



Competitive Alternatives

KPMG's Guide to International Business Location

2008 Edition

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KPMG LLP has conducted an analysis of the relative costs of doing business in nine industrialized countries in North America, Europe, and Asia Pacific. This report was made possible through the support of our research contributors and sponsors as identified in this report.

The analysis in this publication is based on cost information collected primarily between July 2007 and January 2008. Taxes reflect tax rates in effect on January 1, 2008, and also incorporate any announced changes at that time to take effect at specified later dates. Exchange rates and other cost factors will, of course, change over time. Tax rates and other tax-related information are also subject to change as a result of new legislation, judicial decisions, and administrative pronouncements.

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Published by KPMG LLP

Version 1.1 March 27, 2008



Competitive Alternatives

KPMG's Guide
to
International Business Location
2008 Edition

Produced in association with



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Preface and Study Contacts

About KPMG's Global Location and Expansion Services

In most industries today, companies have to operate internationally to stay successful and grow. The need to enter new markets, serve major customers, or reduce costs and risks are just some of the reasons why businesses decide to establish a presence overseas. KPMG's Global Location and Expansion Services (GLES) group was formed to assist clients in the location and establishment of operations around the world. GLES professionals can provide objective advice that can help companies:

- Develop an approach for international expansion that can support overall business objectives
- Determine the requirements of a new operation and translate these into criteria for evaluating locations
- Identify and compare countries, regions, and cities as potential locations for relocating or establishing new operations
- Select and evaluate potential properties, buildings, or sites for a new facility
- Negotiate and secure grants, tax breaks, and other types of government incentives and support
- Set up new operations in a tax-efficient manner

Based in all regions of the globe, KPMG's GLES professionals offer locally relevant, industry-specific knowledge that can help support expansion and relocation decisions.

About Competitive Alternatives

The 2008 edition of *Competitive Alternatives* is the most extensive edition of this study to date, covering 136 cities in ten countries. Key organizations and individuals involved in developing this study are detailed below.

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• MMK Consulting Inc. directed this project on behalf of KPMG, including study design and execution, web development, and report authorship.

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Thanks also to Treena Cook, Lynn Arychuk, Dragana Vojakovic, Jennifer Gant, Alberto Cuevas, and Nicolas Korves

- **Colliers International** supplied real estate costs for all locations examined.
- **Mercer** supplied the European, Australian, and Japanese labor cost data.
- **ERI Economic Research Institute** supplied the North American labor cost data.
- **Decisio** researched and supplied operational cost data for Europe.
- **Mexico Consulting Group** researched and supplied operational cost data for Mexico.
- **Yano Research Institute** researched and supplied operational cost data for Japan.

KPMG also thanks the many other individuals and organizations that assisted in developing the information on which this study is based. Selected bibliography and data sources are detailed in Appendix F.

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- A. Details of Study Methodology and Business Model Assumptions
- B. Tax Rate Assumptions and Comparisons, by Jurisdiction
- C. City Profiles: 102 Featured Cities, by Country
- D. City Profiles: 34 Additional Cities
- E. Other Competitiveness Factors: Regional Data and Data Source Notes
- F. Selected Bibliography and Sources of Data

1. Executive Summary

Competitive Alternatives represents KPMG's guide to comparing business locations in North America, Europe, and Asia Pacific. With a primary focus on international business costs, this report measures the combined impact of 27 significant cost components that are most likely to vary by location, as applied to specific industries and business operations. The report also includes secondary comparisons of other factors that influence the competitiveness of international business locations.

The six-month research program covered 136 cities in ten countries: Australia, Canada, France, Germany, Italy, Japan, Mexico, the Netherlands, the United Kingdom, and the United States. More than 2,000 individual business scenarios were examined, analyzing more than 50,000 items of data.

The basis for the cost comparison is the after-tax cost of startup and operation for representative business operations in 12 industries, over a 10-year planning horizon. Results are based on the combined results for a group of comparable cities in each country, and are expressed in comparison to the baseline results of the United States.

A. International Results

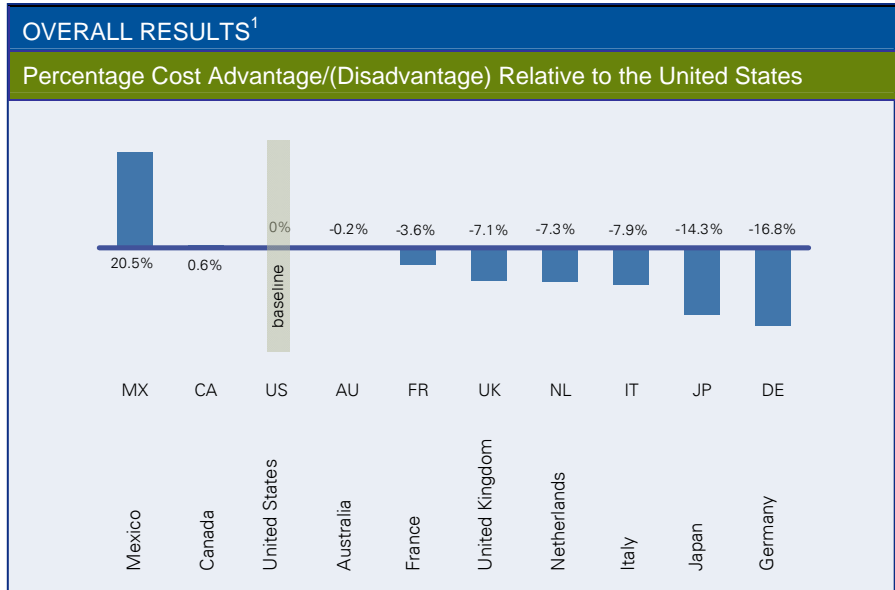
Among the countries studied, **Mexico** represents the lowest-cost country, with a business cost advantage of 20.5 percent, on average, relative the US baseline. This result reflects Mexico's status as the first emerging industrialized country to be included in *Competitive Alternatives*.

Canada, the **United States**, and **Australia** are the cost leaders among the nine established industrialized countries examined. Business costs in these three countries are virtually equivalent, with less than 1 percent separating these countries.

France ranks fifth among the ten countries examined, and has the lowest cost structure among the European countries. Business costs in France are 3.6 percent higher than the US baseline.

The **United Kingdom**, the **Netherlands**, and **Italy** are also very closely grouped, with business costs between 7.1 and 7.9 percent above the US baseline.

Japan and **Germany** have the highest cost structures among the ten countries examined, with costs 14.3 and 16.8 percent (respectively) higher than the United States.



EXCHANGE RATES USED IN THIS STUDY

	Exchange Rates				Two-year Appreciation Relative to US\$
	2006 Edition		2008 Edition		
Euro	€ 0.8410	(US \$1.189)	€ 0.680	(US \$1.471)	23.7%
UK Pound	£0.5719	(US \$1.749)	£0.500	(US \$2.000)	14.4%
Canadian Dollar	CA \$1.1735	(US \$0.852)	CA \$1.000	(US \$1.000)	17.4%
Mexican Peso ¹	MX\$10.710	(US \$0.093)	MX\$10.870	(US \$0.092)	-1.5%
Australian Dollar ¹	AU \$1.345	(US \$0.744)	AU \$1.140	(US \$0.877)	17.9%
Japanese Yen	¥117.26	(US \$0.009)	¥111.27	(US \$0.009)	5.4%

B. Cost Trends

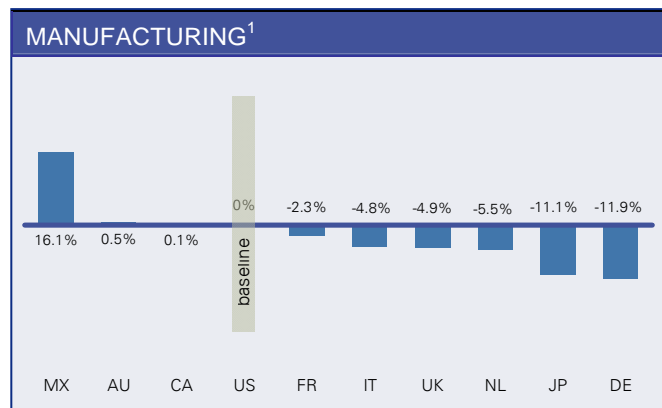
Since the previous (2006) edition of *Competitive Alternatives*, the most notable cost trends have been caused by the weakening of the US dollar against all other major currencies. However, changes in the local cost fundamentals in each country have also impacted results:

- The **United States** has experienced the greatest gain in cost competitiveness since 2006, improving its position significantly against all other countries as the value of the US dollar has declined.

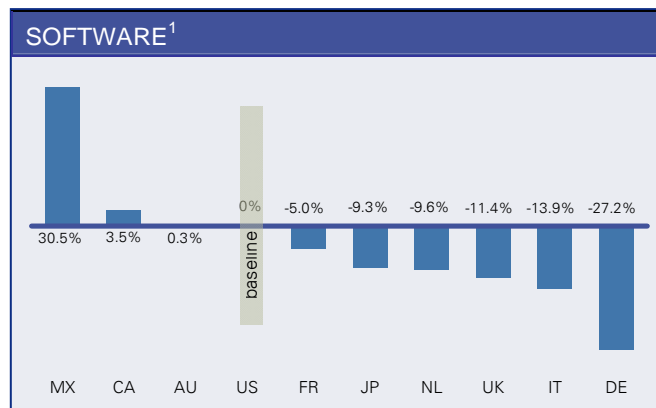
- **Canada** and **Australia** have both lost their previous cost advantages relative to the US, but have both gained ground relative to the European countries.
- **France**, **Germany**, **Italy**, and the **Netherlands** have all lost relative to both the US and the **United Kingdom**. The UK has benefited from the stronger appreciation of the euro than the pound.
- While **Japan** remains a relatively high-cost country, over the longer-term it has gained some ground against most countries, due to its low inflation rates and the lower volatility of the yen vis-à-vis the US dollar.

C. Costs by Industry Sector

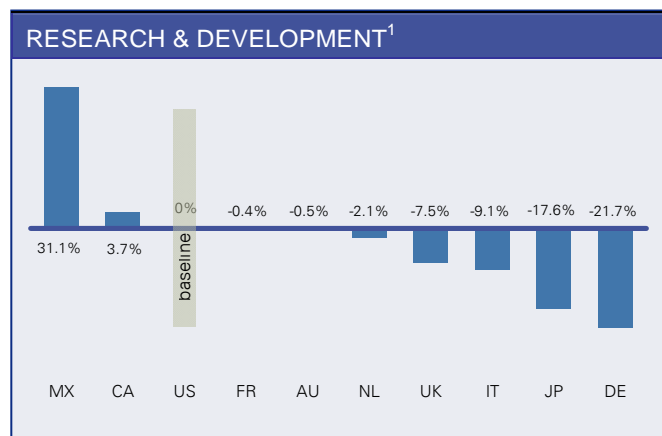
International business cost relationships vary by industry sector.



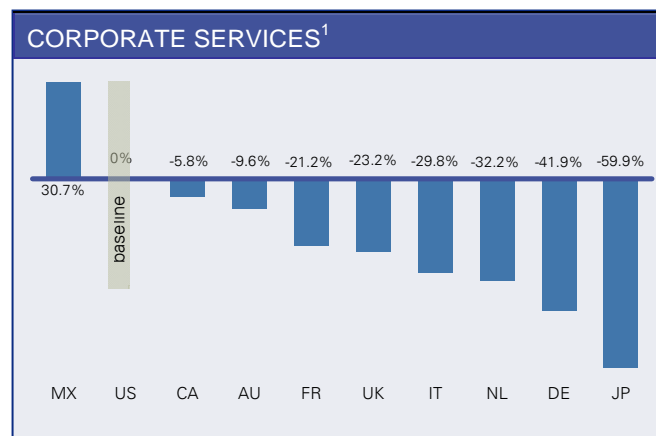
For manufacturers, significant costs for globally sourced materials and equipment do not vary by location, resulting in lower cost differentials for most countries. In this sector, **Australia** and **Italy** achieve their best rankings, while the **United Kingdom** and **Germany** also achieve their strongest results.



Labor costs are more significant in the software sector, and vary considerably by country and by region. This results in generally higher cost differentials in this sector, as seen most prominently in the cost advantage that **Mexico** holds over all other countries. Among other countries studied, **Japan** achieves its best ranking in this sector.



Cost differentials are generally higher for R&D, due to differences in labor costs for scientific and technical employees, as well as differences in tax treatment of R&D costs. **Canada**, **France**, and the **Netherlands** all have their strongest results in this sector.



Results for the corporate services sector are driven primarily by labor costs for entry-level workers, which vary most significantly by country. The **United States** achieves its best ranking in this sector.

D. Comparisons by Cost Component

Labor is the most significant component of location-sensitive costs. Total labor costs, including wages, salaries, and all benefits, are lowest in Mexico, followed by the United States and Canada.

Among other major cost components, **industrial facility** costs are lowest in Mexico and the United States, **office leasing** costs are lowest in Italy and Mexico, and **transportation costs** are lowest in the Netherlands and the United Kingdom. **Effective income tax rates** for a wide range of operations are lowest in the Netherlands, Canada, and the United Kingdom, while costs for **non-income taxes** are lowest in the Netherlands, Mexico, and Australia.

E. Other Competitiveness Factors

While business costs represent an important factor in any site selection process, a wide variety of other factors also influence the overall competitiveness of any location.

Business environment factors, such as labor availability and skills, economic conditions and markets, innovation, infrastructure, and regulatory environment, along with **personal factors**, such as cost of living and quality of life, all influence the desirability of locations to different types of businesses. In 2008, for the first time, the *Competitive Alternatives* report presents a secondary comparison of these factors across all study locations.

1. Percentage cost advantage/(disadvantage) relative to the United States. Country abbreviations are defined in the chart on Page i. Average result for each sector is based on specific industries identified in Exhibit 1.3.

1. Objectives, Scope, and Methodology

A. Study Objectives

Selecting the best site for a business operation requires careful consideration of both cost and other factors. Exhibit 1.1 illustrates some of the major factors that influence the site location decision.

The relative importance of these factors vary not only among different industries, but also for individual firms within a particular industry.

For many firms, the logical first step in locating or relocating a business operation is to perform an initial scan of:

- How jurisdictions compare in terms of cost competitiveness
- How jurisdiction compare in terms of other key competitiveness factors

The 2008 edition of *Competitive Alternatives* is the most thorough comparison of international business locations ever undertaken by KPMG, and is designed to provide valuable information to business executives, economic developers, and policy makers. The study objectives are:

- To develop a comprehensive database of locational data, for 136 cities in the G7, NAFTA, and selected other countries
- To measure the cost competitiveness of each jurisdiction, both in terms of total business costs and specific cost components
- To provide sector-specific cost analysis for 17 industries and representative operations

- To provide information on important non-cost competitiveness factors
- To provide a detailed, interactive model for undertaking customized location cost analysis of specific business opportunities
- To provide a tool for evaluating the impact of taxes, tax relief, and other incentives on the cost-competitiveness of different jurisdictions

This report provides a thorough overview of the study results for all countries, cities, and industries. Interactive access to more detailed results is available online at: www.CompetitiveAlternatives.com.

EXHIBIT 1.1		
Key Site Location Factors		
	Cost Factors	Other Key Factors
Business	Business Costs Land/building/office Labor wage/salary/benefits Transportation and distribution Utilities Financing Federal/regional/local taxes	Business Environment Labor availability and skills Access to markets, customers, and suppliers Road, rail, port, airport infrastructure Utility and telecom/internet service reliability Suitable land sites Regulatory environment
Personal	Cost of Living Personal taxes Cost of housing Cost of consumer products and services Healthcare costs Education costs	Quality of Life Crime rates Healthcare facilities Schools and universities Climate Culture and recreation

B. Scope of the Study

This report is based on a six-month research program. The scope of the study includes:

- 136 cities in ten countries
- 17 industries and business operations
- 27 location-sensitive cost factors in each city
- More than 50,000 individual cost items

1. Countries and Cities

This study represents an analysis of business costs in nine developed countries—the G7 countries, Australia, and the Netherlands, and one emerging industrial country, Mexico. For the first time, the 2008 edition of *Competitive Alternatives* includes the three NAFTA countries (US, Canada, Mexico), as well as all 50 US States and Puerto Rico.

Of the 136 cities examined, this report presents an analysis and discussion of 102 featured cities, as listed in Exhibit 1.2. Results for each of these cities are discussed in Chapter 4.

Detailed results have also been developed for the 34 additional locations, on the same basis as the featured cities. Summary results for these cities are presented in Chapter 7.

The analysis is based on the wider metropolitan area that each city represents. This approach allows a realistic comparison between locations, recognizing that many industrial and commercial facilities choose to locate in suburban areas.

EXHIBIT 1.2		
Featured Cities		
Europe		
France	Italy	United Kingdom
Mulhouse	Livorno	Barnsley
Paris	Naples	London
Toulouse	Vicenza	Manchester
		Plymouth
Germany	Netherlands	
Erlangen	Utrecht	
Frankfurt		
Halle		
North America		
Canada - Atlantic	US - Northeast	US - Midwest
Charlottetown, PE	Baltimore, MD	Albuquerque, NM
Fredericton, NB	Buffalo, NY	Billings, MT
Halifax, NS	Charleston, WV	Cedar Rapids, IA
Moncton, NB	Detroit, MI	Cheyenne, WY
St. John's, NL	Harrisburg, PA	Chicago, IL
Canada - East	Indianapolis, IN	Dallas-Fort Worth, TX
Montreal, QC	Lexington, KY	Denver, CO
Ottawa, ON	New York City, NY	Fargo, ND
Quebec City, QC	North Virginia,	Houston, TX
Sherbrooke, QC	(Metro DC), VA	McAllen, TX
Toronto, ON	Philadelphia, PA	Milwaukee, WI
Waterloo Region, ON	Saginaw, MI	Minneapolis, MN
Canada - West	Trenton, NJ	Oklahoma City, OK
Calgary, AB	Wilmington, DE	Omaha, NE
Edmonton, AB	Youngstown, OH	Phoenix, AZ
Saskatoon, SK		Salt Lake City, UT
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Guadalajara	Montgomery, AL	Boise, ID
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Reynosa	Shreveport, LA	Portland, OR
	Tampa, FL	Riverside-
US - New England	US - Puerto Rico	San Bernardino, CA
Bangor, ME	San Juan, PR	San Diego, CA
Boston, MA		San Jose, CA
Burlington, VT		Seattle, WA
Hartford, CT		Spokane, WA
Manchester, NH		
Providence, RI		
Asia Pacific		
Australia	Japan	
Adelaide	Fukuoka	
Brisbane	Hamamatsu	
Melbourne	Yokohama	
Sydney		

1 Reference to each city includes the wider metropolitan area represented by that city.

2. Industries

Seventeen industries have been analyzed in this study, as illustrated in Exhibit 1.3. For each industry, one representative business operation has been defined, modeled, and analyzed in detail. Results for all 17 business operations are presented in Chapter 3.

To enhance comparability with previous study results, overall city and country comparisons are based on the 12 business operations carried forward from previous editions of this study, as indicated in Exhibit 1.3.

The 17 business operations represent a broad mix of different business types, including manufacturing, research and development (R&D), software, and corporate services. They also cover a wide range of operating requirements, such as labor, facility, and capital requirements.

For manufacturing industry operations, the analysis is based on constructing a new facility on a purchased site, in a suburban area zoned for industrial use. For non-manufacturing operations, the analysis is based on leasing Class "A" office space in a suburban office building.

3. Location-sensitive Cost Components

This study compares costs among jurisdictions based on 27 location-sensitive cost components, as identified in Exhibit 1.4. These components, which are discussed in detail in Chapter 5, represent the most significant location-sensitive costs for the types of operations examined in this study.

The 27 location-sensitive cost factors studied generally represent between 40 and 90 percent of total operating costs for the manufacturing and service operations examined in this study.

Some significant costs (major plant and equipment, "commodity" inputs to the manufacturing process) tend to be governed by world market prices and do not vary substantially by location. These costs are held constant (in US dollars) for comparison purposes.

A number of less significant cost factors, such as advertising, accounting services, and office supplies, may be location-sensitive, but do not have a material impact on the overall comparison and are not examined in this study.

EXHIBIT 1.3

Industries

Industry	Business Operation Modeled
MANUFACTURING	
Aerospace	Aircraft parts
Agri-food	Food processing ¹
Automotive	Auto parts
Chemicals	Specialty chemicals ¹
Electronics	Electronics assembly ¹
Medical devices	Medical device manufacturing
Metal components	Metal machining ¹
Pharmaceuticals	Pharmaceutical products ¹
Plastics	Plastic products ¹
Precision manufacturing	Precision components ¹
Telecommunications	Telecom equipment
R&D	
Biotechnology	Biomedical R&D ¹
Clinical trials	Clinical trials management
Product testing	Electronic systems development and testing ¹
SOFTWARE	
Software design	Advanced software ¹
Web and multimedia	Content development ¹
CORPORATE SERVICES	
Back office/call centers	Shared services center ¹

¹ Overall results are based on the weighted average of these 12 operations, consistent with the 2002 to 2006 editions of *Competitive Alternatives*.

EXHIBIT 1.4

Location-sensitive Cost Components

Labor Costs

- Salaries and wages
 - 42 job positions
- Statutory plans
 - Government pension plans
 - Public medical plans
 - Unemployment insurance
 - Workers' compensation
- Employer-sponsored benefits
 - Paid time not worked (holidays and vacation)
 - Private health insurance
 - Other discretionary benefits

Facility Costs

- Industrial land
- Industrial construction
- Office leasing

Transportation costs

- Road freight
- Air freight
- Sea freight

Utility Costs

- Electricity
- Natural gas
- Telecommunications

Depreciation Charges

Financing Costs (Interest)

Taxes Other Than Income

- Capital
- Property
- Sales and transactions
- Land transfer
- Sundry local taxes

Income Taxes

- Federal
- Regional (state, provincial, etc.)
- Local

C. Key Assumptions

1. Currency Exchange Rates

All figures in this report are expressed in US dollars unless otherwise stated.

Exchange rates used in this study, along with comparative rates from the previous 2006 edition of *Competitive Alternatives*, are illustrated in Exhibit 1.5. The rates used in 2008 are based on average daily rates for the US Federal Reserve Board, for December 1, 2007, through January 15, 2008.

The results of this study are sensitive to exchange rate changes. Exchange rate sensitivity is discussed further in Chapter 2, and can also be analyzed online at: www.CompetitiveAlternatives.com.

2. Cities Used in National Results

The cities selected to calculate the national results for each country are illustrated in Exhibit 1.6. National results are based on the average results for comparable cities within each country.

The selected cities within each country represent a comparable mix in terms of geography, population, and economic circumstances. Each selected city may be classified in one of three ways:

- **Restructuring city:** a city in a region that is undergoing significant economic restructuring, generally giving rise to the likelihood of lower cost levels and higher availability of incentives.
- **Emerging city:** a city that is experiencing strong economic growth, mainly in high-tech industries. Such a city could be described as representing a “rising star,” and generally with moderate cost levels.
- **Mature city:** a significant metropolitan area that represents an industrially developed region within the country, generally experiencing relatively higher cost levels.

As illustrated in Exhibit 1.6, an equal number of cities from each of these classifications is used to calculate the national results for each country. Given its compact geography, the Netherlands is represented by a single city.

EXHIBIT 1.5

Exchange Rates Used in this Study

	Exchange Rates		Two-year Appreciation Relative to US\$
	2006 Edition	2008 Edition	
Euro	€ 0.84 (US \$1.19)	€ 0.68 (US \$1.47)	23.7%
UK Pound	£0.57 (US \$1.75)	£0.50 (US \$2.00)	14.4%
Canadian Dollar	CA \$1.17 (US \$0.85)	CA \$1.00 (US \$1.00)	17.4%
Mexican Peso ¹	MX\$10.71 (US \$0.09)	MX\$10.87 (US \$0.09)	-1.5%
Australian Dollar	AU\$1.34 (US \$0.74)	AU \$1.14 (US \$0.88)	17.9%
Japanese Yen	¥117.26 (US \$0.01)	¥111.27 (US \$0.01)	5.4%

¹ Although Mexico was not included in the 2006 study, it is presented here to show the exchange rate of its currency at the time of the 2006 study.

EXHIBIT 1.6

Cities Selected for Calculation of National Results

Country	Restructuring City	Emerging City	Mature City
EUROPE			
France	Mulhouse	Toulouse	Paris
Germany	Halle	Erlangen	Frankfurt
Italy	Livorno	Vicenza	Naples
Netherlands	----- Utrecht ¹ -----		
United Kingdom	Barnsley	Plymouth	Manchester
NORTH AMERICA			
Canada	Halifax	Calgary	Montreal
	Winnipeg	Ottawa	Toronto
Mexico	Reynosa	Aguascalientes	Guadalajara
United States	Burlington	Albuquerque	Baltimore
	Fargo	Providence	Denver
	McAllen	Raleigh	Seattle
	Saginaw	Salt Lake City	St. Louis
	Shreveport	San Diego	Tampa
ASIA PACIFIC			
Australia	Adelaide	Brisbane	Sydney
Japan	Hamamatsu	Fukuoka	Yokohama

¹ Utrecht is an ideal representative of the Netherlands, being the fourth largest city, centrally located within moderate-to-long commuting distance of eight of the ten largest cities in the Netherlands, and with wages/salaries equal to the national median.

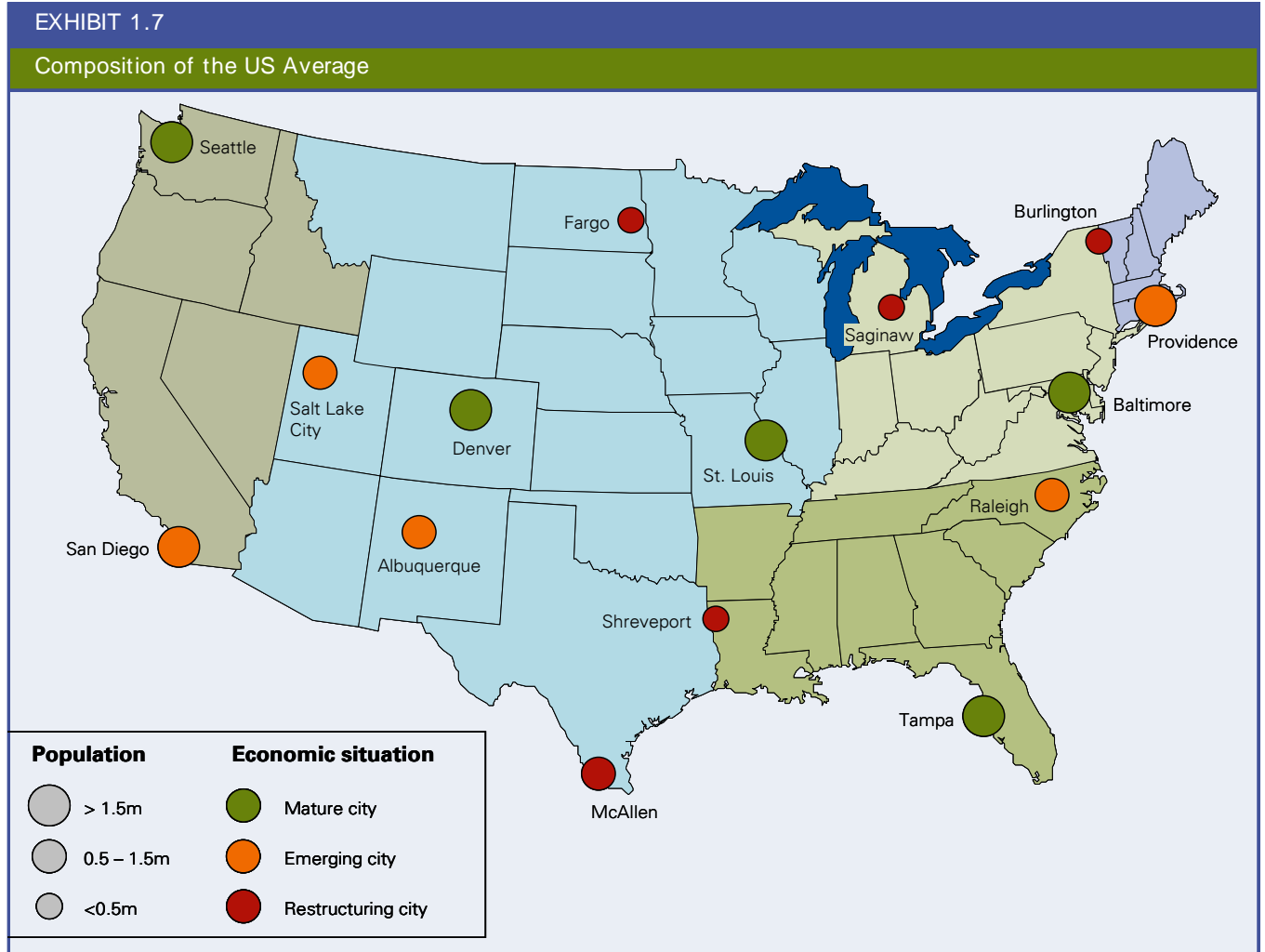
3. US Baseline Definition

Total business costs in each country are expressed as an index, with the baseline index of 100.0 being assigned to the United States. Therefore, a stringent approach to defining and calculating the US baseline average is especially important, as this impacts on the indexed results for all cities and countries.

The US baseline, or US average, is calculated using the national average methodology described in the previous section. As listed in Exhibit 1.6 (above), a total of 15 US cities are used to calculate the US average in this study. As illustrated in Exhibit 1.7, this group of 15 cities:

- Provides representation of all geographic regions of the United States (as color-shaded in Exhibit 1.7 and discussed in Chapter 4)
- Represents an even mix of restructuring, emerging and mature cities
- Represents an even mix of small, mid-sized, and large cities

This approach to defining the US baseline is consistent with the approach taken in previous editions of *Competitive Alternatives*.



D. Methodology

1. KPMG's Cost Model

This study is based on KPMG's proprietary CompetitiveAlternatives.com cost model used to analyze costs for many different types of business operations across multiple geographic locations. The model applies current business cost data for each location to a set of business operating specifications that are held constant for all locations. The result is a comparison of the estimated cost of establishing and operating an equivalent facility in each location.

Using standard financial assumptions, the model generates ten-year pro forma reports, including income statements, cash flow statements, and detailed tax calculations. These reports form the basis of the cost comparisons contained in this report.

2. Physical Productivity

This study is based on specific comparisons of different types of individual business operations, from the viewpoint of a business investor. It should *not* be interpreted as comparing overall levels of performance and physical productivity among countries.

For this report, three major sources of productivity variations—time worked, technology employed, and workforce training—have been included in the analysis, while the physical productivity of labor has been assumed to be equal in all locations. A more detailed discussion of productivity is contained in Chapter 5.

3. Income Statement vs. Net Present Value Analysis

The comparisons presented in this report are based on income statement analysis. All items are treated on a cash basis, except for the initial investment in land, buildings, and equipment. Initial investment is reflected in annual depreciation on buildings and equipment, as well as in interest on the debt associated with facility start-up. Using this approach, differences in initial investment costs are factored into operating costs over time.

This measurement approach has been chosen in part due to its widespread use in business, and also due to its usefulness in highlighting the sources of cost differences among locations.

Another widely used approach is to calculate the net present value (NPV) of all projected cash flows, applying a discount rate to future cash flows. NPV techniques are often applied in investment analysis and decision-making. Results developed on a NPV basis are not substantially different from the income statement approach used in this report.

4. Incentives

Significant, generally-applicable incentives, with clearly defined eligibility criteria, are included in the scope of this study. These incentives include: certain tax rate reductions, tax abatements, sales tax exemptions, favorable interstate-income apportionment rules, investment tax credits, research and development incentives, and job tax credits available in various jurisdictions.

For major business investments, it is not uncommon for governments to also offer incentive packages negotiated on a discretionary basis. These packages typically comprise a complex set of financing assistance and/or tax abatements, tailored to specific investment and job creation proposals. The analysis in this report does *not* distinguish among jurisdictions based on such discretionary incentives, because:

- There is generally no before-the-fact basis for forecasting the value of incentives a jurisdiction may ultimately provide, without entering into negotiations over a specific investment proposal
- The primary focus of the cost analysis is on the fundamental business cost structures that apply to representative operations within different industries

5. Interpretation of Results

While great care has been taken in performing this analysis and developing the findings, the resulting comparisons are of a general nature. All factors examined in this study are subject to change over time, due to changes in local laws, regulations, and/or market conditions. The results of this study should not be interpreted as a definitive or final opinion on the merits of locating any specific facility in one jurisdiction over another. Further analysis is required to determine the best site for a specific facility or operation.

6. Further Information on Methodology

Further details on methodology are contained in the Appendices to this report, available online at:
www.CompetitiveAlternatives.com.

2. The International Comparison

A. Overall Results by Country

Business costs in each country are estimated based on the analysis of:

- Representative business operations in 12 industries (Exhibit 1.3)
- 27 individual cost components (Exhibit 1.4)
- A representative group of cities in each country, specifically chosen to provide comparable national averages (Exhibits 1.6 and 1.7).

Overall results are illustrated in Exhibit 2.1. Total business costs in each country are expressed as an index, with the baseline index of 100.0 being assigned to the United States. Countries with business costs lower than the US baseline have a cost index less than 100, while countries with business costs higher than the US baseline have a cost index greater than 100. Rankings are based on ascending business costs, with the lowest cost country ranking first.

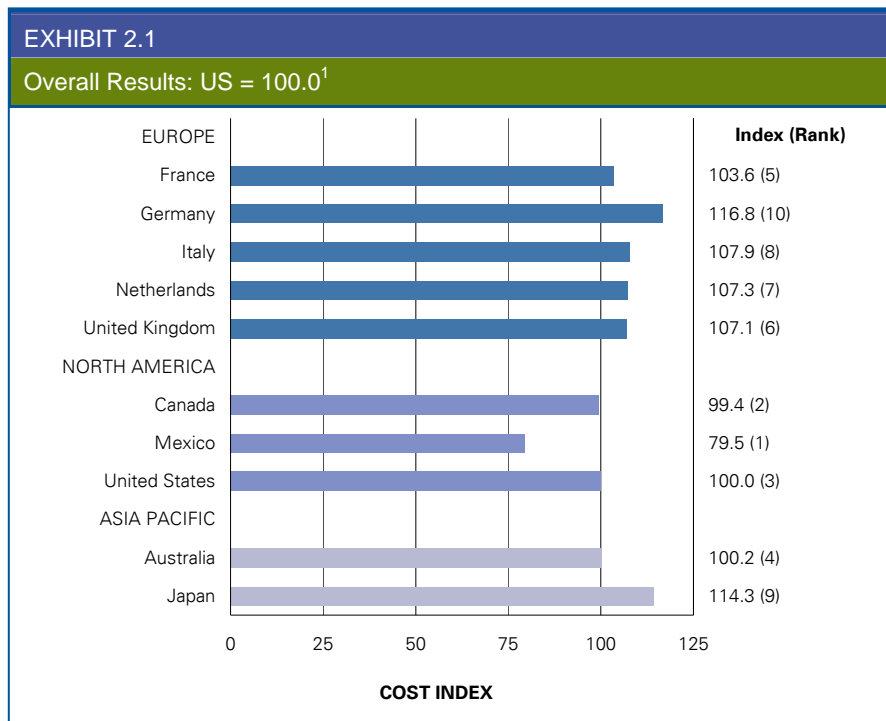
Mexico, new to the study in 2008, is ranked first among the ten countries. With a cost index of 79.5, this represents a 20.5 percent cost advantage over the United States benchmark. This rating reflects Mexico's status as the sole emerging industrial country among the ten nations studied.

Canada, the **United States**, and **Australia** are the cost leaders among the nine industrialized countries, with cost indices of 99.4, 100.0, and 100.2 respectively. Business costs in these three countries are virtually equivalent, within a range of less than 1 percent.

Fifth-ranked **France** has the lowest cost structure among the European countries studied, with a cost index of 103.6, representing business costs 3.6 percent above the US benchmark.

The **United Kingdom**, the **Netherlands**, and **Italy** are closely grouped, with business costs between 7.1 and 7.9 percent above the US benchmark.

Japan and **Germany** have the highest business cost structures among the ten countries examined, with costs 14.3 and 16.8 percent higher (respectively) than the United States.



¹ Average for 12 operations. (Refer to Exhibit 1.3 and related text.)

B. Cost Trends, 2006-2008¹

1. Trends by Country

Cost trends for the returning countries from the 2006 study are illustrated in Exhibit 2.2. These trends reflect both changes in exchange rates, and changes in the local cost fundamentals in each country.

Since the previous 2006 edition of *Competitive Alternatives*, the most notable cost trends have been caused by the dramatic weakening of the US dollar against all other major currencies:

- The **United States** has experienced the greatest gain in cost competitiveness since 2006, improving its position significantly against all other countries as the value of the US dollar has declined.
- **Canada** has lost most of its previous cost advantage over the US, but has gained ground against other countries, assisted by moderate increases in labor costs and reductions in corporate income taxes.
- **Japan**, while still a relatively high-cost jurisdiction, has gained some ground over the longer-term against most countries, due to its low inflation rates and the lower volatility of the yen vis a vis the US dollar.

- **Australia** has lost ground to the US, Canada, and Japan, but has increased its cost competitiveness relative to all of the European countries studied.
- **France** has increased the size of its lead over the other European countries, aided by relatively moderate inflationary increases in all key cost areas.
- The **United Kingdom** has benefited from the stronger appreciation seen by the euro than the pound, but has also experienced some relatively higher cost increases in land, construction, and labor costs.
- **Germany's** cost index increase reflects the strengthening euro as well as higher transportation costs, offset partly by moderate labor cost increases, lower land and building costs, and corporate tax cuts.
- **Italy's** higher cost index in 2008 reflects the strength of the euro, combined with labor cost increases that are somewhat above average among the European countries.
- Similarly, the **Netherlands'** cost index increase also reflects the much stronger euro, combined with labor, land, and construction cost increases over the last two years.

2. Trends by Cost Component

Industrial land costs have increased in most countries, with the greatest increases in Canada and the United Kingdom. Land costs have been stable in France, and have continued their 2004-06 declining trend in Japan and Germany, bringing land costs in these countries more in-line with other international locations.

Industrial construction (building) costs have increased in almost all countries, most significantly in Canada, the US, the UK, and the Netherlands.

Labor cost increases have generally been modest, with cost escalations in Japan, the Netherlands, the US, the UK, and Italy being higher than in other study countries.

Road freight costs have also increased in most jurisdictions, continuing the trend between 2004 and 2006, and reflecting the global increases in diesel fuel costs.

