

Competitive Alternatives

KPMG's Guide to International Business Location Costs

2012 Edition

competitivealternatives.com

Corporate Sponsors



KPMG LLP has conducted an analysis of the relative costs of doing business in 14 countries in the Americas, 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 2011 and January 2012. Taxes reflect tax rates in effect on January 1, 2012, 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.

All information provided is of a general nature and is not intended to address the circumstances of any particular individual or entity. Although we endeavor to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act upon such information without appropriate professional advice after a thorough examination of the particular situation.

© 2012 KPMG LLP, a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity. All rights reserved. The KPMG name, logo and "cutting through complexity" are registered trademarks of KPMG International.

No part of this publication may be reproduced, reprinted, stored in a retrieval system, or transmitted, in part or whole, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the authors.

Electronic copies of this report, as well as additional information in respect of this report, are available at www.CompetitiveAlternatives.com.

Published by KPMG LLP



Competitive Alternatives

KPMG's Guide to International Business Location Costs

2012 Edition

Produced in association with



Contributions from





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 2012 edition of *Competitive Alternatives* is the most extensive edition of this study to date, covering 133 cities in 14 countries. Key organizations and individuals involved in developing this study are detailed below.

KPMG's member firm contacts:

Australia:	– Simon Corden	T: +61 3 9288 6183	E: scorden@kpmg.com.au
Brazil:	– Marienne Mendonça Shiota Coutinho	T: +55 11 2183 3182	E: mmcoutinho@kpmg.com.br
Canada:	– Brad Watson	T: +1 416 777 8142	E: bdwatson@kpmg.ca
	– Elio Luongo	T: +1 416 777 3586	E: eluongo@kpmg.ca
	– Denis Lacroix	T: +1 514 840 2550	E: ddlacroix@kpmg.ca
China:	– Anthony Chau	T: +86 28 8673 3916	E: anthony.chau@kpmg.com
France:	– Olivier Schmitt	T: +33 1 5568 1592	E: oschmitt@fidalinternational.com
Germany:	– Tim Löbig	T: +49 89 9282 4458	E: timloebig@kpmg.de
India:	– Rajesh Jain	T: +91 22 3090 2370	E: rcjain@kpmg.com
Italy:	– Domenico Busetto	T: +39 045 811 4111	E: dbusetto@kstudioassociato.it
Japan:	– Yasuhiko Ito	T: +81 3 6229 8340	E: yasuhiko.ito@jp.kpmg.com
Mexico:	– Luis Ricardo Rodriguez	T: +52 81 8122 1946	E: luisricardorodriguez@kpmg.com.mx
Netherlands:	– Elbert Waller	T: +31 20 656 7009	E: waller.elbert@kpmg.nl
Russia:	– Graham Povey	T: +7 495 626 5445 ×10260	E: gpovey@kpmg.ru
United Kingdom:	– David Ashworth	T: +44 118 964 2458	E: david.ashworth@kpmg.co.uk
United States:	– Hartley Powell	T: +1 704 335 5583	E: whpowell@kpmg.com

MMK Consulting Inc. directed this project on behalf of KPMG, including study design and execution, web development, and report authorship.
 Glenn Mair, Study Director, 1997 to 2012
 Stuart MacKay, Founder of *Competitive Alternatives* T: +1 604 484 4621
 E: gmair@mmkconsulting.com
 E: smackay@mmkconsulting.com

- Treena Cook, Project Manager T: +1 604 484 4623 E: tcook@mmkconsulting.com
- Colliers International supplied real estate costs for all locations examined.
- Mercer supplied labor cost data for all study countries.
- ERI Economic Research Institute supplied labor cost data for Canada and the United States.
- Galaxy Transport Corp. coordinated the collection of freight cost data for all study countries.
- Cosmex International supplied operational cost data for Mexico.

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 D.

Sponsors of Featured Cities

This 2012 edition of *Competitive Alternatives* is made possible through the support of many sponsors, as listed below.

Corporate Sponsors	Phone	E-mail	Internet
Colliers International	+1 604 681 4111	Howie.Charters@colliers.com	www.colliers.com
MMK Consulting Inc.	+1 604 484 4620	info@mmkconsulting.com	www.mmkconsulting.com
Silver Sponsors	Phone	E-mail	Internet
Department of the Premier an Adelaide, SA, Australia	d Cabinet, South Austra +61 8 8303 2546	alia david.flores@sa.gov.au	www.southaustralia.biz
Louisiana Economic Developm Baton Rouge, LA, USA	nent +1 225 342 3000	Larry.Henson@la.gov	www.opportunitylouisiana.com
Alberta Treasury Board and E Edmonton, AB, Canada	nterprise +1 780 427 6787	maryann.sosa@gov.ab.ca	www.albertacanada.com
Atlantic Canada Opportunities Moncton, NB, Canada	s Agency +1 506 851 2573	invest@acoa-apeca.gc.ca	www.acoa.ca
British Columbia Ministry of J Vancouver,BC, Canada	Hobs, Tourism and Innov +1 604 775 2100	ation info@investbc.com	www.investbc.com
Calgary Economic Developme Calgary, AB, Canada	+1 403 221 7831	info@CalgaryEconomicDevelopment.com	www.calgaryeconomicdevelopment.com
Economic Development Winn Winnipeg, MB, Canada	ipeg Inc. +1 204 954 1982	greg@economicdevelopmentwinnipeg.com	www.economicdevelopmentwinnipeg.com
Edmonton Economic Develop Edmonton, AB, Canada	+1 780 424 9191	info@edmonton.com	www.edmonton.com
Enterprise Fredericton Fredericton, NB, Canada	+1 506 444 4686	Doug.Motty@ent-fredericton.ca	www.enterprisefredericton.ca
Enterprise Greater Moncton Moncton, NB, Canada	+1 506 858 9550	info@greatermoncton.org	www.greatermoncton.org
Enterprise Saskatchewan Saskatoon, SK, Canada	+1 306 933 7599	Jeremy.Karwandy@enterprisesask.ca	www.enterprisesaskatchewan.ca
Greater Halifax Partnership Halifax, NS, Canada	+1 902 490 6000	info@greaterhalifax.com	www.greaterhalifax.com
Initiatives Prince George Deve Prince George, BC, Canada	+1 250 564 0282	info@initiativespg.com	www.initiativespg.com
Innovation et Développement Trois-Rivières, QC, Canada	t économique Trois-Rivi é +1 819 374 4061	info@idetr.com	www.idetr.com
Innovation PEI Charlottetown, PE, Canada	+1 902 368 6300	bdmix@gov.pe.ca	www.innovationpei.com
Invest NB Fredericton, NB, Canada	+1 506 453 8696	investnb@gnb.ca	www.inbcanada.ca
Manitoba Trade & Investment Winnipeg, MB, Canada	t +1 204 945 8695	Don.Callis@gov.mb.ca	www.manitoba-canada.com

Silver Sponsors (cont'd)	Phone	E-mail	Internet	
Montréal International				
Montreal, QC, Canada	+1 514 987 8191	info@montrealinternational.com	www.montrealinternational.com	
Newfoundland and Labrador, Dep	artment of Innovation, Busin	ess and Rural Development		
St. John's, NL, Canada	+1 709 729 7000	darinsteeves@gov.nl.ca	www.nlbusiness.ca	
Nova Scotia Business Inc.				
Halifax, NS, Canada	+1 902 424 6650	info@nsbi.ca	www.novascotiabusiness.com	
Québec International				
Quebec, QC, Canada	+1 418 681 9700	info@quebecinternational.ca	www.quebecinternational.ca	
Saskatoon Regional Economic De	velopment Authority Inc.			
Saskatoon, SK, Canada	+1 306 664 0720	info@sreda.com	www.sreda.com	
Vancouver Economic Commission	n			
Vancouver, BC, Canada	+1 604 632 9668	info@vancouvereconomic.com	www.vancouvereconomic.com	
WindsorEssex Economic Develop	ment Corporation			
Windsor, ON, Canada	+1 519 255 9200	info@choosewindsoressex.com	www.choosewindsoressex.com	

Contents

Ex	ec	cutive Summary	i
1.	O A.	ojectives, Scope, and Methodology Study Objectives	1 1
	Β.	Scope of the Study	2
	C.	Key Assumptions	4
	D.	Methodology	5
2.	T٢	ne International Comparison	7
	А.	Overall Results by Country	7
	Β.	Cost Trends 2010-2012	8
	C.	Exchange Rate Sensitivity	9
3.	Re	esults by Industry and Operation	11
	A.	Manufacturing	12
		1. Aerospace	12
		2. Agri-Food	14
		3. Automotive	16
		4. Chemicals	18
		5. Electronics	20
		6. Green Energy	22
		7. Medical Devices	24
		8. Metal Components	26
		9. Pharmaceuticals	28
		10. Plastics	30
		11. Precision Manufacturing	32
		12. Telecommunications	34
	Β.	Research and Development	36
		1. Biotechnology	36
		2. Clinical Trials	38
		3. Product Testing	40
	C.	Digital	42
		1. Digital Entertainment	42
		2. Software Design	44
	D.	Corporate Services	46
		1. Professional Services	46
		2. Support Services	48
4.	Re	egional and City Comparisons	50
	A.	Results for Cities in High Growth Countries	50
	В.	Results for Cities in Mature Countries	51
	C.	Detailed City Results, by Industry Operation	54

5.	Сс	omparison by Cost Component	57
	Α.	Relative Importance of Cost Components	57
	Β.	Labor Costs	58
	C.	Facility Costs	59
	D.	Transportation Costs	60
	Ε.	Utility Costs	61
	F.	Financing Costs	62
	G.	Non-Income-Based Taxes	62
	Н.	Income Taxes	64
6.	O	ther Competitiveness Factors	65
	Α.	Relative Importance of Site Selection Factors	66
	Β.	General Business Environment	67
	C.	Labor Markets	72
	D.	Innovation	78
	Ε.	Regulatory Framework	80
	F.	Energy Supply and Demand	82
	G.	Infrastructure Quality	83
	Η.	Quality of Life	84
	١.	Conclusion	87
7.	O	ther Sponsored Cities	88
	А.	Results for Other Sponsored Cities	88
	В.	Contact Information for Other Sponsored Cities	89

The following appendices are contained in Volume II of this report, and can be accessed online at www.CompetitiveAlternatives.com

- A. Details of Study Methodology and Business Model Assumptions
- B. Tax Rate Assumptions and Comparisons, by Jurisdiction
- C. Other Competitiveness Factors: Regional Data and Data Source Notes
- D. Selected Bibliography and Sources of Data

Executive Summary

Competitive Alternatives is KPMG's guide to comparing international business locations in mature and high growth markets. Competitive Alternatives 2012 is the most thorough comparison of international business locations ever undertaken by KPMG. This study contains valuable information for any company considering their international business location options.

Competitive Alternatives 2012 compares business costs and other competitiveness factors in more than 110 cities in 14 countries. For the first time, the 2012 study features four major high growth countries— Brazil, Russia, India, and China—frequently referred to as the "BRIC Countries". The study also updates the comparison of 10 other countries included in the 2010 edition—Australia, Canada, France, Germany, Italy, Japan, Mexico, the Netherlands, the United Kingdom, and the United States.

The primary focus of *Competitive Alternatives* is international business costs. The study measures the combined impact of 26 significant cost components that vary by location, over a 10-year analysis horizon commencing in 2012. The study compares 19 different business operations, including three operations that are new in 2012 advanced battery/fuel cell manufacturing, video game production, and international financial services.

Competitive Alternatives also provides important information on non-cost factors that influence the business attractiveness of different locations. Aspects addressed by the study include labor availability and skills, economic conditions, innovation, infrastructure, regulatory environment, cost of living, and personal quality of life factors.

New For 2012 – Major High Growth Markets

For the first time, *Competitive Alternatives* 2012 compares five leading high growth countries—Brazil, China, India, Mexico, and Russia. Over the last decade, these five countries have nearly doubled their share of world output and they now account for one fifth of global GDP. In 2010, China became the world's second largest economy, overtaking Japan and now ranking only behind the United States. In recent years, China has also surpassed both Germany and the United States to become the world's leading exporter.

The rapid economic growth in these countries has been integrally linked with their lower labor costs and increasing importance in global supply chains. Rapid economic growth has also led to the emergence of a large and growing middle class in these countries, creating a more self-sustaining economic base.

While the high growth markets offer many opportunities to business, there are many factors to consider before deciding where,

EXCHANGE RATES USED IN THIS STUDY						
	Exchang	Two-year				
	2010 Edition 2012 Edition					
Canadian Dollar	CA \$1.06 (US \$0.94)	CA \$1.02 (US \$0.98)	3.9%			
Mexican Peso	MX \$13.07 (US \$0.08)	MX \$13.64 (US \$0.07)	-4.2%			
Euro	€ 0.68 (US \$1.47)	€ 0.74 (US \$1.35)	-8.1%			
UK Pound	£0.61 (US \$1.64)	£0.64 (US \$1.56)	-4.7%			
Australian Dollar	AU \$1.10 (US \$0.91)	AU \$0.99 (US \$1.01)	11.1%			
Japanese Yen	¥89.86 (US \$0.01)	¥77.33 (US \$0.01)	16.2%			
Brazilian Real	n/a	R \$1.80 (US \$0.56)	n/a			
Russian Ruble	n/a	RUB 31.07 (US \$0.03)	n/a			
Chinese Yuan	n/a	CN ¥6.36 (US \$0.16)	n/a			
Indian Rupee	n/a	Rs 50.75 (US \$0.02)	n/a			

how, and why to enter these markets. These countries have all experienced similarly high rates of economic growth in recent years, yet they still differ greatly in many other regards. *Competitive Alternatives* 2012 details a range of cost and non-cost issues related to the high growth markets, including:

- Population/demographics The high growth countries generally have a young age demographic, providing advantages for both labor supply and consumption. Russia is an exception in this regard, with population aging issues similar to the mature countries. China is also projected to move rapidly to an aging population demographic over the next two decades.
- Education/skilled labor Access to education has been growing rapidly in the high growth markets, as has the demand for skilled workers. However, issues exist around both the quality of education in certain areas, and skill shortages in certain fields as demand for educated workers has outstripped the growth of the education systems.
- Innovation High growth economies, particularly China and India, have historically focused on process and secondary product innovation in pursuit of production cost efficiencies. However, relatively high rates of wage inflation in recent years have been eroding the labor cost advantages in these countries, leading to an increased focus on higher value added innovation.
- Infrastructure Infrastructure levels in the high growth countries are generally behind those of the mature countries. China stands out among the high growth countries in recent years for the sheer scale of its infrastructure investments – particularly in the rapid development of its transportation and distribution networks.

The Bottom Line

Mature Markets

The four largest US metro areas—New York City, Los Angeles, Chicago, and Dallas-Fort Worth—form the US baseline against which costs for major cities in other countries are compared to determine the national results.

Among mature markets, the **United Kingdom**, the **Netherlands**, and **Canada** are the low-cost leaders, with business costs five percent or more lower than the United States. Favorable results for the UK and the Netherlands are due, in part, to devaluations of the euro and the pound resulting from the European debt crisis.

France and **Italy** rank fourth and fifth among the mature markets. Costs in France are 3.9 percent lower than the US baseline, while costs in Italy are 2.1 percent lower than in the US. Pegged as the study baseline, costs in the **United States** rank sixth among the mature markets, while costs in seventh-ranked **Germany** are virtually equal to the US.

Australia's business cost structure is 3.7 percent higher than the United States, while **Japan** has the highest cost structure at 9.4 percent above the US. Relative costs in both of these countries have risen in recent years due to the strong appreciation of their currencies relative to other major world currencies



High Growth Markets

Business costs in the five emerging countries are below those in the nine mature countries examined. Costs in these countries are also compared to the US baseline.

China and **India** are the cost leaders among the high growth countries, with overall business costs 25.8 and 25.3 percent, respectively, below the United States.

Business costs in **Mexico** and **Russia** are relatively close. Mexico ranks third among the countries, with business costs 21.0 percent below the US. In fourth-ranked Russia, business costs are 19.7 percent below the US baseline.

Costs in **Brazil** are higher than in the other high growth countries, and approach the cost levels of the leading mature countries. Brazil's wage levels, including minimum wage standards, are significantly above those of the other high growth countries studied. A heavy burden for both direct and indirect taxes also impacts Brazil's total cost performance.

The business costs examined here do not include variations related to different physical security requirements that may be required in each country.



© 2012 KPMG LLP, a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity. All rights reserved

Results by Sector

Results for specific business operations form the basis for comparing major sectors.

Digital¹

Costs in the digital sector primarily reflect salary levels and benefit costs associated with hiring creative and technical IT professionals. Among the mature markets, **Canada**, the **United Kingdom**, and the **Netherlands** are the most cost-competitive countries for digital operations, while among the high growth markets, **India**, **China**, and **Russia** offer the lowest overall costs in this sector. Costs in Brazil are higher than in the leading mature countries, due to a high indirect tax burden on businesses in this sector.





Research & Development¹

Cost differentials are generally higher for R&D, due to differences in labor costs for scientific and technical employees, as well as differences in the tax and incentive treatment of R&D costs among jurisdictions. Among the mature markets, the **Netherlands**, **Canada**, and **France** are the most cost-competitive countries for R&D operations, while among the high growth markets, **India**, **China**, and **Mexico** offer the lowest overall costs in this sector.





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

Corporate Services¹

Labor costs for entry-level administrative and customer service employees, as well as finance professionals, are most significant in this sector. These costs vary considerably by country and region, resulting in generally higher cost differentials in this sector. Among the mature markets, the **United Kingdom**, **Canada**, and the **Netherlands** are the most cost-competitive countries for corporate services operations, while among the high growth markets, **India**, **Mexico**, and **China** offer the lowest overall costs in this sector.





Manufacturing¹

For manufacturing operations, component costs fixed at other levels in the supply chain and costs for globally sourced equipment are similar by location, resulting in lower cost differentials among countries than seen in other sectors. Among the mature markets, the **United Kingdom**, the **Netherlands**, and **France** are the most cost-competitive countries for manufacturing operations, while **China**, the world's largest exporter, offers the lowest overall costs in the manufacturing sector.





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

Key Cost Factors

Labor costs vary significantly between the high growth and mature countries. For many other business factors, however, costs in the high growth countries are similar to, or even higher than, those in the mature countries.

Labor costs represent the single largest location-sensitive cost factor for all industries examined.

Labor comparisons are based on a mix of 42 job positions, which vary by industry. Labor costs comprise wages and salaries, statutory costs (payroll taxes, government pension plans, medical plans, etc.), and other benefits typically provided by employers. In the high growth markets, total labor costs are adjusted for the higher rates of wage inflation and lower, but improving, levels of worker productivity seen in these countries.

- In the mature markets, labor costs account for approximately 55 percent of total location-sensitive costs in manufacturing and approximately 85 percent of total location-sensitive costs in the service operations examined. Labor costs are lowest in the United Kingdom, Canada, and Italy.
- In the high growth markets, total labor costs account for approximately 30 percent of total location-sensitive costs in manufacturing and approximately 65 percent of total locationsensitive costs in service operations. Labor costs are lowest in India, China, and Mexico.

Facility costs vary both by location and type of business operation.

- Industrial facility lease costs average approximately 5 percent of total location-sensitive costs for the manufacturing operations examined. Industrial lease costs are lowest in India, Canada, the United States, and China.
- For non-manufacturing operations, office lease costs average approximately 10 percent of total location-sensitive costs. Office lease costs are lowest in India, the Netherlands, Mexico, and Germany.

Transportation costs vary widely by industry and represent between 6 and 22 percent of location-sensitive costs for the manufacturing operations examined. Transportation costs vary by product and markets served, but tend to be lowest in Asia (India, Japan, China) and Europe (France and the Netherlands).

Utility costs include electricity and natural gas costs and represent up to 8 percent of total location-sensitive costs. Overall utility costs are lowest in Russia, followed by the United States, Canada, and Mexico.

Taxes, Taxes, Taxes

Taxes typically represent up to 18 percent of location-sensitive costs across the locations and industries examined. Effective income tax rates, calculated net of generally applicable tax credits and incentives, vary by business sector:

- For **digital** operations, Canada, China, France, and Australia offer the lowest effective corporate income tax rates.
- For research and development operations, many of the countries studied offer significant R&D tax incentives. France, the Netherlands, Canada, and Australia offer the lowest effective tax rates in this sector.
- For corporate services, Russia, Canada, the United Kingdom, and China offer the lowest effective rates of corporate income tax.
- For **manufacturing** operations, Canada, China, Russia, and the United Kingdom also offer the lowest effective corporate tax rates.

Taxes are also the subject of a separate KPMG report, *Competitive Alternatives Special Report: Focus on Tax*, which analyzes international tax issues in greater depth than this report on business costs. The *Focus on Tax* report is expected to be available in June 2012 at www.CompetitiveAlternatives.com.

Business Cost Trends

For the 10 countries included in both this and the prior 2010 edition of *Competitive Alternatives*, the following table tracks the change in business costs over the last two years. Australia and the United Kingdom have seen the greatest changes in business costs, albeit moving in opposite directions.

BUSINESS COST TRENDS						
Country	2010 Edition	010 Edition 2012 Edition				
Australia	97.8	103.7	+5.9			
Canada	95.0	95.0	+0.0			
France	98.3	96.1	-2.2			
Germany	102.6	100.1	-2.5			
Italy	100.0	97.9	-2.1			
Japan	107.6	109.4	+1.8			
Mexico	81.8	79.0	-2.8			
Netherlands	96.5	94.7	-1.8			
United Kingdom	98.2	94.5	-3.7			
United States	100.0	100.0	0.0			

1: Increase in cost index represents an increase in relative business costs since 2010.

vi Competitive Alternatives: KPMG's Guide to International Business Location Costs 2012 Edition

THIS PAGE IS INTENTIONALLY BLANK

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 varies both among different industries and among individual firms within a particular industry. The importance of each factor can also change depending upon whether a firm is only considering locations in established, mature markets, or in emerging, high growth markets, or is assessing locations across both mature and high growth markets.

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 jurisdictions compare in terms of other key competitiveness factors.

The 2012 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 133 cities in leading mature and high growth 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 19 industries and representative operations
- To provide information on important noncost 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 Locati	Key Site Location 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 developed from a 6-month research program. The scope of the study includes:

- 133 cities in 14 countries
- 19 industries and business operations
- 26 location-sensitive cost factors
- More than 30 non-cost competitiveness factors
- More than 50,000 individual data items.

