of minute amounts of these elements changes the electrical conductivity of silicon, and the resulting silicon is known as “doped.” The only part of the wafer that gets doped is the silicon that has been exposed in the etching process. The portion covered by the silicon dioxide coating is not affected.

Repeat Steps

For each layer of circuitry, the steps from oxidation to doping are repeated until the complete chip has been built up.

Dielectric Deposition and Metallization

The layers of the wafer are interconnected using a pattern of metals and dielectrics. This process creates a series of electrical connections between the various parts of the chips.

Passivation

The wafer is covered by a final dielectric layer for protection. This film is etched to expose the terminals, also called bonding pads.

Assembly and Test

Backside Prep

The wafer is thinned to allow better heat dissipation and to remove stress fractures.

Probe Test

Each integrated circuit on the wafer is tested for functionality through an automated electrical test. Nonfunctional chips are marked with dye for rejection.

Die Cut

The wafer is sliced into individual dies or chips using a diamond saw. The marked chips are discarded, and the remaining ones are inspected visually under a microscope before packaging.

Wire Bonding

The dies are then mounted onto lead frames, and a wire bonding machine attaches gold wires from the bonding pads to the lead frames to create the electrical path. The wires are very thin, about 1/3 the diameter of human hair.

Encapsulation

The dies are then encapsulated within a plastic coating. The lead frame is trimmed and formed, then treated to prevent oxidation.

Burn-in

The burn-in process tests each semiconductor chip for reliability at levels that far exceed specified conditions. These tests, which include functional checks and power grading, weed out chips that would fail under normal conditions. The semiconductor chips that pass the tests are able to be shipped to customers.
### Annex 2: Intel's Decision Process Timetable

<table>
<thead>
<tr>
<th>Phase</th>
<th>Timing</th>
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<tbody>
<tr>
<td>Phase I—Pre-qualification</td>
<td>• 1st Qtr 1996: World wide search to develop long list. Consolidate list into short list by April 1996</td>
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<tr>
<td></td>
<td>• April 1996: Trips to the short list sites</td>
</tr>
<tr>
<td>Phase II—Site Research</td>
<td>• July 1996: Reduce short list to two finalists</td>
</tr>
<tr>
<td></td>
<td>• September 1996: Negotiate in principle with both countries and select single finalist</td>
</tr>
<tr>
<td>Phase III—Contingent Announcement and Delivery</td>
<td>• November 1996: Announce investment contingent on the completion of final approvals and permits. Land optioned but not purchased</td>
</tr>
<tr>
<td>Phase IV—Start Up</td>
<td>• April 1997: Start construction detail work flow, develop staffing, and obtain supplier and vendor support. Select plant manager.</td>
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Annex 3: Costa Rica's Free Zone Incentive Package

- 100% exemption on import duties on raw materials, components and capital goods
- 100% exemption on taxes on profits for 8 years, and 50% for the following 4 years
- 100% exemption on export taxes, local sales and excise taxes, and taxes on profit repatriation
- 100% exemption on municipal and capital taxes
- No restrictions on capital repatriation or foreign currency management
- Fully expedited on-site customs clearance
- Can sell to exporters within Costa Rica
- Can also sell up 40% in the local market with exemption from sales tax

In the Puntarenas free trade zone (one of the largest zones, representative of benefits applied in Intel's free zone), investors also receive:

- 50% longer exemption on taxes on profits: 100% for 12 years and 50% for the following six years
- Job bonus: Every year, for 5 years, the government will repay the investors a percentage of its payroll in the chosen base year:
  Year 1—15%; Year 2—13%; Year 3—11%; Year 4—9%; Year 5—7%.
- Subsidized training program: the government will pay every new direct worker for 3 months while receiving free on-site training, provided by the National Training Institute (INA). This results in 3 months of free labor for corporations in the free trade zone.

As of mid-1997, 190 companies in eight industrial parks operate under the Costa Rican free zone system. Intel will be deemed its own free zone, as its installation will be too large to place within any of the existing industrial parks.
Annex 4: Organizational Diagram of the Investment Process
Intel was impressed by the degree of commitment by the President. He hosted members of the site selection team on several occasions and visited Intel's plant in Chandler, Arizona.

As the process continued the President assigned Jose Rossi to coordinate all interactions with the Costa Rican Government Intel was given top priority. Rossi held weekly meetings with the President and CINDE to discuss progress.

After the preliminary presentation, CINDE Costa Rica took over and assigned three full-time investment specialists to attend to Intel's requests and questions.

In the initial stages, CINDE coordinated government involvement.

The Presidency
Jose Maria Figueres, President

Ministry for Environment & Energy
Rene Castro, Minister

I.C.E. (Costa Rican Electric Utility Co.)
Dr. Roberto Dobles, President

Ministry for Transport and Public Works
Rodolfo Silva Vargas, Minister

Ministry of Finance
Francisco de Paula Gutierrez, Minister

Ministry of Science and Technology
Eduardo Sibaja, Minister

Ministry for Education
Eduardo Doryan, Minister

Technical Institute of Costa Rica
Alejandro Cruz, President

CINDE
Enrique Egloff, CEO
Danilo Arias, Dir. Investment Promotion
(Legal, Taxation, & Free Zone Issues)
Julissa Bravo, Investment Officer
(Human Resources & Education)
Marcela Mora, Investment Officer
(Real Estate, Construction, & Permitting)

Armando Heilbron, Director
New York Office

Intel's first contact with Costa Rica was a presentation made by Armando Heilbron, Director of CINDE's New York Office.
The Foreign Investment Advisory Service (FIAS), a joint facility of the International Finance Corporation (IFC) and the World Bank, was established to help governments of developing member countries to review and adjust policies, institutions, and programs that affect foreign direct investment. The ultimate purpose of FIAS is to assist member governments in attracting beneficial foreign private capital, technology, and managerial expertise.

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