Sea freight and **air freight** rates have generally been stable or declining, reversing the upward trend reported between 2004 and 2006.

Electricity and **natural gas** rates have tended to increase, reflecting the rise in global oil and other energy prices. Trends in some countries differ significantly by area, depending on industry structure and pricing policies.

Telecommunication rates have generally remained stable or declined, continuing the trends seen in previous editions of *Competitive Alternatives*.

Income taxes (effective corporate tax rates) have generally been flat or trending downward, as a number of countries and state/regional jurisdictions continue to implement corporate tax reductions in order to improve their international competitiveness.

EXHIBIT 2.2				
Cost Trends for Returning Countries from the 2006 Study				
	Change in Currency	Cost Index		
		2006 ¹	2008 ¹	Change vs. US ²
EUROPE				
France	+23.7%	95.6	103.6	+8.0
Germany	+23.7%	107.4	116.8	+9.4
Italy	+23.7%	97.8	107.9	+10.1
Netherlands	+23.7%	95.7	107.3	+11.6
United Kingdom	+14.4%	98.1	107.1	+9.0
NORTH AMERICA				
Canada	+17.4%	94.5	99.4	+4.9
United States	-	100.0	100.0	-
ASIA PACIFIC				
Australia	+17.9%	92.3	100.2	+7.9
Japan ³	+5.4%	106.9	114.3	+7.4

¹ Based on exchange rates illustrated in Exhibit 1.5. Results reflect both exchange rate shifts and local cost trends.

² Difference in points between 2006 and 2008 index.

³ Japan's results for 2008 reflect changes since 2006 in the labor costing methodology for Japan.

¹ Caution must be applied in the interpretation of historical trends due to ongoing refinements to the costing methodology used in successive editions of *Competitive Alternatives*.

C. Long-run Cost Trends

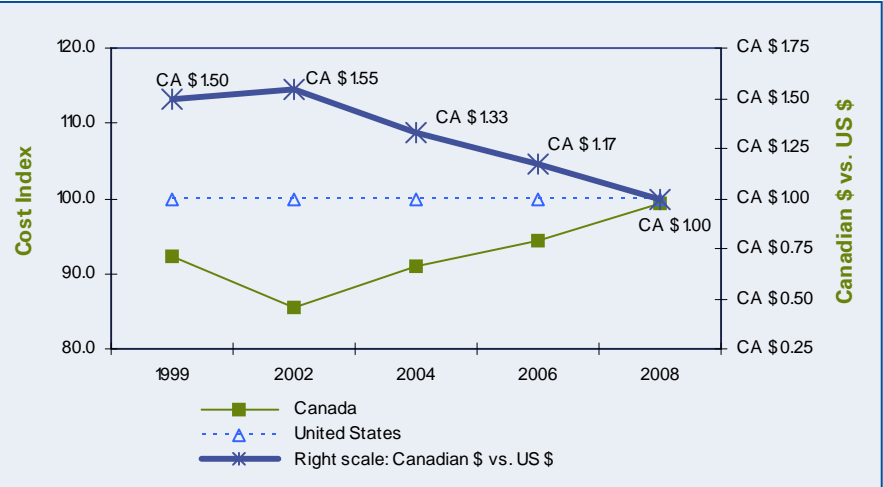
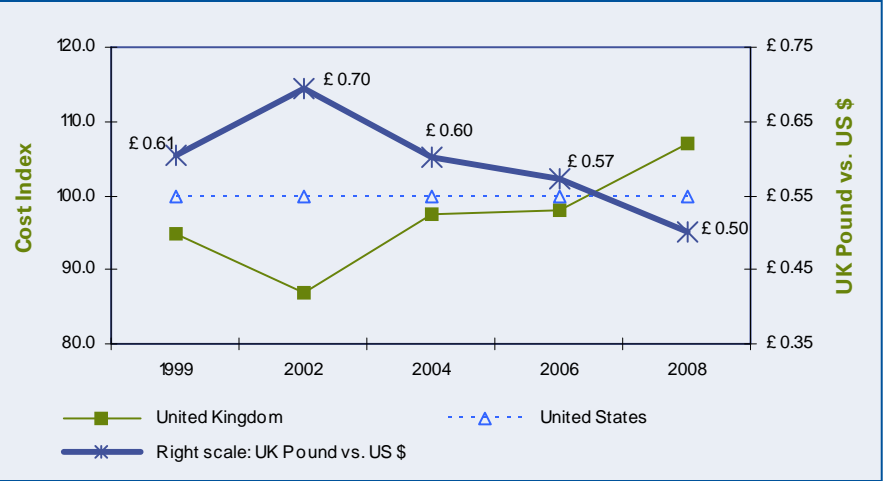
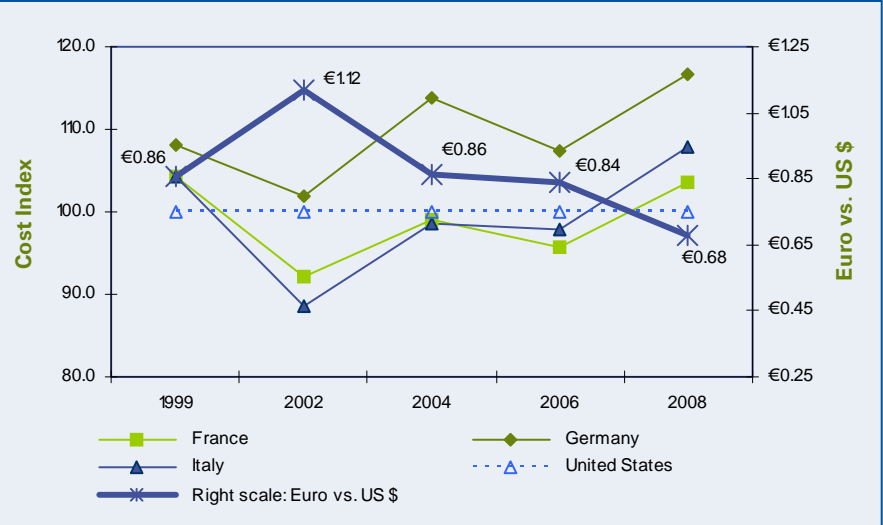
Cost index trends for continuing countries in the five most recent editions of *Competitive Alternatives* are illustrated in Exhibit 2.3. They illustrate the inverse relationship between currency exchange rates and cost competitiveness.

- Euro countries saw a significant gain in their cost-competitiveness between 1999 and 2002, as the value of the euro dropped steeply in the years following its inception on January 1, 1999. Since 2002, the euro countries' cost competitiveness has declined once again, as the euro has strengthened. However, representing a long-term improvement in competitiveness relative to the United States, France and Italy have very similar comparative cost results in 1999 and 2008, despite the fact that the euro is now 18 points stronger against the US dollar than it was in 1999.
- The United Kingdom's general trends have been similar to those of the euro countries, with 2002 being a turning point in both exchange rates and cost index trends. The pound is now at its strongest point in the last decade relative to the US dollar, resulting in the UK reporting business costs higher than the United States for the first time.
- The Canadian dollar has appreciated by approximately one-third against the US dollar since 2002, bringing Canada's exchange rate and business costs virtually to parity with the United States.

These charts also provide insight into long-run trends in underlying cost fundamentals within each country. For example, among the euro countries, France's cost index has risen the least since 2002, reflecting lower inflationary increases in its underlying cost fundamentals, and a slower labor market than in Italy or Germany.

EXHIBIT 2.3

Longer-term Cost Trends for Continuing Countries



D. Sensitivity to Exchange Rates

Exchange rates are a key consideration for business investors when comparing international locations, and the international comparisons provided in this study are sensitive to currency exchange rates. Exhibit 2.4 illustrates the sensitivity of the 2008 results to future shifts in exchange rates.

The percentage impact on business costs (converted to US dollars) is less than the percentage change in exchange rates because:

- Some cost factors—such as major plant equipment, commodity raw materials, and international transportation—are generally priced globally in US dollars. Changes in local exchange rates do not alter the cost of these factors, when expressed in US dollars
- Corporate income taxes tend to dampen the after-tax effects of exchange rate shifts

The analysis presented here reflects the output of the CompetitiveAlternatives.com cost model, which compares all costs in US dollars. While exchange rate changes do not directly vary local business costs in the local currency, they impact international competitiveness when converted to a common currency.

1. European Countries

Based on the 2008 study exchange rates, business costs in the European countries studied range from 3.6 percent (France) to 16.8 percent (Germany) higher than the United States.

A depreciation of 10 percent in the European currencies (euro and pound) relative to the US dollar would bring France's cost index to 99.4, just below the US benchmark. A 20 percent depreciation would bring cost indices for the UK, the Netherlands, and Italy below the US benchmark.

Conversely, if the European currencies were to appreciate by 10 percent relative to the US dollar, an even greater cost disadvantage relative to the United States would result.

EXHIBIT 2.4

Sensitivity of Results to Exchange Rates

	If Local Currency Decreases in Value vs. US \$		2008 Study Results	If Local Currency Increases in Value vs. US \$	
	-20%	-10%	0%	10%	20%
Euro¹	€0.82	€0.75	€0.68	€0.61	€0.54
France	95.9	99.4	103.6	109.1	116.8
Germany	105.7	110.5	116.8	126.2	139.2
Italy	99.2	103.2	107.9	114.2	123.2
Netherlands	97.9	102.1	107.3	114.1	124.5
UK Pound¹	£0.60	£0.55	£0.50	£0.45	£0.40
United Kingdom	97.6	101.8	107.1	114.2	124.1
Canadian Dollar¹	CA \$1.20	CA \$1.10	CA \$1.00	CA \$0.90	CA \$0.80
Canada	91.9	95.3	99.4	104.4	111.1
Mexican Peso¹	MX \$13.04	MX \$11.96	MX \$10.87	MX \$9.78	MX \$8.70
Mexico	74.8	76.9	79.5	82.7	86.7
Australian dollar¹	AU \$1.37	AU \$1.25	AU \$1.14	AU \$1.03	AU \$0.91
Australia	92.2	95.9	100.2	105.6	113.1
Japanese Yen¹	¥133.52	¥122.40	¥111.27	¥100.14	¥89.02
Japan	106.2	109.9	114.3	121.0	131.3

¹ Local currency value per US dollar.

2. Canada and Mexico

Reflecting the strengthening Canadian dollar, Canada's business costs have risen to become virtually equivalent to those in the United States. A further 10 to 20 percent appreciation of the Canadian dollar would place Canada at a cost disadvantage to the United States, in the range of 4.4 to 11.1 percent. Conversely, if the Canadian dollar weakens, this trend would tend to restore a cost advantage for Canada of 4.7 to 8.1 percent.

Mexico's cost competitiveness holds across a wide range of future exchange rates. Even if Mexico's currency were to appreciate by 20 percent against the US dollar, the resulting cost index of 86.7 would still be more than 13 percent lower than the US benchmark. It is also worth noting that, among the countries studied, Mexico's exchange rate has been the most stable relative to the US dollar in recent years.

3. Asia Pacific

Based on 2008 study exchange rates, Australia's cost index of 100.2 is virtually equivalent to the United States. A further appreciation of the Australian dollar by 10 to 20 percent would place Australia at a 5.6 to 13.1 percent business cost disadvantage to the United States, while a similar weakening of the Australian dollar would result in a 4.1 to 7.8 percent cost advantage.

Japan's cost index is higher than the US benchmark over a wide range of exchange rates. Relative to Europe, Japan is cost-competitive with Germany at current exchange rates, but the Japanese yen would have to devalue by 10 to 20 percent vis-à-vis the European currencies to make Japan's cost structures competitive with those of the other European countries.

4. Further Sensitivity Analysis

Further analysis of the impact of exchange rates on the results of this study, as applied to specific cities and industries, can be obtained by visiting the Detailed Results section of the study website at: www.CompetitiveAlternatives.com.

3. Results by Industry and Operation

Chapter 3 details the analysis and results for the 17 industries and representative operations examined in this study.

Exhibit 3.1 identifies each of the 17 industries examined, along with the representative operation that has been modeled for each industry.

The specific operations modeled in this study are also relevant to a wide range of other industries. For example:

- The metal machining operation is relevant to the manufacture of building products (hardware), industrial equipment, agricultural equipment, and transportation equipment
- With the increasing sophistication of many product types, electronics assembly applications are relevant not only to the electronics equipment industry, but also to other industries, such as automotive, aerospace, medical devices, and telecom equipment
- Biomedical R&D is broadly applicable to such industries as biotechnology, pharmaceuticals, agricultural biotechnology, and marine biotechnology. While representing different fields of specialization, these industries also share many common operating parameters

Exhibit 3.1 illustrates further examples of the many types of operations for which the results of this study may be relevant.

EXHIBIT 3.1	
Industries and Modeled Operations	
Industry	Modeled Operations Are Relevant to:
Manufacturing	
Aerospace	Aircraft parts ¹
Agri-food	Food processing ¹ Packaged, dried, or canned food products Confectionery products
Automotive	Auto parts ¹ Auto parts assembly
Chemicals	Specialty chemicals ¹ Specialty adhesives and solvents Specialty fragrances and essences
Electronics	Electronics assembly ¹ Automotive electronics systems Electronics manufacturing services Electro-medical device manufacturing
Medical Devices	Medical device manufacturing ¹
Metal Components	Metal machining ¹ Building products (hardware) Industrial equipment components Agricultural equipment components Transportation equipment components
Pharmaceuticals	Pharmaceutical production ¹ Prescription drug manufacturing Non-prescription drug manufacturing Vitamin and health-supplement manufacturing
Plastics	Plastic products ¹ Plastic auto parts Electronic device casings Furniture components
Precision Manufacturing	Precision components ¹ Engine parts manufacturing Precision component casings and housings
Telecommunications	Telecom equipment ¹
R&D	
Biotechnology	Biomedical R&D ¹ Agri-food R&D Marine biotech R&D Pharmaceutical R&D
Clinical Trials	Clinical trials management ¹ Phase II/III clinical trials
Product Testing	Electronics systems development and testing ¹ Aerospace systems R&D and testing Telecom systems R&D and testing
Software	
Software Design	Advanced software ¹ Digital animation development Biometric applications development Voice recognition applications development
Web and Multimedia	Content development ¹ (Web, multimedia, etc.) Multimedia content development Routine software maintenance
Corporate Services	
Back Office/Call Centers	Shared services center ¹ Call center Back office facilities Data processing center

¹ Indicates the representative operation modeled in each study.

A. Manufacturing

1. Aerospace

The aerospace industry produces commercial and military aircraft and parts, military weapons, space rockets, and satellites. The Aerospace Industries Association of America estimates that revenues for the US aerospace industry totaled almost \$200 billion in 2007.

a) Representative Operation – Aircraft Parts

The membership of the Aerospace Industries Association of America (excluding aircraft assemblers and service providers) comprises approximately 45 percent precision metal component manufacturers, 40 percent electronic assemblers, and 15 percent plastics producers. The representative operation modeled, a manufacturer of aircraft parts, is based on this mix of production.

As outlined in Exhibit 3.2, this type of operation is characterized by:

- Moderate land, building, and equipment requirements
- A workforce consisting primarily of skilled technicians and operators
- Moderate energy requirements

The business is assumed to operate as a stand-alone profit center.

b) International Results

International results are illustrated in Exhibit 3.3. These results reflect the combined impact of 27 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.4.

c) Selected Cities

Exhibit 3.5 profiles results for selected cities, by country, from among the 102 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.10.

EXHIBIT 3.2 – AEROSPACE	
Aircraft Parts Manufacturing – Summary of Operating Parameters	
Facilities Requirements	
Industrial site purchased	8 acres (3.2 hectares)
Size of factory built	76,500 ft ² (7,107 m ²)
Other Initial Investment Requirements	
Machinery and equipment – US \$'000	\$4,847
Office equipment – US \$'000	\$209
R&D equipment – US \$'000	\$300
Inventory – US \$'000	\$1,585
Equity financing - % of project costs	50.25%
Workforce	
Management	4
Sales and administration	10
Production/non-dedicated product development	
- Professional, technical	23
- Operators	38
- Unskilled laborers	7
Other	3
Total employees	85
Energy Requirements	
Electricity monthly consumption/peak demand	177,000 kWh and 675 kW
Gas monthly consumption	4,250 CCF (12,035 m ³)
Other Annual Operating Characteristics	
Sales at full production – US \$'000	\$15,500
Materials and other direct costs - % of sales	26%
Other operating costs - % of sales	4%
Investment in tax-eligible R&D - % of sales	1.8%

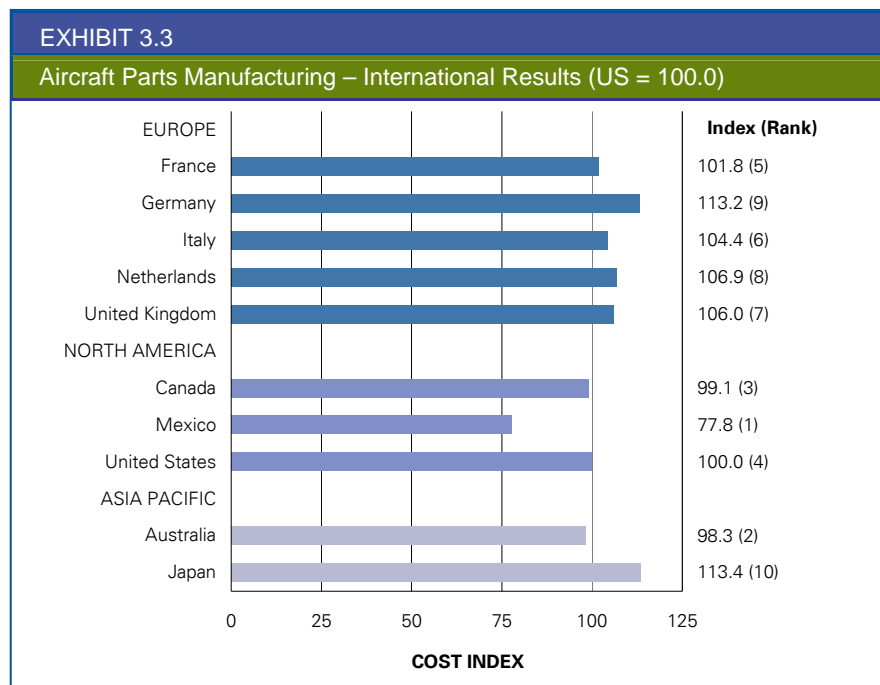


EXHIBIT 3.4 – AEROSPACE

Aircraft Parts Manufacturing – Costs by Major Component, US \$'000

	Europe					North America			Asia Pacific	
	France	Germany	Italy	Netherlands	UK	Canada	Mexico	US	Australia	Japan
Revenues	14,900	14,900	14,900	14,900	14,900	14,900	14,900	14,900	14,900	14,900
Costs										
- Salaries & Wages	3,808	5,798	3,779	5,046	4,475	4,431	2,053	4,072	4,299	5,310
- Statutory Plans	1,614	938	1,237	649	537	379	245	419	555	483
- Other Benefits	770	1,154	985	1,511	1,389	944	465	1,135	913	1,762
- Total Labor & Benefits	6,192	7,890	6,001	7,206	6,402	5,755	2,763	5,626	5,766	7,555
- Transportation	454	514	832	499	442	628	969	861	396	673
- Utilities	294	443	569	412	381	245	341	202	352	404
- Interest & Depreciation	1,208	1,508	1,202	1,467	1,548	1,202	21	1,084	1,133	1,541
- Non-income Taxes	324	141	48	38	477	335	33	225	103	361
- Location-insensitive Costs	4,436	4,436	4,436	4,436	4,436	4,436	4,436	4,436	4,436	4,436
Profit Before Income Tax	1,991	(32)	1,812	944	1,214	2,299	6,337	2,472	2,713	(69)
- Income Taxes ¹	589	85	766	125	375	538	1,752	828	856	76
Effective Rate	29.6%	n/a	42.2%	24.0%	30.9%	23.4%	27.6%	33.8%	31.5%	n/a
After-tax Profit	1,402	(117)	1,047	717	839	1,761	4,585	1,636	1,857	(146)
Total Annual Costs	13,498	15,017	13,853	14,183	14,062	13,140	10,315	13,263	13,043	15,046
Index (US=100.0)	101.8	113.2	104.4	106.9	106.0	99.1	77.8	100.0	98.3	113.4
Rank	5	9	6	8	7	3	1	4	2	10

¹ Income taxes may be either positive or negative, irrespective of whether profit before income tax is positive or negative, due to the impact of specific expense deduction rules, minimum taxes, and refundable income tax credits. Effective tax rates are not shown where results are not meaningful because of low profitability.

EXHIBIT 3.5 – AEROSPACE

Aircraft Parts Manufacturing – Results for Selected Cities, by Country

Country	City	Index	Rank Among 102 Cities	Country	City	Index	Rank Among 102 Cities
France	Toulouse	100.6	51	Canada	Montreal	98.6	39
Italy	Livorno	104.7	80		Toronto	100.8	54
United Kingdom	Manchester	111.2	95		Winnipeg	96.8	24
				Mexico	Monterrey	80.6	4
Australia	Brisbane	97.6	31	United States	Atlanta	97.3	27
	Sydney	101.0	57		Hartford	103.4	73
					Indianapolis	101.9	62
					Oklahoma City	94.5	14
					Phoenix	103.1	70
					Seattle	104.6	79
					St. Louis	101.5	60
					Wichita	99.5	46

2. Agri-food

The agri-food industry encompasses the production of food, beverage, and tobacco products. In the United States alone, the total value of shipments for this industry exceeded \$660 billion in 2006, and the industry provided more than 1.5 million jobs. The industry is highly fragmented, with thousands of small independent food processors competing for market share with some of the world's largest conglomerates.

a) Representative Operation – Food Processing

The representative operation modeled is a small independent food processor, producing medium-value, non-perishable products, such as packed, dried, or canned foods, or confectionary products. As illustrated in Exhibit 3.6, this operation is characterized by:

- Moderate facility and other initial investment requirements
- A workforce with a relatively high proportion of lesser-skilled employees
- Moderate energy requirements

The business is assumed to operate as a stand-alone profit center.

b) International Results

International results are illustrated in Exhibit 3.7. These results reflect the combined impact of 27 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.8.

c) Leading Cities

Exhibit 3.9 profiles results for the leading (lower-cost) cities, by country, from among the 102 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.10.

EXHIBIT 3.6 – AGRIFOOD	
Food Processing – Summary of Operating Parameters	
Facilities Requirements	
Industrial site purchased	5 acres (2 hectares)
Size of factory built	50,000 ft ² (4,645 m ²)
Other Initial Investment Requirements	
Machinery and equipment – US \$'000	\$4,500
Office equipment – US \$'000	\$300
R&D equipment – US \$'000	–
Inventory – US \$'000	\$1,500
Equity financing - % of project costs	33%
Workforce	
Management	6
Sales and administration	12
Production/non-dedicated product development	
- Professional, technical	7
- Operators	65
- Unskilled laborers	17
Other	3
Total employees	110
Energy requirements	
Electricity monthly consumption/peak demand	370,000 kWh and 1,260 kW
Gas monthly consumption	40,000 CCF (113,314 m ³)
Other Annual Operating Characteristics	
Sales at full production – US \$'000	\$34,000
Materials and other direct costs - % of sales	53%
Other operating costs - % of sales	4%
Investment in tax-eligible R&D - % of sales	–

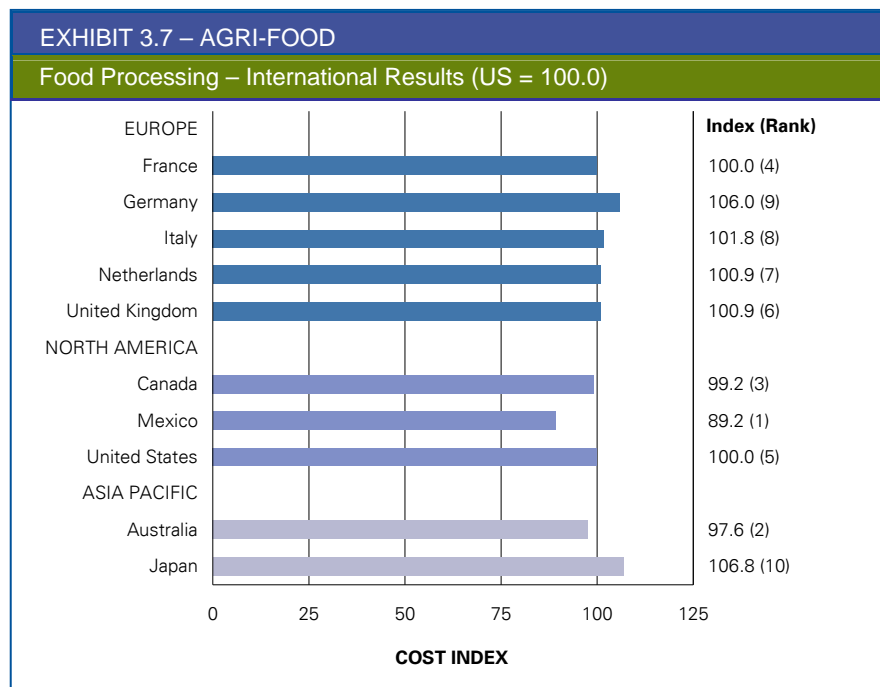


EXHIBIT 3.8 – AGRI-FOOD

Food Processing – Costs, by Major Component, US \$'000

	Europe					North America			Asia Pacific	
	France	Germany	Italy	Netherlands	UK	Canada	Mexico	US	Australia	Japan
Revenues	32,500	32,500	32,500	32,500	32,500	32,500	32,500	32,500	32,500	32,500
Costs										
- Salaries & Wages	4,571	6,962	4,489	6,101	5,456	5,380	2,278	4,893	5,395	6,544
- Statutory Plans	1,947	1,151	1,478	800	660	528	276	660	711	595
- Other Benefits	925	1,361	1,156	1,779	1,713	1,146	559	1,365	1,084	2,193
- Total Labor & Benefits	7,444	9,474	7,123	8,680	7,829	7,055	3,114	6,917	7,191	9,332
- Transportation	927	856	1,433	396	519	1,611	2,666	1,959	665	1,367
- Utilities	1,175	1,627	1,648	1,238	1,258	784	906	700	1,109	1,382
- Interest & Depreciation	893	1,296	994	1,109	1,229	937	(265)	881	710	1,259
- Non-income Taxes	262	104	38	27	373	267	32	247	64	266
- Location-insensitive Costs	18,363	18,363	18,363	18,363	18,363	18,363	18,363	18,363	18,363	18,363
Profit Before Income Tax	3,435	781	2,902	2,687	2,929	3,485	7,685	3,441	4,398	530
- Income Taxes ¹	1,139	295	1,143	670	907	954	2,129	1,140	1,368	285
Effective Rate	33.2%	37.8%	39.4%	24.9%	31.0%	27.4%	27.7%	33.4%	31.1%	53.9%
After-tax Profit	2,296	486	1,759	2,017	2,022	2,531	5,557	2,291	3,030	245
Total Annual Costs	30,203	32,014	30,741	30,483	30,478	29,970	26,944	30,209	29,470	32,255
Index (US=100.0)	100.0	106.0	101.8	100.9	100.9	99.2	89.2	100.0	97.6	106.8
Rank	4	9	8	7	6	3	1	5	2	10

¹ Income taxes may be either positive or negative, irrespective of whether profit before income tax is positive or negative, due to the impact of specific expense deduction rules, minimum taxes, and refundable income tax credits. Effective tax rates are not shown where results are not meaningful because of low profitability.

EXHIBIT 3.9 – AGRI-FOOD

Food Processing – Results for Leading Cities, by Country

Country	City	Index	Rank Among 102 Cities	Country	City	Index	Rank Among 102 Cities
France	Mulhouse	99.8	47	Canada	Sherbrooke	95.8	11
	Toulouse	99.9	51		Waterloo Region	97.5	18
Germany	Halle	104.4	91	Quebec City	97.8	23	
	Frankfurt	106.8	95	Saskatoon	98.2	26	
Italy	Vicenza	100.7	64	Mexico	Reynosa	86.9	1
	Livorno	101.4	74	Aguascalientes	89.6	2	
Netherlands	Utrecht	100.9	67	United States	Lexington	95.0	6
United Kingdom	Barnsley	99.3	41		Greenville-Spartanburg	95.4	7
	Plymouth	100.1	52		Little Rock	95.7	8
Australia	Adelaide	96.4	14		Charleston	95.8	9
	Melbourne	96.5	15		Shreveport	95.8	9
Japan	Fukuoka	105.4	94		Montgomery	96.0	12
	Yokohama	107.0	97		Nashville	96.2	13
					Atlanta	96.6	16
			Jackson	96.7	17		

3. Automotive

The global automotive industry is dominated by world-scale manufacturers, such as Toyota, General Motors, Ford, Chrysler, Honda, Nissan, and others. These manufacturers outsource much of their parts production to larger "Tier 1" suppliers, who in turn often subcontract production to smaller "Tier 2/3" manufacturers. Parts manufacturers may supply both Original Equipment Manufacturers (OEMs) and the replacement parts market.

a) Representative Operation – Auto Parts

Most "Tier 2/3" suppliers manufacture a specialty or some combination of metal components (approximately 75 percent of a vehicle), plastic components (15 percent), and electronic components (10 percent). The representative operation modeled is a "Tier 2/3" supplier of manufactured auto parts assemblies. As illustrated in Exhibit 3.10, this operation is characterized by:

- Moderate facility and other initial investment requirements
- A balanced workforce of skilled and unskilled workers
- Moderate energy requirements

The business is assumed to operate as a stand-alone profit center.

b) International Results

International results are illustrated in Exhibit 3.11. These results reflect the combined impact of 27 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.12.

c) Selected Cities

Exhibit 3.13 profiles results for selected cities, by country, from among the 102 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.10.

EXHIBIT 3.10 – AUTOMOTIVE	
Auto Parts Manufacturing – Summary of Operating Parameters	
Facilities Requirements	
Industrial site purchased	9 acres (3.6 hectares)
Size of factory built	102,000 ft ² (9,476 m ²)
Other Initial Investment Requirements	
Machinery and equipment – US \$'000	\$3,475
Office equipment – US \$'000	\$488
R&D equipment – US \$'000	\$75
Inventory – US \$'000	\$505
Equity financing - % of project costs	47%
Workforce	
Management	4
Sales and administration	15
Production/non-dedicated product development	
- Professional, technical	14
- Operators	42
- Unskilled laborers	18
Other	5
Total employees	98
Energy requirements	
Electricity monthly consumption/peak demand	352,500 kWh and 1,152 kW
Gas monthly consumption	13,295 CCF (37,651 m ³)
Other Annual Operating Characteristics	
Sales at full production – US \$'000	\$18,500
Materials and other direct costs - % of sales	26%
Other operating costs - % of sales	6%
Investment in tax-eligible R&D - % of sales	2.7%

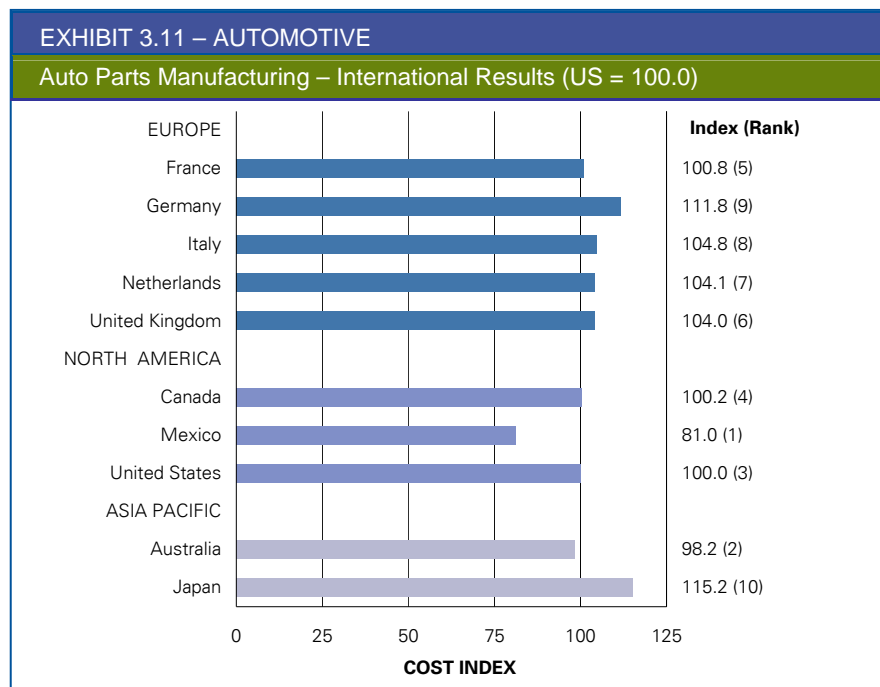


EXHIBIT 3.12 – AUTOMOTIVE

Auto Parts Manufacturing – Costs, by Major Component, US \$'000

	Europe					North America			Asia Pacific	
	France	Germany	Italy	Netherlands	UK	Canada	Mexico	US	Australia	Japan
Revenues	17,600	17,600	17,600	17,600	17,600	17,600	17,600	17,600	17,600	17,600
Costs										
- Salaries & Wages	4,029	6,142	4,058	5,363	4,708	4,698	2,052	4,259	4,663	5,752
- Statutory Plans	1,713	1,012	1,329	703	571	465	247	421	608	526
- Other Benefits	811	1,203	1,059	1,569	1,476	1,001	472	1,188	969	1,884
- Total Labor & Benefits	6,552	8,358	6,446	7,634	6,755	6,165	2,771	5,868	6,240	8,162
- Transportation	779	793	1,188	507	525	1,317	1,883	1,517	621	1,357
- Utilities	650	970	1,158	856	801	501	682	412	736	854
- Interest & Depreciation	1,074	1,420	1,086	1,368	1,438	1,130	(199)	943	1,023	1,536
- Non-income Taxes	334	181	60	51	593	426	35	284	135	417
- Location-insensitive Costs	5,632	5,632	5,632	5,632	5,632	5,632	5,632	5,632	5,632	5,632
Profit Before Income Tax	2,578	247	2,029	1,720	1,857	2,430	6,796	2,953	3,213	(358)
- Income Taxes ¹	776	162	846	257	549	532	1,894	1,011	997	83
Effective Rate	30.1%	n/a	41.7%	24.7%	29.5%	21.9%	27.9%	34.6%	31.0%	n/a
After-tax Profit	1,801	85	1,184	1,295	1,308	1,898	4,902	1,933	2,217	(441)
Total Annual Costs	15,799	17,516	16,417	16,305	16,292	15,702	12,698	15,667	15,384	18,041
Index (US=100.0)	100.8	111.8	104.8	104.1	104.0	100.2	81.0	100.0	98.2	115.2
Rank	5	9	8	7	6	4	1	3	2	10

¹ Income taxes may be either positive or negative, irrespective of whether profit before income tax is positive or negative, due to the impact of specific expense deduction rules, minimum taxes, and refundable income tax credits. Effective tax rates are not shown where results are not meaningful because of low profitability.

EXHIBIT 3.13 – AUTOMOTIVE

Auto Parts Manufacturing – Results for Selected Cities, by Country

Country	City	Index	Rank Among 102 Cities	Country	City	Index	Rank Among 102 Cities
France	Mulhouse	100.3	49	Canada	Montreal	98.5	34
	Paris	102.1	63		Sherbrooke	93.2	9
Germany	Erlangen	113.1	96	Toronto	101.1	54	
Italy	Livorno	104.5	81	Waterloo Region	98.2	32	
	Naples	106.6	88	Mexico	Aguascalientes	81.4	2
United Kingdom	Manchester	108.2	90		Monterrey	82.7	4
	Australia	Adelaide	95.9	18	Puebla	81.7	3
Melbourne		96.1	19	Reynosa	77.9	1	
Japan	Hamamatsu	117.9	101	United States	Charleston	93.7	12
					Detroit	104.7	83
					Greenville-Spartanburg	93.0	7
					Jackson	94.9	13
					Lexington	93.4	11
					Montgomery	93.2	8
					Nashville	94.9	14
					Saginaw	100.5	51
					Shreveport	92.4	6
					Youngstown	99.0	38

4. Chemicals

The chemical industry encompasses the production of basic organic and inorganic chemicals, synthetic rubber and fibers, pesticides and fertilizers, pharmaceuticals, paints and adhesives, soaps, and cleaning compounds. In the United States alone, the total value of shipments for the chemicals industry exceeded \$650 billion in 2006, and the industry provided almost 750,000 jobs.

a) Representative Operation – Specialty Chemicals Manufacturing

The representative operation modeled is a smaller producer of specialty chemicals in limited volumes for niche markets, such as the production of industrial and consumer cleaning products, solvents, adhesives, and fragrances. As illustrated in Exhibit 3.14, this operation is characterized by:

- Modest land and building requirements
- Very significant initial machinery and equipment costs
- A workforce consisting almost entirely of professional and technical staff
- Significant raw material and inventory-carrying requirements

The business is assumed to operate as a stand-alone profit center.

b) International Results

International results are illustrated in Exhibit 3.15. These results reflect the combined impact of 27 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.16.

c) Leading Cities

Exhibit 3.17 profiles results for the leading (lower-cost) cities, by country, from among the 102 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.10.