1. Countries and Cities

This study represents an analysis of business locations in 14 leading mature and high growth countries:

- Nine mature countries, including the G7 countries plus Australia and the Netherlands
- Five high growth markets, including Brazil, Russia, India, and China (the "BRIC countries") plus Mexico.

Of the 133 cities examined, this report presents an analysis and discussion of 113 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 20 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 or urbanfringe areas.

EXHIBIT 1.2

Featured Cities¹

Americas

Brazil Belo Horizonte São Paulo

Canada – Atlantic Charlottetown, PE Fredericton, NB Halifax, NS Moncton, NB St. John's, NL

Canada – East Montreal, QC Quebec City, QC Toronto, ON Trois-Rivières, QC Windsor-Essex, ON

Canada-West

Calgary, AB Edmonton, AB Saskatoon, SK Winnipeg, MB

Canada – Pacific Prince George, BC Vancouver, BC

Mexico

Mexico City Monterrey

US – New England Bangor, ME Boston, MA Burlington, VT Hartford, CT Manchester, NH Providence, RI

Baltimore MD Buffalo, NY Charleston, WV Cincinnati, OH Cleveland, OH Detroit, MI Indianapolis, IN Lexington, KY New York City, NY North Virginia, (Metro DC) VA Philadelphia, PA Pittsburgh, PA Saginaw, MI Trenton, NJ Wilmington, DE Youngstown, OH

US-Northeast

US-Southeast

Atlanta, GA Baton Rouge, LA Gulfport-Biloxi, MS Jackson, MS Little Rock, AR Miami, FL Mobile, AL Montgomery, AL Nashville, TN New Orleans, LA Orlando, FL Raleigh, NC Shreveport, LA Spartanburg, SC Tampa, FL

US-Midwest

Albuquerque, NM Austin, TX Beaumont, TX Billings, MT Cedar Rapids, IA Champaign-Urbana, IL Cheyenne, WY Chicago, IL Dallas-Fort Worth, TX Denver, CO Fargo, ND Houston, TX Madison, WI Minneapolis, MN Oklahoma City, OK Omaha, NE Phoenix, AZ Salt Lake City, UT Sioux Falls, SD St. Louis, MO Wichita, KS

US-Pacific

Russia

Japan

Osaka

Tokyo

Moscow Saint Petersburg

United Kingdom

Manchester

London

Anchorage, AK Boise, ID Honolulu, HI Las Vegas, NV Los Angeles, CA Portland, OR Riverside-San Bernardino, CA Sacramento, CA Salem, OR San Diego, CA San Francisco, CA Seattle, WA Spokane, WA

Europe

France

Marseille

Paris

Germany Berlin Frankfurt **Netherlands** Amsterdam

Milan

Rome

Italy

Rotterdam

Asia Pacific

Australia

Adelaide Brisbane Melbourne Sydney China Chengdu Shanghai

India Chennai Mumbai

Mumbai

1 Countries/cities in black are "mature", those in red are "high growth".

2. Industries

Nineteen 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 19 business operations are presented in Chapter 3.

The 19 business operations represent a broad mix of different business types, including manufacturing, digital services, research and development (R&D), 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 leasing a new industrial facility in a suburban industrial area. For non-manufacturing operations, the analysis is based on leasing Class "A" commercial space, generally in a suburban office building, or in a downtown office building for the international financial services operation.

3. Location-Sensitive Cost Components

This study compares costs among jurisdictions based on 26 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 26 location-sensitive cost factors studied generally represent between 30 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 or are fixed at other levels of the supply chain, and therefore 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 and Business Operations

Industry

MANUFACTURING

Aerospace Agri-food Automotive Chemicals Electronics Green energy Medical devices Metal components Pharmaceuticals Plastics Precision manufacturing Telecommunications

DIGITAL

Digital entertainment Software design

R&D

Biotechnology Clinical trials Product testing

CORPORATE SERVICES

Professional services Support services

Business Operation Modeled

Aircraft parts Food processing Auto parts Specialty chemicals Electronics assembly Advanced batteries Medical device manufacturing Metal machining Pharmaceutical products Plastic products Precision components Telecom equipment

Video game production Software development

Biomedical R&D Clinical trials management Electronic systems development/testing

International financial services Shared services center

EXHIBIT 1.4

Location-Sensitive Cost Components

Labor Costs

- Salaries & 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
- Industrial leasing
- Office leasing

Transportation costs

- Air freight
- Surface freight (road & sea)

Utility Costs

- Electricity
- Natural gas

Cost of Capital

- Financing costs (interest)
- Depreciation charges

Taxes Other Than Income

- Capital
- Property
- Sales & 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 2010 edition of *Competitive Alternatives*, are illustrated in Exhibit 1.5. The rates used in 2012 are based on average daily rates reported by the US Federal Reserve Board for October through December 2011. As the Federal Reserve Board does not report exchange rates for the Russian ruble, a similar alternative source was used for Russia.

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, reflecting business costs in the major metropolitan regions of each country.

As illustrated in Exhibit 1.6, two major cities are used to calculate the national results for each country, with the exception of the United States. The four largest US metro areas—New York, Los Angeles, Chicago, and Dallas Fort Worth—are used to calculate the US national results and form the baseline against which business costs in other countries and cities are compared.

EXHIBIT 1.5

Exchange Rates Used in this Study

	Exchang	Two-year Appreciation Belative	
	2010 Edition	2012 Edition	to US\$
Returning countries			
Canadian Dollar	CA \$1.06 (US \$0.94)	CA \$1.02 (US \$0.98)	3.9%
Mexican Peso	MX \$13.07 (US \$0.08)	MX \$13.64 (US \$0.07)	-4.2%
Euro	€ 0.68 (US \$1.47)	€ 0.74 (US \$1.35)	-8.1%
UK Pound	£0.61 (US \$1.64)	£0.64 (US \$1.56)	-4.7%
Australian Dollar	AU \$1.10 (US \$0.91)	AU \$0.99 (US \$1.01)	11.1%
Japanese Yen	¥89.86 (US \$0.01)	¥77.33 (US \$0.01)	16.2%
New countries			
Brazilian Real	n/a	R \$1.80 (US \$0.56)	n/a
Russian Ruble	n/a	RUB 31.07 (US \$0.03)	n/a
Chinese Yuan	n/a	CN ¥6.36 (US \$0.16)	n/a
Indian Rupee	n/a	Rs 50.75 (US \$0.02)	n/a

Source: US Federal Reserve and and Oanda.com average rates for October-December 2011.

EXHIBIT 1.6					
Cities Selected for Calculation of National Results					
Country	Country Cities				
AMERICAS					
Brazil	São Paulo	Belo Horizonte			
Canada	Toronto	Montreal			
Mexico	Mexico City	Monterrey			
United States	New York	Chicago			
	Los Angeles	Dallas			
EUROPE					
France	Paris	Marseille			
Germany	Frankfurt	Berlin			
Italy	Milan	Rome			
Netherlands	Amsterdam	Rotterdam			
Russia	Moscow	Saint Petersburg			
United Kingdom	London	Manchester			
ASIA PACIFIC					
Australia	Sydney	Melbourne			
China	Shanghai	Chengdu			
India	Mumbai	Chennai			
Japan	Tokyo	Osaka			

D. Methodology

1. KPMG's Cost Model

This study is based on KPMG's proprietary CompetitiveAlternatives.com cost model which analyzes 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 generally 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 10-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. Comparing Mature and High Growth Countries

The analytical approach used for the mature countries in this study, as detailed throughout this report, is unchanged from prior editions of *Competitive Alternatives*.

For high growth countries, the analytical approach has been refined in three areas to establish a valid basis of comparison between countries at different stages of economic development. These refinements are explained in the following sections.

a) Wage Inflation

Rates of wage inflation in the mature countries examined have generally been close to 3 percent (plus or minus 1 percent) since 2006. Accordingly, no distinction is made between the mature countries for different rates of wage inflation. However, wage inflation rates in the high growth markets have varied significantly in recent years, reaching as high as 12 percent per annum. For the comparisons contained in this study, the labor cost calculations in the high growth countries include an allowance for the expectation that higher rates of wage inflation will continue in the short term, but will gradually decline over the 10-year analysis horizon of this study.

b) Physical Productivity

This study compares specific types of business operations from the viewpoint of a business investor. It should <u>not</u> be interpreted as comparing overall levels of economic productivity among countries.

For this report, three key sources of productivity variations—paid time not worked, core technology employed, and core workforce training—have been standardized in the analysis for all locations.

For the mature countries, which have broadly similar workforces in terms of general education and skill levels, the physical productivity of labor has been assumed to be equal in all locations.

For the high growth countries, differences in worker skill levels have been reflected in physical productivity assumptions, with somewhat higher numbers of workers being assigned in high growth countries to achieve a given level of output. The extent of this adjustment varies with the level of skills and education for different job positions, with the greatest adjustments being for production labor, progressively lower adjustments for each of administrative and professional employees, and no adjustment for management staff.

These differential productivity levels have also been considered in the assessment of underlying wage rates and in reconciling alternate sources of wage and salary data for the high growth countries.

c) Capital Investment

In the mature countries, this analysis assumes the same investment in all machinery and equipment for each specific business operation.

In the high growth countries, this analysis assumes the same investments are made in core production technologies to achieve a standard level of output. This reflects the establishment of a relatively sophisticated facility for the high growth countries, reflecting recent industry trends. However, this study also incorporates a lower cost for non-core capital investments in the high growth countries, due to some marginal production aspects being assigned to labor instead of capital, and the likelihood that some general equipment may be sourced locally at a lower cost than in the mature countries.

3. Income Statement 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 capital assets, which is reflected in annual depreciation, as well as in interest on the debt associated with facility start-up.

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

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 preferred 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 19 industries (Exhibit 1.3)
- 26 individual cost components (Exhibit 1.4)
- A representative group of major cities in each country chosen to provide comparable national averages (Exhibit 1.6).

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 in each group, with the lowest cost country ranking first. Among mature markets, the **United Kingdom,** the **Netherlands,** and **Canada** are the low-cost leaders, with business costs five percent or more lower than the United States. Favorable results for the UK and the

States. Favorable results for the UK and the Netherlands are due, in part, to devaluations of the euro and the pound resulting from the European debt crisis.

France and Italy rank fourth and fifth among the mature markets. Costs in France are 3.9 percent lower than the US baseline, while costs in Italy are 2.1 percent lower than in the US. Pegged as the study baseline, costs in the **United States** rank sixth among the mature markets, while costs in seventhranked **Germany** are virtually equal to the US.

Australia's business cost structure is 3.7 percent higher than the US, while Japan has the highest cost structure at 9.4 percent above the US. Relative costs in both of these countries have risen in recent years due to the strong appreciation of their currencies relative to other major world currencies. Business costs in the five emerging countries are below those in the nine mature countries examined. Costs in these countries are also compared to the US baseline.

China and **India** are the cost leaders among the high growth countries, with overall business costs 25.8 and 25.3 percent, respectively, below the United States.

Business costs in **Mexico** and **Russia** are relatively close. Mexico ranks third among the countries, with business costs 21.0 percent below the US. In fourth-ranked Russia, business costs are 19.7 percent below the US baseline.

Costs in **Brazil** are higher than in the other high growth countries, and approach the cost levels of the leading mature countries. Brazil's wage levels, including minimum wage standards, are significantly above those of the other high growth countries studied. A heavy burden for both direct and indirect taxes also impacts Brazil's total cost performance.



1 Average for 19 operations. (Refer to Exhibit 1.3 and related text.)

B. Cost Trends 2010-2012

Exhibit 2.2 compares the rankings of the nine mature countries included in this edition of Competitive Alternatives to their rankings in the previous 2010 edition, and details key cost trends that have influenced the results of each country in the 2012 study.

Rankings for most countries are generally consistent between 2010 and 2012. The main exceptions are the United Kingdom, which has seen a notable improvement in its ranking, and Australia, which has seen a notable decline. Canada has also seen a decline in its ranking, now falling behind both an improved UK and the Netherlands, whose ranking is unchanged from 2010.

While many variations in country results are explained by the trends identified in Exhibit 2.2, some caution must be applied in the interpretation of historical trends due to ongoing refinements to the costing methodology used and range of business operations examined in successive editions of Competitive Alternatives.

EXHIBIT 2.2

Major Cost Trends	Since 2010 For Mature Countries			
		2012		2010
Country	Significant Cost Trends	Index	Rank ¹	Rank ¹
Australia	 11% currency appreciation against the US\$ Increase in industrial facility costs Increase in sea and air freight rates Increase in electricity rates Phased-in corporate tax rate reductions 	103.7	8	3
Canada	 4% currency appreciation against the US\$ Increase in employee benefit costs Decrease in industrial facility costs Increase in road and sea freight rates Decrease in natural gas rates Federal and provincial tax rate reductions 	95.0	3	1
France	 8% currency depreciation against the US\$ Increase in total labor costs Decrease in industrial facility costs Increase in sea freight rates Increase in electricity and natural gas rates Local tax reforms completed 	96.1	4	5
Germany	 8% currency depreciation against the US\$ Largest gain in labor costs since 2010 Decrease in office lease costs Increase in sea freight rates Decrease in electricity rates Increase in natural gas rates 	100.1	7	8
Italy	 8% currency depreciation against the US\$ Decrease in office lease costs Increase in sea and air freight rates Decrease in electricity and natural gas rates 	97.9	5	6
Japan	 16% currency appreciation against the US\$ Slight drop in labor costs post-recession Largest decrease in office lease costs Phased-in corporate tax rate reduction 	109.4	9	9
Netherlands	 8% currency depreciation against the US\$ Increase in total labor costs Increase in office lease costs Increase in sea freight rates Decrease in electricity and natural gas rates Corporate income tax rate reduction 	94.7	2	2
United Kingdom	 5% currency depreciation against the US\$ Slight drop in labor costs post-recession Largest decrease in industrial facility costs Increase in sea and air freight rates Decrease in electricity and natural gas rates Phased-in corporate tax rate reduction 	94.5	1	4
United States	 Increase in employee benefit costs Decrease in industrial facility costs Increase in road and sea freight rates Decrease in natural gas rates Some tax increases due to state deficits 	100.0	6	7

Rank among the nine mature countries included in both the 2010 and 2012 studies.

1

C. Exchange Rate Sensitivity

Exchange rates are a key consideration for business investors when comparing international locations, and the cost comparisons presented in this study are sensitive to exchange rate changes. Exhibit 2.3 estimates the sensitivity of the study results to possible future changes in exchange rates.

The analysis presented here reflects the output of the *Competitive Alternatives* cost model, which compares all costs in US dollars. Exchange rate changes do not affect local business costs, expressed in local currency terms, but do impact international comparisons when local costs are converted to a common currency.

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

- Some cost factors—such as major plant equipment, commodity raw materials, components for which costs are fixed at other levels of the supply chain, and international freight—are generally priced globally in US dollars. Exchange rate changes do not alter these cost factors in US dollar terms
- Corporate taxes dampen the after-tax effects of exchange rate changes.

For any country, if the value of the local currency increases relative to the US dollar (currency appreciation), then the country's business costs increase in US dollar terms, resulting in a higher business cost index. Conversely, a decrease in local currency value relative to the US dollar improves cost competitiveness, resulting in a lower cost index.

The study results for the high growth countries are less sensitive to exchange rates than results for the mature countries, due to lower wage and salary levels in the high growth countries. Labor and other localcurrency costs represent a relatively lower share of overall business costs in the high growth countries, and thus exchange rate changes have a relatively lower impact on total business costs.

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.

EXHIBIT 2.3

Sensitivity of Results to Exchange Rates

Currency ¹ and Country	If Local Currency Decreases in Value vs. US \$		2012 Study Results	If Local Currency Increases in Value vs. US \$	
,	-20%	-10%	0%	+10%	+20%
Australian Dollar	AU \$1.19	AU \$1.09	AU \$0.99	AU \$0.89	AU \$0.79
Australia	97.4	100.3	103.7	108.7	115.8
Brazilian Real	R \$2.16	R \$1.98	R \$1.80	R \$1.62	R \$1.44
Brazil	89.2	90.9	93.0	95.6	98.8
Canadian Dollar	CA \$1.22	CA \$1.12	CA \$1.02	CA \$0.92	CA \$0.82
Canada	90.3	92.4	95.0	98.2	102.4
Chinese Yuan	CN ¥7.63	CN ¥7.00	CN ¥6.36	CN ¥5.72	CN ¥5.09
China	72.2	73.1	74.2	75.5	77.2
Euro	€0.89	€0.81	€0.74	€0.67	€0.59
France	91.7	93.7	96.1	99.1	103.1
Germany	94.8	97.2	100.1	103.8	109.0
Italy	93.1	95.3	97.9	101.2	105.5
Netherlands	89.8	92.1	94.7	98.0	102.1
Indian Rupee	Rs 60.90	Rs 55.83	Rs 50.75	MX \$45.68	MX \$40.60
India	73.4	74.0	74.7	75.5	76.5
Japanese Yen	¥92.80	¥85.06	¥77.33	¥69.60	¥61.86
Japan	102.2	105.2	109.4	115.4	123.7
Mexican Peso	MX \$16.37	MX \$15.00	MX \$13.64	MX \$12.28	MX \$10.91
Mexico	77.0	77.9	79.0	80.4	82.0
Russian Ruble	RUB 37.28	RUB 34.18	RUB 31.07	RUB 27.96	RUB 24.86
Russian Ruble	77.1	78.5	80.3	82.4	85.0
UK Pound	£0.77	£0.70	£0.64	£0.58	£0.51
United Kingdom	89.7	91.9	94.5	97.8	102.0

1 Local currency value per US dollar.

THIS PAGE IS INTENTIONALLY BLANK

3. Results by Industry and Operation

Chapter 3 details the analysis and results for the 19 industries and representative operations examined in this study.

Exhibit 3.1 identifies each of the 19 industries examined, along with the representative operation modeled for each industry.

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

- The metal machining operation is also 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 Modeled Operations Are Relevant To: Industry Manufacturing Aerospace Aircraft parts¹ Agri-Food Food processing¹ Packaged, dried, or canned food products Confectionery products Automotive Auto parts¹ Auto parts assembly Chemicals Specialty chemicals Specialty adhesives and solvents Specialty fragrances and essences Electronics Electronics assembly Automotive electronics systems Electronics manufacturing services Electro-medical device manufacturing Green Energy Advanced batteries¹ Fuel cells manufacturing Medical Devices Medical device manufacturing¹ Metal Components Metal machining Building products (hardware) Industrial equipment components Agricultural equipment components Transportation equipment components Pharmaceuticals Pharmaceutical production¹ Prescription drug manufacturing Non-prescription drug manufacturing Vitamin and health supplement manufacturing Plastics Plastic products Plastic auto parts Electronic device casings Furniture components Precision Manufacturing Precision components Engine parts manufacturing Precision component casings and housings Telecommunications Telecom equipment **Research & Development** Biotechnology Biomedical R&D¹ Agri-food R&D Marine biotech R&D Pharmaceutical R&D Clinical Trials Clinical trials management¹ Phase II/III clinical trials Product Testing Electronics systems development and testing Aerospace systems R&D and testing Telecom systems R&D and testing Digital Digital Entertainment Video game production¹ Digital animation development Multimedia content Software Design Software development¹ Voice recognition applications development Software upgrade and maintenance **Corporate Services** Professional Services International financial services Securities/currency trading Wealth/funds management Treasury Support Services Shared services center¹ Call center Back office facilities

1 Indicates the representative operation modeled in the study.

© 2012 KPMG LLP, a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity. All rights reserved.

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 \$242 billion in 2010.

Aircraft components and sub-assemblies comprise a complex mix of elements, including precision metal components, electronic assemblies, and plastics components. The representative operation modeled, a manufacturer of subassembly aircraft components, is based on a mix of these production elements. As outlined in Exhibit 3.2, this operation is characterized by:

- Moderate land and building requirements, and relatively low 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.

International results are illustrated in Exhibit 3.3. These results reflect the combined impact of 26 location-sensitive cost

components applied to the modeled operation. Detailed results,

by key cost component, are presented in Exhibit 3.4.

Exhibit 3.5 profiles results for selected cities, by country, from among the 113 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.5.