EXHIBIT 3.14 – CHEMICALS	
Specialty Chemicals Manufacturing – Summary of Operating Parameters	
Facilities Requirements	
Industrial site purchased	5 acres (2 hectares)
Size of factory built	50,000 ft ² (4,645 m ²)
Other Initial Investment Requirements	
Machinery and equipment – US \$'000	\$14,000
Office equipment – US \$'000	\$500
R&D equipment – US \$'000	\$500
Inventory – US \$'000	\$5,000
Equity financing - % of project costs	40%
Workforce	
Management	5
Sales and administration	11
Customer support	5
Production/non-dedicated product development	
- Professional, technical	71
- Operators	2
- Unskilled laborers	4
Other	2
Total employees	100
Energy Requirements	
Electricity monthly consumption/peak demand	500,000 kWh and 1,800 kW
Gas monthly consumption	41,300 CCF (117,000 m ³)
Other Annual Operating Characteristics	
Sales at full production – US \$'000	\$30,000
Materials and other direct costs - % of sales	43%
Other operating costs - % of sales	4.0%
Investment in tax-eligible R&D - % of sales	2.10%

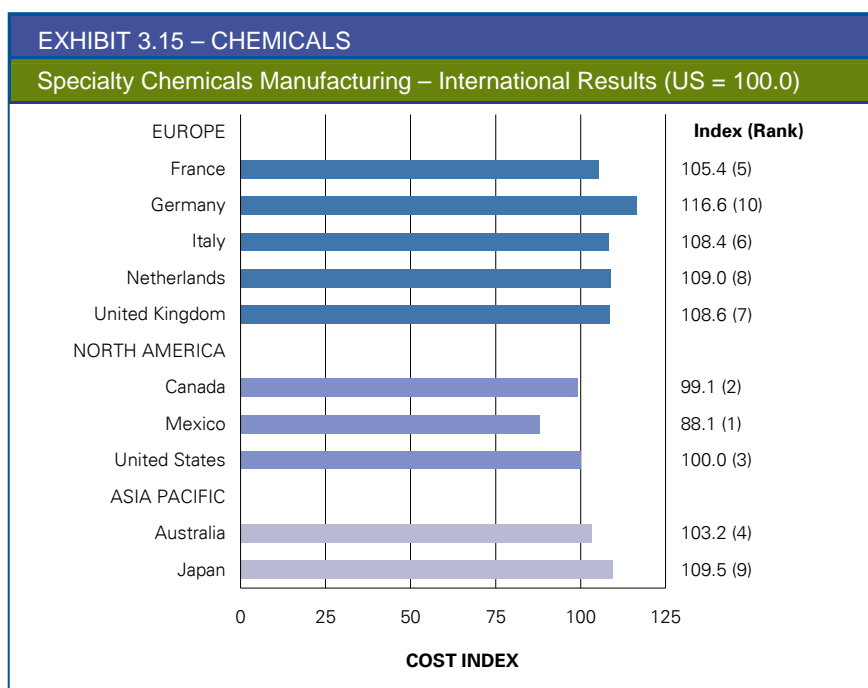


EXHIBIT 3.16 – CHEMICALS

Specialty Chemicals Manufacturing – Costs, by Major Component, US \$'000

	Europe					North America			Asia Pacific	
	France	Germany	Italy	Netherlands	UK	Canada	Mexico	US	Australia	Japan
Revenues	28,950	28,950	28,950	28,950	28,950	28,950	28,950	28,950	28,950	28,950
Costs										
- Salaries & Wages	5,691	8,605	5,800	7,403	6,782	6,188	3,580	5,746	6,294	7,410
- Statutory Plans	2,397	1,308	1,865	853	806	467	455	487	817	700
- Other Benefits	1,144	1,809	1,643	2,417	2,074	1,319	751	1,600	1,485	2,191
- Total Labor & Benefits	9,232	11,722	9,308	10,673	9,662	7,973	4,786	7,833	8,594	10,301
- Transportation	97	107	134	102	101	137	128	125	103	82
- Utilities	1,356	1,915	2,020	1,465	1,503	940	1,158	846	1,343	1,688
- Interest & Depreciation	2,741	3,374	2,870	3,048	3,308	2,541	1,422	2,487	2,769	2,782
- Non-income Taxes	528	104	38	27	373	305	46	348	64	384
- Location-insensitive Costs	13,461	13,461	13,461	13,461	13,461	13,461	13,461	13,461	13,461	13,461
Profit Before Income Tax	1,535	(1,732)	1,119	354	543	3,594	7,949	3,862	2,616	253
- Income Taxes ¹	312	-	683	(115)	161	700	2,185	1,204	823	108
Effective Rate	20.3%	n/a	61.0%	18.6%	29.7%	19.5%	27.5%	31.5%	31.5%	42.8%
After-tax Profit	1,223	(1,732)	437	288	381	2,894	5,764	2,645	1,792	145
Total Annual Costs	27,728	30,682	28,513	28,661	28,569	26,057	23,186	26,304	27,157	28,805
Index (US=100.0)	105.4	116.6	108.4	109.0	108.6	99.1	88.1	100.0	103.2	109.5
Rank	5	10	6	8	7	2	1	3	4	9

¹ Income taxes may be either positive or negative, irrespective of whether profit before income tax is positive or negative, due to the impact of specific expense deduction rules, minimum taxes, and refundable income tax credits. Effective tax rates are not shown where results are not meaningful because of low profitability.

EXHIBIT 3.17 – CHEMICALS

Specialty Chemical Manufacturing – Results for Leading Cities, by Country

Country	City	Index	Rank Among 102 Cities	Country	City	Index	Rank Among 102 Cities
France	Toulouse	104.2	77	Canada	Sherbrooke	96.1	9
	Mulhouse	105.0	83		Moncton	96.5	12
Germany	Halle	113.5	99	Saskatoon	96.5	12	
	Erlangen	116.9	100	St. John's	96.6	14	
Italy	Vicenza	107.6	91	Mexico	Reynosa	86.6	1
	Livorno	108.6	92		Aguascalientes	88.0	2
Netherlands	Utrecht	109.0	93	United States	San Juan	94.3	6
United Kingdom	Barnsley	106.4	87		Shreveport	95.6	7
	Plymouth	106.6	88		McAllen	95.7	8
Australia	Adelaide	101.8	63		Oklahoma City	96.1	10
	Melbourne	101.9	66		Little Rock	96.3	11
Japan	Fukuoka	109.4	95		Lexington	96.9	17
	Yokohama	109.4	96		Montgomery	96.9	19
					Greenville-Spartanburg	97.0	20
			Cheyenne	97.3	22		

5. Electronics

The global size of the electronics assembly industry has been estimated by Electronic Trend Publications as approximately US \$923 billion in 2006. In the United States alone, the value of shipments for the electronics industry in 2006 totaled more than \$390 billion, and the industry provided over 1 million jobs.

a) Representative Operation – Electronics Assembly

This industry manufactures both finished electronic devices and electronic sub-assemblies. Typical products include assembled components and peripheral devices for brand-name manufacturers and distributors of electronic equipment, as well as for manufacturers in other industries who install electronic devices into their own products (e.g., automobile manufacturers).

The representative operation modeled is an electronics sub-assembly plant. As illustrated in Exhibit 3.18, this operation is characterized by:

- Significant land, building, and equipment requirements
- A workforce weighted heavily toward technical employees, plus a mix of skilled and unskilled staff
- Modest energy requirements
- Modest in-house R&D activities

The business is assumed to operate as a stand-alone profit center.

b) International Results

International results are illustrated in Exhibit 3.19. These results reflect the combined impact of 27 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.20.

c) Leading Cities

Exhibit 3.21 profiles results for the leading (lower-cost) cities, by country, from among the 102 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.10.

EXHIBIT 3.18 – ELECTRONICS	
Electronics Assembly – Summary of Operating Parameters	
Facilities Requirements	
Industrial site purchased	14 acres (5.6 hectares)
Size of factory built	120,000 ft ² (11,148 m ²)
Other Initial Investment Requirements	
Machinery and equipment – US \$'000	\$8,000
Office equipment – US \$'000	\$270
R&D equipment – US \$'000	\$750
Inventory – US \$'000	\$1,000
Equity financing - % of project costs	60%
Workforce	
Management	7
Sales and administration	12
Production/non-dedicated product development	
- Professional, technical	46
- Operators	18
- Unskilled laborers	13
Other	4
Total employees	100
Energy Requirements	
Electricity monthly consumption/peak demand	225,000 kWh and 720 kW
Gas monthly consumption	5,600 CCF (15,864 m ³)
Other Annual Operating Characteristics	
Sales at full production – US \$'000	\$19,500
Materials and other direct costs - % of sales	25%
Other operating costs - % of sales	4%
Investment in tax-eligible R&D - % of sales	2.8%

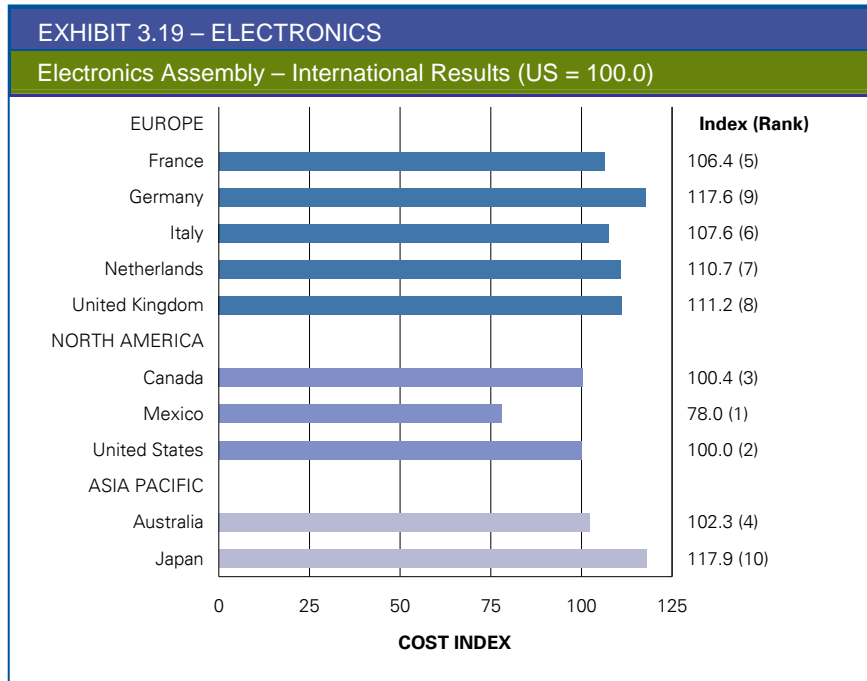


EXHIBIT 3.20 – ELECTRONICS

Electronics Assembly – Costs, by Major Component, US \$'000

	Europe					North America			Asia Pacific	
	France	Germany	Italy	Netherlands	UK	Canada	Mexico	US	Australia	Japan
Revenues	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750
Costs										
- Salaries & Wages	4,732	7,196	4,750	6,217	5,527	5,237	2,676	4,770	5,244	6,507
- Statutory Plans	2,005	1,147	1,544	786	663	397	327	458	682	601
- Other Benefits	966	1,460	1,273	1,926	1,742	1,116	581	1,330	1,172	2,082
- Total Labor & Benefits	7,704	9,803	7,567	8,929	7,931	6,751	3,584	6,558	7,099	9,190
- Transportation	252	264	333	260	295	314	328	288	224	312
- Utilities	390	562	727	525	470	302	442	235	444	572
- Interest & Depreciation	1,792	2,118	1,734	2,083	2,191	1,706	71	1,508	1,617	2,310
- Non-income Taxes	518	215	78	60	737	538	45	332	171	563
- Location-insensitive Costs	5,391	5,391	5,391	5,391	5,391	5,391	5,391	5,391	5,391	5,391
Profit Before Income Tax	2,703	397	2,919	1,692	1,735	3,750	8,889	4,449	3,804	412
- Income Taxes ¹	753	211	1,151	221	533	840	2,451	1,471	1,200	271
Effective Rate	27.9%	53.1%	39.4%	24.4%	30.8%	22.4%	27.6%	33.3%	31.6%	65.6%
After-tax Profit	1,950	186	1,768	1,279	1,202	2,910	6,438	2,967	2,604	142
Total Annual Costs	16,800	18,564	16,982	17,469	17,548	15,841	12,312	15,783	16,147	18,607
Index (US=100.0)	106.4	117.6	107.6	110.7	111.2	100.4	78.0	100.0	102.3	117.9
Rank	5	9	6	7	8	3	1	2	4	10

¹ Income taxes may be either positive or negative, irrespective of whether profit before income tax is positive or negative, due to the impact of specific expense deduction rules, minimum taxes, and refundable income tax credits. Effective tax rates are not shown where results are not meaningful because of low profitability.

EXHIBIT 3.21 – ELECTRONICS

Electronics Assembly – Results for Leading Cities, by Country

Country	City	Index	Rank Among 102 Cities	Country	City	Index	Rank Among 102 Cities
France	Toulouse	104.8	75	Canada	Sherbrooke	94.5	10
	Mulhouse	105.6	79		Charlottetown	94.6	11
Germany	Halle	114.2	95	St. John's	94.9	13	
	Erlangen	118.3	99	Moncton	95.1	15	
Italy	Vicenza	106.6	82	Mexico	Reynosa	75.6	1
	Livorno	107.8	85		Aguascalientes	77.7	2
Netherlands	Utrecht	110.7	93	United States	San Juan	85.7	6
United Kingdom	Plymouth	108.7	87		Shreveport	92.8	7
	Barnsley	108.8	88		McAllen	93.3	8
Australia	Adelaide	100.2	42		Little Rock	94.4	9
	Brisbane	101.3	51		Montgomery	94.8	12
Japan	Fukuoka	117.2	97		Oklahoma City	94.9	14
	Hamamatsu	118.2	98		Greenville-Spartanburg	95.2	16
				Lexington	95.9	18	
				Charleston	96.0	19	

6. Medical Devices

The medical devices industry produces a wide range of medium- and high-technology products, such as prosthetics, artificial joints, stents, and braces. In the United States alone, the medical equipment, technology, and supplies industries, of which medical device manufacturing is one component, provided over 350,000 jobs, and the value of shipments totaled approximately \$100 billion.

a) Representative Operation – Medical Device Manufacturing

The representative operation modeled is a manufacturer of mechanical medical devices such as prosthetics. As illustrated in Exhibit 3.22, this operation is characterized by:

- Moderate facility and equipment requirements
- A workforce strongly weighted toward professional/technical staff and skilled operators
- Modest energy requirements
- Modest in-house R&D activities

The business is assumed to operate as a stand-alone profit center.

b) International Results

International results are illustrated in Exhibit 3.23. These results reflect the combined impact of 27 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.24.

c) Leading Cities

Exhibit 3.25 profiles results for the leading (lower-cost) cities, by country, from among the 102 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.10.

EXHIBIT 3.22 – MEDICAL DEVICES	
Medical Device Manufacturing – Summary of Operating Parameters	
Facilities Requirements	
Industrial site purchased	6 acres (2.4 hectares)
Size of factory built	70,000 ft ² / (6,503 m ²)
Other Initial Investment Requirements	
Machinery and equipment – US \$'000	\$2,700
Office equipment – US \$'000	\$200
R&D equipment – US \$'000	\$300
Inventory – US \$'000	\$2,500
Equity financing - % of project costs	55%
Workforce	
Management	6
Sales and administration	15
Production/non-dedicated product development	
- Professional, technical	29
- Operators	34
- Unskilled laborers	13
Other	3
Total employees	100
Energy Requirements	
Electricity monthly consumption/peak demand	160,000 kWh and 540 kW
Gas monthly consumption	800 CCF (2,266 m ³)
Other Annual Operating Characteristics	
Sales at full production – US \$'000	\$19,500
Materials and other direct costs - % of sales	30%
Other operating costs - % of sales	9%
Investment in tax-eligible R&D - % of sales	3.5%

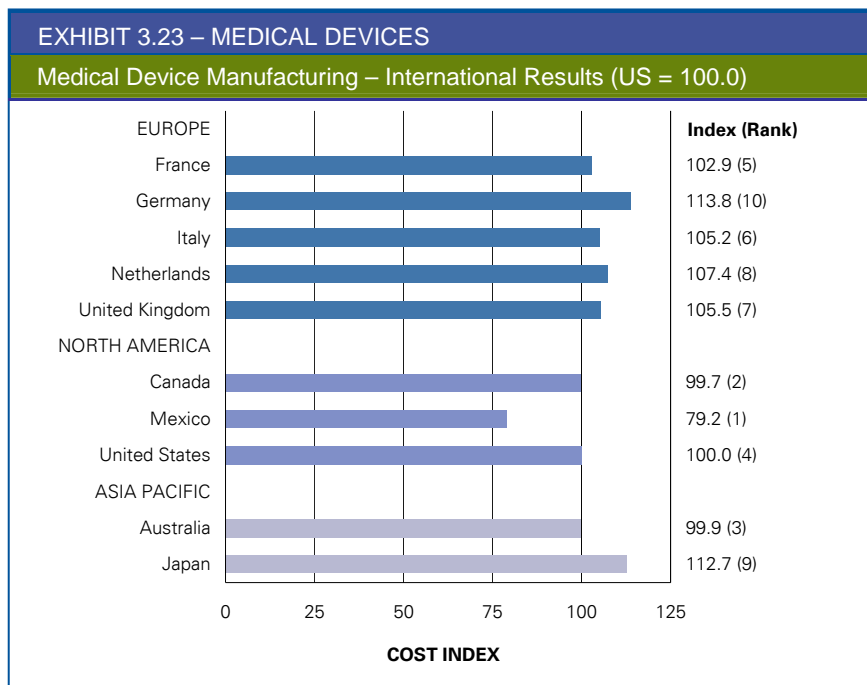


EXHIBIT 3.24 – MEDICAL DEVICES

Medical Device Manufacturing – Costs, by Major Component, US \$'000

	Europe					North America			Asia Pacific	
	France	Germany	Italy	Netherlands	UK	Canada	Mexico	US	Australia	Japan
Revenues	18,500	18,500	18,500	18,500	18,500	18,500	18,500	18,500	18,500	18,500
Costs										
- Salaries & Wages	4,513	6,855	4,543	5,956	5,260	5,206	2,468	4,802	5,048	6,272
- Statutory Plans	1,919	1,098	1,479	750	633	427	302	435	658	577
- Other Benefits	906	1,377	1,218	1,807	1,629	1,109	546	1,339	1,096	2,001
- Total Labor & Benefits	7,338	9,331	7,240	8,513	7,522	6,742	3,317	6,577	6,801	8,849
- Transportation	384	419	527	401	397	548	512	500	405	429
- Utilities	233	329	494	310	283	186	332	145	287	372
- Interest & Depreciation	766	1,122	793	1,014	1,023	728	(576)	630	641	1,119
- Non-income Taxes	249	131	47	35	433	333	36	247	89	316
- Location-insensitive Costs	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215
Profit Before Income Tax	2,316	(47)	2,184	1,194	1,629	2,749	7,664	3,197	3,061	200
- Income Taxes ¹	662	91	908	110	404	577	2,138	1,065	917	157
Effective Rate	28.6%	n/a	41.6%	24.6%	24.8%	21.0%	27.9%	33.7%	30.0%	n/a
After-tax Profit	1,654	(139)	1,276	900	1,224	2,172	5,526	2,121	2,144	43
Total Annual Costs	16,847	18,638	17,223	17,598	17,277	16,328	12,974	16,379	16,356	18,458
Index (US=100.0)	102.9	113.8	105.2	107.4	105.5	99.7	79.2	100.0	99.9	112.7
Rank	5	10	6	8	7	2	1	4	3	9

¹ Income taxes may be either positive or negative, irrespective of whether profit before income tax is positive or negative, due to the impact of specific expense deduction rules, minimum taxes, and refundable income tax credits. Effective tax rates are not shown where results are not meaningful because of low profitability.

EXHIBIT 3.25 – MEDICAL DEVICES

Medical Device Manufacturing – Results for Leading Cities, by Country

Country	City	Index	Rank Among 102 Cities	Country	City	Index	Rank Among 102 Cities
France	Toulouse	101.4	58	Canada	Sherbrooke	94.8	9
	Mulhouse	102.2	63		Moncton	95.3	11
Germany	Halle	110.5	95	Fredericton	95.9	15	
	Erlangen	114.3	100	Charlottetown	96.1	16	
Italy	Vicenza	104.1	80	Mexico	Reynosa	76.9	1
	Livorno	105.5	85		Aguascalientes	79.1	2
Netherlands	Utrecht	107.4	90	United States	San Juan	87.1	6
United Kingdom	Barnsley	102.8	71		Shreveport	93.3	7
	Plymouth	103.3	74		McAllen	93.8	8
Australia	Adelaide	98.2	33		Little Rock	95.2	10
	Brisbane	99.2	38		Oklahoma City	95.5	12
Japan	Fukuoka	111.9	97		Greenville-Spartanburg	95.6	13
	Yokohama	113.0	98		Montgomery	95.8	14
					Jackson	96.5	17
				Lexington	96.6	18	

7. Metal Components

The fabricated metal products industry encompasses both a wide range of products and production techniques, producing metal components for such applications as building products (hardware), automotive, agricultural, drilling/mining, transportation, appliances, and others. In the United States alone, the value of shipments for this industry totaled over \$315 billion in 2006, up 9.6 percent from 2005, and the industry provided over 1.5 million jobs.

a) Representative Operation – Metal Machining

The representative operation modeled is a small manufacturer of metal building products using machining tools. As illustrated in Exhibit 3.26, this operation is characterized by:

- Moderate facility and other initial investment requirements
- A workforce with some professional/technical positions, many skilled operators, and some unskilled positions
- Substantial energy requirements

The business is assumed to operate as a stand-alone profit center.

b) International Results

International results are illustrated in Exhibit 3.27. These results reflect the combined impact of 27 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.28.

c) Leading Cities

Exhibit 3.29 profiles results for the leading (lower-cost) cities, by country, from among the 102 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.10.

EXHIBIT 3.26 – METAL COMPONENTS	
Metal Machining – Summary of Operating Parameters	
Facilities Requirements	
Industrial site purchased	8 acres (3.2 hectares)
Size of factory built	100,000 ft ² (9,290 m ²)
Other Initial Investment Requirements	
Machinery and equipment – US \$'000	\$3,130
Office equipment – US \$'000	\$570
R&D equipment – US \$'000	–
Inventory – US \$'000	\$400
Equity financing - % of project costs	50%
Workforce	
Management	4
Sales and administration	16
Production/non-dedicated product development	
- Professional, technical	10
- Operators	46
- Unskilled laborers	19
Other	5
Total employees	100
Energy Requirements	
Electricity monthly consumption/peak demand	360,000 kWh and 1,170 kW
Gas monthly consumption	15,200 CCF (43,059 m ³)
Other Annual Operating Characteristics	
Sales at full production – US \$'000	\$19,000
Materials and other direct costs - % of sales	30%
Other operating costs - % of sales	4%
Investment in tax-eligible R&D - % of sales	–

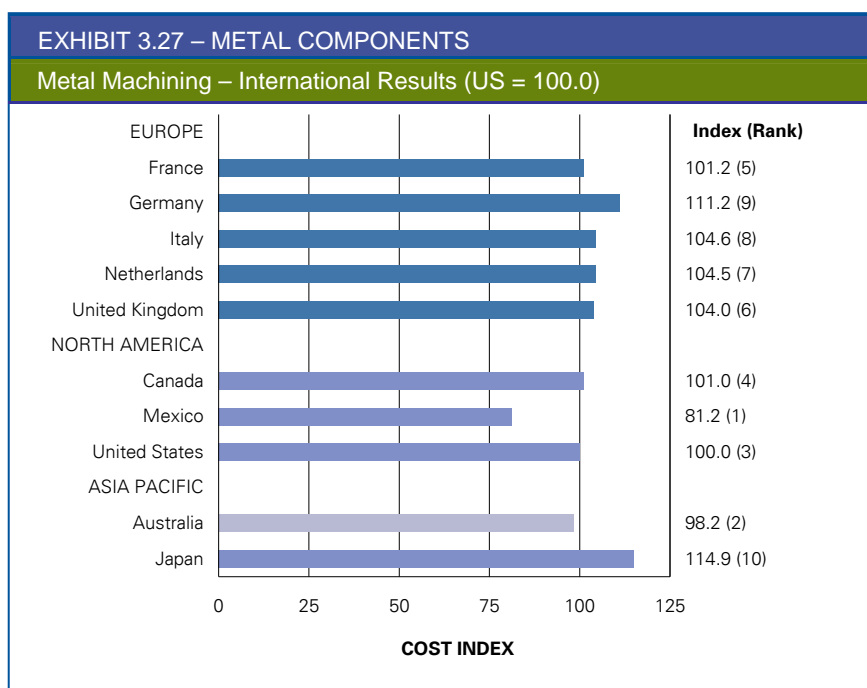


EXHIBIT 3.28 – METAL COMPONENTS

Metal Machining – Costs, by Major Component, US \$'000

	Europe					North America			Asia Pacific	
	France	Germany	Italy	Netherlands	UK	Canada	Mexico	US	Australia	Japan
Revenues	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300
Costs										
- Salaries & Wages	4,092	6,236	4,119	5,455	4,794	4,793	2,057	4,344	4,768	5,866
- Statutory Plans	1,741	1,032	1,351	718	582	479	248	455	623	536
- Other Benefits	822	1,217	1,072	1,584	1,502	1,021	479	1,211	979	1,929
- Total Labor & Benefits	6,655	8,485	6,542	7,757	6,878	6,293	2,783	6,010	6,370	8,331
- Transportation	800	814	1,231	510	530	1,373	1,977	1,587	641	1,407
- Utilities	701	1,038	1,222	910	851	532	718	442	781	914
- Interest & Depreciation	966	1,299	976	1,262	1,293	1,027	(354)	838	876	1,452
- Non-income Taxes	318	177	57	49	572	395	34	248	130	412
- Location-insensitive Costs	6,131	6,131	6,131	6,131	6,131	6,131	6,131	6,131	6,131	6,131
Profit Before Income Tax	2,729	356	2,141	1,682	2,044	2,549	7,011	3,052	3,371	(347)
- Income Taxes ¹	924	194	898	415	705	727	1,956	1,052	1,083	98
Effective Rate	33.9%	54.3%	42.0%	24.7%	34.5%	28.5%	27.9%	34.7%	32.1%	n/a
After-tax Profit	1,805	163	1,242	1,267	1,339	1,822	5,055	1,993	2,288	(445)
Total Annual Costs	16,496	18,137	17,058	17,034	16,960	16,478	13,244	16,308	16,012	18,745
Index (US=100.0)	101.2	111.2	104.6	104.5	104.0	101.0	81.2	100.0	98.2	114.9
Rank	5	9	8	7	6	4	1	3	2	10

¹ Income taxes may be either positive or negative, irrespective of whether profit before income tax is positive or negative, due to the impact of specific expense deduction rules, minimum taxes, and refundable income tax credits. Effective tax rates are not shown where results are not meaningful because of low profitability.

EXHIBIT 3.29 – METAL COMPONENTS

Metal Machining – Results for Leading Cities, by Country

Country	City	Index	Rank Among 102 Cities	Country	City	Index	Rank Among 102 Cities
France	Mulhouse	100.6	51	Canada	Sherbrooke	94.1	12
	Paris	102.3	65		Quebec City	97.6	25
Germany	Halle	108.1	91	Charlottetown	98.8	32	
	Erlangen	112.5	96	Waterloo Region	98.8	33	
Italy	Vicenza	103.0	71	Mexico	Reynosa	78.1	1
	Livorno	104.2	80	Aguascalientes	81.6	2	
Netherlands	Utrecht	104.5	82	United States	Shreveport	92.5	6
United Kingdom	Barnsley	101.5	58		Greenville-Spartanburg	92.9	7
	Plymouth	102.4	66		Lexington	93.2	8
Australia	Adelaide	96.0	18		Montgomery	93.2	9
	Melbourne	96.1	19		Little Rock	93.3	10
Japan	Fukuoka	111.9	95		Charleston	93.8	11
	Yokohama	115.3	100		Nashville	94.8	13
				Jackson	94.9	14	
			Atlanta	94.9	15		

8. Pharmaceuticals

In 2005, the pharmaceutical industry had estimated global sales of more than \$600 billion. In the United States alone, the value of shipments for the industry totaled over \$180 billion in 2006, up 9.1 percent from 2005. Production facilities may be owned by pharmaceuticals firms, or by independent firms producing brand-name drugs (under license) and/or generic products.

a) Representative Operation – Pharmaceutical Production

The representative operation modeled is an independent plant producing prescription drugs on behalf of brand-name and/or generic distributors. As illustrated in Exhibit 3.30, this operation is characterized by:

- Substantial facility and equipment requirements
- A workforce weighted toward skilled operators, but also including a significant number of both professional/technical employees and unskilled staff
- Moderate energy requirements
- Modest in-house R&D activities

The business is assumed to operate as a stand-alone profit center.

b) International Results

International results are illustrated in Exhibit 3.31. These results reflect the combined impact of 27 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.32.

c) Leading Cities

Exhibit 3.33 profiles results for the leading (lower-cost) cities, by country, from among the 102 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.10.

EXHIBIT 3.30 – PHARMACEUTICALS	
Pharmaceutical Production – Summary of Operating Parameters	
Facilities Requirements	
Industrial site purchased	6 acres (2.4 hectares)
Size of factory built	70,000 ft ² (6,503 m ²)
Other Initial Investment Requirements	
Machinery and equipment – US \$'000	\$6,000
Office equipment – US \$'000	\$200
R&D equipment – US \$'000	\$500
Inventory – US \$'000	\$2,000
Equity financing - % of project costs	50%
Workforce	
Management	7
Sales and administration	16
Production/non-dedicated product development	
- Professional, technical	30
- Operators	43
- Unskilled laborers	20
Other	4
Total employees	120
Energy Requirements	
Electricity monthly consumption/peak demand	160,000 kWh and 540 kW
Gas monthly consumption	800 CCF (2,266 m ³)
Other Annual Operating Characteristics	
Sales at full production – US \$'000	\$25,500
Materials and other direct costs - % of sales	30%
Other operating costs - % of sales	15%
Investment in tax-eligible R&D - % of sales	2.6%

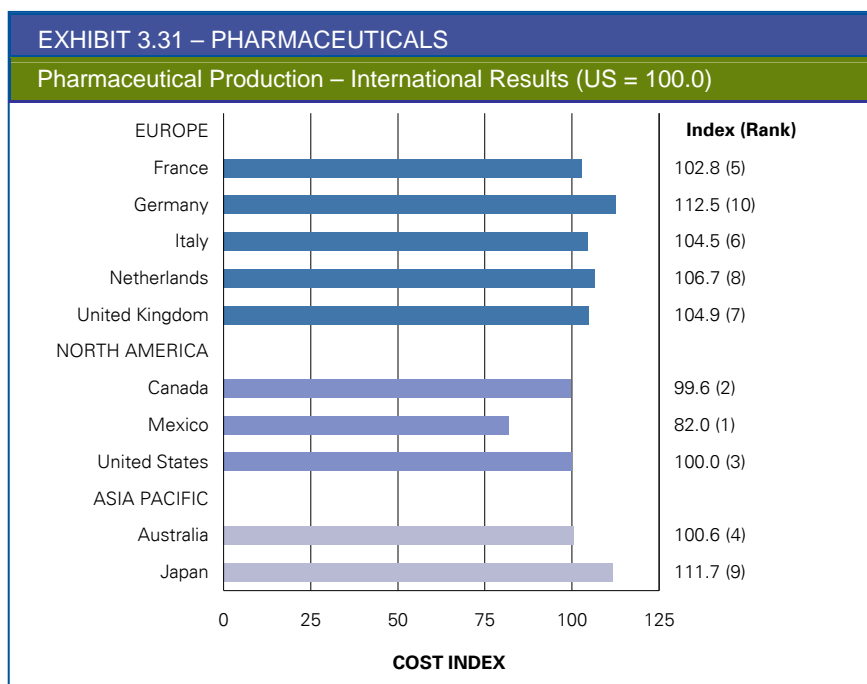


EXHIBIT 3.32 – PHARMACEUTICALS

Pharmaceutical Production – Costs, by Major Component, US \$'000

	Europe					North America			Asia Pacific	
	France	Germany	Italy	Netherlands	UK	Canada	Mexico	US	Australia	Japan
Revenues	24,250	24,250	24,250	24,250	24,250	24,250	24,250	24,250	24,250	24,250
Costs										
- Salaries & Wages	5,218	7,949	5,207	6,919	6,046	5,905	2,770	5,376	5,875	7,354
- Statutory Plans	2,221	1,291	1,704	889	730	497	342	495	773	676
- Other Benefits	1,053	1,579	1,378	2,068	1,892	1,258	618	1,499	1,260	2,380
- Total Labor & Benefits	8,491	10,819	8,289	9,876	8,669	7,661	3,730	7,370	7,907	10,409
- Transportation	473	517	656	494	491	681	638	621	496	529
- Utilities	241	333	502	315	287	188	346	147	293	392
- Interest & Depreciation	1,278	1,693	1,306	1,558	1,559	1,214	(259)	1,119	1,171	1,633
- Non-income Taxes	345	131	47	35	433	397	40	383	89	367
- Location-insensitive Costs	10,913	10,913	10,913	10,913	10,913	10,913	10,913	10,913	10,913	10,913
Profit Before Income Tax	2,509	(157)	2,536	1,338	1,899	3,197	8,843	3,710	3,381	8
- Income Taxes ¹	645	88	1,038	46	486	637	2,445	1,218	1,027	87
Effective Rate	25.7%	n/a	40.9%	24.4%	25.6%	19.9%	27.6%	33.2%	30.4%	n/a
After-tax Profit	1,864	(244)	1,498	1,012	1,413	2,560	6,399	2,480	2,355	(79)
Total Annual Costs	22,386	24,494	22,751	23,237	22,837	21,690	17,851	21,771	21,895	24,329
Index (US=100.0)	102.8	112.5	104.5	106.7	104.9	99.6	82.0	100.0	100.6	111.7
Rank	5	10	6	8	7	2	1	3	4	9

¹ Income taxes may be either positive or negative, irrespective of whether profit before income tax is positive or negative, due to the impact of specific expense deduction rules, minimum taxes, and refundable income tax credits. Effective tax rates are not shown where results are not meaningful because of low profitability.

EXHIBIT 3.33 – PHARMACEUTICALS

Pharmaceutical Production – Results for Leading Cities, by Country

Country	City	Index	Rank Among 102 Cities	Country	City	Index	Rank Among 102 Cities
France	Toulouse	101.6	59	Canada	Sherbrooke	95.4	9
	Mulhouse	102.3	69		Moncton	95.7	10
Germany	Halle	109.5	95	Fredericton	96.1	13	
	Erlangen	113.0	100	Charlottetown	96.8	16	
Italy	Vicenza	103.5	80	Mexico	Reynosa	80.0	1
	Livorno	104.8	86		Aguascalientes	82.0	2
Netherlands	Utrecht	106.7	91	United States	San Juan	88.4	6
United Kingdom	Barnsley	102.6	72		Shreveport	94.5	7
	Plymouth	103.1	74		McAllen	94.6	8
Australia	Adelaide	99.2	36		Little Rock	95.9	11
	Brisbane	100.0	44		Oklahoma City	96.0	12
Japan	Fukuoka	111.0	97		Greenville-Spartanburg	96.3	14
	Yokohama	112.0	98		Montgomery	96.3	15
				Lexington	97.0	18	
				Charleston	97.1	20	

9. Plastics

The plastic products industry encompasses a wide range of products, including bags, films, pipes, bottles, coverings, foam products, and more. In the United States alone, the value of shipments for the plastic products industry totaled almost \$175 billion in 2006, up 6.3 percent from 2005, and the industry provided over 700,000 jobs. Typical firms range from large, high-volume manufacturers of standard products to small-volume contract manufacturers.

a) Representative Operation – Plastic Product Manufacturing

The representative operation modeled is an independent plastic products manufacturer. As illustrated in Exhibit 3.34, this operation is characterized by:

- Substantial land and building requirements, with moderate equipment requirements
- A workforce mix weighted toward skilled operators
- Relatively high energy requirements

The business is assumed to operate as a stand-alone profit center.

b) International Results

International results are illustrated in Exhibit 3.35. These results reflect the combined impact of 27 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.36.

c) Leading Cities

Exhibit 3.37 profiles results for the leading (lower-cost) cities, by country, from among the 102 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.10.

EXHIBIT 3.34 – PLASTICS	
Plastic Product Manufacturing – Summary of Operating Parameters	
Facilities Requirements	
Industrial site purchased	10 acres (4 hectares)
Size of factory built	100,000 ft ² (9,290 m ²)
Other Initial Investment Requirements	
Machinery and equipment – US \$'000	\$1,980
Office equipment – US \$'000	\$220
R&D equipment – US \$'000	–
Inventory – US \$'000	\$700
Equity financing - % of project costs	25%
Workforce	
Management	3
Sales and administration	11
Production/non-dedicated product development	
- Professional, technical	12
- Operators	46
- Unskilled laborers	15
Other	3
Total employees	90
Energy Requirements	
Electricity monthly consumption/peak demand	400,000 kWh and 1,350 kW
Gas monthly consumption	8,900 CCF (25,205 m ³)
Other Annual Operating Characteristics	
Sales at full production – US \$'000	\$20,000
Materials and other direct costs - % of sales	33%
Other operating costs - % of sales	4%
Investment in tax-eligible R&D - % of sales	–

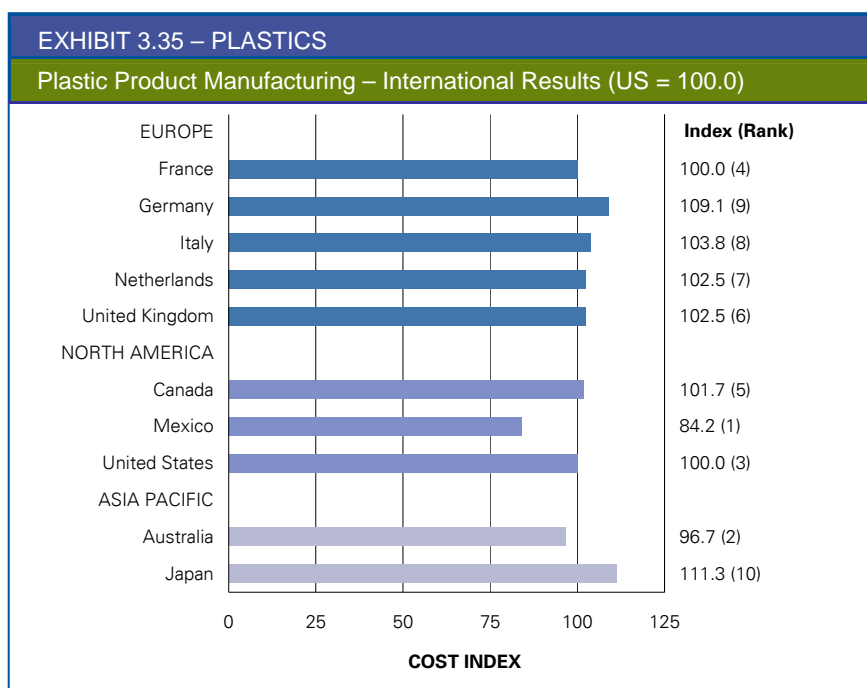


EXHIBIT 3.36 – PLASTICS

Plastic Product Manufacturing – Costs, by Major Component, US \$'000

	Europe					North America			Asia Pacific	
	France	Germany	Italy	Netherlands	UK	Canada	Mexico	US	Australia	Japan
Revenues	19,200	19,200	19,200	19,200	19,200	19,200	19,200	19,200	19,200	19,200
Costs										
- Salaries & Wages	3,725	5,691	3,691	4,987	4,299	4,377	1,904	3,979	4,249	5,322
- Statutory Plans	1,581	934	1,213	650	521	434	227	449	551	483
- Other Benefits	747	1,111	948	1,438	1,334	933	433	1,110	885	1,765
- Total Labor & Benefits	6,054	7,736	5,852	7,074	6,154	5,744	2,565	5,538	5,685	7,570
- Transportation	1,242	1,270	1,839	861	866	2,022	2,600	2,119	935	1,700
- Utilities	608	951	1,192	837	802	509	697	409	743	833
- Interest & Depreciation	973	1,289	967	1,290	1,399	1,098	(245)	818	940	1,392
- Non-income Taxes	290	178	61	49	595	411	34	242	137	380
- Location-insensitive Costs	7,008	7,008	7,008	7,008	7,008	7,008	7,008	7,008	7,008	7,008
Profit Before Income Tax	3,024	767	2,280	2,080	2,376	2,408	6,542	3,073	3,752	318
- Income Taxes ¹	1,034	336	939	519	801	696	1,833	1,069	1,191	262
Effective Rate	34.2%	43.8%	41.2%	25.0%	33.7%	28.9%	28.0%	35.1%	31.7%	n/a
After-tax Profit	1,991	431	1,341	1,561	1,575	1,712	4,709	1,996	2,561	55
Total Annual Costs	17,209	18,768	17,858	17,638	17,626	17,489	14,492	17,204	16,639	19,145
Index (US=100.0)	100.0	109.1	103.8	102.5	102.5	101.7	84.2	100.0	96.7	111.3
Rank	4	9	8	7	6	5	1	3	2	10

¹ Income taxes may be either positive or negative, irrespective of whether profit before income tax is positive or negative, due to the impact of specific expense deduction rules, minimum taxes, and refundable income tax credits. Effective tax rates are not shown where results are not meaningful because of low profitability.

EXHIBIT 3.37 – PLASTICS

Plastics Product Manufacturing – Results for Leading Cities, by Country

Country	City	Index	Rank Among 102 Cities	Country	City	Index	Rank Among 102 Cities
France	Mulhouse	99.5	38	Canada	Sherbrooke	94.1	12
	Toulouse	99.5	39		Quebec City	97.9	27
Germany	Halle	106.3	89	Waterloo Region	98.6	33	
	Erlangen	110.4	95	Montreal	98.7	34	
Italy	Vicenza	102.4	67	Mexico	Reynosa	81.2	1
	Livorno	103.2	77		Aguascalientes	84.5	2
Netherlands	Utrecht	102.5	68	United States	Greenville-Spartanburg	92.3	6
United Kingdom	Barnsley	100.4	48		Shreveport	92.7	7
	Plymouth	101.3	57		Montgomery	92.7	8
Australia	Melbourne	94.4	15		Lexington	92.8	9
	Adelaide	94.6	16		Little Rock	93.4	10
Japan	Fukuoka	108.8	93		Charleston	93.6	11
	Yokohama	111.9	97		Atlanta	94.3	13
					Nashville	94.4	14
			Jackson	94.9	17		

10. Precision Manufacturing

Precision manufacturing is a process-related concept, rather than being defined by specific industry definitions or products.

Applications that require precision manufacturing exist in many industries and operations, including aerospace (aircraft parts and engines), R&D (laboratory and testing equipment), and automotive (auto engine parts), among others.

a) Representative Operation – Precision Component Manufacturing

The representative operation modeled is a small-volume manufacturer of high-value metal products with very low tolerance (e.g., a producer of precision components, casings, and housings). As illustrated in Exhibit 3.38, this operation is characterized by:

- Moderate land, building, and equipment requirements
- A workforce consisting almost entirely of highly skilled operators
- Modest energy requirements

The business is assumed to operate as a stand-alone profit center.

b) International Results

International results are illustrated in Exhibit 3.39. These results reflect the combined impact of 27 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.40.

c) Leading Cities

Exhibit 3.41 profiles results for the leading (lower-cost) cities, by country, from among the 102 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.10.

EXHIBIT 3.38 – PRECISION MANUFACTURING	
Precision Component Manufacturing – Summary of Operating Parameters	
Facilities Requirements	
Industrial site purchased	3 acres (1.2 hectares)
Size of factory built	30,000 ft ² (2,790 m ²)
Other Initial Investment Requirements	
Machinery and equipment – US \$'000	\$3,000
Office equipment – US \$'000	\$150
R&D equipment – US \$'000	–
Inventory – US \$'000	\$2,400
Equity financing - % of project costs	50%
Workforce	
Management	3
Sales and administration	3
Production/non-dedicated product development	
- Professional, technical	7
- Operators	55
- Unskilled laborers	1
Other	1
Total employees	70
Energy Requirements	
Electricity monthly consumption/peak demand	60,000 kWh and 410 kW
Gas monthly consumption	1,500 CCF (4,249 m ³)
Other Annual Operating Characteristics	
Sales at full production – US \$'000	\$10,500
Materials and other direct costs - % of sales	24%
Other operating costs - % of sales	3%
Investment in tax-eligible R&D - % of sales	1.3%

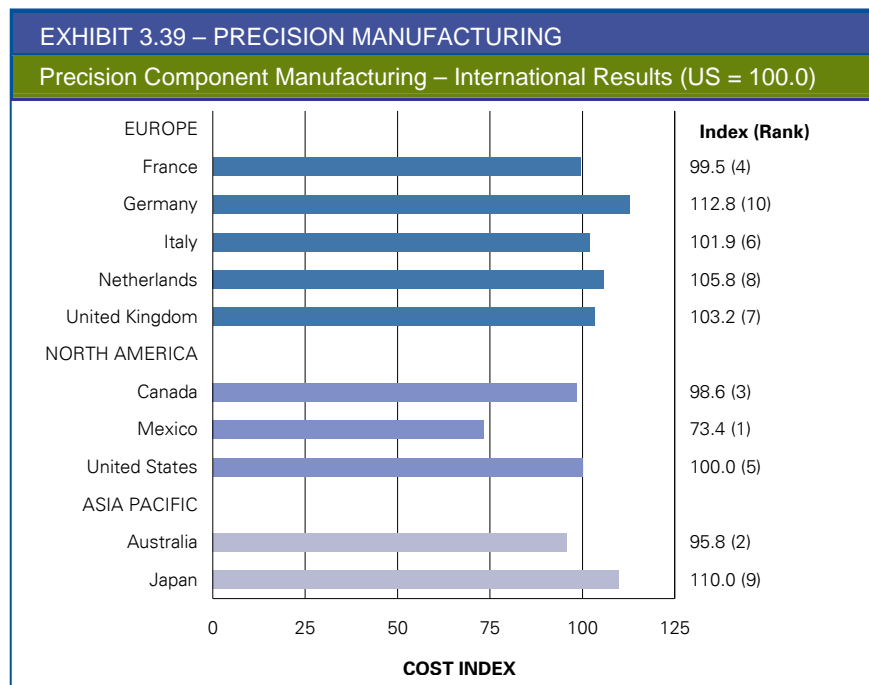


EXHIBIT 3.40 – PRECISION MANUFACTURING

Precision Component Manufacturing – Costs, by Major Component, US \$' 000

	Europe					North America			Asia Pacific	
	France	Germany	Italy	Netherlands	UK	Canada	Mexico	US	Australia	Japan
Revenues	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300
Costs										
- Salaries & Wages	3,035	4,629	2,960	4,061	3,613	3,678	1,597	3,391	3,536	4,267
- Statutory Plans	1,287	753	974	525	433	315	180	379	452	382
- Other Benefits	613	906	744	1,181	1,109	784	391	946	708	1,488
- Total Labor & Benefits	4,936	6,288	4,678	5,767	5,154	4,777	2,168	4,717	4,696	6,138
- Transportation	304	352	609	345	300	463	687	610	218	199
- Utilities	121	178	260	166	138	104	120	90	130	177
- Interest & Depreciation	640	912	685	827	872	671	(166)	641	560	833
- Non-income Taxes	153	62	22	16	223	145	21	110	35	159
- Location-insensitive Costs	2,729	2,729	2,729	2,729	2,729	2,729	2,729	2,729	2,729	2,729
Profit Before Income Tax	1,419	(220)	1,316	515	883	1,410	4,740	1,411	1,932	66
- Income Taxes ¹	428	38	557	54	240	338	1,311	461	599	61
Effective Rate	30.2%	n/a	42.3%	23.1%	27.2%	24.0%	27.7%	33.2%	31.0%	n/a
After-tax Profit	991	(258)	759	396	643	1,072	3,429	942	1,333	4
Total Annual Costs	9,310	10,558	9,540	9,904	9,657	9,229	6,871	9,358	8,967	10,297
Index (US=100.0)	99.5	112.8	101.9	105.8	103.2	98.6	73.4	100.0	95.8	110.0
Rank	4	10	6	8	7	3	1	5	2	9

¹ Income taxes may be either positive or negative, irrespective of whether profit before income tax is positive or negative, due to the impact of specific expense deduction rules, minimum taxes, and refundable income tax credits. Effective tax rates are not shown where results are not meaningful because of low profitability.

EXHIBIT 3.41 – PRECISION MANUFACTURING

Precision Component Manufacturing – Results for Leading Cities, by Country

Country	City	Index	Rank Among 102 Cities	Country	City	Index	Rank Among 102 Cities
France	Toulouse	98.4	40	Canada	Sherbrooke	92.3	7
	Mulhouse	98.4	41		Charlottetown	93.7	11
Germany	Halle	108.3	89	Moncton	93.8	13	
	Erlangen	114.0	100	Fredericton	94.0	14	
Italy	Vicenza	99.9	52	Mexico	Reynosa	69.7	1
	Livorno	102.4	67		Aguascalientes	73.7	2
Netherlands	Utrecht	105.8	84	United States	San Juan	85.9	6
United Kingdom	Barnsley	100.4	53		Shreveport	92.8	8
	Plymouth	100.6	55		McAllen	93.3	9
Australia	Adelaide	94.0	15		Little Rock	93.3	10
	Brisbane	95.7	20		Oklahoma City	93.8	12
Japan	Fukuoka	109.0	93		Greenville-Spartanburg	95.5	16
	Yokohama	110.4	96		Montgomery	95.5	17
					Jackson	95.8	21
				Charleston	95.9	22	

11. Telecommunications

The telecommunications industry includes both service providers and equipment manufacturers, with equipment manufacturers producing both transmitting and receiving equipment for traditional wired networks and modern optical and wireless networks. In the United States alone, the value of shipments for the communications equipment industry totaled over \$70 billion in 2006, up by more than 19 percent from 2005.

a) Representative Operation – Telecom Equipment Manufacturing

The representative operation modeled is a manufacturer of specialized telecom equipment, in either a wired or a wireless environment. As illustrated in Exhibit 3.42, this operation is characterized by:

- Moderate land, building and equipment requirements
- A workforce heavily weighted toward highly skilled professional/technical staff and skilled operators
- Modest energy requirements
- Relatively high materials and other costs, reflecting the significant use of components and sub-assemblies

The business is assumed to operate as a stand-alone profit center.

b) International Results

International results are illustrated in Exhibit 3.43. These results reflect the combined impact of 27 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.44.

c) Leading Cities

Exhibit 3.45 profiles results for the leading (lower-cost) cities, by country, from among the 102 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.10.

EXHIBIT 3.42 – TELECOMMUNICATIONS	
Telecom Equipment Manufacturing – Summary of Operating Parameters	
Facilities Requirements	
Industrial site purchased	6 acres (2.4 hectares)
Size of factory built	60,000 ft ² (5,574 m ²)
Other Initial Investment Requirements	
Machinery and equipment – US \$'000	\$5,000
Office equipment – US \$'000	\$400
R&D equipment – US \$'000	\$500
Inventory – US \$'000	\$5,000
Equity financing - % of project costs	50%
Workforce	
Management	7
Sales and administration	20
Production/non-dedicated product development	
- Professional, technical	34
- Operators	30
- Unskilled laborers	25
Other	4
Total employees	120
Energy Requirements	
Electricity monthly consumption/peak demand	200,000 kWh and 680 kW
Gas monthly consumption	5,600 CCF (15,857 m ³)
Other Annual Operating Characteristics	
Sales at full production – US \$'000	\$35,000
Materials and other direct costs - % of sales	45%
Other operating costs - % of sales	12%
Investment in tax-eligible R&D - % of sales	4.3%

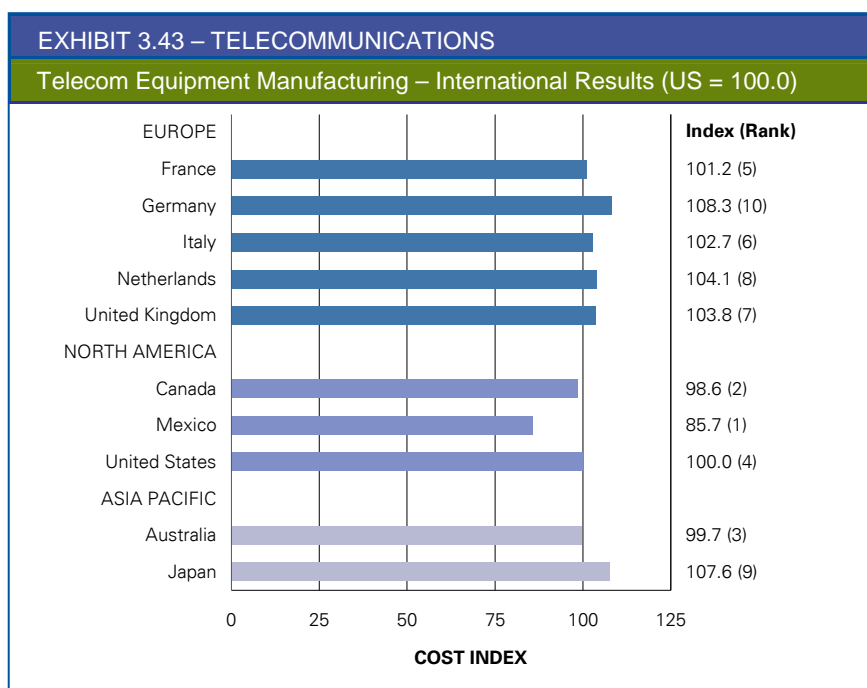


EXHIBIT 3.44 – TELECOMMUNICATIONS

Telecom Equipment Manufacturing – Costs, by Major Component, US \$'000

	Europe					North America			Asia Pacific	
	France	Germany	Italy	Netherlands	UK	Canada	Mexico	US	Australia	Japan
Revenues	32,700	32,700	32,700	32,700	32,700	32,700	32,700	32,700	32,700	32,700
Costs										
- Salaries & Wages	5,306	8,085	5,364	6,987	6,435	6,246	2,821	5,783	6,188	7,432
- Statutory Plans	2,258	1,315	1,752	901	778	482	350	539	817	681
- Other Benefits	1,070	1,623	1,430	2,136	2,010	1,331	636	1,612	1,312	2,352
- Total Labor & Benefits	8,635	11,023	8,546	10,024	9,223	8,059	3,807	7,934	8,317	10,465
- Transportation	384	402	504	396	448	484	505	444	338	473
- Utilities	368	517	669	489	435	279	425	224	411	564
- Interest & Depreciation	1,139	1,604	1,221	1,447	1,615	1,106	(350)	1,071	1,045	1,497
- Non-income Taxes	306	125	45	31	448	405	40	422	77	339
- Location-insensitive Costs	18,639	18,639	18,639	18,639	18,639	18,639	18,639	18,639	18,639	18,639
Profit Before Income Tax	3,229	390	3,076	1,933	1,892	3,727	9,634	3,981	3,874	723
- Income Taxes ¹	900	188	1,203	220	347	624	2,672	1,285	1,104	323
Effective Rate	27.9%	48.1%	39.1%	24.8%	18.3%	16.7%	27.7%	32.6%	28.5%	44.9%
After-tax Profit	2,329	202	1,872	1,454	1,545	3,103	6,961	2,682	2,770	399
Total Annual Costs	30,372	32,497	30,828	31,246	31,155	29,597	25,738	30,018	29,931	32,301
Index (US=100.0)	101.2	108.3	102.7	104.1	103.8	98.6	85.7	100.0	99.7	107.6
Rank	5	10	6	8	7	2	1	4	3	9

¹ Income taxes may be either positive or negative, irrespective of whether profit before income tax is positive or negative, due to the impact of specific expense deduction rules, minimum taxes, and refundable income tax credits. Effective tax rates are not shown where results are not meaningful because of low profitability.

EXHIBIT 3.45 – TELECOMMUNICATIONS

Telecom Equipment Manufacturing – Results For Leading Cities, By Country

Country	City	Index	Rank Among 102 Cities	Country	City	Index	Rank Among 102 Cities
France	Toulouse	100.3	52	Canada	Sherbrooke	95.5	7
	Mulhouse	100.7	59		Moncton	95.8	8
Germany	Halle	106.3	94		St. John's	95.9	9
	Erlangen	108.7	100		Fredericton	96.0	11
Italy	Vicenza	102.0	73	Mexico	Reynosa	84.2	1
	Livorno	102.9	83		Aguaascalientes	85.7	2
Netherlands	Utrecht	104.1	88	United States	San Juan	91.1	6
United Kingdom	Barnsley	102.2	75		Shreveport	95.9	10
	Plymouth	102.3	76		McAllen	96.2	12
					Little Rock	97.1	16
Australia	Adelaide	98.6	31		Oklahoma City	97.1	18
	Brisbane	99.3	42		Greenville-Spartanburg	97.4	20
Japan	Fukuoka	107.2	97		Montgomery	97.5	21
	Yokohama	107.7	98		Lexington	97.8	22
					Jackson	98.0	23

B. Research & Development

1. Biotechnology

The biotechnology industry encompasses a wide range of applications, such as pharmaceuticals, medical testing, agriculture, environmental management, and DNA fingerprinting. Biotechnology is one of the most research-intensive industries in the world and, according to the Biotechnology Industry Organization (BIO), the US biotech industry alone spent \$19.8 billion on R&D in 2005.

a) Representative Operation – Biomedical R&D

The representative operation modeled is a “pure” biomedical research facility, with no commercial sales. As illustrated in Exhibit 3.46, this operation is characterized by:

- A leased office/laboratory facility, with significant investment in R&D equipment
- A workforce consisting primarily of research scientists and technicians
- A significant level of tax-eligible R&D activities

The business is assumed to operate as a fully owned subsidiary of a parent firm, with revenue allocated to the business on a “cost-plus-10 percent” basis.

b) International Results

International results are illustrated in Exhibit 3.47. These results reflect the combined impact of 27 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.48.

c) Selected Cities

Exhibit 3.49 profiles results for selected cities, by country, from among the 102 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.10.

EXHIBIT 3.46 – BIOTECHNOLOGY	
Biomedical R&D – Summary of Operating Parameters	
Facilities Requirements	
Class A office space leased	45,000 ft ² (4,181 m ²)
Other Initial Investment Requirements	
Machinery and equipment – US \$'000	\$175
Office equipment – US \$'000	\$850
R&D equipment – US \$'000	\$2,500
Inventory – US \$'000	–
Equity financing - % of project costs	100%
Workforce	
Management	6
Sales and administration	11
Dedicated product development	46
Unskilled laborers	2
Other	1
Total employees	66
Energy Requirements	
Electricity monthly consumption/peak demand	112,600 kWh and 280 kW
Other Annual Operating Characteristics	
Sales at full production – US \$'000	– ¹
Operating costs – US \$'000	2,000
Investment in tax-eligible R&D - % of sales	23%

¹ This operation represents a cost center. For taxation purposes, corporate revenue allocated to the operation is assumed to be cost-of-operation, plus 10 percent markup.

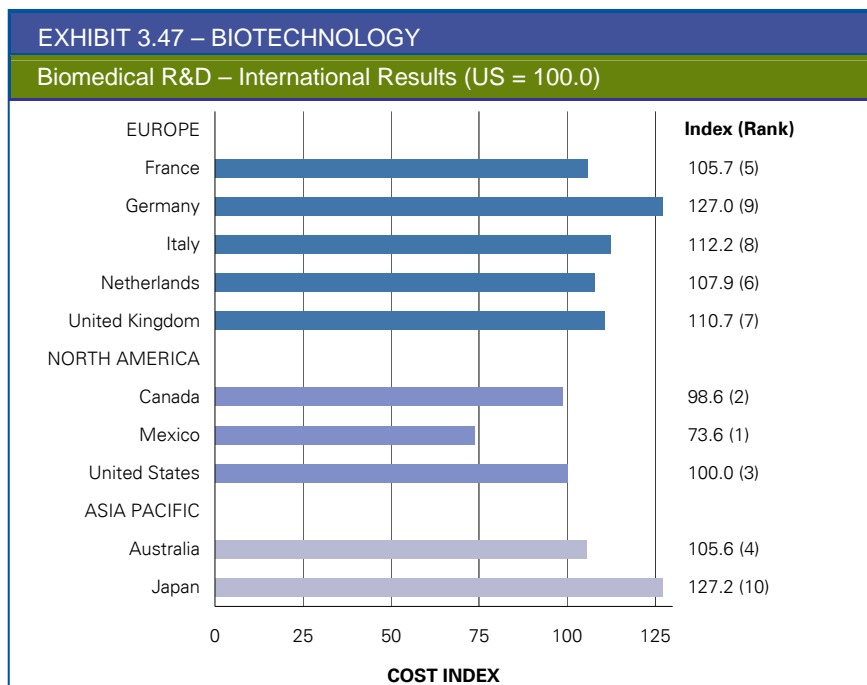


EXHIBIT 3.48 – BIOTECHNOLOGY

Biomedical R&D – Costs, by Major Component, US \$'000

	Europe					North America			Asia Pacific	
	France	Germany	Italy	Netherlands	UK	Canada	Mexico	US	Australia	Japan
Revenues	10,890	12,348	10,751	10,569	11,252	9,940	7,165	9,694	10,484	12,315
Costs										
- Salaries & Wages	3,936	5,929	4,117	5,066	4,756	4,388	2,606	4,158	4,336	5,003
- Statutory Plans	1,673	859	1,308	543	562	269	320	341	550	472
- Other Benefits	777	1,272	1,199	1,699	1,414	834	538	931	1,010	1,397
- Total Labor & Benefits	6,385	8,060	6,623	7,308	6,733	5,491	3,464	5,429	5,897	6,873
- Facility Lease	1,271	873	529	861	1,425	1,267	693	993	1,534	1,682
- Transportation	-	-	-	-	-	-	-	-	-	-
- Utilities	152	203	299	184	172	126	313	104	163	284
- Interest & Depreciation	148	190	227	196	-	141	114	228	36	398
- Non-income Taxes	44	-	194	14	-	112	29	166	-	62
- Location-insensitive Costs	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900
Profit Before Income Tax	990	1,122	978	961	1,023	904	652	881	954	1,117
- Income Taxes ¹	(246)	377	476	(610)	(122)	(34)	210	316	115	420
Effective Rate	(24.8%)	33.5%	48.7%	25.5%	(12.0%)	(3.7%)	32.1%	36.5%	12.1%	37.7%
After-tax Profit	1,235	746	502	716	1,145	938	443	560	839	696
Total Annual Costs	9,654	11,603	10,249	9,853	10,107	9,003	6,722	9,134	9,646	11,619
Index (US=100.0)	105.7	127.0	112.2	107.9	110.7	98.6	73.6	100.0	105.6	127.2
Rank	5	9	8	6	7	2	1	3	4	10

¹ Income taxes may be either positive or negative, irrespective of whether profit before income tax is positive or negative, due to the impact of specific expense deduction rules, minimum taxes, and refundable income tax credits. Effective tax rates are not shown where results are not meaningful because of low profitability.

EXHIBIT 3.49 – BIOTECHNOLOGY

Biomedical R&D – Results for Selected Cities, by Country

Country	City	Index	Rank Among 102 Cities	Country	City	Index	Rank Among 102 Cities
France	Paris	117.5	92	Canada	Montreal	94.9	31
	Toulouse	101.2	54		Quebec City	90.5	16
Germany	Erlangen	123.9	98	Saskatoon	92.0	19	
	Frankfurt	137.7	101	Toronto	104.0	66	
Italy	Livorno	112.1	85	Vancouver	107.5	73	
	Vicenza	112.4	88	Mexico	Guadalajara	79.0	4
Netherlands	Utrecht	107.9	74	Monterrey	83.8	7	
United Kingdom	London	151.8	102	United States	Atlanta	97.9	41
	Plymouth	108.4	78		Baltimore	100.2	50
Australia	Brisbane	108.1	76		Boston	113.2	90
	Melbourne	103.8	65		Chicago	113.1	89
Japan	Fukuoka	129.2	99		Hartford	106.7	70
					Indianapolis	102.2	60
					Minneapolis	106.8	71
					Raleigh	97.0	35
			San Diego		110.8	82	

2. Clinical Trials

Clinical trials are the result of promising new biotech and biomedical research. Once a new drug has been developed and tested on animals, the next step is clinical trials. Phase I clinical trials are conducted to confirm that a drug is not harmful. Phase II clinical trials measure the drug's effectiveness, while Phase III clinical trials further confirm a drug's efficacy, compare it to alternate treatments, and evaluate side effects.

a) Representative Operation – Clinical Trials Management

The representative operation modeled is a clinical trials management firm. As illustrated in Exhibit 3.50, this operation is characterized by:

- A leased office/laboratory facility. (Because the representative operation is a management firm, hospital/clinical operations and related costs are not included in the operational model.)
- A workforce consisting primarily of clinical trial administrators
- Activities that mostly represent tax-eligible R&D activities

The business is assumed to operate as a stand-alone profit center.

b) International Results

International results are illustrated in Exhibit 3.51. These results reflect the combined impact of 27 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.52.

c) Selected Cities

Exhibit 3.53 profiles results for selected cities, by country, from among the 102 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.10.

EXHIBIT 3.50 – CLINICAL TRIALS	
Clinical Trials Management – Summary of Operating Parameters	
Facilities Requirements	
Class A office space leased	10,000 ft ² (929 m ²)
Other Initial Investment Requirements	
Office equipment – US \$'000	\$150
R&D equipment – US \$'000	–
Inventory – US \$'000	–
Equity financing - % of project costs	85%
Workforce	
Management	3
Sales and administration	9
Dedicated product development	38
Unskilled laborers	0
Other	–
Total employees	50
Energy Requirements	
Electricity monthly consumption/peak demand	50,000 kWh and 195 kW
Other Annual Operating Characteristics	
Sales at full production – US \$'000	\$5,900
Operating costs - % of sales	5%
Investment in tax-eligible R&D - % of sales	60%

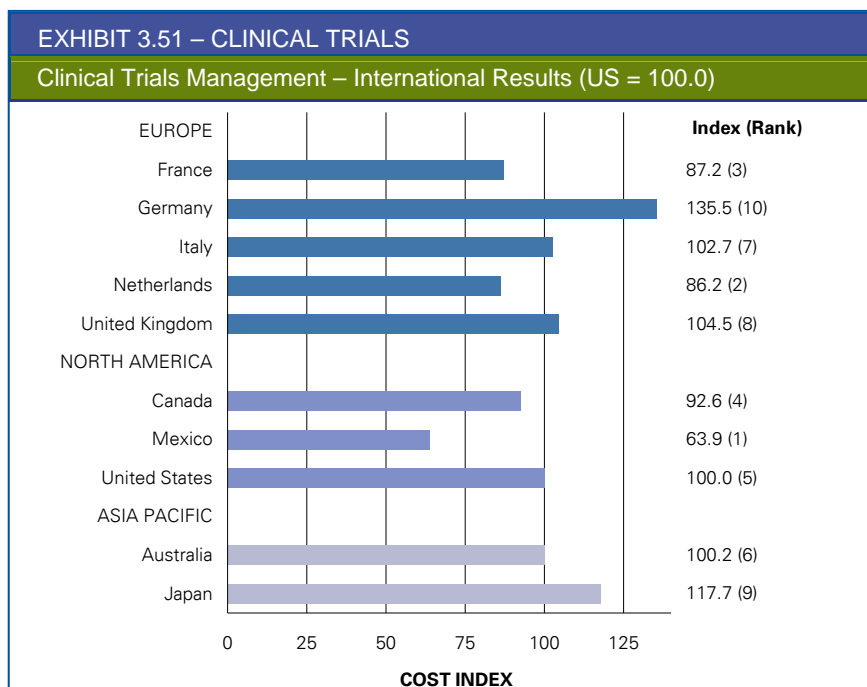


EXHIBIT 3.52 – CLINICAL TRIALS

Clinical Trials Management – Costs, by Major Component, US \$'000

	Europe					North America			Asia Pacific	
	France	Germany	Italy	Netherlands	UK	Canada	Mexico	US	Australia	Japan
Revenues	4,990	4,990	4,990	4,990	4,990	4,990	4,990	4,990	4,990	4,990
Costs										
- Salaries & Wages	2,537	3,854	2,494	3,269	3,268	3,122	1,528	2,941	2,923	3,317
- Statutory Plans	1,106	611	818	396	395	193	206	250	371	324
- Other Benefits	481	775	711	996	890	594	325	658	658	911
- Total Labor & Benefits	4,124	5,240	4,024	4,660	4,554	3,908	2,058	3,849	3,952	4,552
- Facility Lease	238	200	144	205	357	291	185	227	345	374
- Transportation	-	-	-	-	-	-	-	-	-	-
- Utilities	55	87	106	64	65	55	102	50	72	81
- Interest & Depreciation	47	463	13	(100)	50	(58)	(469)	(3)	(5)	145
- Non-income Taxes	10	-	53	3	-	20	17	25	-	8
- Location-insensitive Costs	250	250	250	250	250	250	250	250	250	250
Profit Before Income Tax	266	(1,250)	399	1,356	(285)	525	2,846	593	377	(419)
- Income Taxes ¹	(708)	-	139	(1,110)	(463)	(199)	798	208	-	13
Effective Rate	(265.8%)	n/a	34.9%	n/a	n/a	(38.0%)	28.0%	35.2%	n/a	n/a
After-tax Profit	974	(1,250)	260	1,018	178	724	2,048	384	377	(432)
Total Annual Costs	4,016	6,240	4,730	3,972	4,812	4,266	2,942	4,606	4,613	5,422
Index (US=100.0)	87.2	135.5	102.7	86.2	104.5	92.6	63.9	100.0	100.2	117.7
Rank	3	10	7	2	8	4	1	5	6	9

¹ Income taxes may be either positive or negative, irrespective of whether profit before income tax is positive or negative, due to the impact of specific expense deduction rules, minimum taxes, and refundable income tax credits. Effective tax rates are not shown where results are not meaningful because of low profitability.

EXHIBIT 3.53– CLINICAL TRIALS

Clinical Trials Management – Results for Selected Cities, by Country

Country	City	Index	Rank Among 102 Cities	Country	City	Index	Rank Among 102 Cities
France	Paris	96.0	35	Canada	Halifax	77.5	11
	Toulouse	82.2	13		Montreal	85.0	15
Germany	Erlangen	133.8	100	Toronto	100.5	60	
	Frankfurt	147.0	102	Vancouver	106.3	80	
Italy	Livorno	102.6	69	Mexico	Guadalajara	67.7	4
	Vicenza	102.1	65		Monterrey	71.9	5
Netherlands	Utrecht	86.2	16	United States	Boston	112.1	89
United Kingdom	London	138.4	101		Indianapolis	103.3	71
	Plymouth	99.5	53		Minneapolis	106.3	81
Australia	Adelaide	94.4	28		New York City	122.3	98
	Sydney	106.8	82		North Virginia (Metro DC)	103.8	73
Japan	Fukuoka	116.2	92		Philadelphia	105.4	76
					Providence	102.3	66
					San Diego	105.8	77
			Trenton	114.5	90		

3. Product Testing

Product testing, for both functionality and safety, is an essential component of bringing new products to market. In addition to the safety testing performed by regulatory agencies, many labs and testing agencies perform product testing on behalf of manufacturers. These entities may be independent labs or, alternately, may be in-house testing operations of a larger parent firm.

a) Representative Operation – Electronic Systems Development and Testing

The representative operation modeled develops and tests electronic systems and devices, such as computer components or systems, telecommunications equipment, and electronic systems for automotive or aerospace applications.

As illustrated in Exhibit 3.54, this operation is characterized by:

- A leased office/laboratory facility, with significant investment in R&D equipment
- A non-management workforce consisting almost entirely of professional and technical staff
- A significant level of tax-eligible R&D activities

The business is assumed to operate as a fully-owned subsidiary of a parent firm, with revenue allocated to the business on a "cost-plus-10 percent" basis.

b) International Results

International results are illustrated in Exhibit 3.55. These results reflect the combined impact of 27 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.56.

c) Selected Cities

Exhibit 3.57 profiles results for selected cities, by country, from among the 102 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.10.

EXHIBIT 3.54 – PRODUCT TESTING

Electronic Systems Development and Testing – Summary of Operating Parameters

Facilities Requirements	
Class A office space leased	45,000 ft ² (4,181 m ²)
Other Initial Investment Requirements	
Machinery and equipment – US \$'000	\$180
Office equipment – US \$'000	\$850
R&D equipment – US \$'000	\$2,600
Inventory – US \$'000	–
Equity financing - % of project costs	100%
Workforce	
Management	2
Sales and administration	12
Dedicated product development	56
Total employees	70
Energy Requirements	
Electricity monthly consumption/peak demand	112,600 kWh and 280 kW
Annual operating characteristics	
Sales at full production – US \$'000	– ¹
Operating costs – US \$'000	1,325
Investment in tax-eligible R&D - % of sales	25%

¹ This operation represents a cost center. For taxation purposes, corporate revenue allocated to the operation is assumed to be cost-of-operation, plus 10 percent markup.

EXHIBIT 3.55 – PRODUCT TESTING

Electronic Systems Development and Testing – International Results (US = 100.0)

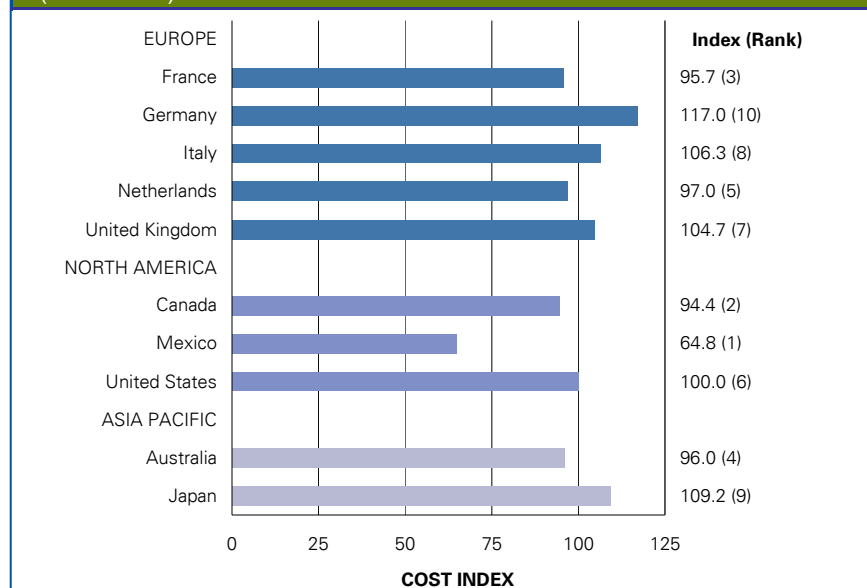


EXHIBIT 3.56 – PRODUCT TESTING

Electronic Systems Development and Testing – Costs, by Major Component, US \$'000

	Europe					North America			Asia Pacific	
	France	Germany	Italy	Netherlands	UK	Canada	Mexico	US	Australia	Japan
Revenues	11,251	12,969	11,588	10,832	12,176	10,863	7,178	11,048	10,889	12,044
Costs										
- Salaries & Wages	4,502	6,846	4,989	5,658	5,877	5,507	3,117	5,311	5,108	5,251
- Statutory Plans	1,971	960	1,578	592	697	318	373	545	655	512
- Other Benefits	890	1,461	1,470	1,957	1,666	1,174	643	1,478	1,159	1,504
- Total Labor & Benefits	7,362	9,266	8,037	8,207	8,240	6,998	4,133	7,333	6,921	7,267
- Facility Lease	1,271	873	529	861	1,425	1,267	693	993	1,534	1,682
- Transportation	-	-	-	-	-	-	-	-	-	-
- Utilities	139	197	283	178	168	122	279	98	153	272
- Interest & Depreciation	153	193	232	202	(23)	132	126	225	30	410
- Non-income Taxes	45	-	194	14	-	95	35	143	-	63
- Location-insensitive Costs	1,259	1,259	1,259	1,259	1,259	1,259	1,259	1,259	1,259	1,259
Profit Before Income Tax	1,023	1,180	1,053	985	1,107	988	653	1,005	991	1,092
- Income Taxes ¹	(271)	395	529	(623)	(171)	(50)	220	358	98	413
Effective Rate	(26.5%)	33.4%	50.3%	25.5%	(15.5%)	(5.1%)	33.7%	36.4%	9.9%	37.8%
After-tax Profit	1,293	786	524	734	1,278	1,039	433	639	893	679
Total Annual Costs	9,958	12,183	11,064	10,098	10,898	9,824	6,745	10,409	9,996	11,365
Index (US=100.0)	95.7	117.0	106.3	97.0	104.7	94.4	64.8	100.0	96.0	109.2
Rank	3	10	8	5	7	2	1	6	4	9

¹ Income taxes may be either positive or negative, irrespective of whether profit before income tax is positive or negative, due to the impact of specific expense deduction rules, minimum taxes, and refundable income tax credits. Effective tax rates are not shown where results are not meaningful because of low profitability.

EXHIBIT 3.57 – PRODUCT TESTING

Electronic Systems Development and Testing – Results for Selected Cities, by Country

Country	City	Index	Rank Among 102 Cities	Country	City	Index	Rank Among 102 Cities
France	Paris	106.6	78	Canada	Calgary	103.3	69
	Toulouse	91.3	25		Ottawa	96.5	41
Germany	Erlangen	114.1	95	Vancouver	102.9	67	
	Halle	110.3	87	Waterloo Region	92.0	30	
Italy	Naples	104.8	74	Mexico	Aguascalientes	63.6	2
	Vicenza	107.6	82	Guadalajara	70.1	4	
Netherlands	Utrecht	97.0	45	United States	Albuquerque	101.7	61
United Kingdom	London	145.7	102		Dallas-Fort Worth	97.5	47
	Plymouth	102.0	62		Denver	111.4	91
Australia	Melbourne	94.8	37		Phoenix	103.4	70
	Sydney	99.1	57		Portland	98.8	53
Japan	Fukuoka	110.9	88		Raleigh	96.6	42
	Yokohama	111.0	89		Salt Lake City	102.2	63
				San Jose	120.0	99	
				San Juan	81.3	8	

C. Software

1. Software Design

The packaged software industry serves a wide range of markets, including business enterprise software, office software, educational software, and entertainment software.

a) Representative Operation – Advanced Software Development

Software business operations typically range in size from hundreds of programmers providing sophisticated new products, to very small groups serving niche customer markets.