EXHIBIT 3.2 – AEROSPACE	
Aircraft Parts Manufacturing – Sumı Parameters	mary of Operating
Facilities Requirements	
Leased industrial site	5 acres (20,234 m²)
Size of factory	76,500 ft ² (7,107 m ²)
Other Initial Investment Requirements	
Machinery and equipment – US \$'000	\$7,000
Office equipment – US \$'000	\$250
R&D equipment – US \$'000	\$300
Inventory – US \$'000	\$8,000
Equity financing – % of project costs	50%
Workforce	
Management	4
Sales and administration	10
Production/non-dedicated product development	
- Professional, technical	38
- Operators	27
- Unskilled laborers	3
Other	_3
Total employees	85
Energy Requirements	
Electricity monthly consumption/peak demand	177,000 kWh and 675 kW
Gas monthly consumption	7,250 CCF (20,538 m ³)
Other Annual Operating Characteristics	· · · ·
Sales at full production – US \$'000	\$32,500
Materials and other direct costs – % of sales	47%
Other operating costs - % of sales	4%
Investment in tax-eligible R&D – % of sales	1.7%



Aircraft Parts Manufacturing – International Results (US = 100.0)



© 2012 KPMG LLP, a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative (*KPMG International*), a Swiss entity. All rights reserved

EXHIBIT 3.4 – AEROSPACE

Aircraft Parts Manufacturing - Costs by Major Component, US \$'000														
				I	Mature						Hi	gh Growt	h	
	Ameri	lcas			Europe			Asia Pa	clflc	Americas		Europe	Asla Pa	clfic
	Canada	US	France	Germany	Italy	Netherland	s UK	Australia	Japan	Brazil	Mexico	Russia	China	India
Revenues	31,150	31,150	31,150	31,150	31,150	31,150	31,150	31,150	31,150	31,150	31,150	31,150	31,150	31,150
Costs														
- Salaries & Wages	5,182	5,283	4,220	6,003	4,509	4,971	4,445	6,348	7,369	2,802	1,866	2,668	1,557	1,225
- Statutory Plans	577	501	1,993	995	1,257	669	432	1,165	927	889	240	406	315	44
- Other Benefits	1,430	2,277	1,011	1,290	1,125	1,472	1,348	775	1,123	1,799	497	629	237	204
- Total Labor & Benefits	7,189	8,061	7,225	8,287	6,891	7,112	6,225	8,289	9,419	5,491	2,603	3,703	2,108	1,473
- Facility Lease	359	363	427	626	559	697	807	725	1,359	829	396	850	378	281
- Transportation	2,851	2,467	2,318	2,270	2,905	2,273	3,776	3,916	2,261	2,207	2,656	2,618	1,950	1,837
- Utilities	284	265	344	420	450	341	362	560	498	531	283	130	372	384
- Interest & Depreciation	1,251	1,388	1,218	1,303	1,263	1,200	1,209	1,492	1,454	1,149	682	578	914	748
- Non-Income Taxes	333	420	442	233	36	(69)	377	181	816	142	47	328	103	580
- Location-Insensitive Costs	15,731	15,731	15,731	15,731	15,731	15,731	15,731	15,731	15,731	15,731	15,731	15,731	15,731	15,731
Profit Before Income Tax	3,153	2,457	3,447	2,282	3,316	3,749	2,664	257	(387)	5,072	8,753	7,214	9,595	10,119
- Income Taxes ¹	568	756	931	705	1,247	929	501	82	81	1,753	2,428	1,347	1,410	2,949
Effective Rate	18.0%	30.8%	27.0%	30.9%	37.6%	21.6%	18.8%	32.1%	n/a	34.6%	27.7%	18.7%	14.7%	29.1%
After-Tax Profit	2,585	1,701	2,516	1,576	2,069	2,938	2,164	175	(468)	3,320	6,325	5,867	8,184	7,169
Total Annual Costs	28,566	29,450	28,634	29,575	29,082	28,213	28,986	30,976	31,618	27,831	24,825	25,284	22,966	23,981
Index (US=100.0)	97.0	100.0	97.2	100.4	98.8	95.8	98.4	105.2	107.4	94.5	84.3	85.9	78.0	81.4
Rank	7	11	8	12	10	6	9	13	14	5	3	4	1	2

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

Airc	Aircraft Parts Manufacturing – Results for Selected Cities, by Country													
Count	ry and City	Index	Rank ¹	Count	ry and City	Index	Rank ¹	Count	try and City	Index	Rank ¹			
Matur	e - North America			Matu	e - International			High Growth						
Select	ed Cluster Cities			All Cit	ies			All Cit	All Cities					
CA	Calgary, AB Montreal, QC	98.6 96.9	63 23	AU	Adelaide Brisbane	104.7 104.7	108 107	BR	Belo Horizonte São Paulo	93.1 95.9	9 13			
	Winnipeg, MB Vancouver, BC	96.9 98.7	29 25 68	FR	Sydney Marseille Paris	104.1 106.3 96.5	100 111 21 52	CN	Chengdu Shanghai	76.0 80.0	1 3			
US	Atlanta, GA Hartford, CT Indianapolis, IN	97.5 100.8 98.1	41 97 57	GE IT	Berlin Frankfurt Milan	98.9 102.0 98.6	74 103 64	IN	Chennai Mumbai	79.9 82.9	2 4			
	Mobile, AL Oklahoma City, OK Orlando, FL Phoenix, AZ	97.6 97.8 97.8 98.6	43 49 47 65	JP NE	Rome Osaka Tokyo Amsterdam	98.9 104.9 109.8 95.8	76 109 113 12	MX RU	Mexico City Monterrey Moscow	84.5 84.1 87.7	7 6 8			
	Seattle, WA St. Louis, MO Wichita, KS	101.6 97.9 97.4	101 54 36	UK	Rotterdam London Manchester	95.8 101.6 95.3	11 102 10		Saint Petersburg	84.0	5			

1 Rank among 113 cities.

2. Agri-Food

The agri-food industry encompasses the production of food, beverage, and tobacco products. In the United States alone, the industry provided 1.4 million jobs in 2009 according to the US Census Bureau. The industry is highly fragmented, with thousands of small independent food processors competing for market share with some of the world's largest conglomerates.

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

- Moderate facility and equipment 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.

International results are illustrated in Exhibit 3.7. These results reflect the combined impact of 26 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.8.

Exhibit 3.9 profiles results for selected cities, by country, from among the 113 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.5.

EXHIBIT 3.6 – AC	GRI-FOOD
------------------	----------

Food Processing – Summary of Operating Parameters

Facilities Requirements		
Leased industrial site	3 acres	(12,141 m ²)
Size of factory	50,000 ft ²	(4,645 m ²)
Other Initial Investment Requirements		
Machinery and equipment – US \$'000	\$18,000	
Office equipment – US \$'000	\$300	
R&D equipment – US \$'000	-	
Inventory – US \$'000	\$2,000	
Equity financing – % of project costs	50%	
Workforce		
Management	6	
Sales and administration	12	
Production/non-dedicated product development		
- Professional, technical	14	
- Operators	43	
- Unskilled laborers	32	
Other	3	
Total employees	110	
Energy requirements		
Electricity monthly consumption/peak demand	370,000 kWh a	and 1,260 kW
Gas monthly consumption	30,000 CCF	(84,986 m ³)
Other Annual Operating Characteristics		
Sales at full production – US \$'000	\$40,000	
Materials and other direct costs - % of sales	44%	
Other operating costs - % of sales	6%	
Investment in tax-eligible R&D – % of sales	-	

EXHIBIT 3.7 – AGRI-FOOD

Food Processing – International Results (US = 100.0)



© 2012 KPMG LLP, a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative (*KPMG International'), a Swiss entity. All rights reserve

EXHIBIT 3.8 – AGRI-FOOD

Food Processing - Costs by Major Component, US \$'000														
				I	Mature						Hi	gh Growt	h	
	Amer	Icas		Europe					Asia Pacific		Icas	Europe	Asla Pa	clflc
	Canada	US	France	Germany	Italy	Netherland	s UK	Australia	Japan	Brazil	Mexico	Russia	China	India
Revenues	38,000	38,000	38,000	38,000	38,000	38,000	38,000	38,000	38,000	38,000	38,000	38,000	38,000	38,000
Costs														
- Salaries & Wages	5,444	5,269	4,300	6,234	4,344	5,333	4,543	6,677	8,099	2,244	1,532	2,440	1,375	997
- Statutory Plans	653	659	2,060	1,089	1,239	752	425	1,240	1,023	713	201	456	263	49
- Other Benefits	1,503	2,271	1,017	1,344	1,048	1,419	1,339	807	1,229	1,799	426	584	211	159
- Total Labor & Benefits	7,600	8,200	7,377	8,667	6,631	7,504	6,308	8,723	10,351	4,756	2,159	3,479	1,849	1,204
- Facility Lease	235	237	279	409	366	455	528	474	889	542	259	555	247	184
- Transportation	3,797	3,409	2,240	2,423	2,793	2,239	2,336	3,919	2,305	1,542	4,357	3,045	1,971	1,756
- Utilities	678	620	915	1,103	1,075	842	859	1,354	1,252	1,292	635	314	1,025	1,072
- Interest & Depreciation	2,600	2,785	2,498	2,602	2,508	2,490	2,352	2,590	2,743	1,960	1,571	1,231	1,863	1,547
- Non-Income Taxes	221	501	444	161	27	34	286	104	725	262	37	388	181	237
- Location-Insensitive Costs	18,810	18,810	18,810	18,810	18,810	18,810	18,810	18,810	18,810	18,810	18,810	18,810	18,810	18,810
Profit Before Income Tax	4,061	3,438	5,439	3,827	5,792	5,627	6,522	2,027	926	8,837	10,173	10,178	12,055	13,192
- Income Taxes ¹	880	1,050	1,728	1,141	1,960	1,393	1,525	588	309	2,973	2,766	1,886	2,996	3,976
Effective Rate	21.7%	30.6%	31.8%	29.8%	33.8%	24.8%	23.4%	29.0%	33.3%	33.6%	27.2%	18.5%	24.9%	30.1%
After-Tax Profit	3,181	2,388	3,711	2,686	3,832	4,234	4,997	1,439	618	5,865	7,407	8,292	9,059	9,216
Total Annual Costs	34,819	35,613	34,289	35,315	34,169	33,766	33,003	36,561	37,382	32,136	30,593	29,709	28,942	28,785
Index (US=100.0)	97.8	100.0	96.3	99.2	95.9	94.8	92.7	102.7	105.0	90.2	85.9	83.4	81.3	80.8
Rank	10	12	9	11	8	7	6	13	14	5	4	3	2	1

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

FOG	ba Frocessing – Resu	ILS IOF S	elected		s, by Country						
Coun	try and City	Index	Rank ¹	Coun	try and City	Index	Rank ¹	Coun	try and City	Index	Rank ¹
Matu	re - North America			Matu	re - International			High	Growth		
Lowe	st Cost Cities			All Ci	ties			All Ci	ties		
	Trais Binibara, OO				A delete i de	100 7	101		Dela Universita		
CA	Trois-Rivieres, QC	97.2	33	AU	Adelaide	102.7	104	BK	Belo Horizonte	89.4	9
	Montreal, QC	97.4	35		Brisbane	103.0	105		São Paulo	91.1	11
	Fredericton, NB	98.1	45		Melbourne	101.9	100				
	Toronto, ON	98.1	47		Sydney	103.5	106	CN	Chengdu	79.8	1
	Halifax, NS	98.2	48	FR	Marseille	96.1	18		Shanghai	82.8	5
					Paris	96.5	23				
US	Lexington, KY	95.3	15	GE	Berlin	97.6	39	IN	Chennai	80.2	2
	Cincinnati, OH	96.0	17		Frankfurt	100.7	88		Mumbai	81.5	3
	Youngstown, OH	96.3	20	IT	Milan	95.8	16				
	Montgomery, AL	96.3	21		Rome	96.1	19	MX	Mexico City	86.7	8
	Champaign-Urbana, IL	96.4	22	JP	Osaka	103.7	108		Monterrey	85.1	6
	Charleston, WV	96.5	24		Tokyo	106.3	111				
	Shreveport, LA	96.5	25	NE	Amsterdam	94.8	14	RU	Moscow	85.1	7
	Nashville, TN	96.7	26		Rotterdam	94.8	12		Saint Petersburg	81.7	4
	Gulfport-Biloxi, MS	96.7	27	UK	London	94.8	13				
	Spartanburg, SC	96.8	28		Manchester	90.5	10				

1 Rank among 113 cities.

3. Automotive

The global automotive industry is dominated by world-scale manufacturers, such as Toyota, General Motors, Ford, Chrysler, Honda, Nissan, Volkswagen, 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.

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 equipment requirements
- A balanced workforce of skilled and unskilled workers
- Moderate energy requirements
- Relatively high costs for materials, reflecting the significant use of components and sub-assemblies

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

International results are illustrated in Exhibit 3.11. These results reflect the combined impact of 26 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.12.

Exhibit 3.13 profiles results for selected cities, by country, from among the 113 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.5.

EXHIBIT 3.10 – AUTOMOTIVE

Auto Parts Manufacturing – Summary of Operating Parameters

Facilities Requirements		
Leased industrial site	6 acres	(24,281 m ²)
Size of factory	100,000 ft ²	(9,290 m ²)
Other Initial Investment Requirements		
Machinery and equipment – US \$'000	\$13,000	
Office equipment – US \$'000	\$500	
R&D equipment – US \$'000	\$75	
Inventory – US \$'000	\$2,500	
Equity financing – % of project costs	50%	
Workforce		
Management	4	
Sales and administration	15	
Production/non-dedicated product development		
- Professional, technical	27	
- Operators	35	
- Unskilled laborers	14	
Other	5	
Total employees	100	
Energy requirements		
Electricity monthly consumption/peak demand	352,500 kWh a	nd 1,152 kW
Gas monthly consumption	13,295 CCF	(37,663 m ³)
Other Annual Operating Characteristics		
Sales at full production – US \$'000	\$41,500	
Materials and other direct costs - % of sales	55%	
Other operating costs - % of sales	6%	
Investment in tax-eligible R&D – % of sales	2.4%	



EXHIBIT 3.12 – AUTOMOTIVE

Auto Parts Manufacturing - Costs by Major Component, US \$'000														
				I	Mature						Hi	gh Growt	h	
	Amer	Icas			Europe			Asla Pa	clflc	Amer	Icas	Europe	Asia Pa	clflc
	Canada	US	France	Germany	Italy	Netherland	s UK	Australia	Japan	Brazil	Mexico	Russia	China	India
Revenues	39,550	39,550	39,550	39,550	39,550	39,550	39,550	39,550	39,550	39,550	39,550	39,550	39,550	39,550
Costs														
- Salaries & Wages	5,227	5,169	4,215	6,065	4,281	5,111	4,392	6,412	7,672	2,416	1,633	2,501	1,359	1,044
- Statutory Plans	642	525	2,008	1,054	1,211	717	417	1,187	977	767	213	445	270	47
- Other Benefits	1,442	2,229	987	1,289	1,040	1,365	1,315	774	1,163	1,790	451	597	213	165
- Total Labor & Benefits	7,312	7,923	7,210	8,408	6,533	7,193	6,124	8,372	9,812	4,974	2,297	3,543	1,841	1,257
- Facility Lease	469	474	558	818	731	911	1,055	948	1,777	1,084	517	1,111	494	367
- Transportation	2,041	2,020	1,269	1,374	1,669	1,365	1,457	2,464	1,191	1,449	2,344	1,800	1,462	1,300
- Utilities	507	466	604	736	790	598	635	1,087	878	973	537	256	718	729
- Interest & Depreciation	1,935	2,100	1,876	1,998	1,903	1,887	1,792	2,092	2,234	1,576	1,106	949	1,368	1,166
- Non-Income Taxes	428	619	512	300	45	(92)	488	236	1,099	175	45	471	136	865
- Location-Insensitive Costs	23,730	23,730	23,730	23,730	23,730	23,730	23,730	23,730	23,730	23,730	23,730	23,730	23,730	23,730
Profit Before Income Tax	3,130	2,219	3,792	2,188	4,151	3,804	4,271	621	(1,170)	5,592	8,976	7,691	9,801	10,137
- Income Taxes ¹	371	640	924	652	1,450	935	786	139	52	1,954	2,456	1,424	1,421	2,896
Effective Rate	11.8%	28.9%	24.4%	29.8%	34.9%	20.5%	18.4%	22.3%	n/a	34.9%	27.4%	18.5%	14.5%	28.6%
After-Tax Profit	2,760	1,579	2,867	1,535	2,701	3,025	3,485	482	(1,221)	3,638	6,520	6,267	8,380	7,241
Total Annual Costs	36,791	37,972	36,683	38,015	36,850	36,526	36,066	39,068	40,771	35,913	33,030	33,282	31,169	32,309
Index (US=100.0)	96.9	100.0	96.6	100.1	97.0	96.2	95.0	102.9	107.4	94.6	87.0	87.6	82.1	85.1
Rank	9	11	8	12	10	7	6	13	14	5	3	4	1	2

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

Aut	Auto Parts Manufacturing– Results for Selected Cities, by Country													
Count	ry and City	Index	Rank ¹	Count	ry and City	Index	Rank ¹	Count	try and City	Index	Rank ¹			
Matur	e - North America			Matur	e - International			High Growth						
Select	ed Cluster Cities			All Cities					All Cities					
СА	Montreal, QC Toronto, ON	96.6 97.2	24 39	AU	Adelaide Brisbane	102.7 102.0	106 104	BR	Belo Horizonte São Paulo	93.4 95.8	10 11			
	Trois-Rivières, QC	96.0	14		Melbourne	101.8	103		0001000	00.0				
	Windsor-Essex, ON	97.9	54		Sydney	104.0	109	CN	Chengdu	80.5	1			
				FR	Marseille	96.2	15		Shanghai	83.7	3			
US	Charleston, WV	96.9	30		Paris	97.0	33							
	Detroit, MI	99.3	84	GE	Berlin	98.8	75	IN	Chennai	83.5	2			
	Jackson, MS	97.6	45		Frankfurt	101.4	102		Mumbai	86.7	6			
	Lexington, KY	96.3	20	IT	Milan	96.9	28							
	Montgomery, AL	96.2	19		Rome	97.2	38	MX	Mexico City	87.5	7			
	Nashville, TN	96.9	31	JP	Osaka	104.9	111		Monterrey	86.5	5			
	Saginaw, MI	98.2	61		Tokyo	109.9	113							
	Shreveport, LA	96.2	16	NE	Amsterdam	96.2	17	RU	Moscow	89.2	8			
	Spartanburg, SC	97.1	34		Rotterdam	96.2	18		Saint Petersburg	86.1	4			
	Youngstown, OH	96.9	29	UK	London	97.6	48							
					Manchester	92.3	9							

1 Rank among 113 cities.

4. Chemicals

The chemicals industry encompasses the production of basic organic and inorganic chemicals, synthetic rubber and fibers, pesticides and fertilizers, paints and adhesives, soaps, and cleaning compounds. The US Census Bureau reports that the total value of US shipments for the chemicals industry exceeded \$625 billion in 2009, and the industry provided almost 725,000 jobs.

EXHIBIT 3 14 - CHEMICALS

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
- Moderate initial machinery and equipment requirements
- A workforce consisting of predominantly professional and technical staff, and skilled operators.
- Moderate energy requirements.

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

International results are illustrated in Exhibit 3.15. These results reflect the combined impact of 26 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.16.

Exhibit 3.17 profiles results for selected cities, by country, from among the 113 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.5.

Specialty Chemicals Manufacturing Operating Parameters	– Summary	of
Facilities Requirements		
Leased industrial site	3 acres	(12,141 m ²)
Size of factory	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	50%	
Workforce		
Management	5	
Sales and administration	11	
Customer support	5	
Production/non-dedicated product development		
- Professional, technical	34	
- Operators	33	
- Unskilled laborers	10	
Other	2	
Total employees	100	
Energy Requirements		
Electricity monthly consumption/peak demand	300,000 kWh a	nd 1,080 kW
Gas monthly consumption	41,300 CCF	(116,997 m ³)
Other Annual Operating Characteristics		
Sales at full production – US \$'000	\$50,000	
Materials and other direct costs - % of sales	53%	
Other operating costs – % of sales	8%	
Investment in tax-eligible R&D - % of sales	2.1%	



© 2012 KPMG LLP, a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity. All rights reserved.

EXHIBIT 3.16 - CHEMICALS

Specialty Chemicals Manufacturing - Costs by Major Component, US \$'000														
				I	Mature						Hi	gh Growt	h	
	Amer	Icas		Europe					clflc	Americas		Europe Asia Paci		iclflc
	Canada	US	France	Germany	Italy	Netherland	IS UK	Australia	Japan	Brazil	Mexico	Russia	China	India
Revenues	48,200	48,200	48,200	48,200	48,200	48,200	48,200	48,200	48,200	48,200	48,200	48,200	48,200	48,200
Costs														
- Salaries & Wages	5,854	5,884	4,774	6,770	5,130	5,681	5,075	7,296	8,542	3,015	2,013	2,914	1,716	1,337
- Statutory Plans	591	530	2,260	1,128	1,431	765	490	1,345	1,068	958	262	453	347	49
- Other Benefits	1,616	2,536	1,141	1,470	1,277	1,683	1,532	893	1,299	2,009	533	690	264	218
- Total Labor & Benefits	8,062	8,950	8,175	9,369	7,838	8,129	7,098	9,534	10,909	5,983	2,808	4,057	2,328	1,604
- Facility Lease	235	237	279	409	366	455	528	474	889	542	259	555	247	184
- Transportation	1,392	1,104	652	727	775	662	747	1,179	509	683	1,232	914	679	604
- Utilities	718	648	1,047	1,254	1,140	915	910	1,340	1,381	1,349	599	307	1,132	1,207
- Interest & Depreciation	2,108	2,377	2,056	2,166	2,081	2,028	1,887	1,829	2,345	1,773	1,135	835	1,619	1,338
- Non-Income Taxes	221	549	468	161	27	(109)	286	104	673	101	48	348	84	1,021
- Location-Insensitive Costs	29,402	29,402	29,402	29,402	29,402	29,402	29,402	29,402	29,402	29,402	29,402	29,402	29,402	29,402
Profit Before Income Tax	6,064	4,932	6,124	4,712	6,572	6,576	7,343	4,340	2,094	8,367	12,720	11,783	12,712	12,842
- Income Taxes ¹	1,128	1,524	1,718	1,431	2,256	1,605	1,478	1,119	636	2,912	3,509	2,196	3,072	3,654
Effective Rate	18.6%	30.9%	28.0%	30.4%	34.3%	22.2%	20.1%	25.8%	30.4%	34.8%	27.6%	18.6%	24.2%	28.5%
After-Tax Profit	4,936	3,408	4,406	3,280	4,315	5,113	5,866	3,222	1,457	5,455	9,211	9,587	9,640	9,188
Total Annual Costs	43,265	44,792	43,794	44,920	43,885	43,087	42,334	44,979	46,744	42,745	38,990	38,613	38,561	39,013
Index (US=100.0)	96.6	100.0	97.8	100.3	98.0	96.2	94.5	100.4	104.4	95.4	87.0	86.2	86.1	87.1
Rank	8	11	9	12	10	7	5	13	14	6	3	2	1	4

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 Chemicals Manufacturing – Results for Selected Cities, by Country											
Country and City		Index	Rank ¹	Country and City		Index	Rank ¹	Count	ry and City	Index	Rank ¹
Mature	e - North America			Matur	e - International			High (Growth		
Lowest Cost Cities				All Cit	All Cities			All Cit	ies		
CA	Moncton, NB	95.1	11	AU	Adelaide	99.8	95	BR	Belo Horizonte	94.6	10
	Fredericton, NB	95.2	12		Brisbane	100.8	102		São Paulo	96.3	21
	Halifax, NS	95.6	13		Melbourne	99.5	93				
	Trois-Rivières, QC	95.8	14		Sydney	101.3	106	CN	Chengdu	84.6	1
	Winnipeg, MB	95.9	15	FR	Marseille	97.2	39		Shanghai	87.6	6
					Paris	98.3	69				
US	Shreveport, LA	96.1	17	GE	Berlin	99.2	87	IN	Chennai	85.5	3
	Cheyenne, WY	96.7	26		Frankfurt	101.4	107		Mumbai	88.7	8
	Baton Rouge, LA	96.7	28	IT	Milan	97.9	54				
	Omaha, NE	96.8	31		Rome	98.1	63	MX	Mexico City	87.3	5
	Sioux Falls, SD	96.9	32	JP	Osaka	103.4	111		Monterrey	86.8	4
	Charleston, WV	96.9	33		Tokyo	105.3	113				
	Montgomery, AL	97.0	35	NE	Amsterdam	96.2	19	RU	Moscow	87.6	7
	Gulfport-Biloxi, MS	97.1	36		Rotterdam	96.2	18		Saint Petersburg	84.8	2
	Lexington, KY	97.2	38	UK	London	96.3	20				
	Mobile, AL	97.3	41		Manchester	92.8	9				

1 Rank among 113 cities.

5. Electronics

The global size of the electronics assembly industry has been estimated by New Venture Research as approximately US \$1.1 trillion in 2010. In the United States alone, the value of shipments for the electronics industry totaled more than \$325 billion in 2009.