The representative operation performs original technology development for packaged or “shrink-wrapped” software applications.

Examples would include the design of new digital imaging and animation techniques for the video game and movie production industries. As illustrated in Exhibit 3.58, this operation is characterized by:

- Leased office space
- A workforce consisting mostly of very highly skilled product development staff, with heavy sales and administration support

The business is assumed to operate as a stand-alone profit center.

b) International Results

International results are illustrated in Exhibit 3.59. These results reflect the combined impact of 27 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.60.

c) Selected Cities

Exhibit 3.61 profiles results for selected cities, by country, from among the 102 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.10.

EXHIBIT 3.58 – SOFTWARE DESIGN

Advanced Software Development – Summary of Operating Parameters

Facilities Requirements

Class A office space leased	22,500 ft ² (2,090 m ²)
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Other Initial Investment Requirements

Machinery and equipment – US \$'000	–
Office equipment – US \$'000	\$1,350
R&D equipment – US \$'000	\$150
Inventory – US \$'000	\$500
Equity financing - % of project costs	67%

Workforce

Management	13
Sales and administration	33
Dedicated product development	52
Customer support	12
Total employees	110

Energy Requirements

Electricity monthly consumption/peak demand	120,000 kWh and 410 kW
---	------------------------

Other Annual Operating Characteristics

Sales at full production – US \$'000	\$18,000
Operating costs - % of sales	8%
Investment in tax-eligible R&D - % of sales	4.7%

EXHIBIT 3.59 – SOFTWARE DESIGN

Advanced Software Development – International Results (US = 100.0)

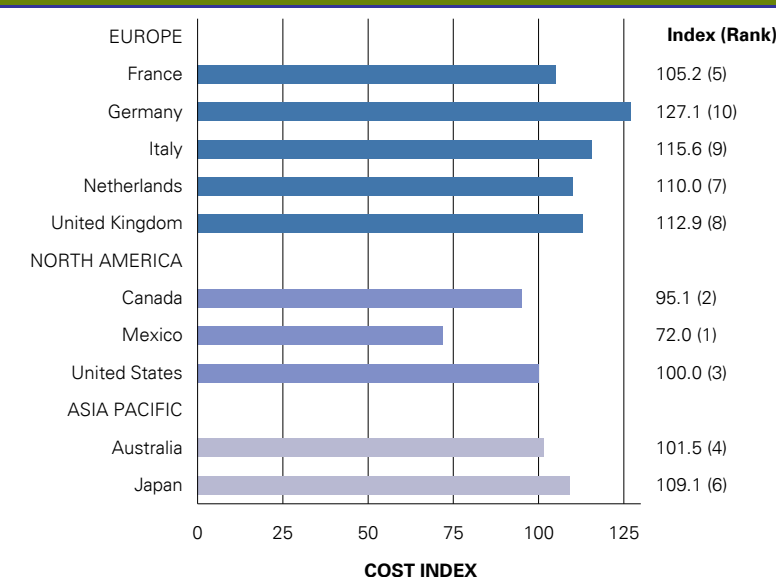


EXHIBIT 3.60 – SOFTWARE DESIGN

Advanced Software Development – Costs, by Major Component, US \$'000

	Europe					North America			Asia Pacific	
	France	Germany	Italy	Netherlands	UK	Canada	Mexico	US	Australia	Japan
Revenues	16,975	16,975	16,975	16,975	16,975	16,975	16,975	16,975	16,975	16,975
Costs										
- Salaries & Wages	7,594	11,456	8,438	9,223	9,635	8,781	5,362	8,461	8,611	8,845
- Statutory Plans	3,332	1,539	2,623	939	1,122	488	637	686	1,121	845
- Other Benefits	1,597	2,579	2,671	3,689	2,947	1,669	1,153	1,893	2,018	2,533
- Total Labor & Benefits	12,523	15,573	13,732	13,851	13,705	10,939	7,152	11,041	11,749	12,224
- Facility Lease	635	437	264	430	713	634	346	496	767	841
- Transportation	125	123	142	122	146	128	147	124	119	171
- Utilities	195	249	335	216	194	153	380	138	232	368
- Interest & Depreciation	35	844	286	143	289	(217)	(1,398)	(81)	(226)	243
- Non-income Taxes	54	-	97	7	-	90	60	153	-	61
- Location-insensitive Costs	1,273	1,273	1,273	1,273	1,273	1,273	1,273	1,273	1,273	1,273
Profit Before Income Tax	2,135	(1,524)	845	1,292	655	3,977	9,016	3,832	3,062	1,795
- Income Taxes ¹	478	-	692	(35)	115	850	2,527	1,409	864	702
Effective Rate	22.4%	n/a	81.9%	25.1%	17.5%	21.4%	28.0%	36.8%	28.2%	39.1%
After-tax Profit	1,657	(1,524)	153	968	541	3,127	6,490	2,421	2,198	1,093
Total Annual Costs	15,318	18,499	16,822	16,007	16,434	13,848	10,485	14,554	14,777	15,882
Index (US=100.0)	105.2	127.1	115.6	110.0	112.9	95.1	72.0	100.0	101.5	109.1
Rank	5	10	9	7	8	2	1	3	4	6

¹ Income taxes may be either positive or negative, irrespective of whether profit before income tax is positive or negative, due to the impact of specific expense deduction rules, minimum taxes, and refundable income tax credits. Effective tax rates are not shown where results are not meaningful because of low profitability.

EXHIBIT 3.61 – SOFTWARE DESIGN

Advanced Software Development – Results for Selected Cities, by Country

Country	City	Index	Rank Among 102 Cities	Country	City	Index	Rank Among 102 Cities
France	Paris	111.2	92	Canada	Montreal	94.8	23
	Toulouse	101.9	64		Ottawa	96.8	34
Germany	Erlangen	125.2	99	Toronto	99.0	46	
	Frankfurt	136.6	101	Vancouver	99.2	48	
Italy	Vicenza	116.9	97	Mexico	Guadalajara	76.5	5
Netherlands	Utrecht	110.0	91	Monterrey	80.4	6	
United Kingdom	London	158.4	102	United States	Boston	108.1	84
	Plymouth	108.0	83		Dallas-Fort Worth	96.7	33
Australia	Melbourne	102.0	65		Denver	106.1	79
	Sydney	106.2	80		New York City	112.5	94
Japan	Fukuoka	109.0	86		North Virginia (Metro DC)	101.9	61
	Yokohama	109.6	89		Phoenix	101.9	62
					Portland	101.2	58
			San Jose		111.6	93	
			Seattle		105.7	77	

2. Web and Multimedia

The increased affordability of computers with full multimedia capabilities, the growth of broadband internet services, and the dramatic growth of mobile internet devices has caused demand for web and multimedia services to grow tremendously in the past decade. Typical services include sophisticated website development and maintenance, preparation of multimedia presentations, and training through new internet-based education techniques.

a) Representative Operation – Content Development

The representative operation modeled performs process-oriented services, such as compiling basic multimedia content and developing standard websites. As illustrated in Exhibit 3.62, this operation is characterized by:

- Leased office space
- A technically oriented workforce, heavily weighted toward junior programmers

The business is assumed to operate as a stand-alone profit center.

b) International Results

International results are illustrated in Exhibit 3.63. These results reflect the combined impact of 27 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.64.

c) Selected Cities

Exhibit 3.65 profiles results for selected cities, by country, from among the 102 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.10.

EXHIBIT 3.62 – WEB AND MULTIMEDIA	
Content Development – Summary of Operating Parameters	
Facilities Requirements	
Class A office space leased	22,500 ft ² (2,090 m ²)
Other Initial Investment Requirements	
Office equipment – US \$'000	\$1,500
Equity financing - % of project costs	67%
Workforce	
Management	11
Sales and administration	12
Dedicated product development	84
Customer support	3
Total employees	110
Energy Requirements	
Electricity monthly consumption/peak demand	120,000 kWh and 360 kW
Other Annual Operating Characteristics	
Sales at full production – US \$'000	\$16,000
Operating costs - % of sales	8%
Investment in tax-eligible R&D - % of sales	–

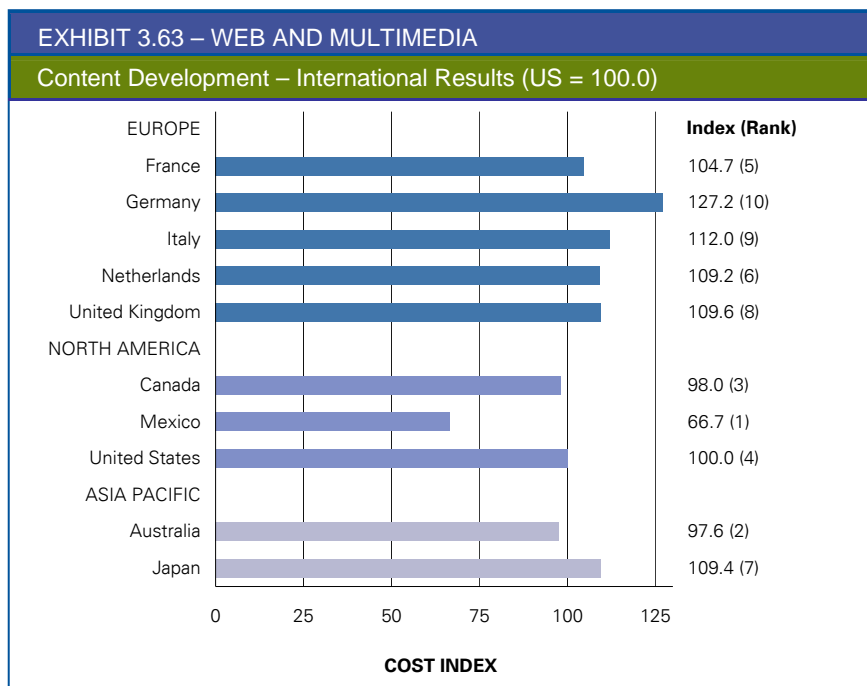


EXHIBIT 3.64 – WEB AND MULTIMEDIA

Content Development – Costs, by Major Component, US \$'000

	Europe					North America			Asia Pacific	
	France	Germany	Italy	Netherlands	UK	Canada	Mexico	US	Australia	Japan
Revenues	15,200	15,200	15,200	15,200	15,200	15,200	15,200	15,200	15,200	15,200
Costs										
- Salaries & Wages	6,632	10,368	7,345	8,191	8,358	7,994	4,303	7,665	7,312	7,893
- Statutory Plans	2,932	1,494	2,332	913	999	476	527	629	961	766
- Other Benefits	1,323	2,179	2,105	2,948	2,381	1,520	878	1,715	1,649	2,305
- Total Labor & Benefits	10,887	14,042	11,781	12,051	11,737	9,990	5,707	10,009	9,922	10,963
- Facility Lease	635	437	264	430	713	634	346	496	767	841
- Transportation	-	-	-	-	-	-	-	-	-	-
- Utilities	212	250	358	224	201	155	415	131	206	413
- Interest & Depreciation	9	759	160	107	125	(136)	(1,449)	(76)	(337)	215
- Non-income Taxes	62	-	97	7	-	71	47	120	-	59
- Location-insensitive Costs	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140
Profit Before Income Tax	2,255	(1,428)	1,399	1,241	1,285	3,346	8,993	3,379	3,502	1,569
- Income Taxes ¹	743	-	832	307	413	960	2,516	1,249	1,057	669
Effective Rate	33.0%	n/a	59.5%	24.7%	32.1%	28.7%	28.0%	37.0%	30.2%	42.6%
After-tax Profit	1,512	(1,428)	567	934	872	2,386	6,477	2,130	2,445	900
Total Annual Costs	13,688	16,628	14,633	14,266	14,328	12,814	8,723	13,070	12,755	14,300
Index (US=100.0)	104.7	127.2	112.0	109.2	109.6	98.0	66.7	100.0	97.6	109.4
Rank	5	10	9	6	8	3	1	4	2	7

¹ Income taxes may be either positive or negative, irrespective of whether profit before income tax is positive or negative, due to the impact of specific expense deduction rules, minimum taxes, and refundable income tax credits. Effective tax rates are not shown where results are not meaningful because of low profitability.

EXHIBIT 3.65 – WEB AND MULTIMEDIA

Content Development – Results for Selected Cities, by Country

Country	City	Index	Rank Among 102 Cities	Country	City	Index	Rank Among 102 Cities
France	Paris	110.8	93	Canada	Calgary	100.3	51
	Toulouse	101.4	58		Halifax	94.3	20
Germany	Erlangen	125.2	100		Saskatoon	93.2	16
	Halle	119.1	98	St. John's	92.8	15	
Italy	Vicenza	112.7	96	Mexico	Guadalajara	70.7	4
Netherlands	Utrecht	109.2	86		Monterrey	74.4	6
United Kingdom	London	152.7	102	United States	Boston	108.5	84
	Plymouth	105.6	77		Dallas-Fort Worth	96.6	31
Australia	Adelaide	94.2	18		Denver	106.2	81
	Melbourne	98.1	41		New York City	113.0	97
Japan	Fukuoka	109.3	87		North Virginia (Metro DC)	102.4	68
	Yokohama	109.9	90		Phoenix	102.0	63
					Portland	101.3	57
			San Jose		112.0	94	
			Seattle		106.1	80	

D. Corporate Services

1. Back Office/Call Centers

This industry includes any business support operation that interacts primarily through electronic communication. Typical operations would include inbound call centers (e.g., customer enquiries, internal helpdesks), outbound call centers (e.g., telemarketing, teleresearch), IT/data processing, and other administrative functions. Back office/call center operations may be subsidiary operations of a parent firm, or may be outsourced to an independent service provider.

a) Representative Operation – Shared Services Center

The representative operation modeled is a corporate shared services center, incorporating centralized accounting, customer call center, and internal IT support functions.

As illustrated in Exhibit 3.66, this operation is characterized by:

- Leased office space
- A workforce consisting mostly of lesser-skilled administrators, such as clerks, teleservice representatives, and helpdesk agents

The business is assumed to operate as a fully owned subsidiary of a parent firm, with revenue allocated to the business on a “cost-plus-10 percent” basis.

b) International Results

International results are illustrated in Exhibit 3.67. These results reflect the combined impact of 27 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.68.

c) Leading Cities

Exhibit 3.69 profiles results for the leading (lower-cost) cities, by country, from among the 102 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.10.

EXHIBIT 3.66 – BACK OFFICE/CALL CENTERS

Shared Services Center – Summary of Operating Parameters

Facilities Requirements	
Class A office space leased	22,500 ft ² (2,090 m ²)
Other Initial Investment Requirements	
Office equipment – US \$'000	\$1,800
Equity financing - % of project costs	100%
Workforce	
Management	10
Sales and administration	105
Customer support	29
Other	1
Total employees	145
Energy Requirements	
Electricity monthly consumption/peak demand	125,000 kWh and 410 kW
Other Annual Operating Characteristics	
Sales at full production – US \$'000	– ¹
Operating costs – US \$'000	\$1,250

¹ This operation represents a cost center. For taxation purposes, corporate revenue allocated to the operation is assumed to be cost-of-operation, plus 10 percent markup.

EXHIBIT 3.67

Shared Services Center – International Results (US = 100.0)

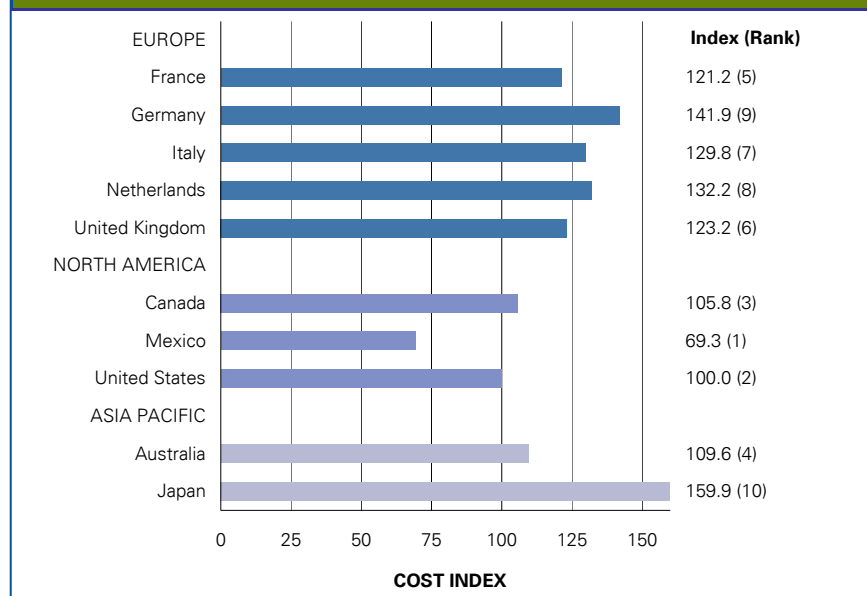


EXHIBIT 3.68 – BACK OFFICE/CALL CENTERS

Shared Services Center – Costs, by Major Component, US \$'000

	Europe					North America			Asia Pacific	
	France	Germany	Italy	Netherlands	UK	Canada	Mexico	US	Australia	Japan
Revenues	14,589	17,100	15,252	16,018	14,930	12,782	8,328	11,977	13,213	19,051
Costs										
- Salaries & Wages	6,498	9,733	7,076	8,266	7,832	7,293	3,516	6,578	7,024	8,806
- Statutory Plans	2,800	1,583	2,254	1,050	945	555	440	561	919	846
- Other Benefits	1,305	1,982	2,070	2,937	2,453	1,386	765	1,474	1,441	2,508
- Total Labor & Benefits	10,603	13,298	11,400	12,253	11,229	9,234	4,721	8,613	9,383	12,160
- Facility Lease	635	437	264	430	713	634	346	496	767	841
- Transportation	-	-	-	-	-	-	-	-	-	-
- Utilities	667	508	721	571	413	341	1,165	278	635	2,735
- Interest & Depreciation	79	53	134	51	(32)	84	51	124	(23)	270
- Non-income Taxes	29	-	97	7	-	79	38	127	-	65
- Location-insensitive Costs	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250
Profit Before Income Tax	1,325	1,555	1,387	1,456	1,357	1,162	757	1,089	1,201	1,729
- Income Taxes ¹	446	502	811	381	353	344	263	418	381	756
Effective Rate	33.7%	32.3%	58.4%	26.2%	26.0%	29.6%	34.7%	38.4%	31.7%	43.8%
After-tax Profit	879	1,052	576	1,075	1,005	818	494	670	820	972
Total Annual Costs	13,709	16,048	14,676	14,943	13,925	11,965	7,834	11,307	12,393	18,078
Index (US=100.0)	121.2	141.9	129.8	132.2	123.2	105.8	69.3	100.0	109.6	159.9
Rank	5	9	7	8	6	3	1	2	4	10

¹ Income taxes may be either positive or negative, irrespective of whether profit before income tax is positive or negative, due to the impact of specific expense deduction rules, minimum taxes, and refundable income tax credits. Effective tax rates are not shown where results are not meaningful because of low profitability.

EXHIBIT 3.69 – BACK OFFICE/CALL CENTERS

Shared Services Center – Results for Leading Cities, by Country

Country	City	Index	Rank Among 102 Cities	Country	City	Index	Rank Among 102 Cities
France	Toulouse	116.2	84	Canada	Charlottetown	95.2	21
	Mulhouse	117.0	86		Sherbrooke	95.4	23
Germany	Halle	134.1	95		Moncton	96.1	26
	Erlangen	141.4	97	Fredericton	97.4	30	
Italy	Vicenza	127.4	90	Mexico	Reynosa	64.1	1
	Livorno	130.8	92		Aguascalientes	69.1	2
Netherlands	Utrecht	132.2	94	United States	San Juan	79.3	6
United Kingdom	Barnsley	114.9	81		McAllen	84.6	7
	Plymouth	119.0	87		Shreveport	87.0	8
Australia	Adelaide	105.8	60		Little Rock	87.4	9
	Melbourne	109.8	67		Oklahoma City	88.0	10
Japan	Hamamatsu	159.3	100		Montgomery	91.2	11
	Fukuoka	159.4	101		Greenville-Spartanburg	91.5	12
				Jackson	91.6	13	
			Bangor	92.2	14		

4. Regional and City Comparisons

Site searches often differ in the range of geographic locations under active consideration. Whether the search is international or regional, there is often a tradeoff between larger and smaller cities. Larger cities tend to provide larger labor pools and better support infrastructure, while smaller cities tend to offer lower labor and facility costs.

This chapter presents results by city, first considering larger international cities, and then considering all featured cities on a regional basis.

A. Results for Large International Cities

Many companies prefer to locate in larger international cities, to gain benefits such as:

- Access to a larger and higher skilled workforce
- Access to universities and colleges
- Proximity to clusters of customers, suppliers, and competitors
- Access to major ports and airports
- Greater ability to relocate and recruit senior management personnel

The 35 largest international cities included in this study all have a metropolitan population of at least two million people. Results for these cities are illustrated in Exhibit 4.1:

- In **Europe**, costs in Paris and Naples are comparable with the largest US cities, while costs in Manchester, Frankfurt, and London are significantly higher than in any of the North American cities. London represents the most expensive city examined, by a wide margin.
- In **North America**, the large Mexican cities of Puebla, Guadalajara, and Monterrey, offer the lowest business costs, followed by San Juan, Puerto Rico. This group of Latin American cities is then followed by a group of Southern US cities that all offer moderately low business costs: Atlanta, Tampa, and Dallas-Fort Worth. At the other end of the spectrum, San Jose (Silicon Valley, in metro San Francisco) and New York City continue to represent the most expensive North American cities in which to do business.
- In **Asia Pacific**, Melbourne has lower costs than Sydney in Australia, with both cities being relatively affordable compared to their peers elsewhere in the world. By contrast, in Japan, Yokohama (Metro Tokyo) has the third-highest cost structure among the major international cities studied, behind only Frankfurt and London.

EXHIBIT 4.1

Results for Large International Cities¹

City	Country	Cost Index
EUROPE		
London	United Kingdom	129.3
Frankfurt ²	Germany	121.1
Manchester	United Kingdom	113.3
Naples ²	Italy	108.5
Paris	France	107.1
NORTH AMERICA		
San Jose (Metro San Francisco)	United States	110.0
New York City	United States	109.2
Detroit	United States	106.8
Boston	United States	106.7
Chicago	United States	106.5
Seattle	United States	105.5
Denver	United States	104.9
San Diego	United States	104.6
Vancouver	Canada	104.2
Minneapolis	United States	103.9
Philadelphia	United States	103.2
Riverside-San Bernardino (Metro LA)	United States	102.8
Portland	United States	102.2
Phoenix	United States	102.1
Toronto	Canada	101.5
St. Louis	United States	101.1
North Virginia (Metro DC)	United States	101.0
Houston	United States	99.4
Baltimore	United States	98.9
Montreal	Canada	98.5
Dallas-Fort Worth	United States	97.3
Tampa	United States	97.3
Atlanta	United States	96.9
San Juan	United States	89.1
Monterrey	Mexico	83.6
Guadalajara	Mexico	82.6
Puebla	Mexico	80.0
ASIA PACIFIC		
Yokohama (Metro Tokyo)	Japan	114.8
Sydney	Australia	102.7
Melbourne	Australia	99.4

¹ Cities with a metro area population of more than two million.

² Based on estimated metro/regional population within reasonable commuting distance of at least two million people. (No official measures of metro population are available).

B. Europe

Results for cities in Europe are illustrated in Exhibit 4.2.

a) Population of 100,000 to 500,000

Seven of the 14 cities examined in Europe have populations of less than 500,000, reflecting the strong significance of smaller regional centers in Europe.

Among smaller cities, the cost leader is the southern French city of Mulhouse (cost index: 101.9), followed by two UK cities, Barnsley (103.2) and Plymouth (104.9).

Back on the continent, the Italian cities of Vicenza (107.2) and Livorno (108.0) both have lower costs than the German cities of Halle (112.5) and Erlangen (116.7).

With only 4.2 points separating the costs in Erlangen, in Western Germany, and Halle, in the former East Germany, the cost differential between Germany's east and west continues to decrease over time.

EXHIBIT 4.2		Results by Size of City/Region, Europe			
Population					
100,000 to 500,000		500,000 to 1.5 million		Exceeds 1.5 million	
Erlangen, DE	116.7	Utrecht, NL	107.3	London, UK	129.3
Halle, DE	112.5	Toulouse, FR	101.8	Frankfurt, DE	121.1
Livorno, IT	108.0			Manchester, UK	113.3
Vicenza, IT	107.2			Naples, IT	108.5
Plymouth, UK	104.9			Paris, FR	107.1
Barnsley, UK	103.2				
Mulhouse, FR	101.9				

While previous editions of *Competitive Alternatives* examined different cities in Germany (Chemnitz and Darmstadt), in 2002 and 2004 the cost difference between smaller cities in Eastern and Western Germany stood at approximately 10 points, before declining to 5.4 points in 2006 and 4.2 points in 2008.

b) Population of 500,000 to 1.5 million

The southern French city of Toulouse (101.8) is the cost leader of the two mid-sized European cities. Toulouse also represents

the overall cost leader among the European cities. Trailing Toulouse is Utrecht (107.3) in the Netherlands.

c) Population over 1.5 million

Paris (107.1) is the cost leader among larger European cities examined, followed by Naples (108.5), Manchester (113.3) and Frankfurt (121.1). Costs in London (129.3) are the highest among all European cities examined, and more than 22 points higher than in Paris.

C. North America

1. New England/Atlantic Canada

Results for the 11 cities examined in this region are illustrated in Exhibit 4.4.

a) Population of 100,000 to 500,000

The cost leaders in this region are the Atlantic Canada cities of Moncton (cost index: 94.9), Fredericton (95.3), Charlottetown (95.8), and Halifax (96.6), all with costs below any of the US cities compared in this region.

Bangor, Maine (97.5), Burlington, Vermont (99.4), and St. John's, Newfoundland (99.5), also have cost structures below the US average. Costs in Manchester, New Hampshire (101.0), are somewhat higher, reflecting Manchester's proximity to Boston.

EXHIBIT 4.3		Results by Size of City, New England/Atlantic Canada			
Population					
100,000 to 500,000		500,000 to 1.5 million		Exceeds 1.5 million	
Manchester, NH	101.0	Hartford, CT	104.1	Boston, MA	106.7
St. John's, NL	99.5			Providence, RI	101.9
Burlington, VT	99.4				
Bangor, ME	97.5				
Halifax, NS	96.6				
Charlottetown, PE	95.8				
Fredericton, NB	95.3				
Moncton, NB	94.9				

b) Population of 500,000 to 1.5 million

Business costs are significantly higher in Hartford (104.1) than in any of the smaller cities in this region, reflecting Hartford's status as a major center for financial services operations.

c) Population over 1.5 million

Providence (101.9) has a lower cost base than either Hartford or Boston, despite its location less than 90 miles (145 km) from both of these cities. Boston (106.7) represents both the largest and the most costly city in this region.

2. Northeast US/Canada

Results for the 20 cities examined in this region are illustrated in Exhibit 4.4. (Boston is also included for comparative purposes.)

a) Population of 100,000 to 500,000

Sherbrooke, Quebec (cost index: 92.8), is the cost leader in this region, followed by Lexington, Kentucky (95.0), and Waterloo Region, Ontario (98.2). These three cities all have business costs below the US average, while business costs in Saginaw, Michigan (102.2) are notably higher.

b) Population of 500,000 to 1.5 million

Among the mid-sized cities examined in this region, Charleston, West Virginia (95.3), and Quebec City (96.3) offer the most competitive business cost structures. Costs are slightly higher in Ottawa (99.9), Youngstown (100.2), Harrisburg (100.5), and Buffalo (100.6), with costs in all four of these cities being very close to the US average.

EXHIBIT 4.4		Results by Size of City, Northeast US/Canada			
Population					
100,000 to 500,000		500,000 to 1.5 million		Exceeds 1.5 million	
Saginaw, MI	102.2	Buffalo, NY	100.6	New York City, NY	109.2
Waterloo Region, ON	98.2	Harrisburg, PA	100.5	Trenton, NJ ²	106.8
Lexington, KY	95.0	Youngstown, OH	100.2	Detroit, MI	106.8
Sherbrooke, QC	92.8	Ottawa, ON	99.9	Boston, MA ¹	106.7
		Quebec City, QC	96.3	Philadelphia, PA	103.2
		Charleston, WV	95.3	Toronto, ON	101.5
				Indianapolis, IN	101.3
				North Virginia (Metro DC)	101.0
				Wilmington, DE ²	100.6
				Baltimore, MD	98.9
				Montreal, QC	98.5

1 While Boston is located in New England, the size and nature of its economy are more relevant to major Northeastern cities such as New York City, Philadelphia, and Toronto. Therefore, Boston is also shown here for comparative purposes.

2 Trenton and Wilmington are both classified as large cities based on the population of metro Philadelphia, given that both these cities are located within 34 miles (55 kilometers) of Philadelphia.

c) Population over 1.5 million

This region is home to many of the largest cities in North America. Among the large cities examined in this region, Montreal (98.5) and Baltimore (98.9) are the two cities that offer business costs below the US average.

Business costs are somewhat higher in Wilmington (100.6), North Virginia (Metro DC, 101.0), Indianapolis (101.3), Toronto (101.5), and Philadelphia (103.2). Costs are higher still, but very similar, in each of Boston (106.7), Detroit (106.8), and Trenton (106.8), while New York City (109.2) has the highest business costs in the region.

3. Southeast US and Puerto Rico

Exhibit 4.5 illustrates the results for ten cities examined in the US Southeast and Puerto Rico. This represents the lowest-cost region within the United States, and all of the cities examined have costs lower than the US average index of 100.

a) Population of 100,000 to 500,000

Shreveport, Louisiana (cost index: 92.7), has the lower costs of the two small cities studied in this region, and also the lowest business costs among 56 cities studied in the continental United States. Costs in Montgomery, Alabama (94.7), are 2.0 points higher than in Shreveport, but still well below the US average.

EXHIBIT 4.5		Results by Size of City, Southeast US and Puerto Rico			
Population					
100,000 to 500,000		500,000 to 1.5 million		Exceeds 1.5 million	
Montgomery, AL	94.7	Raleigh, NC	97.6	Tampa, FL	97.3
Shreveport, LA	92.7	Nashville, TN	96.8	Atlanta, GA	96.9
		Jackson, MS	95.4	San Juan, PR	89.1
		Greenville-Spartanburg, SC	94.4		
		Little Rock, AR	93.4		

b) Population of 500,000 to 1.5 million

Among the mid-sized cities examined in this region, Little Rock (93.4) is the cost leader. Costs for Greenville-Spartanburg (94.4), Jackson (95.4), Nashville (96.8), and Raleigh (97.6) are also well below the US average.

c) Population over 1.5 million

San Juan, Puerto Rico (89.1), has the lowest costs not only among all cities examined in this region, but also among all 59 US cities included in this study. Atlanta (96.9) and Tampa (97.3) have somewhat higher business costs, but still significantly lower than those for most large cities in other regions of the United States.

4. Mexico

Costs in Mexico's cities are lower than in all other cities in all other regions examined in this study. Results for the five cities studied in Mexico are illustrated in Exhibit 4.6.

a) Population of 100,000 to 500,000

No representative cities of this size were included in the study.

b) Population of 500,000 to 1.5 million

Reynosa (cost index: 76.6) is the overall cost leader among all cities examined in this study, with business costs more than 23 percent below the US average. Located on the US (Texas) border, Reynosa offers both lower labor and lower transportation costs than Aguascalientes (79.4), which is located in the Bajío region of west-central Mexico. However, costs in Aguascalientes are still more than 20 percent below the US average.

EXHIBIT 4.6		Results by Size of City, Mexico			
Population					
100,000 to 500,000		500,000 to 1.5 million		Exceeds 1.5 million	
No representative city		Aguascalientes	79.4	Monterrey	83.6
		Reynosa	76.6	Guadalajara	82.6
				Puebla	80.0

c) Population over 1.5 million

Guadalajara (82.6), Monterrey (83.6), and Puebla (80.0) represent the second, third, and fourth largest cities in Mexico, respectively, behind only Mexico City in terms of population. Costs in all three of these cities are higher than in the mid-sized Mexican cities examined, but business costs in these large cities are still 16.4 to 20.0 percent below the US average.

5. Midwest US/Western Canada

Results for the 22 cities examined in this region are illustrated in Exhibit 4.7.

a) Population of 100,000 to 500,000

Saskatoon, Saskatchewan (cost index: 96.7), is the cost leader among smaller cities in this region, followed closely by Cheyenne, Wyoming (96.9). Costs in Sioux Falls, South Dakota (97.4), Cedar Rapids, Iowa (97.6), and Fargo, North Dakota (98.1), are all relatively similar and below the US average. Billings, Montana (99.4), has the highest costs among this group of cities, but still marginally below the US average.

b) Population of 500,000 to 1.5 million

The regional cost leaders among the mid-sized cities are McAllen (93.7) and Oklahoma City (94.3), both of which have more than a three point advantage over Winnipeg (97.7). Omaha (99.0), Wichita (99.6), and Edmonton (99.9) all offer costs that are marginally below the US average, while costs in Salt Lake City (101.0), Albuquerque (101.2) and Calgary (102.0), are all slightly above the US norm.

EXHIBIT 4.7		Results by Size of City, Midwest US/Western Canada			
Population					
100,000 to 500,000		500,000 to 1.5 million		Exceeds 1.5 million	
Billings, MT	99.4	Calgary, AB	102.0	Chicago, IL	106.5
Fargo, ND	98.1	Albuquerque, NM	101.2	Denver, CO	104.9
Cedar Rapids, IA	97.6	Salt Lake City, UT	101.0	Minneapolis, MN	103.9
Sioux Falls, SD	97.4	Edmonton, AB	99.9	Milwaukee, WI	103.7
Cheyenne, WY	96.9	Wichita, KS	99.6	Phoenix, AZ	102.1
Saskatoon, SK	96.7	Omaha, NE	99.0	St. Louis, MO	101.1
		Winnipeg, MB	97.7	Houston, TX	99.4
		Oklahoma City, OK	94.3	Dallas-Fort Worth, TX	97.3
		McAllen, TX	93.7		

c) Population over 1.5 million

Among the eight large cities examined in this region, Dallas-Fort Worth (97.3) is the clear cost leader, offering the fifth-lowest costs among all cities studied in this region, regardless of city size. Houston (99.4) is the only other large city in this region with a cost index below the US average.

St. Louis (101.1) and Phoenix (102.1) offer costs modestly above the US average. Costs are higher, and very similar, in Milwaukee (103.7) and Minneapolis (103.9), while Denver (104.9) and Chicago (106.5) have the highest costs among all cities in this region.

6. Pacific US/Canada

Costs in both US and Canadian cities in the Pacific region tend to be higher than in most other regions of each respective country. Results for the 12 cities examined in the Pacific region are illustrated in Exhibit 4.8.

a) Population of 100,000 to 500,000

Spokane, Washington (cost index: 99.8), has the lowest costs of the three small cities examined in this region. In comparison, costs in Chilliwack, British Columbia (101.6), are slightly over the US average. Anchorage, Alaska (112.6), due to its remote location, has the highest cost structure of all cities examined in continental North America.

EXHIBIT 4.8		Results by Size of City, Pacific US/Canada			
Population					
100,000 to 500,000		500,000 to 1.5 million		Exceeds 1.5 million	
Anchorage, AK	112.6	Honolulu, HI	115.0	San Jose, CA	110.0
Chilliwack, BC	101.6	Boise, ID	100.5	Seattle, WA	105.5
Spokane, WA	99.8			Las Vegas, NV	105.5
				San Diego, CA	104.6
				Vancouver, BC	104.2
				Riverside-San Bernardino, CA	102.8
				Portland, OR	102.2

b) Population of 500,000 to 1.5 million

Business costs in Boise, Idaho (100.5), are marginally above the US average. The only other mid-sized city examined in this region is Honolulu, Hawaii, which with a cost index of 115.0 represents the most expensive US city examined in this study.

c) Population over 1.5 million

All of the large cities in this region have costs at least 2.0 percent or more above the US average. Portland (102.2), followed by Riverside-San Bernardino (102.8), are the cost leaders in this region.

Vancouver (104.2), San Diego (104.6), Las Vegas (105.5), and Seattle (also 105.5) all have relatively similar cost structures. Costs are significantly higher in San Jose (110.0), making it the most expensive city studied in the lower 48 US states.

D. Asia Pacific

The results for four Australian cities and three Japanese cities are illustrated in Exhibit 4.9, and highlight the significantly different business cost structures in these two countries. Given its geographic location in the central Pacific, results for Honolulu are also included for comparative purposes.

a) Population of 100,000 to 500,000

No representative cities of this size were included in this study.

b) Population of 500,000 to 1.5 million

Adelaide (cost index: 97.9) is the cost leader for medium sized cities in this region, representing the most cost competitive city examined in Australia. The two medium sized Japanese cities of Fukuoka (113.6) and Hamamatsu (114.6) have very similar business costs, far above the US average. Business costs in Honolulu (115.0) are more akin to those of a Japanese city than to continental US cities.

EXHIBIT 4.9		Results by Size of City, Asia Pacific			
Population					
100,000 to 500,000		500,000 to 1.5 million		Exceeds 1.5 million	
No representative city		Honolulu, HI ¹	115.0	Yokohama, JP	114.8
		Hamamatsu, JP	114.6	Sydney, AU	102.7
		Fukuoka, JP	113.6	Brisbane, AU	100.1
		Adelaide, AU	97.9	Melbourne, AU	99.4

¹ Honolulu is primarily considered part of the Pacific US region, but is also included here due to geographic location.

c) Population over 1.5 million

Melbourne (99.4) is the cost leader for large cities in this region, with costs marginally below the US average. The other large Australian cities, Brisbane (100.1) and Sydney (102.7), have costs somewhat higher than Melbourne, but still much lower than Yokohama (114.8).

E. NAFTA Border Region Comparisons

With the inclusion of Mexico for the first time, *Competitive Alternatives 2008* provides a full picture of business costs throughout all three NAFTA member countries—Canada, Mexico, and the United States.

Given the strong trade ties that exist between these countries, and especially in the border regions, this section compares the business cost results for five pairs of cities¹ that straddle the Canada-US and the US-Mexico borders. The cities in each pair are located within approximately 140 miles (225 kilometers) of each other. Exhibit 4.10 illustrates the locations of these border cities, and Exhibit 4.11 compares the cost results for each pair of cities.

1. US-Canada Comparisons

There are four pairs of US-Canada border cities included in this study. In each case, the Canadian city holds an overall cost advantage over its US counterpart, although the extent of the cost advantage varies significantly among the city pairings. Indeed, in two of the four cases, with cost differentials of less than 2.0 percent, considerations other than cost would almost certainly drive cross-border investment decisions.

Cost results for US-Canada border cities are as follows:

- Burlington, Vermont, and Sherbrooke, Quebec, are similarly-sized communities only 127 miles (205 kilometers) apart. However, Sherbrooke holds a cost advantage of 6.6 points over Burlington.



¹ This comparison includes results for eight cities featured in this report, and two additional cities as referenced in Chapter 7.

- St. Catharines-Niagara, Ontario, occupies the Canadian side of the Niagara Falls region, slightly downriver from Buffalo, New York. With almost three times the population of St. Catharines-Niagara, and border-free access to the large US market, it is not surprising that business costs in Buffalo are slightly higher (1.6 percentage points) than in St. Catharines-Niagara.
- With their downtowns facing each other across the Detroit River, and strong integration in the automotive industry, Detroit, Michigan, and Windsor-Essex, Ontario, are as close as any pair of cities on the US-Canada border. Indeed, the Detroit-Windsor border represents the busiest commercial crossing point on the Canada-US border. Comparing business costs between the two cities, Windsor-Essex holds a 5.5 point cost advantage over its much larger neighbor.
- Seattle, Washington, and Vancouver, British Columbia, both share a background in forestry and transportation and both have strong high-tech clusters. These two major cities also share relatively similar business costs, with Vancouver holding a slim 1.3 point lead over its US counterpart.

2. US-Mexico Comparison

McAllen, Texas, and Reynosa, Tamaulipas, represent the only pairing of US and Mexican border communities in this study. Both cities are of very similar size, with populations in the range of 600-700,000. McAllen (93.7) represents one of the lowest-cost cities examined in the mainland United States, with business costs more than 6 percent below the US average. However, not surprisingly, neighboring Reynosa (76.6) offers a large cost advantage over McAllen, with savings of 17.1 points. Overall, Reynosa represents the lowest-cost city among all 136 cities included in this study.

EXHIBIT 4.11				
NAFTA Border City Comparisons				
City	Population	Cost Index	Cost Difference	Distance
US-Canada Border Cities				
Burlington	0.2 M	99.4	6.6	127 miles (205 km)
Sherbrooke	0.2 M	92.8		
Buffalo	1.1 M	100.6	1.6	30 miles (48 km)
St. Catharines-Niagara	0.4 M	99.0		
Detroit	4.5 M	106.8	5.5	2 miles (3 km)
Windsor-Essex	0.3 M	101.3		
Seattle	3.3 M	105.5	1.3	141 miles (227 km)
Vancouver	2.1 M	104.2		
US-Mexico Border Cities				
McAllen	0.7 M	93.7	17.1	12 miles (19 km)
Reynosa	0.6 M	76.6		

F. Detailed City Results, by Industry Operation

Exhibit 4.12 contains the index results for all featured cities, by region, for each of the 17 business operations examined in this study. Further detailed results for each city, by cost component, are also available online at: www.CompetitiveAlternatives.com.

EXHIBIT 4.12																		
Results by City – Europe and Asia Pacific																		
	Manufacturing											R&D			Software		Corp. Services	Overall Result ¹
Industry	Aero-space	Agri-food	Auto-motive	Chemicals	Electronics	Medical Devices	Metal Compon.	Pharmaceuticals	Plastics	Precision Mfg	Telecom	Biotech	Clinical Trials	Product Testing	Software Design	Web/Multi-media	Back Office/Call Center	12 Operations
Operation	Aircraft Parts	Food Proc.	Auto Parts	Spec. Chem.	Electr. Assbly	Medical Dev.	Metal Mach.	Pharmaceutical	Plastic Prod.	Prec. Comp.	Telecom Equip.	Bio-medical R&D	Clinical Trials Mgt	Elec. Syst. Dvlt/Test.	Adv. Softw.	Content Dvlt	Shared Serv.	
EUROPE																		
France																		
Mulhouse	100.9	99.8	100.3	105.0	105.6	102.2	100.6	102.3	99.5	98.4	100.7	98.4	83.4	89.1	102.6	102.1	117.0	101.9 (2)
Paris	103.8	100.3	102.1	107.1	108.9	105.0	102.3	104.5	101.1	101.6	102.5	117.5	96.0	106.6	111.2	110.8	130.5	107.1 (5)
Toulouse	100.6	99.9	100.1	104.2	104.8	101.4	100.5	101.6	99.5	98.4	100.3	101.2	82.2	91.3	101.9	101.4	116.2	101.8 (1)
Germany																		
Erlangen	114.2	106.8	113.1	116.9	118.3	114.3	112.5	113.0	110.4	114.0	108.7	123.9	133.8	114.1	125.2	125.2	141.4	116.7 (12)
Frankfurt	115.9	106.8	113.8	119.5	120.4	116.7	113.1	115.1	110.6	116.1	109.8	137.7	147.0	126.8	136.6	137.3	150.3	121.1 (13)
Halle	109.6	104.4	108.6	113.5	114.2	110.5	108.1	109.5	106.3	108.3	106.3	119.5	125.7	110.3	119.6	119.1	134.1	112.5 (10)
Italy																		
Livorno	104.7	101.4	104.5	108.6	107.8	105.5	104.2	104.8	103.2	102.4	102.9	112.1	102.6	106.5	116.3	112.5	130.8	108.0 (8)
Naples	105.8	103.1	106.6	109.0	108.4	105.9	106.5	105.2	105.8	103.5	103.3	112.1	103.4	104.8	113.5	110.7	131.2	108.5 (9)
Vicenza	102.8	100.7	103.3	107.6	106.6	104.1	103.0	103.5	102.4	99.9	102.0	112.4	102.1	107.6	116.9	112.7	127.4	107.2 (6)
Netherlands																		
Utrecht	106.9	100.9	104.1	109.0	110.7	107.4	104.5	106.7	102.5	105.8	104.1	107.9	86.2	97.0	110.0	109.2	132.2	107.3 (7)
United Kingdom																		
Barnsley	103.3	99.3	101.5	106.4	108.8	102.8	101.5	102.6	100.4	100.4	102.2	103.2	96.1	96.8	104.4	102.1	114.9	103.2 (3)
London	126.9	107.5	124.3	119.6	133.3	121.7	123.4	118.2	121.0	121.1	112.7	151.8	138.4	145.7	158.4	152.7	156.0	129.3 (14)
Manchester	111.2	103.2	108.2	112.8	116.0	110.4	108.2	109.1	105.7	108.6	106.8	120.4	117.8	115.2	126.3	121.2	135.5	113.3 (11)
Plymouth	103.6	100.1	102.3	106.6	108.7	103.3	102.4	103.1	101.3	100.6	102.3	108.4	99.5	102.0	108.0	105.6	119.0	104.9 (4)
ASIA PACIFIC																		
Australia																		
Adelaide	96.4	96.4	95.9	101.8	100.2	98.2	96.0	99.2	94.6	94.0	98.6	100.7	94.4	91.1	98.0	94.2	105.8	97.9 (1)
Brisbane	97.6	97.7	98.0	102.4	101.3	99.2	98.1	100.0	96.7	95.7	99.3	108.1	99.3	97.8	100.5	96.9	110.0	100.1 (3)
Melbourne	97.6	96.5	96.1	101.9	101.3	99.6	96.1	100.4	94.4	96.5	99.6	103.8	100.2	94.8	102.0	98.1	109.8	99.4 (2)
Sydney	101.0	98.5	100.6	105.5	105.5	102.2	100.4	102.5	98.8	97.8	101.1	108.0	106.8	99.1	106.2	101.7	113.0	102.7 (4)
Japan																		
Fukuoka	111.9	105.4	112.0	109.4	117.2	111.9	111.9	111.0	108.8	109.0	107.2	129.2	116.2	110.9	109.0	109.3	159.4	113.6 (5)
Hamamatsu	114.5	107.9	117.9	109.8	118.2	113.2	117.6	112.3	113.1	110.7	107.9	123.1	116.5	105.6	108.8	109.0	159.3	114.6 (6)
Yokohama	113.9	107.0	115.6	109.4	118.3	113.0	115.3	112.0	111.9	110.4	107.7	129.3	120.4	111.0	109.6	109.9	161.0	114.8 (7)

¹ For consistency with 2006 results, the overall results are based on the same 12 industries analyzed in the 2006 editions of *Competitive Alternatives*. (Refer to Exhibit 1.3)

EXHIBIT 4.12 (cont'd)

Results by City – North America

	Manufacturing											R&D			Software		Corp. Serv.	Overall Result ¹
Industry	Aero-space	Agri-food	Auto-motive	Chemicals	Electronics	Medical Devices	Metal Compon.	Pharmaceuticals	Plastics	Precision Mfg	Telecom	Biotech	Clinical Trials	Product Testing	Software Design	Web/Multi-media	Back Office/Call Center	12 Operations
Operation	Aircraft Parts	Food Proc.	Auto Parts	Spec. Chem.	Electr. Assbly	Medical Dev.	Metal Mach.	Pharmaceutical	Plastic Prod.	Prec. Comp.	Telecom Equip.	Bio-medical R&D	Clinical Trials Mgt	Elec. Syst. Dvlt/Test	Adv. Softw.	Content Dvlt	Shared Serv.	
NORTH AMERICA																		
New England/Atlantic Canada																		
Bangor, ME	98.6	100.6	100.6	98.6	97.7	98.2	100.4	98.2	101.1	98.3	98.7	91.1	93.6	90.6	95.3	95.0	92.2	97.5 (5)
Boston, MA	105.7	103.4	106.5	104.3	106.2	105.1	106.3	104.1	105.8	105.5	103.1	113.2	112.1	112.9	108.1	108.5	114.5	106.7 (11)
Burlington, VT	99.4	99.8	99.6	99.7	99.5	99.5	99.8	99.4	100.0	99.8	99.7	97.9	99.2	98.4	99.5	99.3	98.4	99.4 (6)
Charlottetown, PE	94.1	100.2	98.1	96.8	94.6	96.1	98.8	96.8	100.4	93.7	97.1	92.0	90.9	86.9	89.8	91.5	95.2	95.8 (3)
Fredericton, NB	94.3	99.5	97.0	96.8	95.7	95.9	99.0	96.1	99.9	94.0	96.0	86.2	75.1	82.4	89.2	92.2	97.4	95.3 (2)
Halifax, NS	95.5	100.4	98.9	96.9	96.7	96.9	100.2	97.1	102.2	95.6	96.8	88.8	77.5	84.5	91.5	94.3	99.1	96.6 (4)
Hartford, CT	103.4	101.9	103.6	103.0	103.6	103.3	103.6	102.6	103.0	103.9	102.4	106.7	107.2	107.5	105.2	105.8	110.4	104.1 (10)
Manchester, NH	101.3	101.7	102.5	101.5	101.6	101.1	102.5	100.7	102.4	101.4	100.5	97.1	100.3	97.4	100.5	100.5	101.0	101.0 (8)
Moncton, NB	94.0	99.8	96.9	96.5	95.1	95.3	98.9	95.7	100.0	93.8	95.8	84.7	74.1	81.0	88.4	91.3	96.1	94.9 (1)
Providence, RI	101.5	101.5	102.7	101.6	101.8	101.3	102.5	100.8	102.7	101.1	100.8	103.1	102.3	103.2	101.6	102.1	103.5	101.9 (9)
St. John's, NL	97.6	109.6	108.7	96.6	94.9	96.7	110.1	97.0	117.4	98.2	95.9	84.9	75.6	81.4	90.1	92.8	97.6	99.5 (7)
Northeast US/Canada																		
Baltimore, MD	98.5	99.3	97.8	99.4	98.4	98.6	97.9	98.6	97.6	98.5	98.9	100.2	99.6	98.8	98.9	99.1	100.1	98.9 (7)
Buffalo, NY	100.2	98.9	100.2	100.4	100.2	101.0	99.5	100.7	98.7	100.9	100.5	101.5	102.7	102.4	102.1	102.1	103.3	100.6 (11)
Charleston, WV	96.0	95.8	93.7	97.4	96.0	96.8	93.8	97.1	93.6	95.9	98.1	93.6	94.4	91.9	96.0	95.8	92.7	95.3 (3)
Detroit, MI	107.1	101.8	104.7	104.9	107.4	106.9	104.3	105.8	103.1	108.8	104.5	110.9	116.8	114.0	109.8	110.1	116.0	106.8 (18)
Harrisburg, PA	101.5	99.6	101.4	100.2	102.2	101.0	101.2	100.6	100.6	101.0	100.5	98.9	100.3	99.0	100.6	100.6	101.2	100.5 (10)
Indianapolis, IN	101.9	98.2	98.8	101.8	102.7	102.6	98.7	102.3	97.5	102.7	101.7	102.2	103.3	103.6	103.5	103.6	105.6	101.3 (14)
Lexington, KY	95.9	95.0	93.4	96.9	95.9	96.6	93.2	97.0	92.8	96.0	97.8	92.6	95.1	91.6	95.9	95.7	92.8	95.0 (2)
Montreal, QC	98.6	98.2	98.5	99.6	101.0	99.6	99.1	99.4	98.7	97.9	98.6	94.9	85.0	91.4	94.8	97.9	105.7	98.5 (6)
New York City, NY	108.6	103.1	108.7	105.4	109.5	107.9	107.6	106.3	106.7	108.4	104.8	119.1	122.3	121.3	112.5	113.0	119.1	109.2 (20)
North Virginia (Metro DC), VA	100.7	98.6	98.9	101.4	101.6	100.4	98.8	100.5	98.2	100.7	100.4	106.3	103.8	104.2	101.9	102.4	104.4	101.0 (13)
Ottawa, ON	99.0	98.2	99.6	100.0	102.2	101.2	100.1	100.8	100.0	97.9	99.6	100.8	96.3	96.5	96.8	99.4	107.9	99.9 (8)
Philadelphia, PA	102.8	100.5	102.2	101.8	103.2	102.6	102.0	102.0	101.1	103.5	101.7	106.9	105.4	107.6	105.1	105.3	109.0	103.2 (17)
Quebec City, QC	96.2	97.8	96.9	98.0	98.0	97.5	97.6	97.7	97.9	95.6	97.3	90.5	81.1	87.0	91.6	94.6	101.1	96.3 (4)
Saginaw, MI	102.5	99.7	100.5	102.1	102.3	103.0	100.3	102.5	99.2	104.0	101.9	101.8	105.8	104.8	104.4	104.5	106.5	102.2 (16)
Sherbrooke, QC	92.8	95.8	93.2	96.1	94.5	94.8	94.1	95.4	94.1	92.3	95.5	83.4	75.0	80.2	87.7	90.4	95.4	92.8 (1)
Toronto, ON	100.8	98.5	101.1	100.9	103.7	102.3	101.5	101.7	101.7	99.6	100.2	104.0	100.5	99.7	99.0	101.8	111.2	101.5 (15)
Trenton, NJ	105.9	102.3	105.4	104.2	106.5	105.5	105.0	104.5	104.3	106.3	103.6	114.6	114.5	115.9	109.2	109.5	116.4	106.8 (19)
Waterloo Region, ON	97.5	97.5	98.2	99.3	100.0	99.6	98.8	99.5	98.6	96.9	98.7	95.9	94.7	92.0	95.0	97.5	105.2	98.2 (5)
Wilmington, DE	100.2	99.4	99.6	100.0	100.6	100.3	100.3	99.8	99.7	100.8	100.0	101.8	101.8	101.7	101.5	101.9	103.1	100.6 (12)
Youngstown, OH	101.0	99.6	99.0	100.7	101.0	101.4	99.4	101.0	98.5	101.9	101.0	98.2	101.2	100.2	100.8	100.7	101.3	100.2 (9)
Southeast US and Puerto Rico																		
Atlanta, GA	97.3	96.6	95.0	98.3	97.0	97.4	94.9	97.7	94.3	97.7	98.6	97.9	97.8	97.6	97.1	97.1	96.9	96.9 (8)
Greenville-Spartanburg, SC	95.4	95.4	93.0	97.0	95.2	95.6	92.9	96.3	92.3	95.5	97.4	91.8	93.6	90.6	94.2	94.0	91.5	94.4 (4)
Jackson, MS	96.2	96.7	94.9	97.7	96.4	96.5	94.9	97.2	94.9	95.8	98.0	92.9	93.9	91.3	94.6	94.0	91.6	95.4 (4)
Little Rock, AR	94.1	95.7	93.2	96.3	94.4	95.2	93.3	95.9	93.4	93.3	97.1	89.1	91.5	86.9	92.4	92.1	87.4	93.4 (3)
Montgomery, AL	95.5	96.0	93.2	96.9	94.8	95.8	93.2	96.3	92.7	95.5	97.5	92.1	94.9	91.5	95.5	94.9	91.2	94.7 (5)
Nashville, TN	97.3	96.2	94.9	98.1	97.6	97.9	94.8	98.4	94.4	97.1	98.9	97.4	96.7	96.6	97.3	97.1	95.8	96.8 (7)
Raleigh, NC	98.0	97.5	96.4	98.5	98.0	98.0	96.6	98.1	96.2	98.1	99.0	97.0	97.2	96.6	98.6	98.5	96.7	97.6 (10)
San Juan, PR	89.6	99.3	96.7	94.3	85.7	87.1	96.9	88.4	100.4	85.9	91.1	83.6	73.6	81.3	74.0	74.2	79.3	89.1 (1)
Shreveport, LA	93.2	95.8	92.4	95.6	92.8	93.3	92.5	94.5	92.7	92.8	95.9	87.1	90.8	85.1	92.2	92.0	87.0	92.7 (2)
Tampa, FL	97.6	98.4	97.1	98.6	97.0	96.9	97.2	97.5	97.4	97.3	98.1	96.6	96.5	95.7	96.9	96.6	94.1	97.3 (9)

¹ For consistency with 2006 results, the overall results are based on the same 12 industries analyzed in the 2004 edition of *Competitive Alternatives*. (Refer to Exhibit 1.3.)

EXHIBIT 4.12 (cont'd)																		
Results by City – North America																		
	Manufacturing											R&D			Software		Corp. Serv.	Overall Result ¹
Industry	Aero-space	Agri-food	Auto-motive	Chemicals	Electronics	Medical Devices	Metal Compon.	Pharmaceuticals	Plastics	Precision Mfg	Telecom	Biotech	Clinical Trials	Product Testing	Software Design	Web/Multi-media	Back Office/Call Center	12 Operations
Operation	Aircraft Parts	Food Proc.	Auto Parts	Spec. Chem.	Electr. Assbly	Medical Dev.	Metal Mach.	Pharmaceutical	Plastic Prod.	Prec. Comp.	Telecom Equip.	Bio-medical R&D	Clinical Trials Mgt	Elec. Syst. Dvlt/Test	Adv. Softw.	Content Dvlt	Shared Serv.	
NORTH AMERICA																		
Mexico																		
Aguascalientes	77.8	89.6	81.4	88.0	77.7	79.1	81.6	82.0	84.5	73.7	85.7	72.4	63.6	63.6	71.5	66.2	69.1	79.4 (2)
Guadalajara	80.8	91.1	83.9	89.9	80.7	81.6	84.0	84.0	87.1	76.9	87.3	79.0	67.7	70.1	76.5	70.7	74.6	82.6 (4)
Monterrey	80.6	89.9	82.7	91.0	81.6	82.2	82.8	84.6	85.2	76.7	87.7	83.8	71.9	74.7	80.4	74.4	78.3	83.6 (5)
Puebla	78.5	89.9	81.7	88.1	77.9	79.3	82.0	82.2	85.0	74.5	85.8	74.9	64.7	65.8	72.4	67.1	70.1	80.0 (3)
Reynosa	74.7	86.9	77.9	86.6	75.6	76.9	78.1	80.0	81.2	69.7	84.2	69.4	60.2	60.7	68.2	63.3	64.1	76.6 (1)
Midwest US/Western Canada																		
Albuquerque, NM	102.0	100.3	101.2	101.4	102.5	101.8	101.1	101.8	101.5	101.4	101.1	100.9	100.1	101.7	100.9	101.0	100.8	101.2 (17)
Billings, MT	100.0	101.1	101.6	99.5	100.5	100.1	101.9	100.0	102.6	99.8	99.5	94.1	96.7	95.8	97.6	97.4	95.2	99.4 (12)
Calgary, AB	103.7	99.1	103.0	99.9	102.1	101.2	103.6	101.4	104.3	103.6	99.3	108.1	104.3	103.3	97.6	100.3	110.3	102.0 (18)
Cedar Rapids, IA	98.3	97.7	97.5	98.7	98.4	99.4	97.0	99.6	96.5	99.2	99.6	94.1	96.7	94.8	97.4	97.5	97.4	97.6 (7)
Cheyenne, WY	96.8	98.6	98.2	97.3	96.8	97.9	98.1	98.3	98.6	96.7	98.4	94.5	95.2	94.6	95.1	94.9	93.8	96.9 (4)
Chicago, IL	106.1	101.1	103.7	104.5	107.1	106.3	103.5	105.2	102.4	107.1	104.3	113.1	115.0	115.6	109.4	109.7	115.9	106.5 (23)
Dallas-Fort Worth, TX	97.0	98.3	96.2	98.4	97.1	97.1	96.3	97.5	96.5	97.1	98.5	97.5	96.9	97.5	96.7	96.6	95.8	97.3 (5)
Denver, CO	103.8	102.4	104.2	102.8	104.2	104.1	104.0	103.5	103.6	104.2	102.5	109.8	107.5	111.4	106.1	106.2	110.6	104.9 (22)
Edmonton, AB	102.7	99.1	102.9	99.5	100.7	100.4	103.6	100.7	104.4	102.5	98.7	97.9	99.3	94.1	93.9	96.3	104.6	99.9 (14)
Fargo, ND	97.8	101.0	101.2	97.8	98.0	98.7	101.3	98.6	102.1	97.3	98.6	93.2	95.0	92.6	96.3	96.2	93.8	98.1 (9)
Houston, TX	98.7	99.8	98.3	99.1	98.6	98.2	98.4	98.4	98.6	98.8	99.2	102.6	99.8	102.7	99.3	99.2	99.7	99.4 (11)
McAllen, TX	94.1	97.8	95.0	95.7	93.3	93.8	95.1	94.6	96.3	93.3	96.2	89.3	90.7	89.1	91.3	90.7	84.6	93.7 (1)
Milwaukee, WI	103.4	100.7	101.5	102.4	103.4	103.8	101.4	103.3	100.2	104.8	102.5	106.5	107.8	109.2	106.1	106.1	110.5	103.7 (20)
Minneapolis, MN	103.7	102.3	103.6	102.0	103.9	104.0	103.3	103.4	103.1	104.3	102.1	106.8	106.3	107.2	104.3	104.6	109.4	103.9 (21)
Oklahoma City, OK	94.5	97.6	95.4	96.1	94.9	95.5	95.4	96.0	96.0	93.8	97.1	89.2	91.1	88.4	92.4	92.1	88.0	94.3 (2)
Omaha, NE	98.5	100.6	99.8	98.7	98.6	98.8	100.0	99.2	100.3	98.8	99.0	98.0	98.5	97.9	97.5	97.5	98.2	99.0 (10)
Phoenix, AZ	103.1	101.0	102.4	101.5	102.7	102.4	102.1	102.1	102.0	102.7	101.1	102.9	102.5	103.4	101.9	102.0	103.6	102.1 (19)
Salt Lake City, UT	100.3	100.8	101.1	100.2	100.4	101.1	101.1	101.0	101.2	100.9	100.9	101.7	100.9	102.2	101.1	100.9	101.7	101.0 (15)
Saskatoon, SK	99.3	98.2	99.6	96.5	96.7	97.4	100.7	97.5	101.8	99.3	96.6	92.0	90.3	88.2	90.3	93.2	99.3	96.7 (3)
Sioux Falls, SD	96.8	100.2	100.0	97.9	97.1	97.8	100.0	98.1	100.9	96.2	98.5	93.1	94.7	93.3	95.4	94.8	92.2	97.4 (6)
St. Louis, MO	101.5	98.9	99.3	101.6	102.4	101.8	99.3	101.7	98.5	101.8	101.3	102.1	102.5	102.9	101.9	102.0	103.5	101.1 (16)
Wichita, KS	99.5	100.2	99.9	99.8	100.2	100.0	100.1	100.1	99.9	99.6	100.1	98.4	98.8	99.0	99.0	98.9	98.3	99.6 (13)
Winnipeg, MB	96.8	100.9	100.3	97.0	96.5	96.9	101.9	97.5	103.0	97.1	97.0	94.7	92.2	90.8	91.3	94.5	100.7	97.7 (8)
Pacific US/Canada																		
Anchorage, AK	110.5	119.1	113.1	104.2	109.9	109.8	112.7	108.4	131.2	112.0	105.5	112.1	109.5	111.1	107.0	107.2	114.1	112.6 (11)
Boise, ID	100.7	101.8	102.5	99.9	100.6	101.0	102.5	100.9	102.9	100.5	100.3	97.1	99.3	97.8	99.9	99.6	98.7	100.5 (2)
Chilliwack, BC	107.3	100.7	105.1	100.5	103.4	102.4	105.7	102.3	106.0	108.1	100.5	97.2	98.8	93.6	95.6	98.4	107.7	101.6 (3)
Honolulu, HI	112.5	127.9	114.0	107.5	111.7	111.4	114.0	110.0	140.1	114.0	107.1	110.5	106.9	108.8	104.9	104.8	110.3	115.0 (12)
Las Vegas, NV	105.1	102.8	104.4	104.0	104.8	104.6	103.8	104.0	103.4	106.0	103.2	111.4	110.1	112.5	106.6	106.8	111.1	105.5 (8)
Portland, OR	102.7	103.1	104.5	101.1	103.1	102.3	104.6	101.9	104.8	102.6	101.0	99.5	101.1	98.8	101.2	101.3	102.4	102.2 (4)
Riverside-San Bernardino, CA	103.0	101.1	102.1	101.9	103.2	102.5	101.8	102.3	101.7	102.9	101.5	105.6	104.3	105.7	103.4	103.6	105.7	102.8 (5)
San Diego, CA	105.3	102.0	104.4	102.7	105.2	103.9	104.0	103.4	104.2	104.4	102.3	110.8	105.8	110.3	104.5	104.9	107.8	104.6 (7)
San Jose, CA	109.6	105.3	109.9	105.7	109.8	108.1	109.5	107.0	109.3	109.5	105.0	119.0	121.5	120.0	111.6	112.0	119.6	110.0 (10)
Seattle, WA	104.6	104.7	107.2	102.3	104.1	104.2	107.1	103.9	106.9	105.3	102.8	108.4	106.2	107.2	105.7	106.1	111.0	105.5 (9)
Spokane, WA	99.2	102.1	102.3	99.2	98.6	99.6	102.4	100.1	102.5	99.4	99.7	96.4	98.3	95.1	98.7	98.4	98.9	99.8 (1)
Vancouver, BC	108.6	101.3	106.6	101.3	104.6	103.6	107.2	103.2	107.1	109.6	101.2	107.5	106.3	102.9	99.2	102.4	113.0	104.2 (6)

¹ For consistency with 2006 results, the overall results are based on the same 12 industries analyzed in the 2004 edition of *Competitive Alternatives*. (Refer to Exhibit 1.3.)

5. Comparison by Cost Component

This chapter compares the results among the ten countries for each of the major location-sensitive cost components. Results for individual cities are available at: www.CompetitiveAlternatives.com.

A. Relative Importance of Cost Components

Exhibit 5.1 illustrates the relative significance of each cost component, for both manufacturing and non-manufacturing operations.

The significance of each cost factor varies both by operation and by location. Figures shown here represent the average results for all ten countries.

Labor costs, including employer-paid statutory plans and other benefits, represent 58 to 74 percent of location-sensitive costs for manufacturing operations, and 79 to 88 percent of location-sensitive costs for non-manufacturing (service) operations.

Facility costs represent the second most significant cost factor. For manufacturing operations, annual costs related land acquisition and facility construction are reflected in **depreciation and financing costs**, which range from 8 to 19 percent of total location-sensitive costs. For non-manufacturing operations, **office lease costs** represent 4 to 14 percent of total location-sensitive costs.

For manufacturing operations, **transportation** is another major factor, representing up to 15 percent of total location-sensitive costs.

Utility costs represent 2 to 10 percent of location-sensitive costs. Electricity and natural gas costs are more significant for manufacturers, while telecommunication costs are more significant for non-manufacturers.

Taxes represent 6 to 11 percent of total location-sensitive costs for manufacturing operations, and 2 to 7 percent for non-manufacturing operations.

EXHIBIT 5.1

Relative Importance of Key Location-sensitive Cost Factors

	Manufacturing Operations ¹	Non-manufacturing Operations ²
Labor Costs		
Salaries and wages	41% - 52%	56% - 62%
Statutory plans	7% - 9%	9% - 10%
Other benefits	10% - 13%	14% - 16%
Total labor	58% - 74%	79% - 88%
Lease Costs (Non-manufacturing)	n/a	4% - 14%
Transportation Costs (Road, Air, Sea)	1% - 15%	0% - 1%
Utility Costs		
Electricity/natural gas	2% - 10%	1% - 2%
Telecommunications	0% - 1%	1% - 5%
Total utilities	2% - 10%	2% - 7%
Non-operating (Depreciation, Financing)	8% - 19%	0% - 2%
Taxes		
Property	1% - 2%	n/a
Other	0% - 1%	n/a
Income taxes ³	4% - 8%	2% - 7%
Total taxes	6% - 11%	2% - 7%

¹ Range for seven manufacturing operations included in the overall results. (Refer to Exhibit 1.3.)

² Range for five non-manufacturing operations included in the overall results. (Refer to Exhibit 1.3.)

³ Varies with revenue. Modeled operations are assigned revenues in line with typical industry targets.

B. Labor Costs

Labor costs represent the most important group of cost factors examined in this study.

The labor force required for each business operation has been compiled from 42 benchmark job positions used consistently throughout this study. These positions reflect the full range of skills and responsibilities typically required in each of the business operations. A summary of the workforce profile for each operation can be found in Chapter 3.

1. Total Labor Costs

Total labor costs are the sum of:

- Base wages and salaries
- Employer-paid statutory plans
- Other employer-sponsored benefits

Exhibit 5.2 compares each of these components along with total labor costs for the ten countries examined in this study. The results are as follows:

- Salaries and wages – **Mexico** has the lowest salary and wage structure by far among the ten countries examined. **France, Italy,** and the **United States** rank second through fourth respectively, and all have relatively similar overall salary and wage costs
- Statutory plans – Expressed as a percentage of payroll, statutory plans are lowest in **Canada,** followed by **Japan** and the **United States**
- Other employer-sponsored benefits – Expressed as a percentage of payroll, other benefit costs are lowest in **France** and **Canada,** followed closely by **Germany, Mexico,** and **Australia**
- Total labor – Total labor costs are lowest in **Mexico,** followed by the **United States, Canada,** and **Australia**

2. Differences in Salary and Wage Structures

The study also found significant differences among countries in salary and wage structures at different employee levels.

EXHIBIT 5.2								
Labor Cost Comparison								
	Salaries & Wages		Benefits				Total Labor	
			Statutory Plans		Other Benefits			
	Average per Employee ¹ (US\$)	Rank	Percent of Payroll	Rank	Percent of Payroll	Rank	Average per Employee ¹ (US\$)	Rank
EUROPE								
France	\$51,984	2	43%	10	20%	1	\$84,826	5
Germany	\$79,064	10	15%	8	21%	3	\$107,518	10
Italy	\$54,362	3	32%	9	28%	7	\$87,119	6
Netherlands	\$66,934	8	12%	4	33%	10	\$97,040	9
United Kingdom	\$62,988	7	12%	5	30%	8	\$89,699	7
NORTH AMERICA								
Canada	\$60,006	6	8%	1	20%	2	\$76,738	3
Mexico	\$30,871	1	12%	6	22%	4	\$41,351	1
United States	\$55,821	4	10%	3	26%	6	\$75,411	2
ASIA PACIFIC								
Australia	\$58,480	5	13%	7	22%	5	\$78,903	4
Japan	\$68,247	9	9%	2	31%	9	\$95,600	8

¹ Average for 12 operations included in the overall results. (Refer to Exhibit 1.3) Represents 42 different job positions.

Exhibit 5.3 compares salary levels for five major levels of employees, based on the salary range for each job position in the United States. These employee groups range from unskilled workers to senior management. Results are presented both in table form and graphically. (For visual simplicity, two charts are used, each showing a subset of the countries studied).

Owing to the current weakness of the US dollar, the United States has the second lowest wages or salary levels (after Mexico) for both unskilled and skilled labor positions, as well as for senior technical/professional and line management positions. For general technical/professional positions, salaries in France, Italy, and Australia dip below those of the United States. Even at the senior management level, where top US managers have long been the highest paid in the world, German senior managers have now edged out their US counterparts to take home the largest paycheck among the study countries.

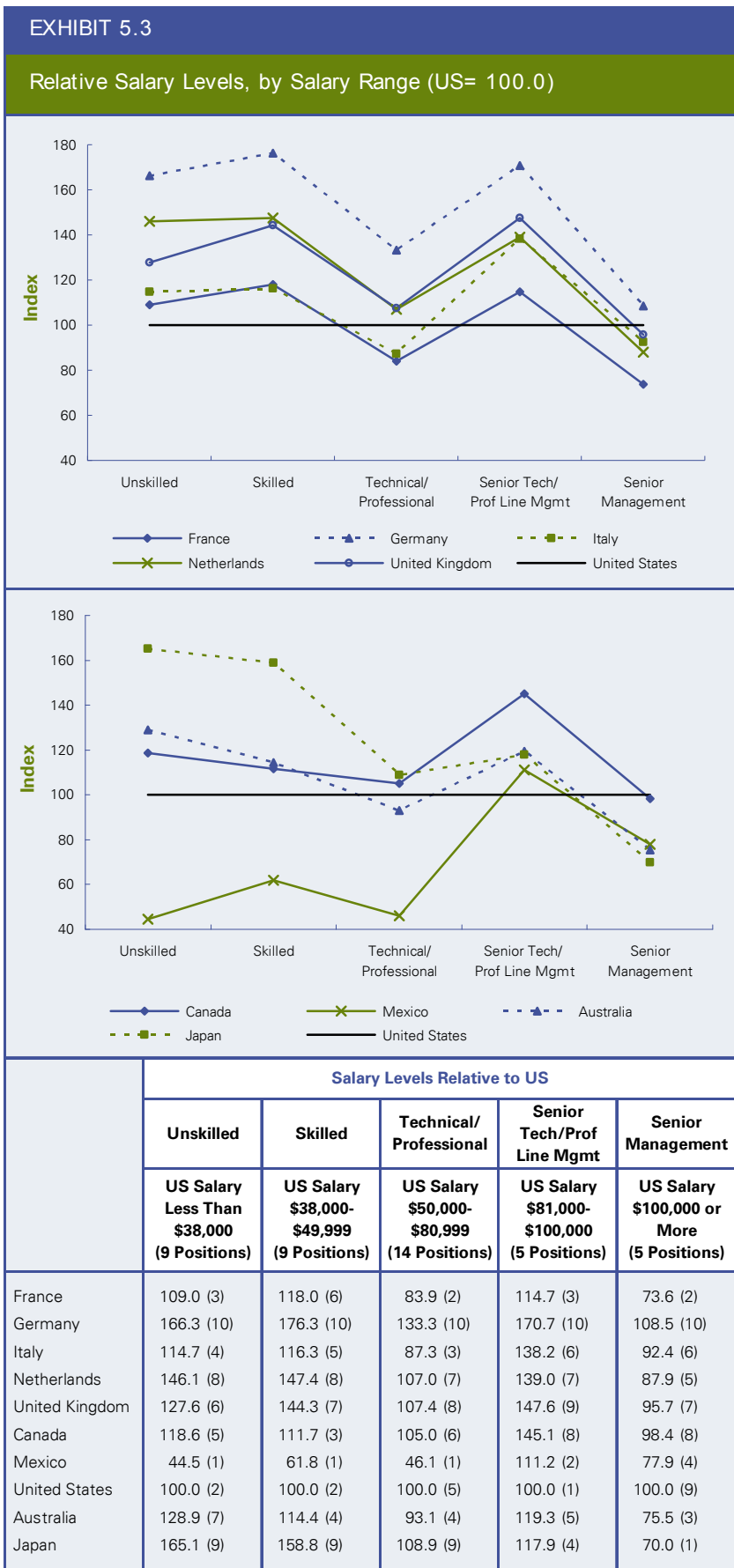
The comparison of wage and salary levels between the United States and Mexico presents an interesting case study of the economic differences between these two countries. For unskilled labor, wages in Mexico are, on average, 55.5 percent lower than in the US. Skilled laborers and lower-level technical/professionals fare little better, with wages and salaries that are 38 to 54 percent lower than in the US. However, among senior technical/professional and management positions, Mexican salaries rise significantly, to be in the same general range as their US counterparts. Indeed, for senior technical/professional and management positions, Mexican salaries align very closely to those of Australia, France, and Japan.

These trends, and the graphs in Exhibit 5.3, demonstrate a higher income disparity between low-paying and high-paying jobs in both Mexico and the US, relative to all other countries.

3. Physical Productivity Factors

Physical productivity is the result of four main factors. These factors have been addressed in this study as follows:

- Actual hours worked**, including the costs associated with paid-time-not-worked (vacation and holidays), have been included in the analysis on the assumption that absent workers must be covered by temporary labor, overtime, or additional staffing to keep the facility running year-round. The total labor costs shown in this study represent the cost for each facility to have full staffing, 52 weeks per year.
- Capital and technology** applied are assumed to be equal in all countries examined, as the model compares the costs of establishing and operating an identical facility in every location. The ability to recruit workers with the required industrial and technology skills may vary from country to country and region to region, and is not included in this analysis. However, all countries and regions included in this study, including Mexico, have modern sophisticated industrial sectors, suggesting that suitably skilled labor pools (of varying size) exist in each region studied.
- Specific workplace training** provided to employees is also assumed to be equal for this comparison of identical facilities in each location.
- Physical productivity of workers** is another key determinant of physical productivity. This factor recognizes the possibility that, given the same tools and training, workers in some countries may work more productively (e.g., achieve higher output per worker hour). However, this factor is extremely difficult to assess in an objective manner, and the comparisons in this study do not differentiate between countries on this basis.