EXHIBIT 3.18 – ELECTRONICS

This industry manufactures both finished electronic devices and electronic sub-assemblies for brand-name manufacturers and distributors of electronic equipment, as well as for manufacturers in many other industries who install electronic devices into their own products. The representative operation modeled is an electronics sub-assembly plant, and 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
- Relatively high costs for materials, reflecting the significant use of components and sub-assemblies
- Modest in-house R&D activities.

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

International results are illustrated in Exhibit 3.19. These results reflect the combined impact of 26 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.20.

Exhibit 3.21 profiles results for selected cities, by country, from among the 113 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.5.

Electronics Assembly – Summary of	Operating F	arameters
Facilities Requirements		
Leased industrial site	7 acres	(28,328 m ²)
Size of factory	120,000 ft ²	(11,148 m ²)
Other Initial Investment Requirements		
Machinery and equipment – US \$'000	\$18,000	
Office equipment – US \$'000	\$270	
R&D equipment – US \$'000	\$750	
Inventory – US \$'000	\$5,000	
Equity financing - % of project costs	60%	
Workforce		
Management	7	
Sales and administration	12	
Production/non-dedicated product development		
- Professional, technical	52	
- Operators	20	
- Unskilled laborers	5	
Other	4	
Total employees	100	
Energy Requirements		
Electricity monthly consumption/peak demand	225,000 kWh a	ind 720 kW
Gas monthly consumption	5,600 CCF	(15,864 m ³)
Other Annual Operating Characteristics		
Sales at full production – US \$'000	\$45,000	
Materials and other direct costs - % of sales	48%	
Other operating costs - % of sales	4%	
Investment in tax-eligible R&D – % of sales	2.8%	

EXHIBIT 3.19 - ELECTRONICS

Electronics Assembly – International Results (US = 100.0)



EXHIBIT 3.20 - ELECTRONICS

Electronics Assembly - Costs by Major Component, US \$'000															
	Mature									High Growth					
	Amer	lcas	Europe					Asia Pacific		Americas		Europe	Asia Pa	la Pacific	
	Canada	US	France	Germany	Italy	Netherland	s UK	Australia	Japan	Brazil	Mexico	Russia	China	India	
Revenues	43,300	43,300	43,300	43,300	43,300	43,300	43,300	43,300	43,300	43,300	43,300	43,300	43,300	43,300	
Costs															
- Salaries & Wages	5,938	6,034	4,889	6,931	5,167	5,747	5,120	7,337	8,523	3,212	2,134	3,049	1,754	1,366	
- Statutory Plans	560	556	2,307	1,163	1,447	782	497	1,356	1,079	1,019	277	475	351	51	
- Other Benefits	1,639	2,601	1,141	1,479	1,283	1,658	1,554	892	1,298	2,096	575	721	273	227	
- Total Labor & Benefits	8,138	9,191	8,337	9,573	7,897	8,187	7,172	9,585	10,900	6,328	2,986	4,246	2,378	1,644	
- Facility Lease	563	569	669	981	877	1,093	1,266	1,138	2,132	1,301	620	1,333	593	440	
- Transportation	1,989	1,466	1,623	1,597	2,087	1,553	2,944	2,320	1,245	1,633	1,965	1,719	969	949	
- Utilities	308	270	334	407	457	340	366	662	495	567	330	155	412	411	
- Interest & Depreciation	2,512	2,805	2,450	2,578	2,505	2,441	2,415	2,218	2,809	2,029	1,353	1,125	1,833	1,464	
- Non-Income Taxes	482	701	627	359	54	(98)	577	262	1,381	197	55	587	158	852	
- Location-Insensitive Costs	22,408	22,408	22,408	22,408	22,408	22,408	22,408	22,408	22,408	22,408	22,408	22,408	22,408	22,408	
Profit Before Income Tax	6,903	5,891	6,853	5,398	7,016	7,204	6,153	4,709	1,931	8,840	13,585	11,730	14,551	15,134	
- Income Taxes ¹	1,223	1,763	1,829	1,639	2,377	1,769	1,172	1,195	582	3,082	3,732	2,177	2,114	4,330	
Effective Rate	17.7%	29.9%	26.7%	30.4%	33.9%	22.1%	19.0%	25.4%	30.1%	34.9%	27.5%	18.6%	14.5%	28.6%	
After-Tax Profit	5,680	4,129	5,024	3,759	4,639	5,609	4,981	3,514	1,349	5,758	9,853	9,552	12,438	10,804	
Total Annual Costs	37,622	39,172	38,276	39,541	38,661	37,693	38,319	39,786	41,951	37,542	33,448	33,749	30,863	32,496	
Index (US=100.0)	96.0	100.0	97.7	100.9	98.7	96.2	97.8	101.6	107.1	95.8	85.4	86.2	78.8	83.0	
Rank	6	11	8	12	10	7	9	13	14	5	3	4	1	2	

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 Selected Cities, by Country											
Country and City		Index	Rank ¹	Country and City		Index	Rank ¹	Count	ry and City	Index	Rank ¹
Matur	e - North America			Matur	e - International			High (Growth		
Lowest Cost Cities				All Cit	All Cities			All Cit	ies		
CA	Trois-Rivières, OC	94.9	11	ΔU	Adelaide	101.4	105	BR	Belo Horizonte	94.4	9
	Moncton NB	94.9	12	1.0	Brisbane	100.9	102	2	São Paulo	97.3	42
	Fredericton, NB	95.0	13		Melbourne	100.5	98				
	Charlottetown, PE	95.1	14		Sydney	102.6	108	CN	Chengdu	77.0	1
	St. John's, NL	95.4	15	FR	Marseille	97.0	37		Shanghai	80.6	2
					Paris	98.4	71				
US	Shreveport, LA	96.2	22	GE	Berlin	99.6	90	IN	Chennai	81.4	3
	Omaha, NE	96.5	27		Frankfurt	102.3	106		Mumbai	84.5	5
	Sioux Falls, SD	96.5	28	ΙТ	Milan	98.4	70				
	Baton Rouge, LA	96.6	30		Rome	99.0	82	MX	Mexico City	85.5	7
	Montgomery, AL	96.7	32	JP	Osaka	105.5	112		Monterrey	85.3	6
	Youngstown, OH	96.8	33		Tokyo	108.7	113				
	Lexington, KY	96.8	34	NE	Amsterdam	96.2	23	RU	Moscow	87.8	8
	Charleston, WV	96.9	35		Rotterdam	96.2	21		Saint Petersburg	84.5	4
	Cheyenne, WY	96.9	36	UK	London	101.0	104				
	Billings, MT	97.1	38		Manchester	94.6	10				

1 Rank among 113 cities.

6. Green Energy

Advanced battery manufacturers produce advanced batteries and energy storage products, utilizing technologies such as lithium ion, nickel metal hydride, or polymer lithium-ion, among others. Significant and ongoing investments in research and development typify this industry, due to continual demand for improved power-to-weight/size ratios for batteries used in automobiles, electronics, and advanced technology applications. Advanced batteries can also form a component of small-scale renewable energy systems, providing storage capacity for generated energy. For 2009, Anything Research estimated the market size of the US battery manufacturing industry to be greater than \$8 billion. Advanced batteries represents a growing component of this industry total.

The representative operation modeled is a small-sized manufacturer of advanced batteries and energy storage products. As illustrated in Exhibit 3.22, this operation is characterized by:

- Moderate facility and equipment requirements
- A workforce strongly weighted toward scientific/technical staff and skilled operators
- Relatively low energy requirements
- Significant in-house R&D activities.

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

International results are illustrated in Exhibit 3.23. These results reflect the combined impact of 26 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.24.

Exhibit 3.25 profiles results for selected cities, by country, from among the 113 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.5.

EXHIBIT 3.22 - GREEN ENERGY

Advanced Batteries – Summary of Operating Parameters

Facilities Requirements					
Leased industrial site	5 acres	(20,234 m ²)			
Size of factory	87,000 ft ²	(8,083 m²)			
Other Initial Investment Requirements					
Machinery and equipment – US \$'000	\$12,000				
Office equipment – US \$'000	\$400				
R&D equipment – US \$'000	\$250				
Inventory – US \$'000	\$5,000				
Equity financing – % of project costs	50%				
Workforce					
Management	6				
Sales and administration	15				
Production/non-dedicated product development					
- Professional, technical	33				
- Operators	17				
- Unskilled laborers	6				
Other	3				
Total employees	80				
Energy Requirements					
Electricity monthly consumption/peak demand	160,000 kWh a	nd 540 kW			
Gas monthly consumption	10,000 CCF	(28,329 m ³)			
Other Annual Operating Characteristics					
Sales at full production – US \$'000	\$40,500				
Materials and other direct costs - % of sales	45%				
Other operating costs – % of sales	5%				
Investment in tax-eligible R&D – % of sales	4.1%				



Advanced Batteries – International Results (US = 100.0)



© 2012 KPMG LLP, a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity. All rights reserved
EXHIBIT 3.24 – GREEN ENERGY

Advanced Batteries - Costs by Major Component, US \$'000														
				I	Mature						Hi	gh Growt	h	
	Amer	Icas			Europe			Asla Pa	clflc	Amer	Icas	Europe	Asla Pa	clflc
	Canada	US	France	Germany	Italy	Netherland	ls UK	Austr	alia	Braz	zil	Russia	China	India
Revenues	33,400	33,400	33,400	33,400	33,400	33,400	33,400	33,400	33,400	33,400	33,400	33,400	33,400	33,400
Costs														
- Salaries & Wages	4,747	4,838	3,785	5,320	4,309	4,497	4,151	5,876	6,767	2,615	1,747	2,338	1,591	1,190
- Statutory Plans	448	420	1,785	835	1,197	576	405	1,071	820	832	220	313	298	35
- Other Benefits	1,311	2,085	941	1,198	1,096	1,474	1,247	734	1,034	1,627	448	548	227	208
- Total Labor & Benefits	6,506	7,343	6,512	7,353	6,602	6,547	5,804	7,681	8,621	5,075	2,415	3,199	2,116	1,433
- Facility Lease	408	412	485	711	636	792	918	825	1,546	943	450	966	430	319
- Transportation	3,700	3,554	2,273	2,451	3,010	2,447	2,599	4,347	1,780	2,557	4,119	3,166	2,576	2,291
- Utilities	256	225	322	389	388	301	310	503	444	479	241	116	360	372
- Interest & Depreciation	2,524	2,704	2,444	2,576	2,541	2,468	2,415	3,117	2,719	2,147	1,795	1,616	1,820	1,716
- Non-Income Taxes	369	596	474	260	39	(141)	421	197	1,019	154	46	476	115	649
- Location-Insensitive Costs	16,366	16,366	16,366	16,366	16,366	16,366	16,366	16,366	16,366	16,366	16,366	16,366	16,366	16,366
Profit Before Income Tax	3,272	2,201	4,526	3,296	3,820	4,425	4,569	365	906	5,680	7,971	7,495	9,618	10,255
- Income Taxes ¹	139	407	878	928	1,276	1,074	898	189	229	2,001	2,083	1,347	1,338	2,693
Effective Rate	4.2%	18.5%	19.4%	28.2%	33.4%	19.9%	19.7%	51.9%	25.2%	35.2%	26.1%	18.0%	13.9%	26.3%
After-Tax Profit	3,133	1,794	3,649	2,368	2,544	3,546	3,671	176	678	3,679	5,888	6,148	8,281	7,561
Total Annual Costs	30,266	31,607	29,752	31,032	30,857	29,855	29,730	33,225	32,723	29,721	27,514	27,252	25,120	25,839
Index (US=100.0)	95.8	100.0	94.1	98.2	97.6	94.5	94.1	105.1	103.5	94.0	87.1	86.2	79.5	81.8
Rank	9	12	7	11	10	8	6	14	13	5	4	3	1	2

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 - GREEN ENERGY

Adv	Advanced Batteries – Results for Selected Cities, by Country												
Count	ry and City	Index	Rank ¹	Count	ry and City	Index	Rank ¹	Count	try and City	Index	Rank ¹		
Matur	e - North America			Mature - International				High Growth					
Selected Cluster Cities				All Cities			All Cit	All Cities					
CA	Calgary, AB Edmonton, AB Trois-Rivieres, QC	100.3 99.6 95.0	83 73 15	AU	Adelaide Brisbane Melbourne	105.6 104.8 104.1	109 107 106	BR	Belo Horizonte São Paulo	93.0 95.1	10 16		
	Vancouver, BC	98.1	55	FR	Sydney Marseille	106.2 93.9	110 11	CN	Chengdu Shanghai	77.9 81.1	1 3		
US	Cleveland, OH Cincinnati, OH Champaign-Urbana, IL	97.8 95.9 96.5	50 21 27	GE	Paris Berlin Frankfurt	94.4 96.3 100.0	12 24 79	IN	Chennai Mumbai	80.3 83.2	2		
	Detroit, MI Houston, TX Little Rock, AR	99.1 98.5 96.7	68 60 35	IT JP	Milan Rome Osaka	97.4 97.9 101 7	41 51 100	мх	Mexico City Monterrey	87.9 86.2	7		
	Madison, WI New Orleans, LA Portland, OR Spartanburg, SC	97.8 97.9 101.3 97.1	48 52 93 38	NE UK	Tokyo Amsterdam Rotterdam London	105.3 94.5 94.4 96.9	108 14 13 37	RU	Moscow Saint Petersburg	88.3 84.2	8		
					Manonester	01.2	5						

7. Medical Devices

Medical device manufacturers produce a wide range of medium- and high-technology products, such as prosthetics, artificial joints, stents, and braces. According to the US Census Bureau, the US medical equipment, technology, and supplies industries, of which medical device manufacturing is one component, provided over 300,000 jobs in 2009, with shipments valued at almost \$85 billion.

The representative operation modeled is a manufacturer of mechanical medical devices, such as prosthetics. As illustrated in Exhibit 3.26, this operation is characterized by:

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

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

International results are illustrated in Exhibit 3.27. These results reflect the combined impact of 26 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.28.

Exhibit 3.29 profiles results for selected cities, by country, from among the 113 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.5.

EXHIBIT 3.26 – MEDICAL DEVICES									
Medical Device Manufacturing – Su Parameters	mmary of Op	perating							
Facilities Requirements									
Leased industrial site	4 acres	(16,187 m ²)							
Size of factory	70,000 ft ²	(6,503 m ²)							
Other Initial Investment Requirements									
Machinery and equipment – US \$'000	\$14,500								
Office equipment – US \$'000	\$200								
R&D equipment – US \$'000	\$300								
Inventory – US \$'000	\$3,400								
Equity financing – % of project costs	55%								
Workforce									
Management	6								
Sales and administration	14								
Production/non-dedicated product development									
- Professional, technical	32								
- Operators	34								
- Unskilled laborers	10								
Other	4								
Total employees	100								
Energy Requirements									
Electricity monthly consumption/peak demand	140,000 kWh a	and 475 kW							
Gas monthly consumption	2,400 CCF	(6,799 m ³)							
Other Annual Operating Characteristics									
Sales at full production – US \$'000	\$24,500								
Materials and other direct costs – % of sales	30%								
Other operating costs - % of sales	5%								
Investment in tax-eligible R&D – % of sales	3.4%								



© 2012 KPMG LLP, a Canadian limited lability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative (*KPMG International*), a Swiss entity. All rights reserved

EXHIBIT 3.28 - MEDICAL DEVICES

Medical Device Manufacturing - Costs by Major Component, US \$'000															
				I	Mature					High Growth					
	Ameri	lcas			Europe			Asla Pa	clfic	Amer	lcas	Europe Asla Pacif		clflc	
	Canada	US	France	Germany	Italy	Netherland	s UK	Australia	Japan	Brazil	Mexico	Russia	China	India	
Revenues	23,200	23,200	23,200	23,200	23,200	23,200	23,200	23,200	23,200	23,200	23,200	23,200	23,200	23,200	
Costs															
- Salaries & Wages	5,622	5,614	4,531	6,457	4,820	5,454	4,811	6,951	8,198	2,741	1,850	2,700	1,598	1,215	
- Statutory Plans	575	499	2,150	1,083	1,353	741	462	1,282	1,025	871	240	438	313	48	
- Other Benefits	1,552	2,420	1,082	1,411	1,193	1,591	1,448	849	1,248	1,911	495	639	243	199	
- Total Labor & Benefits	7,749	8,534	7,763	8,951	7,368	7,786	6,721	9,083	10,471	5,523	2,586	3,777	2,153	1,463	
- Facility Lease	329	332	391	572	512	638	738	664	1,244	759	362	777	346	257	
- Transportation	1,857	1,407	1,206	1,252	1,482	1,173	1,917	1,960	979	1,272	1,722	1,446	934	891	
- Utilities	188	166	195	235	278	205	223	395	297	336	202	93	236	234	
- Interest & Depreciation	2,170	2,313	2,124	2,229	2,153	2,131	2,067	2,250	2,406	1,756	1,271	1,121	1,526	1,296	
- Non-Income Taxes	297	468	408	209	32	(83)	339	152	841	126	46	395	91	337	
- Location-Insensitive Costs	8,004	8,004	8,004	8,004	8,004	8,004	8,004	8,004	8,004	8,004	8,004	8,004	8,004	8,004	
Profit Before Income Tax	2,609	1,976	3,111	1,750	3,373	3,223	3,193	695	(1,041)	5,424	9,009	7,587	9,912	10,720	
- Income Taxes ¹	282	482	746	507	1,226	777	574	80	50	1,889	2,455	1,401	1,436	3,065	
Effective Rate	10.8%	24.4%	24.0%	29.0%	36.4%	20.2%	18.0%	11.6%	n/a	34.8%	27.3%	18.5%	14.5%	28.6%	
After-Tax Profit	2,326	1,495	2,365	1,243	2,146	2,573	2,619	615	(1,092)	3,535	6,554	6,186	8,476	7,654	
Total Annual Costs	20,875	21,705	20,835	21,958	21,055	20,630	20,582	22,587	24,292	19,665	16,646	17,013	14,724	15,546	
Index (US=100.0)	96.2	100.0	96.0	101.2	97.0	95.0	94.8	104.1	111.9	90.6	76.7	78.4	67.8	71.6	
Rank	9	11	8	12	10	7	6	13	14	5	3	4	1	2	

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.

EXH	EXHIBIT 3.29 – MEDICAL DEVICES													
Me	dical Device Manufa	acturing -	- Resul	ts for	Selected Cities,	by Countr	у							
Count	ry and City	Index	Rank ¹	Coun	try and City	Index	Rank ¹	Coun	try and City	Index	Rank ¹			
Matur	e - North America			Mature - International					High Growth					
Lowest Cost Cities				All Ci	ties			All Ci	ties					
CA	Charlottetown, PE	92.9	12	AU	Adelaide	103.0	105	BR	Belo Horizonte	88.8	9			
	Moncton, NB	93.1	13		Brisbane	102.9	104		São Paulo	92.4	11			
	Fredericton, NB	93.3	14		Melbourne	102.9	103							
	Halifax, NS	94.0	16		Sydney	105.3	109	CN	Chengdu	65.4	1			
	Trois-Rivières, QC	94.2	17	FR	Marseille	94.8	19		Shanghai	70.3	3			
					Paris	97.2	61							
US	Shreveport, LA	93.8	15	GE	Berlin	99.0	87	IN	Chennai	70.2	2			
	Baton Rouge, LA	94.8	18		Frankfurt	103.3	106		Mumbai	73.0	4			
	Omaha, NE	94.9	20	IT	Milan	96.8	53							
	Sioux Falls, SD	95.0	22		Rome	97.2	63	MX	Mexico City	77.1	7			
	Lexington, KY	95.1	26	JP	Osaka	108.3	112		Monterrey	76.3	6			
	Montgomery, AL	95.2	27		Tokyo	115.5	113							
	Gulfport-Biloxi, MS	95.2	28	NE	Amsterdam	95.1	24	RU	Moscow	80.9	8			
	Charleston, WV	95.2	29		Rotterdam	95.0	23		Saint Petersburg	75.8	Б			
	Billings, MT	95.4	30	UK	London	99.1	89							
	Little Rock, AR	95.4	30		Manchester	90.6	10							

8. Metal Components

The fabricated metal products industry encompasses both a wide range of products and production techniques, producing metal components for applications such as building products (hardware), automotive, agricultural, drilling/mining, transportation, appliances, and others. The US Census Bureau reports that the US metal fabrication industry provided 1.3 million jobs in 2009, with shipments valued at more than \$280 billion.

The representative operation modeled is a small manufacturer of metal building products using machining tools. As illustrated in Exhibit 3.30, this operation is characterized by:

- Moderately high facility and equipment requirements
- A workforce with some professional/ technical positions, many skilled operators, and some unskilled positions
- Moderate energy requirements.

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

International results are illustrated in Exhibit 3.31. These results reflect the combined impact of 26 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.32.

Exhibit 3.33 profiles results for selected cities, by country, from among the 113 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.5.