C. Facility Costs

For the manufacturing operations examined in this study, facilities are assumed to be established in a newly constructed, owner-occupied building, located on a purchased industrial site.

For the non-manufacturing operations examined, facilities are assumed to be established in leased Class “A” office space.

1. Industrial Land

Land requirements vary by operation, ranging from 3 to 14 acres (1.2 to 5.6 hectares) for the manufacturing operations examined. In locations with extremely high real estate prices, these land requirements have been reduced to reflect higher building density and site-coverage ratios typically found in such locations.

Land costs for each location are based on costs for serviced sites of varying sizes in suburban areas zoned for light to medium industrial use. Prices reflect the availability of suitable land in each city, and may vary significantly by location and size of site. Land costs include all land transfer taxes.

As illustrated in Exhibit 5.4, land acquisition costs are lowest in **Mexico** and the **United States**, followed by three closely grouped countries: **France, Italy,** and **Canada**.

2. Industrial Construction

Factory size requirements vary by operation, but range from 30,000 to 120,000 square feet (2,790 to 11,148 square meters) for the manufacturing operations examined in this study.

Building construction costs for each location are based on the costs of construction for a build-to-suit light industrial building on the land described above. The building is assumed to be a single-level turnkey factory, with 10 percent finished office space. Government development charges and all other “soft” construction costs are included.

As illustrated in Exhibit 5.4, construction costs are lowest in **Mexico**, followed by the **United States, Italy, Australia,** and **France**.

EXHIBIT 5.4								
Facility Costs ¹ : Industrial Land, Construction and Office Leasing Costs, by Country								
	Manufacturing Operations						Other Operations	
	Industrial Land ²		Industrial Construction ³		Total Facility Investment		Office Leasing ⁴	
	US\$ '000 per acre ⁵	Rank	US\$ per sq.ft. ⁶	Rank	US\$ per sq.ft. ⁶ of building ⁷	Rank	US\$ per sq.ft. ⁶	Rank
EUROPE								
France	\$349	3	\$65.01	5	\$99.08	4	\$28.24	7
Germany	\$817	7	\$70.91	6	\$117.19	7	\$19.41	4
Italy	\$358	4	\$59.99	3	\$91.51	3	\$11.75	1
Netherlands	\$1,388	10	\$77.29	8	\$139.56	8	\$19.12	3
United Kingdom	\$597	6	\$97.57	9	\$143.21	9	\$31.67	8
NORTH AMERICA								
Canada	\$359	5	\$75.26	7	\$108.56	5	\$28.16	6
Mexico	\$212	1	\$34.55	1	\$54.11	1	\$15.38	2
United States	\$247	2	\$59.92	2	\$80.52	2	\$22.07	5
ASIA PACIFIC								
Australia	\$1,044	8	\$64.11	4	\$115.64	6	\$34.09	9
Japan	\$1,376	9	\$102.34	10	\$175.39	10	\$37.38	10

1 Results are the average for the comparable cities selected for the international results. (Refer to Exhibit 1.6.) Care should be exercised in interpreting the country averages due to the significant variations in costs among cities within each country.

2 Including land transfer taxes.

3 Including government development charges and all other “soft” construction costs.

4 Including tenant-borne operating, tax, and insurance costs.

5 Equals 0.405 hectare.

6 Equals 0.09 m².

7 Average for seven manufacturing operations included in the overall results. (Refer to Exhibit 1.3.) Represents total investment in both land and buildings, expressed per square foot of building space.

3. Total Industrial Facility Investment

Industrial land and construction costs combine to represent the total initial investment required to establish the new industrial facility. **Mexico** is the cost leader for industrial facility costs, followed by the **United States, Italy,** and **France**.

4. Office Leasing

Office size requirements range from 10,000 to 45,000 square feet (929 to 4,180 square meters) for the non-manufacturing operations examined.

Office lease costs for each location are based on costs for Class “A” office space located, where possible, in a suburban office park or equivalent location. Lease costs include all operating costs, taxes, and insurance costs generally passed on by the landlord to the tenant in each location.

As illustrated in Exhibit 5.4, office lease costs are lowest in **Italy**, followed by **Mexico, the Netherlands,** and **Germany**.

In comparison with other studies that examine office lease costs in the world’s major cities, costs in the European cities featured in this report may appear relatively low. This result is due to the tendency of office lease costs in Europe to be much lower in regional cities than in the major center(s) of each country.

D. Transportation Costs

All of the manufacturing operations examined in this study, plus the advanced software operation (distributing "shrink-wrapped" applications), are assumed to deliver their physical products by some combination of land, sea, and air freight. Exhibit 5.5 illustrates the transportation modes typically used by each type of operation, as well as the relative significance of transportation costs.

Transportation costs are estimated on the general assumption that each firm delivers product to its customers in full-load or standardized less-than-full-load quantities, using normal delivery schedules. (In other words, the model assumes that firms are not selling to customers requiring just-in-time (JIT), just-in-order (JIO), or other specialized warehousing and delivery services which can significantly affect transportation costs.)

The comparisons are based on costs-to-market, combining transportation rates for each distribution channel and the proximity of each location to major markets for the various products. Figures shown here for all freight modes include relevant fuel and security surcharges.

Exhibit 5.6 illustrates representative transportation costs for manufacturing operations, based on specific distribution patterns for each operation. These results should be interpreted only as general indicators of transportation cost relationships among countries, since they are based on assumed product-distribution patterns for each operation within each country. Operations with different product-distribution patterns may have significantly different average transportation costs.

In Europe, the **Netherlands** has the lowest total transportation costs, resulting from its central location in the European market and its proximity to major ports. Transportation costs in the **United Kingdom** are similarly low.

Despite its geographically large but sparsely populated domestic market, and its more distant global location, low freight rates allow **Australia** to rate surprisingly well, with the third-lowest total transportation costs.

With the much larger North American market area, **Canada**, the **United States**, and **Mexico** have the highest transportation costs.

EXHIBIT 5.5

Summary of Distribution Channel Assumptions and Significance of Transportation Costs¹, by Operation

Business Operation	Distribution Channels Used					Transport as a Percent of Total Location-sensitive Costs ⁴
	Continental		Intercontinental		Internet ³	
	Road	Sea ²	Sea	Air		
Manufacturing						
Aircraft parts	√	√	√	√		7%
Auto parts	√	√	√	√		10%
Electronics assembly	√	√		√		3%
Food processing	√	√				10%
Medical devices	√	√	√			5%
Metal components	√	√	√			10%
Pharmaceuticals	√	√	√			5%
Plastic products	√	√	√			15%
Precision components	√	√		√		6%
Specialty chemicals	√	√	√			1%
Telecom equipment	√	√		√		4%
Software						
Advanced software	√	√		√	√	1%

1 Only those operations that distribute products are included.

2 Sea freight is only used as a continental destination channel between countries within Asia, and for the following remote and/or offshore US locations: Anchorage, Honolulu, and San Juan.

3. Costs for distribution of software over the internet have not been included as part of this analysis. These costs are not sensitive relative to the location of the firm requiring the service, since electronic commerce sites can be established anywhere in the world.

4 Includes all modes of transport.

EXHIBIT 5.6

Transportation Costs, by Country and Mode

	Continental	Intercontinental		Total Annual Cost	
	Road/Sea per Load ^{1,2,3}	Sea Freight per Container ¹	Air Freight per Kg ¹	US\$'000 ⁴	Rank
EUROPE					
France	\$921	\$2,451	\$2.72	\$585	4
Germany	\$918	\$2,567	\$2.66	\$597	5
Italy	\$1,485	\$2,848	\$2.70	\$891	7
Netherlands	\$539	\$2,364	\$2.66	\$424	1
United Kingdom	\$610	\$2,173	\$3.24	\$443	2
NORTH AMERICA					
Canada	\$1,731	\$2,257	\$2.25	\$943	8
Mexico	\$2,453	\$2,376	\$2.78	\$1,289	10
United States	\$1,905	\$2,427	\$2.27	\$1,044	9
ASIA PACIFIC					
Australia	\$732	\$1,955	\$2.70	\$469	3
Japan	\$1,425	\$2,690	\$3.75	\$799	6

1 Average for five manufacturing operations that utilize full-load delivery logistics.

2 Per standard US truck load (3,570 ft³ or 21,400 kg), or equivalent.

3 Sea freight is only used as a continental destination channel between countries within Asia.

4 Average for seven manufacturing operations included in the overall results. (Refer to Exhibit 1.3.)

E. Utility Costs

1. Electricity

Most of the operations examined in this study are not particularly energy-intensive, and electricity costs typically represent only 1.3 to 5.7 percent of total location-sensitive costs. Details of electricity demand and consumption requirements for each operation can be found in Chapter 3.

Exhibit 5.7 illustrates the relative cost for electricity in each country, expressed in US cents per kilowatt-hour. The lowest electricity costs are in the **United States**, **Canada**, and **France**.

2. Natural Gas

Natural gas costs are analyzed only for manufacturing operations, as natural gas costs are generally irrelevant or immaterial for service operations. For the manufacturing operations examined, natural gas costs typically represent 0.1 to 5.1 percent of total location-sensitive costs. Details of natural gas consumption requirements for each operation can be found in Chapter 3.

Care should be exercised in interpreting national results, since there may be significant regional differences in availability and costs. For the few locations where natural gas is not readily available, costs of alternate fuel sources (propane, diesel, heating oil, or additional electricity) have been substituted, based on energy-equivalencies for the fuel source representing the most economical alternative in each location.

With these qualifiers, Exhibit 5.7 illustrates the relative cost for natural gas in each country, expressed in US dollars per 100 cubic feet (CCF). The lowest natural gas costs are in **Mexico**, followed by the **United States** and **Canada**, which both have virtually equivalent natural gas costs.

EXHIBIT 5.7

Utility Costs: Electricity, Natural Gas, and Telecommunications Per Unit, by Country

	Electricity ¹		Natural gas ²		Telecommunications ⁴	
	US¢ per kWh	Rank	US\$ per CCF ³ (100ft ³)	Rank	US¢ per Minute ⁴	Rank
EUROPE						
France	9.0 ¢	3	\$1.64	8	10.7 ¢	8
Germany	15.5 ¢	9	\$2.04	10	5.4 ¢	4
Italy	21.6 ¢	10	\$1.49	6	9.7 ¢	7
Netherlands	13.1 ¢	5	\$1.56	7	7.6 ¢	5
United Kingdom	13.2 ¢	6	\$1.47	5	4.4 ¢	3
NORTH AMERICA						
Canada	8.7 ¢	2	\$0.89	3	3.8 ¢	2
Mexico	13.6 ¢	8	\$0.67	1	19.8 ¢	9
United States	6.8 ¢	1	\$0.89	2	3.4 ¢	1
ASIA PACIFIC						
Australia	12.6 ¢	4	\$1.14	4	8.9 ¢	6
Japan	13.4 ¢	7	\$1.69	9	39.6 ¢	10

1 Average for 12 operations included in the overall results. (Refer to Exhibit 1.3.)

2 Average for seven manufacturing operations included in the overall results. (Refer to Exhibit 1.3.)

Natural gas costs have not been analyzed for non-manufacturing operations.

3 Equals 2.83 m³ or 29.87 gJ.

4 Weighted average cost-per-minute across all relevant calling destinations, including local, long distance, national, and international.

3. Telecommunications

Telecommunication costs typically represent less than 1.0 percent of total location-sensitive costs for the operations examined. The exception to this rule is the shared services center, where telecommunication costs represent approximately 5 percent of costs.

Exhibit 5.7 illustrates the relative cost for telecommunications in each country, expressed as a weighted average cost for calls to all relevant calling destinations in US cents per minute.

The lowest costs for telecommunications are in the **United States**, followed by **Canada**, and the **United Kingdom**. The ongoing prevalence of per-minute local call costs in Europe helps to provide an advantage for the US and Canada, where local calling is free.

The relative importance of telecom costs has decreased dramatically over the past decade, as long distance and international calling costs have declined sharply. Strong competition between telecom providers has also greatly reduced or eliminated price differentials between cities in each country. In addition, traditional landline technology is gradually being replaced by relatively inexpensive broadband (VoIP) technology, with mid-to-large businesses representing the early-adopters of this technology. As a result, telecommunication costs have become largely irrelevant in the site selection process, which now generally focuses on the quality of available ICT services and infrastructure, rather than cost. For this reason, it is anticipated that future editions of *Competitive Alternatives* will not consider telecommunication costs.

F. Financing Costs

The base interest rates used in this study, representing typical cash deposit rates and secured commercial borrowing rates in each country in Q4 2007, are illustrated in Exhibit 5.8. These rates are significantly higher than those in the 2006 edition of Competitive Alternatives, reflecting higher inflation rates and tighter credit conditions than in 2005.

For operations in volatile industries or with limited fixed assets to offer as security, additional interest-rate premiums have been added to these base borrowing rates, as appropriate.

G. Non Income-based Taxes

1. Property-based Taxes

a) Manufacturing Operations

For manufacturing operations that own their own premises, property taxes typically account for about 2 percent of location-sensitive costs.

Property taxes include not only taxes on land and buildings, but also (where applicable) on machinery and equipment, inventory, and other physical assets.

Exhibit 5.9 illustrates the average property taxes paid in each country, expressed in US dollars per square foot of building space. The lowest property tax costs for manufacturing operations are in **Mexico** followed by **Australia**, the **Netherlands**, and **Italy**.

National results should be interpreted with caution, as property taxes can vary dramatically, based on local tax rates and property values.

b) Non-manufacturing Operations

For non-manufacturing operations occupying leased office space, property taxes on real estate are typically levied on the landlord. Any amount of this tax passed on to the tenant is captured indirectly as part of total office leasing costs, but is not separately identifiable.

As Exhibit 5.9 illustrates, the non-manufacturing operations examined are still subject to direct property taxes on equipment and/or business occupancy in six of the countries examined. In **Germany**, the **United Kingdom**, and **Mexico**, and **Australia**, none of the cities examined levy taxes on equipment or business occupancy.

EXHIBIT 5.8

Interest Rates Used in this Study

	Cash Deposit Rate	Commercial Secured Borrowing Rate
EUROPE		
France	3.72%	6.72%
Germany	3.72%	6.72%
Italy	3.72%	6.72%
Netherlands	3.72%	6.72%
United Kingdom	5.36%	8.36%
NORTH AMERICA		
Canada	3.88%	6.88%
Mexico	6.64%	9.64%
United States	3.53%	6.53%
ASIA PACIFIC		
Australia	6.12%	9.12%
Japan	0.00%	2.96%

EXHIBIT 5.9

Total Property-based Taxes Average US \$ per Square Foot of Building Space

	Manufacturing Operations ¹ (Owned Facilities)		Non-manufacturing Operations ² (Leased Facilities)	
	US\$ per sq.ft.	Rank	US\$ per sq.ft.	Rank
EUROPE				
France	\$4.82	9	\$1.27	8
Germany	\$1.92	5	\$0.00	1
Italy	\$0.68	4	\$4.31	10
Netherlands	\$0.51	3	\$0.31	5
United Kingdom	\$6.62	10	\$0.00	1
NORTH AMERICA				
Canada	\$3.89	7	\$0.80	7
Mexico	\$0.13	1	\$0.00	1
United States	\$2.46	6	\$0.61	6
ASIA PACIFIC				
Australia	\$0.45	2	\$0.00	1
Japan	\$4.68	8	\$1.52	9

1 Average for seven manufacturing operations included in the overall results. (Refer to Exhibit 1.3.)

2 Average for five non-manufacturing operations included in the overall results. (Refer to Exhibit 1.3.)

2. Capital Taxes

As illustrated in Exhibit 5.10, and detailed below, capital taxes only apply in certain countries and regions:

- In **Canada**, the former national capital tax has been eliminated, as have some provincial capital taxes. A number of provinces are currently in the process of phasing out their capital taxes on corporations other than financial institutions. By the end of 2012, Manitoba is the only province expected to have a general capital tax.
- In the **United States**, capital taxes apply (in various forms) in about 40 percent of all locations examined, including four of the 15 locations selected for international comparison.
- In **Japan**, prefectural and municipal capital taxes apply in all three locations considered in this study.

3. Transaction Taxes

Transaction taxes include:

- **Non-refundable sales taxes**

Non-refundable sales taxes apply in most US states and in half of all Canadian provinces.

Where non-refundable sales taxes apply, exemptions are generally available for many of the costs incurred by a manufacturer, to avoid the compounding of taxes into the price of goods at each stage of the production process.

The tax burden in the locations where sales taxes apply is typically between US \$50,000 and US \$200,000 per annum, or approximately 0.3 to 1.2 percent of location-sensitive costs.

- **Gross receipts taxes.** Gross receipts taxes apply in a small but growing number of jurisdictions in the United States, either instead of, or in addition to, state or local income taxes. Three of the 15 US cities included in the US average for the international comparisons are subject to gross receipts taxes.

The tax burden in the locations where gross receipts taxes apply is typically up to US \$130,000 per annum, or up to approximately 0.8 percent of location-sensitive costs.

EXHIBIT 5.10		
Capital Taxes		
	US\$'000 per Annum ¹	Percent of Location-sensitive Costs
EUROPE		
France	nil	–
Germany	nil	–
Italy	nil	–
Netherlands	nil	–
United Kingdom	nil	–
NORTH AMERICA		
Canada ²	<\$1 – \$56	<0.01% – 0.35%
Mexico	nil	–
United States ²	<\$1 – \$45	<0.01% – 0.29%
ASIA PACIFIC		
Australia	nil	–
Japan ²	\$24 – \$30	0.12% – 0.16%

¹ Average over ten years.

² Range for those locations where capital taxes apply.

- **Refundable value-added taxes (VAT or GST)**

For this analysis, value-added taxes have been excluded, since their refundable nature means there is no net cost to a business once input tax credits (refunds) have been claimed. Although these taxes impose a cost on companies in terms of cash flow timing and administration, such costs are not considered material to this study.

4. Local Business Taxes

Sundry local business taxes, in a wide variety of forms, also apply in many of the jurisdictions studied, and are included in the total cost calculations for this study.

H. Income Taxes

Exhibit 5.11 illustrates the effective combined corporate income tax rates (federal, regional, and local) for three different business situations:

- Manufacturing operations
- R&D operations
- Other non-manufacturing operations

Effective income tax rates are calculated net of generally-applicable tax credits, grants, and other government incentives.

The national results presented in Exhibit 5.11 represent the average for the representative cities within each country (Exhibit 1.6).

Effective tax rates may vary by regional (state, provincial, etc.) and local jurisdiction.

1. Manufacturing Operations

For manufacturing operations, the country with the lowest effective income tax rate is the **Netherlands** followed by **Canada**, **Mexico**, and **France**.

The effective income tax rates in most countries in 2008 are lower than in the 2006 study, reflecting tax rate reductions that benefit manufacturers that have been introduced or announced over the last two years in many of the study countries.

2. R&D Operations

The **Netherlands**, **France**, the **United Kingdom**, and **Canada** all offer significant R&D tax incentives, which may be fully or partially refundable in certain cases or locations. This can result in "negative" income tax (or net government subsidies) for R&D operations in some jurisdictions. Other jurisdictions that offer favorable tax treatment for R&D operations include **Australia** and many **US states**.

Since 2006, the most significant change in effective tax rates for R&D operations is in France (down 35.8 points), due to major enhancements to that country's refundable R&D tax credit program for 2008.

A significant change in the opposite direction occurred in the United States (up 15.3 points), where Congress failed to extend the US federal R&D tax credit program prior to its December 2007 sunset date. This

EXHIBIT 5.11						
Effective Combined Corporate Income Tax Rate ¹ Percentage of Net Profit Before Tax for Representative Operations						
	Manufacturing Average ²		Non-manufacturing			
			R&D Average ³		Corporate Services ⁴	
EUROPE						
France	30.2%	4	-25.7%	2	33.7%	6
Germany	37.8%	8	33.5%	7	32.3%	5
Italy ⁵	42.1%	9	49.5%	10	58.5%	10
Netherlands	18.8%	1	-568.2%	1	26.2%	2
United Kingdom	30.9%	5	-13.8%	3	26.0%	1
NORTH AMERICA						
Canada	24.0%	2	-4.4%	4	29.6%	3
Mexico	27.7%	3	32.9%	6	34.7%	7
United States	33.2%	7	36.0%	8	38.4%	8
ASIA PACIFIC						
Australia	31.4%	6	11.0%	5	31.7%	4
Japan	44.7%	10	37.7%	9	43.8%	9

1 Net of government grants and incentives.

2 Average for seven manufacturing operations included in the overall results. (Refer Exhibit 1.3.) For Germany and Japan, such results are not meaningful due to marginal average profitability, and instead, results have been shown for the single industry reporting the highest net income before tax (and therefore the most "normalized" income tax calculation).

3 Average for two R&D operations included in the overall results. (Refer Exhibit 1.3.) Most activities represent tax-eligible R&D activities. Negative effective income tax rates are the result of R&D refundable income tax credits, grants, or other incentive programs. These amounts may be substantial in some countries or locations.

4 Average for one operation included in the overall results. (Refer Exhibit 1.3.) Results for software operations are generally consistent with these rates.

5 Effective tax rates for service operations are very high due to the limited deductibility of payroll costs for regional income tax (IRAP) purposes.

has happened numerous times previously in the history of this program, each time with subsequent (and most often retroactive) reactivation of the program at a later date. This creates great uncertainty for US R&D firms. However, the program was excluded as it was not in effect at the January 1, 2008, effective date for taxes in this study.

The large change in effective R&D tax rate for the Netherlands since 2006 is due to a change in calculation only. The Netherlands R&D incentive program allows firms to retain a portion of the personal wage tax withheld from the pay of R&D employees. The benefit under this program (although taxable itself) can exceed corporate income tax paid by the company in a year, resulting in a significant negative effective income tax rate. This program was included in the calculation of all cost results for the Netherlands in prior years, but was not previously netted into the calculation of the effective income tax rate.

3. Other Non-manufacturing Operations

For other operations (non-manufacturing, non-R&D), the lowest effective income tax rates are offered by the **United Kingdom**, followed by the **Netherlands** and **Canada**.

Since 2006, Germany, Italy, the Netherlands, and Canada have all introduced/announced income tax changes that can significantly benefit non-manufacturing firms.

4. Nature of Results

The results described here are sensitive to operating specifications, including revenue assumptions. Effective tax rates will also vary for different operations, regions, and cities within countries, and over time, due to changes in tax laws and regulations. These results are of a general nature, and further detailed analysis is required to draw a conclusion about comparative tax rates for a particular operation in alternate locations.

6. Other Competitiveness Factors

The primary focus of the preceding chapters has been to compare business costs (as illustrated in the top left quadrant of Exhibit 6.1) across all study locations.

While business costs represent an important factor in any site selection process, a wide variety of other factors also influence the competitiveness of locations (as seen in the other three quadrants of Exhibit 6.1).

In 2008, for the first time, *Competitive Alternatives* presents a secondary comparison of some of these non-cost factors across study locations. The relative importance of each cost and non-cost factor will vary by firm—even for similar firms in the same industry. Therefore, the results and ratings presented in this chapter should be interpreted by each individual company in relation to its specific needs.

This chapter presents information on a variety of other competitiveness factors, but does not attempt to draw any overall conclusions regarding the “total competitiveness” of each location.

While this chapter primarily compares other competitiveness factors at the country level, select key competitiveness metrics are also available at the regional and/or city level, as referenced in this chapter and as detailed in Appendix E.

EXHIBIT 6.1		
Key Site Location Factors		
	Cost Factors	Other Key Factors
Business	<p>Business Costs</p> <ul style="list-style-type: none"> Land/building/office Labor wage/salary/benefits Transportation and distribution Utilities Financing Federal/regional/local taxes 	<p>Business Environment</p> <ul style="list-style-type: none"> Labor availability and skills Access to markets, customers, and suppliers Road, rail, port, airport infrastructure Utility and telecom/internet service reliability Suitable land sites Regulatory environment
Personal	<p>Cost of Living</p> <ul style="list-style-type: none"> Personal taxes Cost of housing Cost of consumer products and services Healthcare costs Education costs 	<p>Quality of Life</p> <ul style="list-style-type: none"> Crime rates Healthcare facilities Schools and universities Climate Culture and recreation

A. Relative Importance of Site Selection Factors

1. Business Factors

Exhibit 6.2 compares the business-related site selection factors most frequently cited as "important" in *Area Development Magazine's* December 2007 and 2005 US Corporate Surveys. The exhibit shows some significant changes and some similarities in the ranking of these site selection factors between 2007 and 2005:

- Energy availability and costs has become the factor third most frequently cited as important, up from 10th in 2005, and no doubt reflecting concerns over both high oil prices and geo-political uncertainty around future oil supply.
- Environmental regulations ranks ninth among all these site selection factors in 2007, up from 15th in 2005, reflecting the growing importance of environmental issues on corporate agendas.
- Reflecting the increasing pace of business change, availability of land now ranks sixth among these site selection factors, up from 14th in 2005, and two new factors cited as important in 2007 are availability of buildings (14th) and expedited or "fast-track" permitting (17th).
- Labor supply issues are maintaining or growing in importance, even in a period of rising unemployment in the US. Availability of skilled labor is rated as important by 88.7 percent of respondents in 2007, slightly more than the 87.2 percent in 2005, while availability of unskilled labor is now considered important by 65.2 percent of respondents, up from 50.6 percent in 2005. This trend may reflect concerns regarding aging population on the future labor market.

Exhibit 6.2 also identifies which cost-related factors are included within the scope of the *Competitive Alternatives* cost analysis, and which other competitiveness factors are discussed in this chapter.

EXHIBIT 6.2				
Site Selection Factors, by Indicated Frequency of Importance ¹				
	Percentage of Respondents Citing as Important (Rank)		Analyzed in Competitive Alternatives Chapter	
	2007	2005	Ch 5	Ch 6
Highway accessibility	96.9 (1)	91.4 (1)		√
Labor costs	92.3 (2)	87.9 (2)	√	
Energy availability and costs	89.0 (3)	82.8 (10)	√	√
Availability of skilled labor	88.7 (4)	87.2 (3)		√
Occupancy or construction costs	88.2 (5)	83.7 (7)	√	
Availability of land	85.4 (6)	75.7 (14)	√ ²	
Corporate tax rate	83.8 (7)	85.0 (6)	√	
State and local incentives	83.4 (8)	86.0 (4)	√ ³	
Environmental regulations	83.2 (9)	71.1 (15)		√
Tax exemptions	82.8 (10)	83.6 (8)	√ ³	
Proximity to major markets	82.8 (10)	83.2 (9)		√
Availability of advanced ICT services	82.2 (12)	85.7 (5)		√
Low union profile	80.6 (13)	77.0 (13)		√
Availability of buildings	79.3 (14)	n/a	√ ²	
Right-to-work state	72.1 (15)	69.7 (16)		
Proximity to suppliers	71.8 (16)	66.7 (17)		
Expedited or "fast-track" permitting	71.5 (17)	n/a		√
Availability of unskilled labor	65.2 (18)	50.6 (21)		√
Availability of long-term financing	63.0 (19)	56.5 (20)		
Raw materials availability	62.5 (20)	62.3 (18)		

¹ *Area Development*, December 2007 and 2005. Factors considered by more than 60 percent of total respondents to be either "very important" or "important."

² Due to the strong influence of supply and demand in real estate markets, costs of land and buildings provides a good indication of relative availability.

³ All significant generally applicable incentives have been incorporated in the tax calculations and overall results for this study. Refer also to Chapter 1 for discussion of incentives methodology.

2. Personal Factors

While the quality of business environment is a significant factor at the organizational level, personal quality of life factors can also impact on site selection decisions. These factors tend to be particularly relevant for owner-managed enterprises, for knowledge-intensive businesses that need to attract and retain key highly skilled workers in an increasingly global labor market, and for companies that are trying to provide incentives to staff to move to a new location.

Exhibit 6.3 illustrates the cost and quality of life factors that are most frequently identified as important in the *Area Development Corporate Surveys*. In terms of quality of life factors, ratings of public schools and housing availability have both increased in their rankings among the factors identified as being important.

The balance of this chapter examines specific competitiveness indicators across the countries and cities studied, including a number of measures specifically related to the factors indicated here as being of increased importance in current selection decision making.

B. General Business Environment

1. Macro-economic Conditions

Exhibit 6.4 illustrates some key macro-economic indicators for each country for 2006. In that year, all of the countries examined enjoyed a generally stable macro-economic environment, demonstrating very reasonable growth and inflation rates. The United States led all countries in terms of GDP per capita, while Mexico was the leading country for economic growth, and Japan reported the lowest inflation rate. Naturally, changing global economic conditions in late 2007 may result in quite different outcomes for 2008.

EXHIBIT 6.3

Quality of Life Factors, by Indicated Frequency of Importance¹

	Percentage of Respondents Citing as Important (Rank)		Analyzed in Competitive Alternatives Chapter
	2007	2005	Ch 6
Low crime rate	74.0 (1)	67.8 (1)	√
Ratings of public schools	62.6 (2)	56.8 (5)	√
Housing availability	62.1 (3)	59.3 (4)	√
Housing costs	58.8 (4)	60.0 (3)	√
Health facilities	57.4 (5)	62.1 (2)	√
Climate	51.6 (6)	46.5 (7)	
Cultural opportunities	48.7 (7)	48.8 (6)	
Colleges and universities in area	47.3 (8)	46.0 (8)	
Recreational opportunities	43.4 (9)	44.8 (9)	

¹ *Area Development*, December 2007 and 2005. Percentage of total respondents who consider a factor to be either "very important" or "important."

EXHIBIT 6.4

Key Macro-Economic Indicators, 2006¹

Country	GDP/capita (US\$, PPP)		GDP Growth Rate		Inflation Rate	
	Rank	Rank	Rate	Rank	Rate	Rank
Australia	33,037	5	2.7%	7	3.5%	9
Canada	35,514	3	2.8%	5	2.0%	5
France	31,825	7	2.0%	9	1.9%	4
Germany	31,390	8	2.9%	3	1.8%	3
Italy	31,051	9	1.9%	10	2.2%	6
Japan	32,530	6	2.2%	8	0.3%	1
Mexico	11,369	10	4.8%	1	3.6%	10
Netherlands	36,937	2	3.0%	2	1.7%	2
United Kingdom	35,486	4	2.8%	5	2.3%	7
United States	43,223	1	2.9%	3	3.2%	8

¹ World Economic Outlook Database, IMF, October 2007. Data for 2006.

A number of cities have demonstrated particularly strong economic growth rates in the recent past. Based on state/regional level data, in 2004 almost 30 of the 102 cities featured in this study grew at a rate of 4.5 percent and above—a very healthy pace of growth especially for cities in developed countries. State/regional data available for 2006 for Australia, Canada, and the US indicates that growth has slowed somewhat in comparison to 2004, but still remained strong in many cities. Based on the latest available data for each country (2006 or 2004), Exhibit 6.5 presents the ten fastest growing cities in terms of state/regional GDP growth. It is notable that nine of the ten fastest growing regions are located in North America.

Detailed data on GDP growth rates and GDP per capita for all featured cities, based on the state/regional data, are available in Appendix E.

2. Overall Competitiveness

Apart from macro-economic stability, a variety of socio-political institutions, policies, and structures influence competitiveness of business environment in each country. The Global Competitiveness Index (GCI), by the World Economic Forum (WEF), and the World Competitiveness Yearbook (WCY), by the International Institute for Management Development (IMD), both examine broad ranges of such factors at the country level to produce two indices that reflect slightly different perspectives on overall international competitiveness. Exhibit 6.6 presents the 2007 results of these two indices, along with a combined result based on the average of the two. The combined opinions of these two influential international organizations indicate that the United States, followed by the Netherlands and Canada, offer the most broadly competitive business environments among the ten countries included in *Competitive Alternatives*.

EXHIBIT 6.5

Top-10 Fastest Growing Cities, Based on State/Regional GDP Growth Rates

Rank	City	Country	Annual GDP Growth ¹
1	Reynosa	Mexico	7.9%
2	Plymouth	United Kingdom	7.6%
3	Boise	United States	7.4%
4	Salt Lake City	United States	7.2%
5	Phoenix	United States	6.8%
6	Oklahoma City	United States	6.7%
7	Calgary	Canada	6.6%
7	Edmonton	Canada	6.6%
9	Monterrey	Mexico	6.5%
10	Albuquerque	United States	6.2%

¹ Based on most current available data from relevant national and international statistical agencies: Australia, Canada, and US: 2006. All other countries: 2004. Refer to Appendix E for full details on sources.

EXHIBIT 6.6

Indices of Overall Economic Competitiveness, 2007

Country	GCI Score ¹	WCY Score ²	Average Score	Rank
Australia	69.50	82.39	75.95	5
Canada	72.33	83.82	78.08	3
France	69.67	62.56	66.11	8
Germany	75.17	78.02	76.59	4
Italy	56.00	48.27	52.14	9
Japan	73.83	72.40	73.12	7
Mexico	54.33	45.31	49.82	10
Netherlands	73.33	85.86	79.60	2
United Kingdom	73.50	75.45	74.48	6
United States	77.83	100.00	88.92	1

¹ Global Competitiveness Index (GCI) by the World Economic Forum, 2007, rescaled.

² World Competitiveness Yearbook (WCY) copyright © 2007, IMD International, Switzerland, World Competitiveness Center, www.imd.ch/wcc

C. Labor Markets

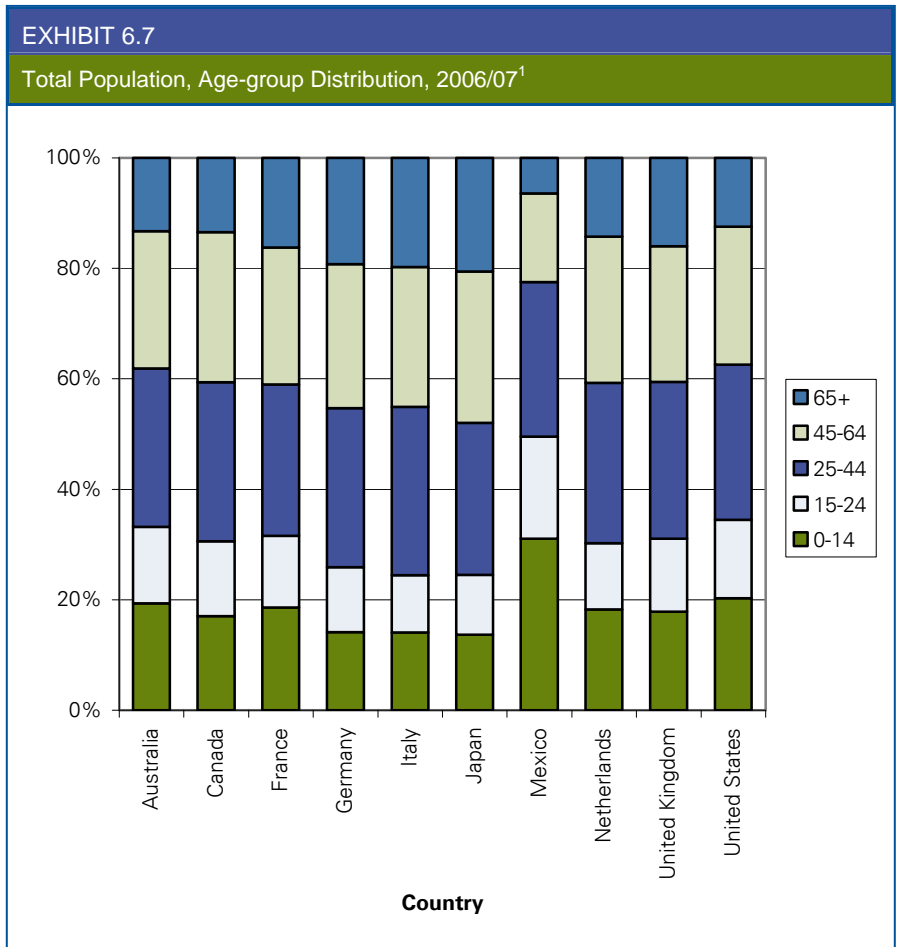
1. Population Demographics

With an aging population and the large “baby-boomer” generation beginning to retire, future labor supply is an issue of concern in most developed countries. Exhibit 6.7 provides an overview of the age distribution of the population in each of the study countries. Unless there are increases in fertility and/or immigration rates in the near future, the pool of available labor is expected to diminish over the coming decade(s) in all developed countries (excluding Mexico).

The population that is already retired or is nearing retirement (45 years of age and above), represents 37.5 to 47.9 percent of the total population in the nine countries studied other than Mexico, while only accounting for 22.4 percent of the population in Mexico. At the same time, the population below the age of 25—the future labor force—represents only 24.4 to 34.5 percent of total population in most countries, except in Mexico where almost 50 percent of the population is under the age of 25.

Germany, Italy, and Japan face the most immediate challenges in terms of aging population. These three countries have the largest proportions of population older than 44, and the smallest shares of population younger than 25.

A table containing the detailed data underlying Exhibit 6.7 can be found in Appendix E.



1: Sources: Eurostat, International Labour Organisation, Statistics Canada, and the US Census Bureau. Refer to Appendix E for full details on sources.

2. Labor Force Activity

The unemployment rate of a country or region represents a key indicator of the health of the labor markets and the economy overall. However, unemployment rates only tell one part of the labor market story, and should be interpreted within the broader context of economic activity rates.

Unemployment rates indicate the proportion of the labor force that is currently looking for work. Economic activity rates represent the proportion of the adult population that is either employed, or unemployed but looking for work. Adults who are neither employed nor looking for work are considered inactive. People can be inactive due to a variety of personal reasons, such as studying, staying at home to look after family, etc. However, low activity rates can also be symptomatic of sluggish labor markets that do not provide enough incentive for people to look for work.

Exhibit 6.8 details the economic activity rates, unemployment rates, and total adult population employment rates for each of the countries examined in 2006. Canada and Italy illustrate the difference between assessing unemployment versus total adult employment. Looking at unemployment rates alone, Canada and Italy have relatively similar unemployment rates. However, a much higher proportion of the Canadian adult population is participating in the labor force (67.2 percent) than in Italy (49.2 percent), meaning that a larger proportion of the population is actually employed. This implies a larger active and experienced labor pool relative to the national population. Overall, the United States, Canada, and the Netherlands have the highest rates of total adult employment.