EXHIBIT 3.30 – METAL COMPONENTS

Metal Machining - Summary of Operating Parameters

Facilities Requirements		
Leased industrial site	6 acres	(24,281 m ²)
Size of factory	100,000 ft ²	(9,290 m ²)
Other Initial Investment Requirements		
Machinery and equipment – US \$'000	\$19,500	
Office equipment – US \$'000	\$500	
R&D equipment – US \$'000	-	
Inventory – US \$'000	\$2,700	
Equity financing – % of project costs	50%	
Workforce		
Management	4	
Sales and administration	16	
Production/non-dedicated product development		
- Professional, technical	17	
- Operators	44	
- Unskilled laborers	14	
Other	5	
Total employees	100	
Energy Requirements		
Electricity monthly consumption/peak demand	240,000 kWh a	nd 780 kW
Gas monthly consumption	10,200 CCF	(28,895 m ³)
Other Annual Operating Characteristics		
Sales at full production – US \$'000	\$27,750	
Materials and other direct costs – % of sales	36%	
Other operating costs – % of sales	3%	
Investment in tax-eligible R&D – % of sales	-	



EXHIBIT 3.32 – METAL COMPONENTS Metal Machining - Costs by Major Component, US \$'000 Mature **High Growth** Asia Pacific Americas Europe Asia Pacific Americas Europe Canada US France Germany Italy Netherlands UK Australia Brazil Mexico Russia China India Japan Revenues 26,675 26,675 26,675 26,675 26,675 26,675 26,675 26,675 26,675 26,675 26,675 26,675 26,675 26,675 Costs - Salaries & Wages 5,148 5,058 4,120 5,958 4,178 5,051 4,302 6,313 7,608 2,268 1,548 2,416 1,319 1,003 - Statutory Plans 617 522 1,969 1,038 1,185 709 406 1,168 966 721 203 441 259 48 - Other Benefits 1,421 2,181 977 1,275 1,012 1,345 1,286 762 1,153 1,747 428 577 205 157 - Total Labor & Benefits 7,186 7,760 7,066 8,270 6,375 7,104 5,994 8,244 9,728 4,735 2,178 3.434 1,783 1,208 - Facility Lease 469 474 558 818 731 911 1.055 948 1,777 1.084 517 1,111 494 367 - Transportation 2,742 1,870 1,857 1,983 3,347 1,616 2,449 2,773 1,727 2,270 1,968 3,180 1,986 1,765 326 445 763 621 178 513 - Utilities 367 434 528 555 423 689 373 520 2,422 - Interest & Depreciation 2,135 2,290 2,065 2,176 2,082 2,106 1,974 2,390 1,808 1,354 1,198 1,553 1,383 - Non-Income Taxes 428 659 490 300 46 64 488 236 1,221 180 43 600 129 448 - Location-Insensitive Costs 10,270 10,270 10,270 10,270 10,270 10,270 10,270 10,270 10,270 10,270 10,270 10,270 10,270 10,270 Profit Before Income Tax 3,050 2,154 4,067 2,444 4,346 3,942 4,468 447 (948) 5,942 8,762 7,436 9,950 10,715 - Income Taxes¹ 391 434 969 463 1,239 972 860 133 50 1,779 2,187 1,247 2,320 3,056 Effective Rate 12.8% 20.2% 23.8% 18.9% 28.5% 24.6% 19.3% 29.6% 29.9% 25.0% 16.8% 23.3% 28.5% n/a After-Tax Profit 2,659 1,719 3,097 1,981 3,107 2,971 3,608 315 (998) 4,163 6,575 6,189 7,630 7,660 Total Annual Costs 24,018 24,955 23.579 24.694 23.568 23,705 23,068 26.361 27,673 22.512 20.101 20.487 19.046 19.016 Index (US=100.0) 99.0 95.0 92.4 105.6 110.9 80.5 82.1 76.3 76.2 96.2 100.0 94.5 94.4 90.2 Rank 10 12 8 11 7 9 6 13 14 5 3 4 2 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 - METAL COMPONENTS

Met	Metal Machining – Results for Selected Cities, by Country													
Count	ry and City	Index	Rank ¹	Count	ry and City	Index	Rank ¹	Count	ry and City	Index	Rank ¹			
Mature	e - North America			Matur	Mature - International			High C	Growth					
Lowes	t Cost Cities			All Cit	ies			All Cit	ies					
СА	Charlottetown, PE	94.4	16	AU	Adelaide	105.7	107	BR	Belo Horizonte	88.5	10			
	Trois-Rivières, QC	94.7	21		Brisbane	104.5	106		São Paulo	91.9	11			
	Fredericton, NB	95.3	30		Melbourne	104.4	105							
	Halifax, NS	95.4	31		Sydney	106.9	108	CN	Chengdu	74.3	1			
	Montreal, QC	95.6	34	FR	Marseille	93.9	12		Shanghai	78.3	4			
					Paris	95.1	26							
US	Lexington, KY	93.9	13	GE	Berlin	96.8	52	IN	Chennai	74.8	2			
	Montgomery, AL	94.2	15		Frankfurt	101.1	93		Mumbai	77.6	3			
	Shreveport, LA	94.5	17	IT	Milan	94.2	14							
	Gulfport-Biloxi, MS	94.6	18		Rome	94.7	20	MX	Mexico City	81.5	7			
	Cincinnati, OH	94.7	19	JP	Osaka	107.1	110		Monterrey	79.6	5			
	Youngstown, OH	95.0	22		Tokyo	114.7	113							
	Little Rock, AR	95.0	24	NE	Amsterdam	95.0	25	RU	Moscow	84.4	8			
	Champaign-Urbana, IL	95.1	27		Rotterdam	95.0	23		Saint Petersburg	79.8	6			
	Nashville, TN	95.1	28	UK	London	96.4	42							
	Mobile, AL	95.2	29		Manchester	88.4	9							

9. Pharmaceuticals

IMS Health estimated that the pharmaceuticals industry had global sales of more than \$850 billion in 2010. In the United States alone, the US Census Bureau reports that the value of industry shipments exceeded \$190 billion in 2009. Production facilities may be owned by pharmaceutical firms, or by independent firms producing brand-name drugs (under license) and/or generic products.

The representative operation modeled is an independent plant producing prescription drugs on behalf of brand-name and/or generic distributors. As illustrated in Exhibit 3.34, this operation is characterized by:

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

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

International results are illustrated in Exhibit 3.35. These results reflect the combined impact of 26 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.36.

Exhibit 3.37 profiles results for selected cities, by country, from among the 113 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.5.

Pharmaceutical Production – Summary of Operating Parameters

Facilities Requirements		
Leased industrial site	5 acres	(20,234 m ²)
Size of factory	70,000 ft ²	(6,503 m²)
Other Initial Investment Requirements		
Machinery and equipment – US \$'000	\$24,000	
Office equipment – US \$'000	\$200	
R&D equipment – US \$'000	\$500	
Inventory – US \$'000	\$10,000	
Equity financing – % of project costs	50%	
Workforce		-
Management	7	
Sales and administration	16	
Production/non-dedicated product development		
- Professional, technical	60	
- Operators	22	
- Unskilled laborers	15	
Other	4	
Total employees	124	
Energy Requirements		-
Electricity monthly consumption/peak demand	160,000 kWh a	ind 540 kW
Gas monthly consumption	10,000 CCF	(28,329 m ³)
Other Annual Operating Characteristics		
Sales at full production – US \$'000	\$40,000	
Materials and other direct costs - % of sales	27%	
Other operating costs – % of sales	15%	
Investment in tax-eligible R&D – % of sales	2.6%	



EXHIBIT 3.36 – PHARMACEUTICALS

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

				ı	Mature			Hi	gh Growt	h				
	Ameri	lcas			Europe			Asla Pa	clflc	Amer	Icas	Europe	Asla Pa	clflc
	Canada	US	France	Germany	Italy	Netherland	s UK	Australia	Japan	Brazil	Mexico	Russia	China	India
Revenues	38,150	38,150	38,150	38,150	38,150	38,150	38,150	38,150	38,150	38,150	38,150	38,150	38,150	38,150
Costs														
- Salaries & Wages	6,953	6,962	5,672	8,055	5,950	6,748	5,983	8,620	10,136	3,527	2,337	3,414	1,938	1,503
- Statutory Plans	695	622	2,688	1,371	1,670	928	575	1,604	1,281	1,120	308	555	398	59
- Other Benefits	1,919	3,000	1,320	1,726	1,467	1,921	1,800	1,044	1,541	2,403	631	810	307	243
- Total Labor & Benefits	9,568	10,583	9,680	11,152	9,086	9,597	8,359	11,268	12,959	7,049	3,276	4,779	2,643	1,805
- Facility Lease	329	332	391	572	512	638	738	664	1,244	759	362	777	346	257
- Transportation	3,084	2,330	2,011	2,086	2,472	1,956	3,200	3,269	1,632	2,127	2,853	2,406	1,555	1,484
- Utilities	281	246	353	426	425	331	341	552	487	526	264	128	395	407
- Interest & Depreciation	3,720	3,986	3,654	3,794	3,700	3,657	3,542	3,761	3,883	3,245	2,540	2,234	2,761	2,609
- Non-Income Taxes	311	805	598	217	37	(144)	349	172	1,011	149	56	515	122	570
- Location-Insensitive Costs	15,832	15,832	15,832	15,832	15,832	15,832	15,832	15,832	15,832	15,832	15,832	15,832	15,832	15,832
Profit Before Income Tax	5,028	4,037	5,634	4,072	6,087	6,095	5,790	2,634	1,106	8,463	12,968	11,478	14,498	15,188
- Income Taxes ¹	705	1,146	1,360	1,213	2,095	1,529	1,143	652	338	2,919	3,522	2,119	2,126	4,444
Effective Rate	14.0%	28.4%	24.1%	29.8%	34.4%	22.0%	19.7%	24.8%	30.6%	34.5%	27.2%	18.5%	14.7%	29.3%
After-Tax Profit	4,322	2,890	4,274	2,859	3,992	4,755	4,647	1,982	767	5,545	9,446	9,360	12,373	10,744
Total Annual Costs	33,828	35,260	33,877	35,292	34,159	33,395	33,503	36,168	37,384	32,605	28,704	28,789	25,778	27,407
Index (US=100.0)	95.9	100.0	96.1	100.1	96.9	94.7	95.0	102.6	106.0	92.5	81.4	81.6	73.1	77.7
Rank	8	11	9	12	10	6	7	13	14	5	3	4	1	2

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 – PHARMACEUTICALS

	Thanhaceulical found in the suits for Selected Cities, by Country												
Coun	try and City	Index	Rank ¹	Coun	Country and City Index R			Coun	try and City	Index	Rank ¹		
Matu	re - North America			Mature - International					High Growth				
Lowe	st Cost Cities			All Cities				All Ci	All Cities				
CA	Moncton, NB	93.6	11	AU	Adelaide	101.8	105	BR	Belo Horizonte	91.1	9		
	Fredericton, NB	93.8	12		Brisbane	102.0	106		São Paulo	93.8	13		
	Halifax, NS	94.1	14		Melbourne	101.8	104						
	Trois-Rivières, QC	94.4	15		Sydney	103.4	108	CN	Chengdu	71.1	1		
	Charlottetown, PE	94.5	16	FR	Marseille	95.3	20		Shanghai	75.1	2		
					Paris	96.9	41						
US	Shreveport, LA	95.4	21	GE	Berlin	98.4	76	IN	Chennai	76.4	3		
	Lexington, KY	96.2	25		Frankfurt	101.8	103		Mumbai	79.0	4		
	Omaha, NE	96.2	26	IT	Milan	96.7	38						
	Baton Rouge, LA	96.2	27		Rome	97.0	44	MX	Mexico City	81.7	7		
	Youngstown, OH	96.4	29	JP	Osaka	104.3	110		Monterrey	81.1	6		
	Montgomery, AL	96.5	31		Tokyo	107.7	113						
	Sioux Falls, SD	96.5	32	NE	Amsterdam	94.7	18	RU	Moscow	83.6	8		
	Wichita, KS	96.5	33		Rotterdam	94.7	17		Saint Petersburg	79.7	5		
	Bangor, ME	96.6	34	UK	London	98.0	64						
	Charleston, WV	96.7	36		Manchester	92.0	10						

10. Plastics

The plastic products industry encompasses a wide range of products, including bags, films, pipes, bottles, coverings, foam products, and more. According to the US Census Bureau, the value of shipments for the US plastic products industry in 2009 exceeded \$135 billion, and the industry provided almost 550,000 jobs. Typical firms range from large high-volume manufacturers of standard products, to small-volume contract manufacturers.

The representative operation modeled is an independent plastic products manufacturer. As illustrated in Exhibit 3.38, 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.

International results are illustrated in Exhibit 3.39. These results reflect the combined impact of 26 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.40.

Exhibit 3.41 profiles results for selected cities, by country, from among the 113 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.5.

EXHIBIT 3.38 – PLASTICS

Plastic Product Manufacturing – Summary of Operating Parameters

Facilities Requirements		
Leased industrial site	6 acres	(24,281 m ²)
Size of factory	100,000 ft ²	(9,290 m ²)
Other Initial Investment Requirements		
Machinery and equipment – US \$'000	\$17,750	
Office equipment – US \$'000	\$250	
R&D equipment – US \$'000	-	
Inventory – US \$'000	\$2,000	
Equity financing – % of project costs	50%	
Workforce		
Management	3	
Sales and administration	11	
Production/non-dedicated product development		
- Professional, technical	14	
- Operators	45	
- Unskilled laborers	14	
Other	3	
Total employees	90	
Energy Requirements		
Electricity monthly consumption/peak demand	400,000 kWh a	ind 1,350 kW
Gas monthly consumption	8,900 CCF	(25,212 m ³)
Other Annual Operating Characteristics		-
Sales at full production – US \$'000	\$25,500	
Materials and other direct costs – % of sales	32%	
Other operating costs – % of sales	2%	
Investment in tax-eligible R&D – % of sales	-	



© 2012 KPMG LLP, a Canadian limited lability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity. All rights reserved

EXHIBIT 3.40 - PLASTICS

Plastic Product Manuf	facturing	g - Cost	ts by Ma	ajor Cor	npone	nt, US \$	000							
				r	Mature						Hi	gh Growt	h	
	Ameri	cas			Europe			Asla Pa	clflc	Amer	ricas	Europe	Europe Asla Pacif	
	Canada	US	France	Germany	Italy	Netherland	s UK	Australia	Japan	Brazil	Mexico	Russia	China	India
Revenues	24,450	24,450	24,450	24,450	24,450	24,450	24,450	24,450	24,450	24,450	24,450	24,450	24,450	24,450
Costs														
- Salaries & Wages	4,571	4,459	3,628	5,258	3,649	4,480	3,762	5,565	6,745	1,940	1,342	2,105	1,131	867
- Statutory Plans	563	493	1,736	921	1,034	631	353	1,025	857	617	175	393	221	43
- Other Benefits	1,262	1,922	857	1,135	881	1,180	1,129	673	1,023	1,555	370	504	174	132
- Total Labor & Benefits	6,396	6,874	6,221	7,315	5,563	6,291	5,244	7,263	8,624	4,112	1,888	3,002	1,526	1,042
- Facility Lease	469	474	558	818	731	911	1,055	948	1,777	1,084	517	1,111	494	367
- Transportation	3,507	3,217	2,055	2,266	2,593	2,191	2,420	4,397	1,896	2,598	3,603	2,986	2,546	2,339
- Utilities	523	499	595	730	832	618	670	1,155	900	999	587	273	712	714
- Interest & Depreciation	1,890	2,029	1,792	1,900	1,814	1,830	1,720	2,246	2,064	1,576	1,144	990	1,362	1,179
- Non-Income Taxes	428	618	479	300	46	64	488	236	1,192	178	39	571	128	374
- Location-Insensitive Costs	8,190	8,190	8,190	8,190	8,190	8,190	8,190	8,190	8,190	8,190	8,190	8,190	8,190	8,190
Profit Before Income Tax	3,048	2,550	4,562	2,932	4,683	4,357	4,664	16	(193)	5,714	8,485	7,330	9,494	10,246
- Income Taxes ¹	428	564	1,175	643	1,350	1,075	921	76	62	1,721	2,135	1,243	2,222	2,930
Effective Rate	14.1%	22.1%	25.8%	21.9%	28.8%	24.7%	19.8%	n/a	n/a	30.1%	25.2%	17.0%	23.4%	28.6%
After-Tax Profit	2,620	1,986	3,387	2,290	3,333	3,282	3,742	(61)	(255)	3,994	6,351	6,087	7,272	7,316
Total Annual Costs	21,831	22,464	21,063	22,160	21,118	21,168	20,707	24,511	24,705	20,457	18,100	18,364	17,178	17,134
Index (US=100.0)	97.2	100.0	93.8	98.6	94.0	94.2	92.2	109.1	110.0	91.1	80.6	81.7	76.5	76.3
Rank	10	12	7	11	8	9	6	13	14	5	3	4	2	1

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 - PLASTICS

Pla	stic Product Manufac	turing -	- Result	ts for S	y						
Count	ry and City	Index	Rank ¹	Count	try and City	Index	Rank ¹	Count	try and City	Index	Rank ¹
Matu	e - North America			Matu	re - International			High	Growth		
Lowe	st Cost Cities			All Ci	ties			All Cit	ties		
СА	Charlottetown, PE	95.3	28	AU	Adelaide	109.9	109	BR	Belo Horizonte	89.6	10
	Trois-Rivières, QC	95.9	31		Brisbane	107.4	107		São Paulo	92.5	11
	Halifax, NS	96.1	36		Melbourne	107.2	106				
	Montreal, QC	96.3	39		Sydney	111.0	110	CN	Chengdu	74.4	1
	Fredericton, PE	96.5	42	FR	Marseille	93.3	12		Shanghai	78.5	4
					Paris	94.2	16				
US	Lexington, KY	93.8	14	GE	Berlin	96.4	41	IN	Chennai	74.8	2
	Montgomery, AL	94.0	15		Frankfurt	100.9	86		Mumbai	77.7	3
	Shreveport, LA	94.4	20	ΙТ	Milan	93.7	13				
	Gulfport-Biloxi, MS	94.5	21		Rome	94.3	19	MX	Mexico City	81.7	7
	Cincinnati, OH	94.7	22	JP	Osaka	106.3	105		Monterrey	79.4	6
	Mobile, AL	94.9	23		Tokyo	113.7	111				
	Champaign-Urbana, IL	94.9	24	NE	Amsterdam	94.2	18	RU	Moscow	84.2	8
	Little Rock, AR	94.9	25		Rotterdam	94.2	17		Saint Petersburg	79.3	5
	Youngstown, OH	95.0	26	UK	London	96.4	40				
	Nashville, TN	95.2	27		Manchester	88.0	9				

11. 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.

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 3.42, this operation is characterized by:

- Relatively small land and building requirements, and moderate equipment requirements
- A workforce consisting almost entirely of highly skilled operators
- Modest energy requirements
- High costs for materials, reflecting the high value of alloys used in production.

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

International results are illustrated in Exhibit 3.43. These results reflect the combined impact of 26 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.44.

Exhibit 3.45 profiles results for selected cities, by country, from among the 113 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.5.

EXHIBIT 3.42 –	PRECISION	MANUFACTURING
EXHIBIT 3.42 -	PRECISION	MANUFACIURING

Precision Component Manufacturing – Summary of Operating Parameters

Facilities Requirements		
Leased industrial site	2 acres	(8,094 m²)
Size of factory	30,000 ft ²	(2,787 m ²)
Other Initial Investment Requirements		
Machinery and equipment – US \$'000	\$14,800	
Office equipment – US \$'000	\$200	
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	8	
- Operators	54	
- Unskilled laborers	1	
Other	1	
Total employees	70	
Energy Requirements		
Electricity monthly consumption/peak demand	150,000 kWh a	and 1,025 kW
Gas monthly consumption	7,500 CCF	(21,246 m ³)
Other Annual Operating Characteristics		
Sales at full production – US \$'000	\$32,500	
Materials and other direct costs - % of sales	60%	
Other operating costs - % of sales	2%	
Investment in tax-eligible R&D - % of sales	1.2%	



© 2012 KPMG LLP, a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative (*KPMG International*), a Swiss entity. All rights reserved

EXHIBIT 3.44– PRECISION MANUFACTURING														
Precision Component Manufacturing - Costs by Major Component, US \$'000														
			_		Mature			Hi	gh Growt	.h				
	Amer	lcas			Europe			Asla Pa	clflc	Amer	lcas	Europe	Asla Pa	aclfic
	Canada	US	France	Germany	Italy	Netherland	IS UK	Australia	Japan	Brazil	Mexico	Russia	China	India
Revenues	31,800	31,800	31,800	31,800	31,800	31,800	31,800	31,800	31,800	31,800	31,800	31,800	31,800	31,800
Costs														
- Salaries & Wages	3,951	3,945	3,235	4,727	3,321	3,887	3,332	4,865	5,740	2,008	1,383	2,064	1,166	887
- Statutory Plans	453	434	1,538	800	937	533	320	885	725	637	175	348	216	38
- Other Benefits	1,091	1,701	787	1,010	819	1,071	1,015	593	876	1,418	376	488	175	146
- Total Labor & Benefits	5,494	6,081	5,560	6,536	5,076	5,490	4,667	6,344	7,343	4,064	1,934	2,901	1,557	1,070
- Facility Lease	141	142	168	246	220	273	317	285	533	325	155	333	148	110
- Transportation	1,976	1,894	1,212	1,310	1,608	1,308	1,387	2,317	952	1,364	2,198	1,690	1,377	1,224
- Utilities	295	299	382	467	506	382	404	479	557	532	268	117	342	381
- Interest & Depreciation	2,241	2,384	2,196	2,289	2,226	2,208	2,101	2,317	2,323	1,866	1,516	1,328	1,627	1,549
- Non-Income Taxes	135	318	273	98	17	(99)	174	58	479	66	32	283	43	731
- Location-Insensitive Costs	19,557	19,557	19,557	19,557	19,557	19,557	19,557	19,557	19,557	19,557	19,557	19,557	19,557	19,557
Profit Before Income Tax	1,962	1,125	2,454	1,299	2,592	2,562	3,194	445	58	4,028	6,142	5,592	7,150	7,180
- Income Taxes ¹	212	329	568	366	907	652	662	92	79	1,368	1,653	1,021	1,055	2,133
Effective Rate	10.8%	29.2%	23.1%	28.2%	35.0%	20.8%	20.7%	20.7%	n/a	33.9%	26.9%	18.3%	14.7%	29.7%
After-Tax Profit	1,750	797	1,886	932	1,685	2,030	2,532	353	(21)	2,661	4,490	4,571	6,095	5,047
Total Annual Costs	30,050	31,004	29,914	30,868	30,116	29,770	29,268	31,446	31,822	29,141	27,311	27,229	25,705	26,754
Index (US=100.0)	96.9	100.0	96.5	99.6	97.1	96.0	94.4	101.4	102.6	94.0	88.1	87.8	82.9	86.3
Rank	9	12	8	11	10	7	6	13	14	5	4	3	1	2

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 - PRECISION MANUFACTURING

Pred	cision Component Ma	inufact	turing–	– Results for Selected Cities, by Country							
Count	ry and City	Index	Rank ¹	Count	ry and City	Index	Rank ¹	Count	ry and City	Index	Rank ¹
Matur	e - North America			Matur	e - International			High (Growth		
Lowes	t Cost Cities			All Cit	ies			All Cit	ies		
CA	Halifax, NS	96.1	15	AU	Adelaide	101.0	100	BR	Belo Horizonte	93.5	10
	Trois-Rivières, QC	96.1	16		Brisbane	101.1	103		São Paulo	94.5	11
	Fredericton, NB	96.2	18		Melbourne	101.0	99				
	Charlottetown, PE	96.3	19		Sydney	101.9	107	CN	Chengdu	81.5	1
	Moncton, NB	96.4	20	FR	Marseille	96.1	16		Shanghai	84.3	2
					Paris	96.8	24				
US	Shreveport, LA	96.7	22	GE	Berlin	98.4	53	IN	Chennai	84.6	3
	Lexington, KY	96.7	23		Frankfurt	100.7	95		Mumbai	88.0	6
	Montgomery, AL	96.9	25	п	Milan	97.0	27				
	Gulfport-Biloxi, MS	97.0	26		Rome	97.2	30	MX	Mexico City	88.6	7
	Cincinnati, OH	97.2	29	JP	Osaka	101.3	104		Monterrey	87.5	5
	Youngstown, OH	97.3	32		Tokyo	104.0	111				
	Little Rock, AR	97.3	33	NE	Amsterdam	96.0	13	RU	Moscow	89.1	8
	Nashville, TN	97.4	34		Rotterdam	96.0	12		Saint Petersburg	86.5	4
	Champaign-Urbana, IL	97.4	35	UK	London	96.1	14				
	Mobile, AL	97.4	36		Manchester	92.7	9				

12. 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. The US Census Bureau reports the communications equipment industry employed over 115,000 people in the United States in 2009.

The representative operation modeled is a manufacturer of specialized telecom equipment in either a wired or a wireless environment. As illustrated in Exhibit 3.46, 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 costs for materials, reflecting the significant use of components and sub-assemblies
- Modest in-house R&D activities.

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

International results are illustrated in Exhibit 3.47. These results reflect the combined impact of 26 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.48.

Exhibit 3.49 profiles results for selected cities, by country, from among the 113 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.5.

Telecom Equipment Manufacturing Operating Parameters	– Summary	of
Facilities Requirements		
Leased industrial site	4 acres	(16,187 m ²)
Size of factory	60,000 ft ²	(5,574 m²)
Other Initial Investment Requirements		
Machinery and equipment – US \$'000	\$17,000	
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	45	
- Operators	30	
- Unskilled laborers	14	
Other	4	
Total employees	120	
Energy Requirements		
Electricity monthly consumption/peak demand	200,000 kWh a	ind 680 kW
Gas monthly consumption	5,600 CCF	(15,864 m ³)
Other Annual Operating Characteristics		
Sales at full production – US \$'000	\$40,000	
Materials and other direct costs - % of sales	45%	
Other operating costs - % of sales	8%	
Investment in tax-eligible R&D – % of sales	5.3%	

EXHIBIT 3.46 – TELECOMMUNICATIONS



EXHIBIT 3.48 – TELECOMMUNICATIONS														
Telecom Equipment Manufacturing - Costs by Major Component, US \$'000														
				I	Mature						Hi	gh Growt	h	
	Amer	lcas			Europe			Asla Pa	clflc	Ame	lcas	Europe	Asla Pa	aclfic
	Canada	US	France	Germany	Italy	Netherland	s UK	Australia	Japan	Brazil	Mexico	Russia	China	India
Revenues	37,700	37,700	37,700	37,700	37,700	37,700	37,700	37,700	37,700	37,700	37,700	37,700	37,700	37,700
Costs														
- Salaries & Wages	6,794	6,828	5,496	7,825	5,811	6,562	5,830	8,348	9,820	3,469	2,294	3,305	1,904	1,475
- Statutory Plans	645	612	2,608	1,320	1,631	901	562	1,551	1,240	1,101	302	530	394	57
- Other Benefits	1,875	2,943	1,317	1,676	1,434	1,909	1,752	1,013	1,494	2,336	619	782	296	243
- Total Labor & Benefits	9,314	10,383	9,422	10,821	8,876	9,372	8,143	10,912	12,555	6,907	3,215	4,617	2,594	1,775
- Facility Lease	282	285	335	491	439	546	633	569	1,066	651	310	666	297	220
- Transportation	1,301	960	1,058	1,042	1,360	1,013	1,917	1,512	811	1,064	1,285	1,123	632	620
- Utilities	282	254	318	385	429	321	345	591	467	520	296	138	372	375
- Interest & Depreciation	2,631	2,832	2,623	2,743	2,657	2,619	2,522	2,758	2,883	2,256	1,632	1,433	1,900	1,680
- Non-Income Taxes	270	574	465	196	33	(126)	347	138	823	123	54	419	96	726
- Location-Insensitive Costs	19,981	19,981	19,981	19,981	19,981	19,981	19,981	19,981	19,981	19,981	19,981	19,981	19,981	19,981
Profit Before Income Tax	3,640	2,432	3,502	2,043	3,925	3,808	3,813	1,241	(885)	6,200	10,928	9,325	11,831	12,322
- Income Taxes ¹	242	510	733	595	1,436	834	461	205	67	2,285	2,982	1,725	1,641	3,227
Effective Rate	6.7%	21.0%	20.9%	29.1%	36.6%	17.5%	12.1%	16.5%	n/a	36.8%	27.3%	18.5%	13.9%	26.2%
After-Tax Profit	3,397	1,922	2,769	1,448	2,490	3,142	3,352	1,036	(951)	3,915	7,945	7,599	10,189	9,095
Total Annual Costs	34,303	35,778	34,934	36,252	35,210	34,559	34,349	36,664	38,651	33,785	29,755	30,102	27,511	28,604
Index (US=100.0)	95.9	100.0	97.6	101.3	98.4	96.6	96.0	102.5	108.0	94.4	83.2	84.1	76.9	79.9
Rank	6	11	9	12	10	8	7	13	14	5	3	4	1	2

I 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.

EXF	IIBIT 3.49 – TELECON	IMUNI	CATIO	٧S							
Tele	ecom Equipment Man	ufactu	ring – F	lesult	s for Selected Citi	ies, by Co	ountry				
Count	ry and City	Index	Rank ¹	Count	try and City	Index	Rank ¹	Count	try and City	Index	Rank ¹
Matur	e - North America			Matu	re - International			High	Growth		
Lowes	t Cost Cities			All Cit	ties			All Cit	ties		
CA	Moncton, NB	93.6	11	AU	Adelaide	101.3	103	BR	Belo Horizonte	93.2	9
	Fredericton, NB	93.8	12		Brisbane	101.7	105		São Paulo	95.7	23
	St. John's, NL	94.1	13		Melbourne	101.6	104				
	Halifax, NS	94.2	14		Sydney	103.3	110	CN	Chengdu	75.1	1
	Charlottetown, PE	94.3	15	FR	Marseille	96.7	39		Shanghai	78.7	3
					Paris	98.6	78				
US	Shreveport, LA	95.6	22	GE	Berlin	99.9	95	IN	Chennai	78.4	2
	Omaha, NE	96.0	24		Frankfurt	102.8	108		Mumbai	81.5	4
	Cheyenne, WY	96.1	26	ΙТ	Milan	98.3	70				
	Baton Rouge, LA	96.1	27		Rome	98.5	77	MX	Mexico City	83.3	7
	Sioux Falls, SD	96.1	28	JP	Osaka	105.8	112		Monterrey	83.1	6
	Billings, MT	96.3	31		Tokyo	110.2	113				
	Lexington, KY	96.5	33	NE	Amsterdam	96.6	37	RU	Moscow	85.9	8
	Charleston, WV	96.6	36		Rotterdam	96.6	35		Saint Petersburg	82.4	5
	Montgomery, AL	96.7	38	UK	London	98.7	84				
	Bangor, ME	96.7	40		Manchester	93.3	10				

B. Research and 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. According to the 2011 *Beyond Borders Global Biotechnology Report*, 315 publicly traded US biotech companies spent \$17.6 billion on R&D in 2010, while more than 1,400 private firms were also active in the US biotech industry.

The representative operation modeled is a "pure" biomedical research facility with no commercial sales. As illustrated in Exhibit 3.50, 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.

International results are illustrated in Exhibit 3.51. These results reflect the combined impact of 26 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.52.

Exhibit 3.53 profiles results for selected cities, by country, from among the 113 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.5.

EXHIBIT 3.50 - BIOTECHNOLOGY

Biomedical R&D – Summary of Op	erating Para	ameters
Facilities Requirements		
Class A office space leased	45,000 ft ²	(4,181 m ²)
Other Initial Investment Requirements		
Machinery and equipment – US \$'000	\$500	
Office equipment – US \$'000	\$500	
R&D equipment – US \$'000	\$4,000	
Inventory – US \$'000	-	
Equity financing – % of project costs	100%	
Workforce		
Management	6	
Sales and administration	12	
Dedicated product development	47	
Other	1	
Total employees	66	
Energy Requirements		
Electricity monthly consumption/peak demand	75,000 kWh	and 185 kW
Other Annual Operating Characteristics		
Sales at full operation – US \$'000	_1	
Operating costs – US \$'000	\$2,000	
Investment in tax-eligible R&D – % of sales	19%	

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.



© 2012 KPMG LLP, a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative (KPMG International), a Swiss entity. All rights reserved

EXHIBIT 3.52 – BIOTECHNOLOGY

Biomedical R&D - Co	osts by I	Major (Compo	nent, U	S \$'00	0								
				, I	Mature						Hi	gh Growt	h	
	Amer	cas			Europe			Asla Pa	clfic	Amer	lcas	Europe	Asla Pa	clflc
	Canada	US	France	Germany	Italy	Netherland	s UK	Australia	Japan	Brazil	Mexico	Russia	China	India
Revenues	11,376	11,875	12,557	12,049	11,748	10,727	11,955	13,040	15,094	11,236	6,863	8,524	6,963	5,427
Costs														
- Salaries & Wages	4,752	4,966	3,848	5,353	4,572	4,474	4,301	5,997	6,737	2,900	1,907	2,427	1,717	1,309
- Statutory Plans	381	399	1,802	807	1,249	547	425	1,084	803	924	237	278	328	31
- Other Benefits	1,187	1,488	958	1,207	1,183	1,556	1,295	758	1,032	1,621	474	564	249	228
_														
- Total Labor & Benefits	6,320	6,853	6,608	7,367	7,005	6,577	6,022	7,840	8,572	5,445	2,618	3,270	2,294	1,568
- Facility Lease	1,478	1,158	1,991	1,051	1,032	918	2,325	1,693	2,413	1,533	1,096	2,085	1,146	700
- Transportation	-	-	-	-	-	-	-	-	-	-	-	-	-	-
- Utilities	78	81	65	83	101	80	94	142	104	122	128	46	100	132
- Interest & Depreciation	562	628	521	553	572	545	528	282	643	476	458	406	531	480
- Non-Income Taxes	5	176	330	-	72	(268)	-	-	87	739	40	43	361	156
- Location-Insensitive Costs	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900
Profit Before Income Tax	1,035	1,080	1,142	1,096	1,068	689	1,087	1,185	1,376	1,022	625	774	634	493
- Income Taxes ¹	(75)	248	(579)	352	523	135	91	7	468	543	199	144		99
Effective Rate	(7.2%)	22.9%	(50.7%)	32.2%	49.0%	(21.9%)	8.4%	0.5%	34.0%	53.2%	31.9%	18.6%	n/a	20.0%
After-Tax Profit	1,110	833	1,721	743	544	840	996	1,179	908	478	425	630	634	394
Total Annual Costs	10,267	11,043	10,836	11,307	11,204	9,887	10,960	11,862	14,187	10,758	6,438	7,894	6,330	5,033
Index (US=100.0)	93.0	100.0	98.1	102.4	101.5	89.5	99.3	107.4	128.5	97.4	58.3	71.5	57.3	45.6
Rank	6	10	8	12	11	5	9	13	14	7	3	4	2	1

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 - BIOTECHNOLOGY

Bio	medical R&D – Resul	ts for S	elected	Cities	s, by Country						
Count	ry and City	Index	Rank ¹	Count	try and City	Index	Rank ¹	Coun	try and City	Index	Rank ¹
Matur	e - North America			Matu	re - International			High	Growth		
Select	ed Cluster Cities			All Ci	ties			All Ci	ties		
CA	Edmonton, AB	88.2	40	AU	Adelaide	102.5	100	BR	Belo Horizonte	93.4	72
	Montreal, QC	90.8	58		Brisbane	108.7	109		São Paulo	101.5	96
	Quebec City, QC	86.2	29		Melbourne	103.2	103				
	Saskatoon, SK	86.4	30		Sydney	111.6	111	CN	Chengdu	53.7	3
	Toronto, ON	95.2	81	FR	Marseille	84.8	24		Shanghai	60.9	6
					Paris	111.5	110				
US	Atlanta, GA	93.9	77	GE	Berlin	97.4	88	IN	Chennai	40.7	1
	Austin, TX	90.3	55		Frankfurt	107.4	107		Mumbai	50.5	2
	Baltimore, MD	90.5	56	IT	Milan	104.2	104				
	Boston, MA	101.7	97		Rome	98.7	91	MX	Mexico City	60.5	5
	Chicago, IL	100.3	94	JP	Osaka	120.2	112		Monterrey	56.1	4
	Indianapolis, IN	90.2	54		Tokyo	136.8	113				
	Minneapolis, MN	96.0	85	NE	Amsterdam	89.5	45	RU	Moscow	79.7	10
	Raleigh, NC	90.1	52		Rotterdam	89.6	46		Saint Petersburg	63.3	7
	San Diego, CA	97.8	89	UK	London	106.5	106				
	San Francisco, CA	107.5	108		Manchester	92.0	67				

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 safety and effectiveness, while Phase III clinical trials further confirm a drug's efficacy, compare it to alternate treatments, and evaluate side effects.

The representative operation modeled is a clinical trials management firm. As illustrated in Exhibit 3.54, this operation is characterized by:

- A leased office 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.

International results are illustrated in Exhibit 3.55. These results reflect the combined impact of 26 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.56.

Exhibit 3.57 profiles results for selected cities, by country, from among the 113 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.5.

EXHIBIT 3.54 -	CLINICAL TRIALS
----------------	-----------------

Clinical Trials Management – Summary of Operating Parameters

Facilities Requirements		
Class A office space leased	10,000 ft ²	(929 m²)
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	
Other		
Total employees	50	
Energy Requirements		
Electricity monthly consumption/peak demand	25,000 kWh	and 100 kW
Other Annual Operating Characteristics		
Sales at full operation – US \$'000	\$8,000	
Operating costs – % of sales	5%	
Investment in tax-eligible R&D – % of sales	58%	



© 2012 KPMG LLP, a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ('KPMG International'), a Swiss entity. All rights reserve

EXHIBIT 3.56 – CLINICAL TRIALS

Clinical Trials Management - Costs by Major Component, US \$'000														
				I	Mature						Hi	gh <mark>Gr</mark> owt	h	
	Ameri	cas			Europe			Asla Pa	clflc	Americas		Europe	Europe Asla Pacifi	
	Canada	US	France	Germany	Italy	Netherlands	UK	Australia	Japan	Brazil	Mexico	Russia	China	India
Revenues	6,700	6,700	6,700	6,700	6,700	6,700	6,700	6,700	6,700	6,700	6,700	6,700	6,700	6,700
Costs														
- Salaries & Wages	3,438	3,480	2,763	3,735	3,259	3,164	3,071	4,217	4,785	1,932	1,247	1,647	1,101	876
- Statutory Plans	268	289	1,295	575	902	407	307	766	583	614	167	189	243	22
- Other Benefits	859	1,043	695	854	833	1,166	933	522	733	1,094	319	386	160	157
- Total Labor & Benefits	4,566	4,811	4,753	5,165	4,994	4,736	4,311	5,505	6,101	3,641	1,733	2,223	1,503	1,055
- Facility Lease	329	252	421	234	269	204	588	399	620	395	244	504	268	172
- Transportation			-	-	-	-	-	-	-	-		-	-	
- Utilities	29	36	28	35	45	32	36	61	46	47	47	14	39	45
- Interest & Depreciation	(36)	26	8	24	15	(57)	(32)	90	318	(53)	(293)	(316)	(71)	(289)
- Non-Income Taxes	-	23	128	-	19	(585)	-	-	12	291	25	3	373	23
- Location-Insensitive Costs	335	335	335	335	335	335	335	335	335	335	335	335	335	335
Profit Before Income Tax	1,478	1,218	1,027	908	1,023	1,447	1,463	311	(731)	2,043	4,609	3,937	4,252	5,361
- Income Taxes ¹	(242)	169	(1,185)	283	369	503	107	-	1	965	1,295	787	533	1,268
Effective Rate	(16.4%)	13.8%	(115.4%)	31.2%	36.0%	(6.0%)	7.3%	n/a	n/a	47.2%	28.1%	20.0%	12.5%	23.6%
After-Tax Profit	1,720	1,050	2,212	625	655	1,533	1,356	311	(732)	1,078	3,314	3,151	3,720	4,093
Total Annual Costs	4,980	5,650	4,488	6,075	6,045	5,167	5,344	6,389	7,432	5,622	3,386	3,550	2,981	2,607
Index (US=100.0)	88.1	100.0	79.4	107.5	107.0	91.5	94.6	113.1	131.5	99.5	59.9	62.8	52.7	46.1
Rank	6	10	5	12	11	7	8	13	14	9	3	4	2	1

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 - CLINICAL TRIALS

Clin	Clinical Trials Management – Results for Selected Cities, by Country												
Count	ry and City	Index	Rank ¹	Count	try and City	Index	Rank ¹	Coun	try and City	Index	Rank ¹		
Matur Select	re - North America ted Cluster Cities			Mature - International All Cities				High Growth All Cities					
CA	Edmonton, AB	86.3	20	AU	Adelaide	103.8	103	BR	Belo Horizonte	97.5	84		
	Montreal, QC	82.0	18		Brisbane	115.3	110		São Paulo	101.5	98		
	Quebec City, QC	79.5	17		Melbourne	109.8	108						
	Toronto, ON	94.3	62		Sydney	116.4	111	CN	Chengdu	48.8	3		
	Winnipeg, MB	73.3	12	FR	Marseille	74.3	14		Shanghai	56.7	5		
					Paris	84.6	19						
US	Baton Rouge, LA	91.3	36	GE	Berlin	102.8	101	IN	Chennai	44.3	1		
	Boston, MA	100.9	97		Frankfurt	112.2	109		Mumbai	47.9	2		
	Indianapolis, IN	93.8	57	IT	Milan	108.2	107						
	Minneapolis, MN	95.0	68		Rome	105.8	105	MX	Mexico City	60.8	7		
	Philadelphia, PA	100.9	96	JP	Osaka	125.1	112		Monterrey	59.1	6		
	Pittsburgh, PA	96.1	79		Tokyo	138.0	113						
	Providence, RI	95.9	75	NE	Amsterdam	91.5	37	RU	Moscow	69.1	8		
	Raleigh, NC	94.4	64		Rotterdam	91.5	37		Saint Petersburg	56.5	4		
	Salt Lake City, UT	92.2	43	UK	London	101.9	99						
	Wilmington, DE	98.7	90		Manchester	87.3	22						

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.

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 3.58, 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.

International results are illustrated in Exhibit 3.59. These results reflect the combined impact of 26 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.60.

Exhibit 3.61 profiles results for selected cities, by country, from among the 113 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.5.

EXHIBIT 3.58 – 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	\$500	
Office equipment – US \$'000	\$500	
R&D equipment – US \$'000	\$4,000	
Inventory – US \$'000	-	
Equity financing – % of project costs	100%	
Workforce		
Management	5	
Sales and administration	12	
Dedicated product development	53	
Other		
Total employees	70	
Energy Requirements		
Electricity monthly consumption/peak demand	75,000 kWh	and 185 kW
Annual operating characteristics		
Sales at full operation – US \$'000	_1	
Operating costs – US \$'000	\$1,800	
Investment in tax-eligible R&D – % of sales	19%	

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.