EXHIBIT 6.8				
Labor Force Size and Activity, 2006 ¹				
Country	Economic Activity Rate	Unemployment Rate	Total Employed Adult Population ²	Rank
Australia	64.2%	4.8%	61.1%	4
Canada	67.2%	6.3%	63.0%	2
France	56.6%	9.5%	51.2%	9
Germany	59.3%	8.1%	54.5%	8
Italy	49.2%	6.8%	45.9%	10
Japan	60.4%	4.1%	57.9%	6
Mexico	59.8%	3.2% ³	57.9%	7
Netherlands	65.0%	3.9%	62.5%	3
United Kingdom	62.4%	5.4%	59.0%	5
United States	66.2%	4.6%	63.2%	1

1 Sources: National and international statistical agencies. Refer to Appendix E for full details on sources.

2 Equals economic activity rate x (1 – unemployment rate).

3 While Mexican definitions for measurement of unemployment appear consistent with all other countries, it is highly likely that this low unemployment rate reflects differences in actual reporting practices and/or masks significant rates of underemployment.

At the city level, North American cities demonstrate the strongest labor market performance. Indeed, labor market performance appears strongest in the neighboring regions of the US Midwest and Western Canada. In 2006, out of 102 international cities, nine of the ten cities with the highest economic activity rates are located in these two regions, while seven of the ten cities with the lowest unemployment rates are also located in these two regions.

Detailed data on economic activity rates and unemployment rates for all featured cities are available in Appendix E.

3. Availability of Skilled Labor

The economic shift towards knowledge-driven growth requires a well educated labor force that is able to work with advanced technologies and easily adapt to innovative business processes.

Completion of secondary education and often some post-secondary education, has become the norm even in occupations that in the past might have required a lower level of qualifications. Therefore, identifying locations that can provide a sufficient pool of skilled labor has become very important for businesses. Exhibit 6.9 presents several indicators related to education:

- Education attainment (i.e., the highest level of education achieved), is a key indicator of skill levels in the workforce
- Education expenditure, is an indicator of the general priority that education has on the national agenda
- Education outcomes, measured by high school science skills, is an indicator of the quality of the educational system

Education attainment, expenditures, and outcomes vary across the study countries:

- The United States ranks first among all countries in terms of both education attainment and expenditures. However, the US ranks eighth in terms of average outcomes (as measured by high school science skills (PISA score)).
- Canada ranks second for education attainment, equal second for education expenditures, and achieves top ranking in terms of education outcomes.
- Japan ranks second among the ten countries in terms of education outcomes, equal second for education expenditures, and third for education attainment.

Educational attainment rates at the regional level generally tend to follow the national attainment rates, although some variations exist in certain countries.

Detailed data on educational attainment for all featured cities, based on the state/regional data, are available in Appendix E.

EXHIBIT 6.9

Education Attainment, Expenditure, and Outcomes

Country	Education Attainment		Education Expenditure			Education Outcomes	
	Percent of Population ¹	Rank	Expenditure as % of GDP ²	Expenditure per Student as % of GDP per Capita ³	Rank	High School Science Skills (PISA Score) ⁴	Rank
Australia	65.0%	8	5.9%	26.0%	6	527	3
Canada	85.2%	2	5.9%	28.0%	2	534	1
France	66.3%	7	6.1%	27.0%	5	495	7
Germany	83.1%	4	5.2%	26.0%	6	516	5
Italy	50.1%	9	4.9%	28.0%	2	475	9
Japan	84.0%	3	4.8%	28.0%	2	531	2
Mexico	21.3%	10	6.4%	21.0%	10	410	10
Netherlands	71.8%	5	5.1%	24.0%	8	525	4
United Kingdom	66.7%	6	5.9%	23.0%	9	515	6
United States	87.8%	1	7.4%	30.0%	1	489	8

1 Percentage of 25-64 population with upper-secondary or higher education. 2005 except Japan (2003), OECD.

2 Expenditure on all levels of education (primary and above), from public and private sources. 2004 or latest data available, OECD.

3. Expenditure on educational institutions per student relative to GDP per capita. 2004 except Canada (2002), OECD.

4 OECD Program for International Student Assessment (PISA), 2006 science competencies .

Refer to Appendix E for full details on sources.

4. Labor Market Flexibility

Rapidly changing competitive pressures and economic conditions can necessitate swift action from companies in order to remain competitive. Such action can include restructuring of the workforce—shedding employees, hiring more employees, and/or hiring different types of employees. The speed and ability of businesses to reorganize their workforce depends to a large extent on the flexibility of labor markets.

High unionization rates among workers are often associated with rigid labor markets, but should be observed within a wider context of collective bargaining agreements. For example, in France only 9.7 percent of French workers were members of unions in 2000, but a total of 92.5 percent were covered by collective bargaining agreements. Widespread coverage by collective agreements implies that there is little scope for direct agreement on employment terms between firms and individual workers.

Regulations governing other aspects of labor markets play an equally important part in maintaining or hindering labor flexibility. Employment protection legislation has an impact on both the processes and costs involved in hiring and firing workers, as well as on employment practices for all workers. Rigid job protection measures can pose a formidable barrier for business in both firing surplus labor and choosing to hire new workers.

Overall, the labor markets in the United States rank as the least restrictive according to each of the indicators presented in Exhibit 6.10, while France receives the consistently lowest scores for its lack of labor market flexibility.

EXHIBIT 6.10									
Labor Market Flexibility Indicators									
Country	Unions and Collective Agreements			General Flexibility of Labor Markets					
	Union Density ¹	Collective Bargaining Coverage ¹	Rank	Employment Protection Legislation				Overall Rigidity of Employment ³	
				Regular Employment ²	Rank	Temporary Employment ²	Rank		
Australia	24.5	82.5	7	1.5	4	0.9	4	0.2	2
Canada	28.1	32.0	4	1.3	3	0.3	1	0.2	3
France	9.7	92.5	10	2.5	9	3.6	9	3.4	10
Germany	25.0	68.0	6	2.7	10	2.0	7	2.6	8
Italy	34.9	82.5	7	1.8	5	2.1	8	2.3	6
Japan	21.5	17.5	2	2.4	7	1.3	6	1.0	5
Mexico	9.8	30.6	3	1.8	5	4.0	10	2.9	9
Netherlands	23.2	82.5	7	2.4	7	1.2	5	2.5	7
United Kingdom	31.2	32.5	5	1.1	2	0.4	3	0.4	4
United States	12.8	14.0	1	0.2	1	0.3	1	0.0	1

1 Percent of total workforce, OECD and ILO 2000.

2 Rating: 0 = Least restrictive, 6 = Most restrictive, OECD 2003.

3 Rating: 0 = Least restrictive, 6 = Most restrictive, World Bank 2007.

Refer to Appendix E for full details on sources.

D. Innovation

In an increasingly global market place, the ability to innovate is key to maintaining a competitive edge. While the determinants of innovation vary in different contexts, the basic prerequisites include the existence of a highly educated labor force coupled with investment in R&D.

The innovation skills of the work force can be measured in a number of different ways, two of which are presented in Exhibit 6.11:

- Human resources in science and technology (HRST) is a broad international definition that encompasses persons who graduated at the tertiary level, plus any “unqualified” persons actually employed in science and technology occupations for which a high qualification is normally required. While a significant proportion of graduates may not be directly employed in occupations related to science and technology, this definition views all graduates as an asset in innovative societies, regardless of specialization. An example in this regard would be the motion picture industry, which employs large numbers of people trained in the arts, but is nonetheless driving significant innovation in the field of digital imaging.
- Researchers (as a percentage of total employment) represent a much narrower measure of innovation capabilities, counting only those who are actively involved in R&D.

Exhibit 6.11 also compares the investment that each country makes in R&D, represented as R&D expenditure as a percentage of GDP.

The information presented in Exhibit 6.11 shows in most cases a direct correlation between R&D expenditure and the number of researchers, with Japan, followed by the United States, leading on both of these measures. Interestingly, while Australia appears to invest relatively little in R&D, it has one of the highest proportions of researchers among the countries studied.

EXHIBIT 6.11								
Innovation Indicators ¹								
Country	Science Employment				R&D Spending			
	HRST Workforce as % of Total Employment ²				Researchers as % of Total Employment		R&D Expenditure as % GDP	
	HRST Professionals	HRST Technicians	Total	Rank	Employment	Rank	as % GDP	Rank
Australia	19.2	18.4	37.6	1	0.78	3	1.64	8
Canada	21.3	14.3	35.5	4	0.72	5	1.99	5
France	12.8	17.7	30.5	7	0.77	4	2.16	4
Germany	14.4	21.4	35.8	3	0.69	6	2.49	3
Italy	9.6	21.4	31.0	6	0.29	9	1.11	9
Japan	6.3	9.7	16.0	10	1.04	1	3.13	1
Mexico	n/a	n/a	17.5	9	0.08	10	0.43	10
Netherlands	18.8	17.6	36.4	2	0.45	8	1.78	7
United Kingdom	14.2	12.6	26.8	8	0.55	7	1.88	6
United States	15.5	16.7	32.2	5	0.96	2	2.68	2

¹ OECD, reporting 2006 or 2004 data.

² HRST = Human resources in science and technology.

Refer to Appendix E for full details on sources.

In most of the countries, HRST workers represent at least 30 percent of the total workforce, with Australia and the Netherlands leading on this measure. A closer examination of the composition of HRST also reveals some differences in the level of skills within this group. For example, while HRST workers make up a similar percentage of the labor force in Canada and Germany, Canada has significantly more professionals than technicians, while Germany has more technicians than professionals.

Within each country, R&D investment tends to be concentrated in research and innovation hubs, which are usually situated in a proximity of large universities, technology clusters operated by large businesses, and/or military/defense research facilities. Therefore, significant regional variations in R&D expenditures exist in most countries.

Exhibit 6.12 lists the "top 20" states/regions included in this study, based on R&D expenditures. The eight leading jurisdictions are all located in the United States, and include regions well known for the clusters in defense (including New Mexico and California), life sciences (including Maryland and Massachusetts), automotive (Michigan), and aerospace (including Washington State and Connecticut).

Apart from the United States, Exhibit 6.12 also lists among the states/regions that invest most in R&D two regions in each of France, Germany, and Canada. (Although Japan spends most on R&D in comparison to other study countries, regional data for Japan was not available for this comparison.)

Detailed data on R&D expenditure for most featured cities, based on the state/regional data, are available in Appendix E.

EXHIBIT 6.12

Leading States/Regions for R&D Expenditure as a Percentage of GDP¹

Rank	State/Region ²	Cities in this Study	R&D Expenditure as % GDP
1	New Mexico	Albuquerque	8.04%
2	Maryland	Baltimore	6.22%
3	Massachusetts	Boston	5.11%
4	Michigan	Detroit, Saginaw	4.56%
5	Rhode Island	Providence	4.40%
6	Connecticut	Hartford	4.32%
6	Washington State	Seattle, Spokane	4.32%
8	California	Riverside-San Bernardino, San Diego, San Jose	3.92%
9	Midi-Pyrénées	Toulouse	3.72%
10	Darmstadt	Frankfurt	3.22%
11	Île de France	Paris	3.20%
11	New Hampshire	Manchester	3.20%
	Japan national average ³	Fukuoka, Hamamatsu, Yokohama	3.13%
13	New Jersey	Trenton	3.04%
14	Mittelfranken	Erlangen	2.81%
15	Colorado	Denver	2.73%
16	Oregon	Portland	2.72%
17	Minnesota	Minneapolis	2.67%
18	Quebec	Montreal, Quebec City, Shrebrooke	2.64%
19	Ontario	Ottawa, Toronto, Waterloo Region	2.53%
20	Vermont	Burlington	2.48%

1 Data represents most recent available by country, and varies between 2003 to 2005. Refer to Appendix E for full details on sources.

2 European regions represent statistical regions as defined by Eurostat, rather than political states or regions.

3 Regional data for Japan is not available for this comparison.

E. Regulatory Framework

1. Business Regulation and Permitting

A cost efficient and functional business regulatory environment is a key determinant of robust and healthy economies.

Transparent and enforceable rules that provide a level playing field for businesses are a key competitive asset. However, government must also consider business regulation within a broader social context.

A wide range of regulations impact on businesses, both in the countries where they operate and in the countries with which they trade. Exhibit 6.13 presents several indicators of the business regulatory environment, as discussed below.

Permitting for new facilities is one aspect of business regulation that was specifically identified as important in the 2007 *Area Development Corporate Survey* (refer to Exhibit 6.2). One of the major costs associated with permitting for new facilities is the time taken by the permitting process, and the drag this places on completing a new business facility.

To assess this issue, Exhibit 6.13 compares the countries based on the number of days required to obtain all necessary permits for building a new warehouse. The permitting process is by far fastest in the United States (40 days) and Canada (75 days), while in all other countries permitting would take more than 100 days, and in Italy permitting would take almost 8.5 months (257 days).

Given the importance of global trade to modern business, the Trade Restrictiveness Index, ranks countries according to the overall openness of their trade policies. As illustrated in Exhibit 6.13, except for Japan and Mexico there is little variation among the countries in terms of trade restrictiveness, with the United States and Canada being the top-ranked countries, followed by the European Union countries in a tie for third place.

With regard to ethical business practices, the Netherlands, Canada, and Australia are the top-rated countries, with the lowest levels of perceived corruption. Mexico and Italy are the two countries with the greatest perceived problems with corruption. It is notable that the United States ranks eighth among the countries on this measure, in contrast to its top rating in every other indicator in Exhibit 6.13.

Finally, considering all of these regulatory issues, and more, the World Bank's Ease of Doing Business Index compares countries based on their overall business regulatory environment, with the United States receiving top ranking according to this measure, followed by the United Kingdom, Canada, and Australia.

EXHIBIT 6.13								
Indicators of Business Regulatory Environment								
Country	Days to Finalize Permitting for a Warehouse ¹		Trade Restrictiveness Index ²		Corruption Perception Index ³		Ease of Doing Business Ranking ⁴	
	Days	Rank	Index	Rank	Index	Rank	Rank	Rank
Australia	221	8	4.4	8	1.4	3	9	4
Canada	75	2	4.1	2	1.3	2	7	3
France	137	5	4.3	3	2.7	7	31	8
Germany	100	3	4.3	3	2.2	5	20	6
Italy	257	10	4.3	3	4.8	9	53	10
Japan	177	7	13.3	10	2.5	6	12	5
Mexico	131	4	8.4	9	6.5	10	44	9
Netherlands	230	9	4.3	3	1.0	1	21	7
United Kingdom	144	6	4.3	3	1.6	4	6	2
United States	40	1	2.9	1	2.8	8	3	1

¹ World Bank, 2008.

² Open-ended scale where 0 is least restrictive, World Bank, 2006.

³ Scale of 0 to 10 where 0 = highly clean and 10 = highly corrupt. Transparency International, 2007.

⁴ Ranking among 178 countries, World Bank, 2008.

Refer to Appendix E for full details on sources.

2. Environmental Regulation

Balancing environmental stewardship with regulation that does not stifle enterprise is an ongoing challenging for governments. With environmental issues becoming more prominent, companies are having to meet increasingly stringent regulatory requirements. Environmental regulations have the potential to significantly raise the cost of running a business.

Exhibit 6.14 presents a comparison of the countries in terms of:

- Their environmental health and ecosystem vitality, as assessed in the Environmental Performance Index
- The degree to which environmental regulations support or hinder business competitiveness

These objectives appear not to be mutually exclusive as, for example, Canada achieves the second-highest ranking on environmental performance, while also being seen to have environmental laws that are the most compatible with business competitiveness. France and Japan also score well on both measures.

F. Quality of Infrastructure

The proliferation of technology in all aspects of business operations has made high quality ICT infrastructure indispensable to business, but has not diminished the importance of traditional infrastructure—most notably highways, which continue to represent the top-rated site selection factor in the recent *Area Development Corporate Surveys*.

Exhibit 6.15 compares the quality of ICT and physical distribution infrastructure across the study countries, and shows that these two factors do not necessarily follow the same trend. For example, the United Kingdom is the top-ranked country for ICT infrastructure but ranks eighth for physical distribution infrastructure, while the United States ranks second for its physical distribution infrastructure, but ranks seventh for ICT networks.

EXHIBIT 6.14

Indicators of Environmental Performance and Regulation

Country	Environmental Performance Index ¹	Rank	Environmental Laws and Competitiveness ²	Rank
Australia	79.8	8	70.5	3
Canada	86.6	2	72.0	1
France	87.8	1	66.5	4
Germany	86.3	3	61.0	6
Italy	84.2	6	53.8	10
Japan	84.5	5	71.5	2
Mexico	79.8	8	54.7	9
Netherlands	78.7	10	55.1	8
United Kingdom	86.3	3	59.0	7
United States	81.0	7	65.0	5

1 Index: 0 = low, 100 = high, Yale Center for Environmental Law and Policy et. al., 2008.

2 Index: 0 = laws hinder competitiveness, 100 = laws do not hinder competitiveness, *World Competitiveness Yearbook* copyright © 2007, IMD International, Switzerland, World Competitiveness Center, www.imd.ch/wcc.

Refer to Appendix E for full details on sources.

EXHIBIT 6.15

Indicators of Quality of Infrastructure

Country	ICT Networks Index ¹	Rank	Quality of Distribution Infrastructure ²	Rank
Australia	6.48	4	7.16	7
Canada	6.06	5	7.78	4
France	5.39	6	7.96	3
Germany	7.54	3	8.77	1
Italy	5.05	8	3.79	10
Japan	3.70	9	7.62	6
Mexico	1.73	10	4.83	9
Netherlands	8.45	2	7.69	5
United Kingdom	8.98	1	6.35	8
United States	5.27	7	8.35	2

1 Index: 2.5 = the average score for 183 countries, *Measuring The Information Society*, ITU 2007.

2 Index: 0 = low and 10 = high. *World Competitiveness Yearbook* copyright © 2007, IMD International, Switzerland, World Competitiveness Center, www.imd.ch/wcc.

Refer to Appendix E for full details on sources.

G. Energy Supply and Demand

The rising global demand for energy, coupled with rising prices, poses a range of energy related issues for governments, corporations, and individuals. Reflecting this issue, energy availability and costs has catapulted from being the 10th rated factor in the 2005 *Area Development Corporate Survey*, to third place in 2007.

Both governments and businesses are increasingly searching for innovative ways to generate energy to reduce dependence on external suppliers, and to use energy more efficiently.

Exhibit 6.16 compares the situation for each of the study countries with respect to energy self-sufficiency and energy efficiency.

Among the study countries, only Australia, Canada, and Mexico are self-sufficient in energy. These three countries all produce more energy than they need to meet their national energy demand and represent net exporters of energy. Italy, Japan, and Germany represent the countries most dependent upon imports to meet their national energy needs.

Not surprisingly, there is generally a strong inverse correlation between energy self-sufficiency and the efficiency of energy use. Most countries that are highly dependent on external energy supplies are among the most efficient users of energy, with Italy, the United Kingdom, and Japan leading the way. Meanwhile, the countries with abundant energy supplies tend to use these resources significantly less efficiently, with Australia and Canada ranking eighth and tenth respectively for efficiency of energy use. The United States is the one exception to this rule, being significantly dependent on external energy supplies, yet ranking ninth for energy efficiency.

EXHIBIT 6.16				
Energy Self-Sufficiency and Efficiency				
Country	Energy Self-Sufficiency		Energy Efficiency	
	Production/ Demand ¹	Rank	Demand/ GDP ²	Rank
Australia	222%	1	0.20	8
Canada	148%	2	0.27	10
France	50%	7	0.16	4
Germany	39%	8	0.16	4
Italy	15%	10	0.12	1
Japan	19%	9	0.15	3
Mexico	147%	3	0.18	7
Netherlands	76%	5	0.17	6
United Kingdom	87%	4	0.14	2
United States	70%	6	0.21	9

- 1 Equals domestic energy production as a percent of total primary energy supply (TPES), in kilotonnes of oil equivalent, International Energy Association, 2005.
 - 2 Equals total primary energy supply (TPES, in kilotonnes of oil equivalent) divided by GDP (at PPP), International Energy Association, 2005. This measure indicates how efficiently energy is used in generating GDP.
- Refer to Appendix E for full details on sources.

H. Quality of Life

Crime rates, the quality of public schools, housing availability and cost, and healthcare represent the most important quality of life location factors identified in the 2007 *Area Development Corporate Survey*.

1. Crime Rates

To anyone considering a move to a new location, personal and property safety are key concerns. Crime rates are notoriously difficult to compare across jurisdictions, given differences in the classification of crimes, crime recording practices, and the willingness of the population to actually report crimes. For this reason, homicide rates, as presented in Exhibit 6.17, are considered the most reliable comparator for violent crime between countries. Based on these statistics, Mexico has the highest incidence of homicide, by a wide margin, followed by the United States, also by a wide margin relative to all other countries. Japan has the lowest homicide rate among the countries studied.

2. Quality of Public Schools

Exhibit 6.9 above presents the results of an international assessment in science skills among 15 year old students, and helps to gauge the relative quality of schools in the different countries. Canada, Japan, and Australia were the top-ranked countries based on this measure.

3. Housing

Housing availability and affordability are integrally linked, with any shortage in housing availability in a location soon translating into higher house prices. Until mid-2007, the housing markets have been generally buoyant in most countries in recent years. Increasing house prices have been a concern to many prospective buyers over the past decade, and the issue of housing affordability has become very important to individuals considering relocation.

Current uncertainty surrounding the housing markets, particularly in the United States, means that housing-related issues are likely to remain a key consideration in personal location decisions for the foreseeable future.

EXHIBIT 6.17		
Crime: Homicide Rates		
Country	Homicides per 100,000 population ¹	Rank
Australia	1.28	5
Canada	1.95	8
France	1.64	7
Germany	0.98	3
Italy	1.23	4
Japan	0.50	1
Mexico	13.04	10
Netherlands	0.97	2
United Kingdom	1.62	6
United States	5.62	9

¹ UN Survey of Crime Trends, 2004 or most recent available data.

EXHIBIT 6.18		
Housing Affordability		
Country	Affordability (Median Multiple) ¹	Rank
Australia	6.3	4
Canada	3.1	1
United Kingdom	5.5	3
United States	3.6	2

¹ International Housing Affordability Survey, Demographia, 2007. Based on an average of 28 local markets surveyed in each of Australia, Canada, and the UK, and 129 local markets in the US.

Using the "median multiple" (median house price as a multiple of median household income) as a measure of affordability, Exhibit 6.18 indicates that, in general, housing is much more affordable in Canada and the United States than in either the United Kingdom or Australia. (Equivalent data are not available for other study countries.)

While the ratio between housing prices and income at the country level gives a broad picture of housing affordability, significant variations exist among local markets in each country. Data on housing affordability by city for Australia, Canada, the United Kingdom, and the United States is presented in Appendix E.

4. Healthcare

Availability of healthcare resources and health outcomes are key factors to many individuals in personal location decisions, particularly if managers or employees are relocating together with their families. From the perspective of companies, the existence of good healthcare facilities and a positive health record can be indicative of a healthy workforce and lower costs from illness-related absenteeism. Exhibit 6.19 compares several indicators related to healthcare, as discussed below.

Doctors per 100,000 inhabitants represents a basic measure of the accessibility of healthcare to the population. The continental European countries—Italy, Germany, France, and the Netherlands—lead all other countries on this measure. At the city/regional level, the number of doctors generally follows national trends, with limited variation between states/regions. Data on doctors per 100,000 inhabitants at the regional level can be found in Appendix E.

Healthcare also represents a point of convergence between personal quality-of-life considerations and direct business costs, given the significant portion of total healthcare costs that are ultimately paid by businesses through statutory medical taxes and/or private health insurance benefits.

The United States spends the largest proportion of GDP on medical care among the countries studied—almost 50 percent more than any other country. Breaking out total medical expenditures between public and private spending, the US and Mexico are the only two countries where more than 50 percent of total medical costs are paid by private sources (individuals and/or businesses). Combining total expenditures and the private spending component, businesses and individuals in the United States spend a full 8.5 percent of GDP on medical care, compared to only 3.5 percent or less in every other country studied. The United Kingdom and Japan have the lowest privately-borne medical costs, at 1.1 and 1.5 percent respectively.

EXHIBIT 6.19

Healthcare Indicators

Country	Doctors per 100,000 Inhabitants ¹		Health Expenditures ²				Healthy Life Expectancy ⁴	
			Total Expendit. as % of GDP	Private Expendit. as % of Total ³	Private Expendit. as % of GDP ³	Rank		
	Rank	Rank	Rank	Rank	Rank			
Australia	248	6	9.6%	32.5%	3.1%	7	73	2
Canada	191	9	9.8%	30.2%	3.0%	6	72	4
France	340	3	10.5%	21.6%	2.3%	4	72	4
Germany	341	2	10.6%	23.1%	2.4%	5	72	4
Italy	639	1	8.7%	24.9%	2.2%	3	73	2
Japan	212	8	7.8%	18.7%	1.5%	2	75	1
Mexico	104	10	6.5%	53.6%	3.5%	9	66	10
Netherlands	315	4	9.2%	37.6%	3.5%	8	71	7
United Kingdom	236	7	8.1%	13.7%	1.1%	1	71	7
United States	266	5	15.4%	55.3%	8.5%	10	69	9

1 National and international statistical sources for 2003-2006, except Australia (2001).

2 World Health Statistics, World Health Organization, 2007 (reporting 2004 data).

3 Private expenditures include expenditures both by individuals and corporations (i.e., all non-public expenditures).

Private expenditures as a percent of GDP = Total expenditure as a percent of GDP x Private expenditure as a percent of total.

4 World Health Statistics, World Health Organization, 2007 (reporting 2002 data).

Looking beyond resources invested in the medical system to consider medical outcomes, healthy life expectancy measures the average number of years a person can expect to live in full health, before the onset of debilitating illness. Japan, Italy, and Australia lead the ten countries in terms of having the longest healthy life expectancy. While the United States invests, by far, the largest share of GDP into healthcare, it ranks ninth in terms of healthy life expectancy, ahead only of Mexico.

It is interesting to note that while healthy life expectancy varies from 66 to 75 years among the countries studied, total life expectancy (not illustrated in Exhibit 6.19) adds a further seven or eight years in all ten countries. Therefore, while the healthcare systems of some countries have provided for a significantly longer healthy life expectancy than in other countries, once severe age-related illness sets in, on average there is not more than one year's difference among all ten countries in terms of how long the healthcare system will postpone death.

I. Conclusion

Both business costs and other factors significantly influence the competitiveness of locations for different types of businesses. Ratings presented in this report should be interpreted by firms in relation to their own individual needs.

While great care has been taken in performing this analysis, the resulting comparisons are of a general nature and all factors examined are subject to change over time. The results of this analysis should not be interpreted as a definitive or final opinion on the merits of locating any specific facility in one jurisdiction over another. Further analysis is required, incorporating information and advice from a variety of other sources, to determine the best location for any specific facility or operation.

7. Other Sponsored Cities

In addition to the 102 cities featured in this report, 34 additional cities in Canada have been sponsored to be benchmarked against the costs of the featured cities. Details of the sponsoring agencies can be found on the following page.

These results are not included in the main body of this report because of space constraints and the need to maintain balance among the countries under discussion. In addition, many of these additional cities do not meet the minimum population requirement of 100,000 for inclusion in the international comparisons.

A. Results for Other Sponsored Cities

Results for these cities were developed on the same basis as for the featured cities. The results are summarized in Exhibit 7.1. Detailed results for these cities are available online at: www.CompetitiveAlternatives.com.

EXHIBIT 7.1																		
Results for Other Sponsored Cities																		
Industry	Manufacturing											R&D			Software		Corp. Serv.	Overall results ¹
	Aero-space	Agri-food	Auto-motive	Chemicals	Electronics	Medical Devices	Metal Compon.	Pharmaceuticals	Plastics	Precision Mfg	Telecom	Biotech	Clinical Trials	Product Testing	Software Design	Web/Multi-media	Back Office/Call Center	
Operation	Aircraft Parts	Food Proc.	Auto Parts	Spec. Chem.	Electr. Assbly	Medical Dev.	Metal Mach.	Pharmaceutical	Plastic Prod.	Prec. Comp.	Telecom Equip.	Bio-medical R&D	Clinical Trials Mgt	Elec. Syst. Dvlt/Test.	Adv. Softw.	Content Dvlt	Shared Serv.	
CANADA																		
Atlantic																		
Pictou, NS	94.1	100.3	98.1	97.0	95.5	95.5	99.4	95.8	101.4	93.4	95.9	81.7	74.2	77.9	88.0	90.5	92.1	94.5
Sydney, NS	96.1	102.1	100.7	98.1	97.1	97.2	102.0	97.2	104.2	95.8	96.9	86.4	76.5	82.4	90.7	93.4	96.9	97.0
Truro, NS	92.5	99.5	96.4	96.1	93.7	94.2	97.8	94.8	99.6	92.0	95.1	80.9	71.5	76.5	86.3	88.8	91.0	93.3
Northeast																		
Barrie, ON	97.4	97.4	98.6	99.1	100.1	99.3	99.2	99.3	99.1	95.8	98.2	94.0	91.7	89.8	93.0	95.3	102.2	97.5
Belleville, ON	95.3	96.6	96.4	98.3	98.1	97.7	97.1	97.9	96.7	94.1	97.5	92.7	90.4	88.3	91.8	94.0	100.2	96.1
Chatham-Kent, ON	97.4	97.2	98.7	98.4	99.9	99.2	99.3	99.1	99.3	95.9	98.1	90.8	90.3	86.9	92.2	94.4	100.8	96.9
Gatineau, QC	97.4	97.7	97.7	98.8	99.6	98.6	98.4	98.5	98.2	96.8	98.0	95.0	83.0	91.3	93.7	96.9	104.4	97.7
London, ON	99.0	98.1	99.9	99.9	101.5	100.7	100.5	100.4	100.2	98.0	99.3	101.0	97.2	96.6	96.9	99.5	108.0	99.9
North Bay, ON	96.3	97.2	97.7	98.4	99.0	98.5	98.4	98.5	98.2	94.7	97.7	92.1	89.6	87.8	91.5	93.7	99.8	96.5
Quinte West, ON	95.0	96.5	96.1	98.3	97.7	97.6	96.8	97.9	96.4	94.0	97.4	92.2	90.1	87.9	91.6	93.8	99.9	95.9
Rimouski, QC	92.7	96.6	94.6	95.8	93.7	94.4	94.5	95.2	96.6	92.4	95.2	83.2	75.2	79.9	87.4	89.9	94.8	93.0
Sault Ste. Marie, ON	100.0	99.6	101.8	100.1	102.3	101.3	102.4	100.9	102.6	98.4	99.3	93.7	93.6	90.1	94.6	96.8	104.1	99.4
St. Catharines-Niagara, ON	98.2	97.6	98.7	99.5	100.7	100.2	99.4	100.1	99.2	97.6	99.0	98.1	96.8	94.1	96.0	98.6	106.7	99.0
Trois-Rivieres, QC	94.8	96.6	95.4	97.6	96.6	96.6	95.3	96.9	96.1	94.7	96.8	88.5	79.7	85.2	90.8	93.6	99.9	95.1
Windsor-Essex, ON	99.1	98.7	100.2	100.1	101.1	100.8	100.9	100.5	100.7	98.6	99.3	96.1	97.0	92.6	96.4	98.9	107.2	99.5
West																		
Brandon, MB	93.9	98.5	96.8	94.8	93.0	94.2	98.4	95.2	99.5	93.8	95.1	86.9	83.2	82.9	86.3	89.1	93.2	93.8
Grande Prairie, AB	104.8	100.5	105.6	99.5	102.0	101.0	106.1	101.1	107.6	104.4	99.0	92.3	95.3	88.9	91.7	93.8	101.6	99.8
Lethbridge, AB	98.8	97.7	98.9	97.5	96.9	97.3	99.7	98.0	100.3	99.1	97.0	89.9	91.3	86.4	89.5	91.5	98.4	96.2
Medicine Hat, AB	98.3	96.9	97.8	96.2	96.3	96.7	98.6	97.6	99.3	98.4	96.5	88.4	89.8	84.9	88.4	90.5	96.9	95.1
Moose Jaw, SK	96.6	97.1	97.3	95.0	94.2	95.3	98.5	95.6	99.4	96.4	95.3	83.4	82.1	79.8	85.8	88.3	92.6	93.5
Prince Albert, SK	96.8	97.5	97.9	94.8	94.1	95.2	99.0	95.6	100.4	96.5	95.2	88.2	83.8	83.9	86.6	89.2	93.8	94.2
Red Deer, AB	100.5	97.5	100.4	97.6	98.5	98.2	101.1	98.8	101.9	100.0	97.3	93.3	92.7	89.3	90.3	92.4	99.6	97.2
Regina, SK	99.3	98.7	100.0	96.7	97.0	97.7	101.1	97.7	102.1	99.3	96.8	97.4	94.4	93.1	92.2	95.2	102.2	97.8
Pacific																		
Abbotsford, BC	107.4	100.6	105.5	100.3	103.5	102.4	106.2	102.2	106.3	107.7	100.3	96.1	97.2	92.4	94.7	97.4	106.3	101.3
Campbell River, BC	105.8	101.2	104.9	99.5	101.3	101.1	105.8	101.2	106.1	106.6	99.4	93.5	94.6	89.9	93.3	95.9	104.0	100.3
Courtenay, BC	106.2	101.2	105.2	99.6	102.0	101.3	105.9	101.4	106.3	106.7	99.6	94.9	95.2	91.1	93.6	96.2	104.6	100.6
Duncan, BC	105.8	101.0	104.6	99.7	101.5	101.2	105.4	101.3	105.6	106.7	99.6	94.9	95.4	91.1	93.7	96.4	104.8	100.5
Kamloops, BC	105.1	99.9	103.4	99.6	101.4	100.7	104.1	100.8	104.3	106.4	99.8	94.5	94.3	90.6	93.0	95.7	103.7	99.8
Kelowna, BC	104.5	99.6	103.2	99.4	101.0	100.3	103.9	100.4	104.3	105.0	99.4	92.3	93.5	88.4	91.6	94.0	101.6	99.0
Nanaimo, BC	105.9	100.5	104.6	99.4	102.0	100.9	105.3	101.0	105.7	106.1	99.4	95.3	94.5	91.3	93.1	95.7	103.8	100.2
Penticton, BC	103.4	99.3	102.2	98.7	100.0	99.1	102.8	99.4	103.6	104.0	98.7	87.7	87.5	84.0	89.2	91.6	98.0	97.5
Prince George, BC	104.8	100.7	104.4	99.3	100.9	100.9	105.2	101.0	105.7	105.7	99.5	94.5	94.9	90.7	93.2	95.8	104.1	100.1
Vernon, BC	104.1	99.3	102.5	98.8	100.6	99.6	103.1	99.9	103.8	104.7	99.1	89.7	90.2	85.9	90.2	92.6	99.5	98.1
Victoria, BC	106.5	101.7	105.9	100.1	102.6	101.7	106.6	101.6	107.1	107.0	100.0	97.2	97.1	93.2	94.3	97.0	105.6	101.4

¹ For consistency with previous results, the overall results are based on the same 12 industries analyzed in the 2002-2006 editions of *Competitive Alternatives*. (Refer to Exhibit 1.3.)

B. Contact Information for Other Sponsored Cities

Bronze Sponsors	Phone	E-mail	Internet
Cape Breton Partnership Sydney, NS, Canada	+1 902 562 6059	keith@capebretonpartnership.com	www.capebretonpartnership.com
Chatham-Kent Economic Development Services Chatham, ON, Canada	+1 519 351 7700	ckeds@chatham-kent.ca	www.ckforbusiness.com
City of Barrie, Economic Development Department Barrie, ON, Canada	+1 705 728 9850	edo@barrie.ca	www.barrie.ca
City of Belleville Economic Development Belleville, ON, Canada	+1 613 967 3238	ecdev@citybelleville.com	www.city.belleville.on.ca
City of Grande Prairie Grande Prairie, AB, Canada	+1 780 538 0308	ecdevinfo@cityofgp.com	www.investgrandeprairie.com
City of Medicine Hat Business Development Office Medicine Hat, AB, Canada	+1 403 529 8373	business@medicinehat.ca	www.medicinehat.ca
City of North Bay Economic Development Office North Bay, ON, Canada	+1 705 474 0400	investin@northbay.ca	www.investinnorthbay.ca
City of Quinte West Trenton, ON, Canada	+1 613 392 2841	garyd@city.quintewest.on.ca	www.city.quintewest.on.ca
City of Red Deer Red Deer, AB, Canada	+1 403 342 8106	econdev@reddeer.ca	www.reddeercorridor.com
Colchester Regional Development Agency Truro, NS, Canada	+1 902 893 1694	ajohnson@corda.ca	www.wherebusinessmoves.ca
Economic Development Corporation of Trois-Rivières Trois-Rivières, QC, Canada	+1 819 374 4061	Info@sdetr.com	www.sdetr.com
Economic Development Lethbridge Lethbridge, AB, Canada	+1 403 331 0022	info@ecdevlethbridge.com	www.chooselethbridge.ca
Gatineau Economic Development Corporation Gatineau, QC, Canada	+1 819 595 8002	dev.econ@gatineau.ca	www.directiongatineau.ca
Investissement Québec Montreal, QC, Canada	+1 514 873 4375	infoiq@invest-quebec.com	www.investquebec.com
London Economic Development Corporation London, ON, Canada	+1 519 661 4545	info@ledc.com	www.ledc.com
Niagara Economic Development Corporation Thorold, ON, Canada	+1 905 685 1308	info@niagaracanada.com	www.niagaracanada.com
Pictou Regional Development Commission New Glasgow, NS, Canada	+1 902 752 6159	info@prdc.com	www.prdc.com
Sault Ste. Marie Economic Development Corporation Sault Ste. Marie, ON, Canada	+1 705 759 2546	j.febraro@ssmedc.ca	www.sault-canada.com
Society for the Economic Promotion of Rimouski Rimouski, QC, Canada	+1 418 722 4781	soper@globetrotter.net	www.promotion-rimouski.org
Windsor Essex Development Commission Windsor, ON, Canada	+1 519 255 9200	info@choosewindsorsex.com	www.choosewindsorsex.com

A black and white photograph of a man sitting at a restaurant table, smiling and eating. He is wearing a light-colored button-down shirt. The table is set with a checkered tablecloth, a glass of water, a pepper grinder, and a bowl of food. In the background, other people are seated at tables, slightly out of focus. Two callout boxes with white text on a dark blue background are overlaid on the image. One callout points to the man, and the other points to a woman in the background.

She is a global manufacturer who wants to set up a local distribution center.

He's managing a portfolio of local industrial properties.



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