© 2012 KPMG LLP, a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity. All rights reserved

EXHIBIT 3.60 - PRODUCT TESTING

Electronic Systems Development and Testing - Costs by Major Component, US \$'000														
				I	Mature						Hi	gh Growt	h	
	Amer	Icas			Europe			Asla Pa	clfic	Amer	ricas	Europe	Asia Pa	clflc
	Canada	US	France	Germany	Italy	Netherland	ls UK	Australia	Japan	Brazil	Mexico	Russia	China	India
Revenues	12,992	14,533	14,062	13,552	13,914	12,276	13,473	14,937	16,901	12,576	7,509	9,096	7,861	5,813
Costs														
- Salaries & Wages	5,906	6,182	4,714	6,491	5,951	5,456	5,424	7,477	8,204	3,691	2,475	3,011	2,502	1,747
- Statutory Plans	452	626	2,197	894	1,647	624	543	1,348	937	1,177	302	281	413	33
- Other Benefits	1,630	2,664	1,230	1,545	1,572	2,142	1,635	964	1,265	1,968	607	693	345	339
- Total Labor & Benefits	7,988	9,473	8,142	8,932	9,170	8,222	7,602	9,788	10,406	6,836	3,385	3,985	3,261	2,119
- Facility Lease	1,478	1,158	1,991	1,051	1,032	918	2,325	1,693	2,413	1,533	1,096	2,085	1,146	700
- Transportation	-	-	-	-	-	-	-	-	-	-	-	-	-	-
- Utilities	78	81	65	83	101	80	94	142	104	122	128	46	100	132
- Interest & Depreciation	552	623	511	546	565	535	517	246	642	473	456	401	528	478
- Non-Income Taxes	5	167	365	-	72	(305)	-	-	87	759	52	43	402	147
- Location-Insensitive Costs	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710	1,710
Profit Before Income Tax	1,182	1,321	1,278	1,232	1,265	794	1,226	1,359	1,539	1,144	683	826	716	529
- Income Taxes ¹	(92)	304	(642)	395	641	151	87	1	524	641	233	154	-	106
Effective Rate	(7.8%)	22.9%	(50.2%)	32.1%	50.7%	(21.7%)	7.1%	0.1%	34.0%	56.1%	34.1%	18.7%	n/a	20.0%
After-Tax Profit	1,274	1,018	1,920	836	624	966	1,139	1,358	1,016	503	450	671	716	423
Total Annual Costs	11,718	13,515	12,142	12,716	13,291	11,310	12,334	13,579	15,886	12,073	7,059	8,425	7,145	5,390
Index (US=100.0)	86.7	100.0	89.8	94.1	98.3	83.7	91.3	100.5	117.5	89.3	52.2	62.3	52.9	39.9
Rank	6	12	8	10	11	5	9	13	14	7	2	4	3	1

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 – PRODUCT TESTING

Elec	ctronic Systems Deve	elopme	nt and 1	「estin	sting – Results for Selected Cities, by Country							
Count	ry and City	Index	Rank ¹	Count	try and City	Index	Rank ¹	Coun	try and City	Index	Rank ¹	
Matur	e - North America			Matu	re - International			High	Growth			
Select	ed Cluster Cities			All Cit	ties			All Ci	ties			
CA	Edmonton, AB	82.3	21	AU	Adelaide	95.4	88	BR	Belo Horizonte	86.5	43	
	Quebec City, QC	80.9	20		Brisbane	101.7	106		São Paulo	92.2	74	
	Toronto, ON	88.7	55		Melbourne	96.8	91					
	Vancouver, BC	88.7	56		Sydney	104.2	109	CN	Chengdu	49.5	3	
				FR	Marseille	77.8	16		Shanghai	56.2	7	
US	Albuquerque, NM	84.5	32		Paris	101.9	107					
	Boise, ID	85.2	35	GE	Berlin	89.2	57	IN	Chennai	35.6	1	
	Dallas-Fort Worth, TX	92.2	75		Frankfurt	98.9	98		Mumbai	44.2	2	
	Denver, CO	92.6	77	IT	Milan	100.0	102					
	Phoenix, AZ	89.7	61		Rome	96.6	90	MX	Mexico City	54.2	6	
	Portland, OR	94.1	84	JP	Osaka	110.5	112		Monterrey	50.3	4	
	Raleigh, NC	89.3	58		Tokyo	124.5	113					
	Salt Lake City, UT	88.4	54	NE	Amsterdam	83.7	29	RU	Moscow	70.5	8	
	San Diego, CA	96.9	92		Rotterdam	83.7	30		Saint Petersburg	54.1	5	
				UK	London	98.5	96					
					Manchester	84.0	31					

C. Digital

1. Digital Entertainment

Video game production studios develop multi-platform video games for release on major gaming platforms, including Sony PlayStation® 3, Microsoft® Xbox 360®, and PCs (Microsoft® Windows®). Many video game production studios are subsidiaries of larger development or publishing houses engaged in developing multiple games for a global market. For 2010, the NPD Group Inc. estimated that sales of new physical game content in the United States were greater than \$10 billion.

The representative operation modeled is assumed to be a subsidiary of a large game developer or publishing house. The operation is assumed to be developing and releasing major versions of new games on a rolling three year cycle, staggering the release of major new titles on different gaming platforms at different points in time. As illustrated in Exhibit 3.62, this operation is characterized by:

- Leased office space
- A technically oriented workforce that is heavily weighted toward junior programmers
- A significant level of activities eligible for either R&D tax incentives or specific digital media production incentives.

The business is assumed to operate as a profit center.

International results are illustrated in Exhibit 3.63. These results reflect the combined impact of 26 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.64.

Exhibit 3.65 profiles results for selected cities, by country, from among the 113 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.5.

EXHIBIT 3.62 – DIGITAL ENTERTAINMENT

Video Game Production – Summary of Operating Parameters

Facilities Requirements	20.052.62	(1.001 2)
Class A office space leased	20,250 ft-	(1,881 m ⁻)
Other Initial Investment Requirements		
Office equipment – US \$'000	\$1,600	
Equity financing – % of project costs	67%	
Workforce		
Management	4	
Sales and administration	7	
Dedicated product development	87	
Customer support	2	
Total employees	100	
Energy Requirements		
Electricity monthly consumption/peak demand	60,000 kWh	and 180 kW
Other Annual Operating Characteristics		
Sales at full operation – US \$'000	\$18,000	
Operating costs – % of sales	12%	
Investment in tax-eligible R&D – % of sales	19%	



EXHIBIT 3.64 – DIGITAL ENTERTAINMENT

Video Game Production - Costs by Major Component, US \$'000

				r	Mature						Hi	gh <mark>Gr</mark> owt	h		
	Amer	lcas			Europe			Asla Pa	clflc	Amer	lcas	Europe	Asla Pa	Asla Pacific	
	Canada	US	France	Germany	Italy	Netherland	s UK	Australia	Japan	Brazil	Mexico	Russia	China	India	
Revenues	17,500	17,500	17,500	17,500	17,500	17,500	17,500	17,500	17,500	17,500	17,500	17,500	17,500	17,500	
Costs															
- Salaries & Wages	7,783	7,813	6,030	8,164	7,157	7,050	6,798	9,172	10,407	4,212	2,789	3,562	2,513	1,903	
- Statutory Plans	614	631	2,824	1,235	1,979	903	679	1,688	1,248	1,339	353	401	496	47	
- Other Benefits	1,944	2,342	1,534	1,906	1,834	2,633	2,048	1,145	1,629	2,373	709	819	351	360	
- Total Labor & Benefits	10,340	10,785	10,388	11,305	10,970	10,585	9,524	12,005	13,283	7,925	3,851	4,783	3,360	2,311	
- Facility Lease	665	521	896	473	464	413	1,047	762	1,086	690	493	938	516	315	
- Transportation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
- Utilities	68	72	56	69	90	65	77	117	92	108	112	37	82	111	
- Interest & Depreciation	(100)	187	(32)	54	60	(45)	(74)	(241)	246	(76)	(719)	(866)	(94)	(630)	
- Non-Income Taxes	4	109	395	-	33	(514)		-	31	1,474	57	17	983	123	
- Location-Insensitive Costs	2,012	2,012	2,012	2,012	2,012	2,012	2,012	2,012	2,012	2,012	2,012	2,012	2,012	2,012	
Profit Before Income Tax	4,511	3,798	3,786	3,589	3,872	4,462	4,914	2,846	750	5,368	11,694	10,579	10,642	13,259	
- Income Taxes ¹	(1,424)	1,204	(83)	1,112	1,457	1,244	920	351	233	2,092	3,296	2,111	1,156	3,686	
Effective Rate	(31.6%)	31.3%	(2.2%)	31.0%	37.6%	16.2%	18.7%	12.3%	31.0%	39.0%	28.2%	20.0%	10.9%	27.8%	
After-Tax Profit	5,935	2,610	3,869	2,477	2,415	3,740	3,994	2,495	518	3,275	8,398	8,467	9,487	9,573	
Total Annual Costs	11,566	14,890	13,631	15,024	15,085	13,760	13,507	15,006	16,983	14,225	9,103	9,033	8,014	7,928	
Index (US=100.0)	77.7	100.0	91.5	100.9	101.3	92.4	90.7	100.8	114.0	95.5	61.1	60.7	53.8	53.2	
Rank	5	10	7	12	13	8	6	11	14	9	4	3	2	1	

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 – DIGITAL ENTERTAINMENT

Vid	eo Game Production -	- Resu	lts for S	electe	ed Cities, by Cour	ntry					
Count	ry and City	Index	Rank ¹	Count	try and City	Index	Rank ¹	Count	try and City	Index	Rank ¹
Matur	e - North America			Matu	re - International			High (Growth		
Select	ed Cluster Cities			All Cit	ties			All Cit	ties		
CA	Halifax, NS	72.2	9	AU	Adelaide	96.4	83	BR	Belo Horizonte	92.5	52
	Montreal, QC	78.4	15		Brisbane	101.1	105		São Paulo	98.5	94
	Toronto, ON	76.9	13		Melbourne	98.7	96				
	Vancouver, BC	86.4	27		Sydney	102.9	108	CN	Chengdu	50.0	1
				FR	Marseille	86.6	28		Shanghai	57.6	5
US	Albuquerque, NM	88.8	32		Paris	96.5	85				
	Atlanta, GA	89.5	33	GE	Berlin	96.9	88	IN	Chennai	51.4	2
	Austin, TX	93.8	66		Frankfurt	104.9	111		Mumbai	55.1	4
	Baton Rouge, LA	80.1	18	IT	Milan	101.8	106				
	Denver, CO	93.7	63		Rome	100.8	102	MX	Mexico City	61.8	7
	Honolulu, HI	97.8	91	JP	Osaka	111.4	112		Monterrey	60.5	6
	Los Angeles, CA	100.3	101		Tokyo	116.7	113				
	Orlando, FL	87.5	29	NE	Amsterdam	92.4	50	RU	Moscow	66.4	8
	Raleigh, NC	94.6	69		Rotterdam	92.4	51		Saint Petersburg	54.9	3
	Providence, RI	89.7	38	UK	London	95.7	76				
					Manchester	85.7	25				

2. Software Design

The packaged software industry serves a wide range of markets, including business enterprise software, office software, educational software, and entertainment software. According to DataMonitor Research, the global software market reached a value of \$242 billion in 2009. 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 modeled performs original technology development and ongoing application development for packaged software applications. As illustrated in Exhibit 3.66, this operation is characterized by:

- Leased office space
- A workforce consisting mostly of very highly skilled product development staff, but also with significant sales and customer support functions.

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

International results are illustrated in Exhibit 3.67. These results reflect the combined impact of 26 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.68.

Exhibit 3.69 profiles results for selected cities, by country, from among the 113 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.5.

EXHIBIT 3.66 – SOFTWARE DESIGN											
Software Development – Summary Parameters	of Operatin	g									
Facilities Requirements											
Class A office space leased	22,500 ft ²	(2,090 m ²)									
Other Initial Investment Requirements											
Office equipment – US \$'000	\$3,000										
Equity financing – % of project costs	67%										
Workforce											
Management	8										
Sales and administration	38										
Dedicated product development	54										
Customer support	10										
Total employees	110										
Energy Requirements											
Electricity monthly consumption/peak demand	60,000 kWh	and 180 kW									
Other Annual Operating Characteristics											
Sales at full operation – US \$'000	\$22,500										
Operating costs – % of sales	10%										
Investment in tax-eligible R&D – % of sales	-										



EXHIBIT 3.68 – SOFTWARE DESIGN

Software Development - Costs by Major Component, US \$'000														
				I	Mature						Hi	gh Growt	h	
	Amerl	cas			Europe			Asla Pa	clflc	Americas		Europe Asla Pac		clflc
	Canada	US	France	Germany	Italy	Netherland	s UK	Australia	Japan	Brazil	Mexico	Russia	China	India
Revenues	21,200	21,200	21,200	21,200	21,200	21,200	21,200	21,200	21,200	21,200	21,200	21,200	21,200	21,200
Costs														
- Salaries & Wages	9,412	9,920	7,733	10,700	9,901	8,899	8,959	12,447	13,490	6,016	4,059	4,944	4,338	2,868
- Statutory Plans	695	778	3,595	1,436	2,773	988	900	2,261	1,516	1,917	498	439	655	50
- Other Benefits	2,351	2,973	1,995	2,564	2,634	3,543	2,696	1,610	2,079	3,206	1,002	1,143	606	575
- Total Labor & Benefits	12,458	13,670	13,322	14,700	15,308	13,429	12,556	16,318	17,086	11,139	5,558	6,528	5,600	3,494
- Facility Lease	739	579	996	526	516	459	1,163	846	1,207	767	548	1,043	573	350
- Transportation	-	-	-	-	-	-	-	-	-	-	-	-	-	-
- Utilities	67	71	55	68	88	64	76	115	90	106	110	37	81	109
- Interest & Depreciation	290	479	345	362	450	267	241	403	741	202	(557)	(766)	142	(459)
- Non-Income Taxes	4	167	464	-	36	9	-	-	85	1,796	84	38	1,189	152
- Location-Insensitive Costs	2,120	2,120	2,120	2,120	2,120	2,120	2,120	2,120	2,120	2,120	2,120	2,120	2,120	2,120
Profit Before Income Tax	5,522	4,115	3,899	3,425	2,683	4,852	5,046	1,398	(128)	5,072	13,337	12,201	11,497	15,436
- Income Taxes ¹	1,268	1,549	1,301	1,051	1,370	1,199	1,178	405	222	1,717	3,746	2,292	1,381	4,624
Effective Rate	23.0%	37.6%	33.4%	30.7%	51.1%	24.7%	23.3%	29.0%	n/a	33.9%	28.1%	18.8%	12.0%	30.0%
After-Tax Profit	4,255	2,567	2,598	2,374	1,313	3,653	3,868	993	(350)	3,355	9,592	9,909	10,115	10,812
Total Annual Costs	16,946	18,633	18,602	18,826	19,888	17,547	17,332	20,208	21,550	17,845	11,609	11,292	11,085	10,389
Index (US=100.0)	90.9	100.0	99.8	101.0	106.7	94.2	93.0	108.5	115.7	95.8	62.3	60.6	59.5	55.8
Rank	5	10	9	11	12	7	6	13	14	8	4	3	2	1

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 - SOFTWARE DESIGN

Sof	Software Development – Results for Selected Cities, by Country														
Count	ry and City	Index	Rank ¹	Count	try and City	Inde	k Ranl	k¹	Count	Rank ¹					
Matur	e - North America			Matu	re - International				High Growth						
Select	ed Cluster Cities			All Cities					All Cities						
CA	Calgary, AB	92.1	38	AU	Adelaide	103.	0 10	2	BR	Belo Horizonte	93.0	52			
	Halifax, NS	87.4	19		Brisbane	107.	9 11	0		São Paulo	98.5	89			
	Montreal, QC 89.5 25				Melbourne	106.	3 10	8							
	Toronto, ON 92.4 42				Sydney	110.	3 11	1	CN	Chengdu	56.0	3			
	Vancouver, BC	92.0	36	FR	Marseille	94.	1 51	8		Shanghai	63.0	6			
					Paris	105.	3 10	6							
US	Austin,TX	93.8	55	GE	Berlin	97.	5 8	6	IN	Chennai	53.6	2			
	Boston, MA	101.4	100		Frankfurt	104.	3 10-	4		Mumbai	57.9	4			
	Denver, CO	96.2	78	IT	Milan	106.	4 10	7							
	New York City, NY	104.2	103		Rome	107.	1 10	9	MX	Mexico City	63.2	7			
	North Virginia, Metro DC	99.4	95	JP	Osaka	110.	7 11:	2		Monterrey	61.4	5			
	Omaha, NE	92.5	44		Tokyo	120.	3 11:	3							
	Orlando, FL	92.8	48	NE	Amsterdam	94.	26	0	RU	Moscow	67.7	8			
	Portland, OR 96.8 82		82		Rotterdam	94.	26	1		Saint Petersburg	53.5	1			
	San Francisco, CA	104.7	105	UK	London	99.	3 9	4							
Seattle, WA 98.9 92					Manchester	86.	7 10	6							

D. Corporate Services

1. Professional Services

The role and importance of financially oriented professional services has grown significantly in recent decades, supporting the rapid globalization of commerce. According to rankings of Global Financial Centers published by Z/Yen Group in September 2011, emergent financial centers in the high growth markets, most notably Shanghai and Singapore, are now providing direct competition to traditional financial services centers in London, New York, Hong Kong, Tokyo, and Chicago.

The representative operation modeled is an international financial services business providing a range of services that may include securities trading, foreign exchange, funds management, wealth management, and/or treasury activities. The business is assumed to operate with a primary focus on serving non-resident businesses/clients. As illustrated in Exhibit 3.70, this operation is characterized by:

- Leased office space
- A workforce consisting mostly of professional staff with significant expertise in finance, banking, and related fields.

The business is assumed to operate as a fully owned subsidiary of a parent firm. Reflecting the high value of the services being provided, revenue is allocated to the business on a "cost-plus" basis using an 18 percent mark-up.

International results are illustrated in Exhibit 3.71. These results reflect the combined impact of 26 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.72.

Exhibit 3.73 profiles results for selected cities, by country, from among the 113 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.5.

EXHIBIT 3.70 – PROFESSIONAL SERVICES

International Financial Services – Summary of Operating Parameters

Facilities Requirements		
Class A downtown office space leased	14,000 ft ²	(1,301 m ²)
Other Initial Investment Requirements		
Office equipment – US \$'000	\$500	
Equity financing – % of project costs	100%	
Workforce		
Management	8	
Sales and administration	34	
Customer support	-	
Other	8	
Total employees	50	
Energy Requirements		
Electricity monthly consumption/peak demand	18,000 kWh	and 75 kW
Other Annual Operating Characteristics		
Sales at full operation – US \$'000	_1	
Operating costs – US \$'000	\$3,000	

1 This operation represents a cost center. For taxation purposes, corporate revenue allocated to the operation is assumed to be cost-of-operation, plus 18 percent markup.



© 2012 KPMG LLP, a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity. All rights reserved

EXHIBIT 3.72 – PROFESSIONAL SERVICES															
International Financi	ial Serv	ices- C	osts by	/ Major	Comp	oonent,	US \$'0	000							
				I	Mature						Hi	gh Growt	h		
	Amer	Icas			Europe			Asla Pa	clflc	Amer	lcas	Europe	Asla Pa	Pacific	
	Canada	US	France	Germany	Italy	Netherland	s UK	Australia	Japan	Brazil Mexico		Russia	China	India	
Revenues	11,316	12,726	12,065	12,460	12,933	11,730	12,144	13,417	15,171	12,063	7,226	7,959	7,835	6,091	
Costs															
- Salaries & Wages	4,560	5,172	3,620	5,143	4,725	4,290	4,249	5,971	6,400	3,049	2,047	2,349	2,144	1,343	
- Statutory Plans	322	389	1,689	687	1,283	461	427	1,060	709	972	245	196	339	22	
- Other Benefits	1,139	1,552	940	1,229	1,262	1,726	1,279	780	989	1,588	475	538	296	247	
- Total Labor & Benefits	6,021	7,113	6,248	7,059	7,270	6,477	5,955	7,812	8,099	5,609	2,767	3,083	2,780	1,613	
- Facility Lease	659	559	809	612	725	567	1,458	858	1,762	976	401	806	476	455	
- Transportation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
- Utilities	23	29	22	28	36	25	29	48	37	38	37	11	31	35	
- Interest & Depreciation	(7)	51	(23)	(29)	(11)	(32)	(41)	(234)	59	(43)	(28)	(64)	41	6	
- Non-Income Taxes	1	145	278	-	52	11	-	-	19	753	42	7	410	146	
- Location-Insensitive Costs	2,925	2,925	2,925	2,925	2,925	2,925	2,925	2,925	2,925	2,925	2,925	2,925	2,925	2,925	
Profit Before Income Tax	1,694	1,904	1,807	1,865	1,936	1,756	1,818	2,008	2,272	1,806	1,082	1,191	1,173	911	
- Income Taxes ¹	300	777	599	588	872	437	418	585	853	615	303	236	290	271	
Effective Rate	17.7%	40.8%	33.2%	31.5%	45.0%	24.9%	23.0%	29.1%	37.6%	34.1%	28.0%	19.8%	24.8%	29.8%	
After-Tax Profit	1,395	1,127	1,208	1,278	1,064	1,319	1,400	1,423	1,419	1,191	779	955	883	639	
Total Annual Costs	9,921	11,599	10,858	11,183	11,869	10,411	10,744	11,994	13,753	10,873	6,447	7,004	6,953	5,452	
Index (US=100.0)	85.5	100.0	93.6	96.4	102.3	89.7	92.6	103.4	118.6	93.7	55.6	60.4	59.9	47.0	
Rank	5	11	8	10	12	6	7	13	14	9	2	4	3	1	

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 3.73 - PROFESSIONAL SERVICES

Inte	International Financial Services – Results for Selected Cities, by Country													
Count	ry and City	Index	Rank ¹	Coun	try and City	Index	Rank ¹	Count	try and City	Index	Rank ¹			
Matur	e - North America			Matu	re - International			High Growth						
Select	ed Cluster Cities			All Ci	ties			All Cities						
CA Halifax, NS Montreal, QC Toronto, QN		77.7 81.7	14 25	AU	Adelaide Brisbane	95.6 102.1	90 105	BR	Belo Horizonte São Paulo	89.7 97.8	67 96			
Toronto, ON 89.3 62 Vancouver, BC 87.0 49				FR	Melbourne Sydney Marseille	101.4 105.4 85.0	104 110 36	CN	Chengdu Shanghai	55.3 64.6	5 7			
US	Boston, MA Chicago, IL Denver, CO	100.7 99.8 91.4	100 98 79	GE	Paris Berlin Frankfurt	102.3 92.0 100.9	106 81 101	IN	Chennai Mumbai	43.0 51.1	1 2			
	Houston, TX Los Angeles, CA Miami, FL New York City, NY Omaha, NE Philadelphia, PA San Francisco, CA	93.6 99.0 92.5 111.1 86.2 97.2 105.1	88 97 84 112 46 95 109	JP NE UK	Milan Rome Osaka Tokyo Amsterdam Rotterdam London Mappopostor	101.2 103.4 108.2 129.0 89.7 89.8 104.3	103 107 111 113 70 71 108 22	MX RU	Mexico City Monterrey Moscow Saint Petersburg	56.7 54.5 66.6 54.2	6 4 8 3			
					wanchester	80.9	22							

2. Support Services

This industry includes business support operations, with a particular focus on those that interact primarily through electronic communication. Typical operations would include inbound call centers (e.g., customer enquiries, IT helpdesks), outbound call centers (e.g., telemarketing, teleresearch), centralized business processing centers, and centralized administrative centers. Support services operations may be subsidiary operations of a parent firm, or may be outsourced to an independent service provider.

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 3.74, 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.

International results are illustrated in Exhibit 3.75. These results reflect the combined impact of 26 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.76.

Exhibit 3.77 profiles results for selected cities, by country, from among the 113 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.5.

EXHIBIT 3.74 – SUPPORT SERVICES

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	\$3,000											
Equity financing – % of project costs	100%											
Workforce												
Management	10											
Sales and administration	88											
Customer support	42											
Other	5											
Total employees	145											
Energy Requirements												
Electricity monthly consumption/peak demand	60,000 kWh	and 180 kW										
Other Annual Operating Characteristics												
Sales at full operation – US \$'000	_1											
Operating costs – US \$'000	\$1,250											

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.



1

© 2012 KPMG LLP, a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"). a Swiss entity. All rights reserved

EXHIBIT 3.76 – SUPPORT SERVICES

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

		-						_					L.	_	
					viature							gn Growt	n		
	Amer	lcas			Europe			Asla Pa	clflc	Amer	lcas	Europe	Asla Pa	aclfic	
	Canada	US	France	Germany	Italy	Netherland	s UK	Australia	Japan	Brazil	Mexico	Russia	China	India	
Revenues	14,547	14,848	15,123	15,945	13,625	14,450	13,453	16,541	19,750	10,797	5,946	8,166	5,788	4,341	
Costs															
- Salaries & Wages	8,045	8,005	6,284	8,864	6,623	7,730	6,760	9,697	11,653	3,281	2,232	3,407	2,023	1,488	
- Statutory Plans	755	663	2,996	1,518	1,889	1,083	643	1,814	1,461	1,042	292	590	375	66	
- Other Benefits	2,010	2,401	1,484	1,945	1,617	2,212	2,009	1,172	1,790	2,445	614	805	307	250	
- Total Labor & Benefits	10,809	11,069	10,764	12,327	10,128	11,025	9,411	12,683	14,903	6,769	3,139	4,803	2,705	1,803	
- Facility Lease	739	579	996	526	516	459	1,163	846	1,207	767	548	1,043	573	350	
- Transportation	-	-	-	-	-	-	-	-	-	-		-	-	-	
- Utilities	70	74	57	71	92	67	79	120	94	110	115	38	84	113	
- Interest & Depreciation	352	403	328	322	365	326	327	139	411	298	309	256	354	323	
- Non-Income Taxes	5	124	353	-	36	9	-	-	88	622	46	35	298	108	
- Location-Insensitive Costs	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	
Profit Before Income Tax	1,323	1,350	1,376	1,450	1,239	1,314	1,224	1,504	1,798	981	540	742	526	395	
- Income Taxes ¹	334	522	447	446	712	329	279	438	701	338	213	138	121	109	
Effective Rate	25.3%	38.6%	32.5%	30.8%	57.5%	25.0%	22.8%	29.2%	39.0%	34.5%	39.4%	18.5%	22.9%	27.6%	
After-Tax Profit	989	828	928	1,004	526	986	944	1,066	1,097	643	327	605	406	286	
Total Annual Costs	13,559	14,020	14,195	14,941	13,099	13,464	12,509	15,475	18,653	10,154	5,619	7,562	5,383	4,055	
Index (US=100.0)	96.7	100.0	101.2	106.6	93.4	96.0	89.2	110.4	133.0	72.4	40.1	53.9	38.4	28.9	
Rank	9	10	11	12	7	8	6	13	14	5	3	4	2	1	

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 3.77 - SUPPORT SERVICES

Sha	Shared Services Center – Results for Selected Cities, by Country													
Count	ry and City	Index	Rank ¹	Country and City Index Rank ¹					Country and City Inde					
Matur	e - North America			Matu	re - International			High	Growth					
Lowes	at Cost Cities				ues				ues					
CA	Charlottetown, PE	82.2	17	AU	Adelaide	103.7	104	BR	Belo Horizonte	67.4	9			
	Moncton, NB	82.7	19		Brisbane	108.8	107		São Paulo	77.5	10			
	Fredericton, NB	84.5	28		Melbourne	108.0	106							
	Halifax, NS	85.9	36		Sydney	112.8	111	CN	Chengdu	34.1	3			
	St. John's, NL	85.9	37	FR	Marseille	92.5	72		Shanghai	42.7	6			
					Paris	110.0	109							
US	Sioux Falls, SD	80.0	11	GE	Berlin	101.1	100	IN	Chennai	26.1	1			
	Cheyenne, WY	80.5	12		Frankfurt	112.0	110		Mumbai	31.7	2			
	Billings, MT	81.4	13	IT	Milan	94.5	81							
	Shreveport, LA	81.8	15		Rome	92.3	71	MX	Mexico City	41.2	5			
	Fargo, ND	82.0	16	JP	Osaka	126.6	112		Monterrey	38.9	4			
	Charleston, WV	82.4	18		Tokyo	139.5	113							
	Bangor, ME	82.7	20	NE	Amsterdam	96.0	85	RU	Moscow	59.9	8			
	Gulfport-Biloxi, MS 82.8 21		21		Rotterdam	96.0	86		Saint Petersburg	48.0	7			
Albuquerque, NM 83.5 22		UK	London	96.7	88									
	Mobile, AL	83.8	23		Manchester	81.7	14							

4. Regional and City Comparisons

Site searches often differ in the range of geographic locations considered, and the rapid emergence of the high growth markets have further complicated the process. Whether the search is global or regional, there is often a trade-off involved in choices between countries and in choices between larger and smaller cities in any country.

This chapter presents results by city, first for larger international cities in both the high growth markets and the mature markets, and then for all other featured cities on a regional basis.

A. Results for Cities in High Growth Countries

One defining aspect of the high growth countries examined is their rapid rates of urbanization (as discussed further in Chapter 6) and the emergence of "megacities" in these countries. As shown in Exhibit 4.1, in four of the five high growth countries examined, the estimated metro population of the largest city examined is approximately 20 million. Russia is the exception in this regard, where the metro population of Moscow is just under 15 million people. Even the "Tier 2" cities examined in the high growth countries are substantial metropolises in their own rightsranging from Monterrey, Mexico, with 3.7 million people to Chengdu, which is approximately the tenth largest city in mainland China¹, with a metro population of approximately 11 million.

In the five high growth countries examined, the Tier 2 cities offer consistent cost savings relative to the larger city (and major business center) in the same country. In **China** and **India**, Chengdu and Chennai represent the two lowest-cost cities examined, while costs in Shanghai and Mumbai are similar, but several percentage points higher.

In **Russia** and **Mexico**, Saint Petersburg, Monterrey and Mexico City are relatively closely grouped, while costs in Moscow are notably higher. In **Brazil**, costs are substantially higher than in the other high growth countries, but with Belo Horizonte still offering notably lower business costs than São Paulo.

 Metro population rankings in China differ among various sources, with Chengdu generally ranking between 8th and 12th depending on the measurement basis.

EXHIBIT 4.1

Results for Cities in High Growth Countries

City	Country	Cost Index ¹	Population ²
Chengdu	China	72.0	11,000,000
Chennai	India	72.9	7,300,000
Shanghai	China	76.3	19,200,000
Mumbai	India	76.4	21,200,000
Saint Petersburg	Russia	77.5	4,900,000
Monterrey	Mexico	78.4	3,700,000
Mexico City	Mexico	79.7	21,200,000
Moscow	Russia	83.0	14,800,000
Belo Horizonte	Brazil	91.4	5,400,000
São Paulo	Brazil	94.6	19,900,000

Business costs are expressed as an index, with the United States being assigned the baseline index of 100.0. An index less than 100 indicates lower costs than the US. An index greater than 100 indicates higher costs than the US. (e.g., an index number of 95.0 represents a 5.0% cost advantage relative to the US.)

2 Estimated metropolitan area population, 2010

B. Results for Cities in Mature Countries

1. Cities Over Two Million in Population

Many companies prefer to locate in very large metro areas to gain such benefits 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 international orientation of business and cultural life in these large cities.

Among the 103 featured cities compared in the mature countries, 44 have metropolitan populations of at least 2 million people, but only four have metro populations exceeding 10 million – Paris, Tokyo, Los Angeles, and New York City. Results for all cities in this category are illustrated in Exhibit 4.2:

- In the Americas, the two largest Canadian cities, Montreal and Toronto, are the low cost leaders, ranking ahead of Cincinnati, Atlanta, Orlando, and Tampa in the United Sates. Meanwhile, Boston, Seattle, New York City, and San Francisco represent the most expensive major North American cities in which to do business.
- In Europe, Manchester, Rotterdam, and Amsterdam are the low cost leaders, with a clear cost advantage over all of the other large European cities studied. Business costs are very similar in Milan, Rome, Berlin, Paris, and London, while Frankfurt has the highest business costs among the European cities.
- In Asia Pacific, Melbourne has lower costs than Brisbane or Sydney in Australia.
 In Japan, business costs in Osaka are only slightly higher than in Sydney, while Tokyo has the highest business costs among all cities studied.

EXHIBIT 4.2

Results for Cities in Mature Countries - Population Over 2 Million¹

City	Country	Cost Index
AMERICAS		
Montreal	Canada	94.3
Toronto	Canada	95.7
Cincinnati	United States	95.9
	United States	96.2
Orlando	United States	96.3
Tampa	United States	96.4
Vancouver	Canada	96.5
Dallas-Fort Worth	United States	96.5
Baltimore	United States	97.0
St. Louis	United States	97.1
Cleveland	United States	97.1
Pittsburgh	United States	97.2
Phoenix	United States	97.6
Miami	United States	97.8
Houston	United States	97.8
Minneapolis	United States	98.3
Denver	United States	98.4
Riverside-San Bernardino	United States	98.6
Detroit	United States	98.7
North Virginia, Metro DC	United States	99.2
Chicago	United States	99.3
Portland	United States	99.3
Philadelphia	United States	99.4
Sacramento	United States	100.0
San Diego	United States	100.6
Los Angeles	United States	100.9
Boston	United States	101.2
Seattle	United States	101.5
New York City	United States	103.4
San Francisco	United States	104.5
EUROPE		
Manchester	United Kingdom	90.8
Rotterdam ²	The Netherlands	94.7
Amsterdam ²	The Netherlands	94.7
Milan	Italy	97.9
Rome	Italy	97.9
Berlin	Germany	98.0
Paris	France	98.1
London	United Kingdom	98.1
Frankfurt ²	Germany	102.2
ASIA PACIFIC		
Melbourne	Australia	102.4
Brisbane	Australia	103.2
Sydney	Australia	105.0
Osaka	Japan	106.5
Tokyo	Japan	112.3

1 Metro area population of two million or more.

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).

2. Cities with Populations of One to Two Million

Cities with populations between 1 and 2 million in the mature countries are sometimes refered to as "Tier 2" cities. These cities are generally large enough to attract interest and investment on some globally-oriented projects, yet small enough to offer a more competitive cost environment than the largest cities in their respective countries.

The 17 cities examined that have metro populations of between 1 and 2 milion are detailed in Exhibit 4.3:

- In the Americas, Oklahoma City, Nashville, Edmonton, and New Orleans have the lowest business costs among the 15 comparably sized cities studied in Canada and the United States. At the other end of the spectrum, Hartford and Trenton are the only cities in this group to have business costs higher than the US baseline.
- In Europe, Marseille in France is the only city examined with a metro population below two million. With a cost index of 94.1, costs in Marseille are lower than in any of the other continental European cites examined.
- In Asia Pacific, Adelaide is the only Australian city examined with a metro population below two million¹. Business costs in Adelaide are higher than the US baseline, but lower than average business costs for Australia.

EXHIBIT 4.3

Results for Cities in Mature Countries - Population 1 to 2 Million

City	Country	Cost Index
AMERICAS		
Oklahoma City, OK	United States	95.5
Nashville, TN	United States	95.7
Edmonton, AB	Canada	96.0
New Orleans, LA	United States	96.0
Indianapolis, IN	United States	96.3
Raleigh, NC	United States	96.6
Austin, TX	United States	97.0
Salt Lake City, UT	United States	97.2
Calgary, AB	Canada	97.3
Buffalo, NY	United States	97.8
Wilmington, DE	United States	98.0
Providence, RI	United States	98.0
Las Vegas, NV	United States	98.7
Hartford, CT	United States	100.1
Trenton, NJ	United States	101.0
EUROPE		
Marseille	France	94.1
ASIA PACIFIC		
Adelaide	Australia	102.3

¹ Until 2010, Brisbane also fell in this category, but its population has recently grown to exceed two million.

3. Cities Under One Million in Population

A total of 42 cities with populations of less than 1 million have been included in this study. Results for these cities are detailed in Exhibit 4.4, and are stratified:

- **By Population**, as large differences in size exist between the smallest cities examined—Charlottetown, Prince Edward Island; Prince George, British Columbia; and Cheyenne, Wyoming—each with populations of less than 100,000, and the largest of these regional cities—Honolulu, Hawaii—which has a population of just over 900,000
- **By Region**, as these cities are often of strongest interest in regionally-oriented site searches.

The cost leaders in the **New England/ Atlantic Canada** region are the Atlantic Canada cities of Moncton, Fredericton, Halifax, and Charlottetown, all with costs seven percent or more below the US baseline. Costs are somewhat higher in St. John's and Bangor, while Burlington (Vermont) and Manchester (New Hampshire) have the highest business costs among the smaller cities in this region.

In the **Northeast US/Canada** region, costs are lowest in Trois-Rivières and Quebec City in Quebec, followed by the US cities of Lexington, Charleston (West Virginia), and Youngstown, and the Canadian city of Windsor-Essex. Business costs are notably higher in Saginaw, Michigan, which represents the most expensive of the smaller cities examined in this region.

In the **Southeast US** region, Shreveport and Baton Rouge, both in Louisiana, are the low cost leaders, with Shreveport also being the lowest cost US city examined in this study. Within this region, the Louisiana cities are followed by Gulfport-Biloxi, Montgomery (Alabama), Little Rock, and Mobile. While business costs are higher in Spartanburg and Jackson (Mississippi), costs in these cities are still moderate relative to other regions of the United States.

EXHIBIT 4.4

Results for North American Cities with Population Under 1 Million

Population of Less Than	500,000	Population of 500,000 t	Population of 500,000 to 1,000,000					
New England/Atlantic Canada								
Moncton, NB	92.3	n/a						
Fredericton, NB	92.5							
Halifax, NS	92.7							
Charlottetown, PE	93.0							
St. John's, NL	95.3							
Bangor, ME	95.4							
Burlington, VT	98.8							
Manchester, NH	99.1							
Northeast US/Canada								
Trois-Rivières, QC	92.8	Quebec City, QC	94.2					
Lexington, KY	94.7	Youngstown, OH	94.9					
Charleston, WV	94.8							
Windsor-Essex, ON	95.1							
Saginaw, MI	97.3							
Southeast US								
Shreveport, LA	93.3	Baton Rouge, LA	94.3					
Montgomery, AL	95.0	Gulfport-Biloxi, MS	94.8					
Mobile, AL	95.4	Little Rock, AR	95.1					
Spartanburg, SC	95.7	Jackson, MS	96.1					
Midwest US/Western Canada								
Sioux Falls, SD	95.1	Winnipeg, MB	94.8					
Cheyenne, WY	95.2	Wichita, KS	95.4					
Saskatoon, SK	95.2	Omaha, NE	95.6					
Billings, MT	95.4	Albuquerque, NM	96.1					
Cedar Rapids, IA	95.7	Madison, WI	97.2					
Champaign-Urbana, IL	96.1							
Fargo, ND	96.3							
Beaumont, TX	97.1							
Pacific US/Canada								
Prince George, BC	96.6	Boise, ID	97.0					
Spokane, WA	98.1	Salem, OR	98.1					
Anchorage, AK	105.3	Honolulu, HI	108.4					

In the Midwest US/Western Canada

region, Winnipeg, Sioux Falls, Cheyenne, and Saskatoon are the low cost leaders with costs closely grouped around five percent below the US baseline. Ranked behind these leaders are Wichita, Billings, Omaha, Cedar Rapids, Albuquerque, Champaign-Urbana, and Fargo. Among the smaller cities examined in this region, business costs are highest in Beaumont (Texas) and Madison (Wisconsin).

Finally, in the Pacific US/Canada

region, Prince George and Boise are the low cost leaders, followed by Spokane and Salem (Oregon), both of which have virtually equivalent levels of business costs. Anchorage and Honolulu—the two cities examined that are not in the "Lower 48" US states—both have business costs that are significantly higher than in other US cities and represent the most expensive US cities examined in this study.

C. Detailed City Results, by Industry Operation

Exhibit 4.5 contains the index results for all featured cities, by region, for each of the 19 business operations examined in this study. Further detailed results for each city, by cost component, are also available online at www.CompetitiveAlternatives.com.

EXHIBIT 4.5																				
Results by City																				
						Manuf	acturing							R&D		DIç	gital	Corp. S	Services	Overall Result
Industry	Aero- space	Agri-food	Auto- motive	Chemi- cals	Electro- nics	Green Energy	Medical Devices	Metal Compon.	Pharma- ceuticals	Plastics	Precision Mfg	Telecom	Biotech	Clinical Trials	Product Testing	Digital Ent'mt	Software Design	Profess'I Services	Support Services	19
Operation	Aircraft Parts	Food Proc.	Auto Parts	Spec. Chem.	Electr. Assbly	Adv. Batteries	Medical Devices	Metal Mach.	Pharma- ceutic.	Plastic Prod.	Precision Comp.	Telecom Equip.	Biomed R&D	Clinical Trials Mgmt	Electronic Systems Dvlt/Test	Video Game Prod'n	Software Dvit	Int'I Financial Servives	Shared Services Center	Operations
MATURE																				
EUROPE																				
France																				
Marseille	96.5	96.1	96.2	97.2	97.0	93.9	94.8	93.9	95.3	93.3	96.1	96.7	84.8	74.3	77.8	86.6	94.1	85.0	92.5	94.1 (2)
Paris	97.9	96.5	97.0	98.3	98.4	94.4	97.2	95.1	96.9	94.2	96.8	98.6	111.5	84.6	101.9	96.5	105.6	102.3	110.0	98.1 (8)
Germany																				
Berlin	98.9	97.6	98.8	99.2	99.6	96.3	99.0	96.8	98.4	96.4	98.4	99.9	97.4	102.8	89.2	96.9	97.5	92.0	101.1	98.0 (7)
Frankfurt	102.0	100.7	101.4	101.4	102.3	100.0	103.3	101.1	101.8	100.9	100.7	102.8	107.4	112.2	98.9	104.9	104.6	100.9	112.0	102.2 (10)
Italy																				
Milan	98.6	95.8	96.9	97.9	98.4	97.4	96.8	94.2	96.7	93.7	97.0	98.3	104.2	108.2	100.0	101.8	106.4	101.2	94.5	97.9 (5)
Rome	98.9	96.1	97.2	98.1	99.0	97.9	97.2	94.7	97.0	94.3	97.2	98.5	98.7	105.8	96.6	100.8	107.1	103.4	92.3	97.9(6)
Ameteriands	05.0	04.0	06.2	06.2	06.2	04.5	OE 1	05.0	04.7	04.2	06.0	06.6	00 F	01.5	02.7	02.4	04.2	00.7	06.0	04.7 (4)
Rotterdam	95.0	94.0	90.2	90.2	90.2	94.9 94.9	95.1	95.0	94.7	94.2	90.0	90.0	89.5	91.5	83.7	92.4	94.2	69.7 80.8	90.0	94.7 (4)
United Kingdom	35.0	34.0	30.2	30.2	30.2	34.4	35.0	35.0	34.7	34.2	30.0	30.0	03.0	51.5	00.7	32.4	34.2	03.0	30.0	34.7 (3/
London	101.6	94.8	97.6	96.3	101.0	96.9	99.1	96.4	98.0	96.4	96.1	98.7	106.5	101.9	98.5	95.7	99.3	104.3	96.7	98.1 (9)
Manchester	95.3	90.5	92.3	92.8	94.6	91.2	90.6	88.4	92.0	88.0	92.7	93.3	92.0	87.3	84.0	85.7	86.7	80.9	81.7	90.8 (1)
ASIA PACIFIC																				
Australla																				
Adelaide	104.7	102.7	102.7	99.8	101.4	105.6	103.0	105.7	101.8	109.9	101.0	101.3	102.5	103.8	95.4	96.4	103.0	95.6	103.7	102.3 (1)
Brisbane	104.7	103.0	102.0	100.8	100.9	104.8	102.9	104.5	102.0	107.4	101.1	101.7	108.7	115.3	101.7	101.1	107.9	102.1	108.8	103.2 (3)
Melbourne	104.1	101.9	101.8	99.5	100.5	104.1	102.9	104.4	101.8	107.2	101.0	101.6	103.2	109.8	96.8	98.7	106.6	101.4	108.0	102.4 (2)
Sydney	106.3	103.5	104.0	101.3	102.6	106.2	105.3	106.9	103.4	111.0	101.9	103.3	111.6	116.4	104.2	102.9	110.3	105.4	112.8	105.0 (4)
Japan																				
Usaka	104.9	103.7	104.9	103.4	105.5	101.7	108.3	107.1	104.3	106.3	101.3	105.8	120.2	125.1	110.5	111.4	110.7	108.2	126.6	106.5 (5)
Токуо	109.8	106.3	109.9	105.3	108.7	105.3	115.5	114.7	107.7	113.7	104.0	110.2	136.8	138.0	124.5	116.7	120.6	129.0	139.5	112.3 (6)
HIGH GROWTH																				
Brazil																				
Belo Horizonte	93.1	89.4	93.4	94.6	94.4	93.0	88.8	88.5	91.1	89.6	93.5	93.2	93.4	97.5	86.5	92.5	93.0	89.7	67.4	91.4 (9)
São Paulo	95.9	91.1	95.8	96.3	97.3	95.1	92.4	91.9	93.8	92.5	94.5	95.7	101.5	101.5	92.2	98.5	98.5	97.8	77.5	94.6 (10)
China																				
Chengdu	76.0	79.8	80.5	84.6	77.0	77.9	65.4	74.3	71.1	74.4	81.5	75.1	53.7	48.8	49.5	50.0	56.0	55.3	34.1	72.0 (1)
Shanghai	80.0	82.8	83.7	87.6	80.6	81.1	70.3	78.3	75.1	78.5	84.3	78.7	60.9	56.7	56.2	57.6	63.0	64.6	42.7	76.3 (3)
India	70.0	00.0	00 F	05.5	01.4	00.0	70.0	74.0	76.4	74.0	04.6	70.4	40.7	44.0	05.6	51.4	50.0	40.0	00.1	70.0.(0)
Mumbai	/9.9	80.2	83.5	85.5	81.4	80.3	70.2	74.8	70.4	74.8	84.6	/8.4	40.7	44.3	35.6	51.4	53.6	43.0	20.1	72.9 (2)
Mexico	02.9	01.5	80.7	00.7	04.0	03.2	73.0	//.0	/9.0	//./	00.0	01.0	50.5	47.9	44.2	55.1	57.9	51.1	31.7	70.4 (4)
Mexico City	84 5	86.7	87.5	87.3	85.5	87.9	77 1	81.5	81.7	81.7	88.6	83.3	60.5	60.8	54.2	61.8	63.2	56.7	41.2	79.7 (7)
Monterrey	84.1	85.1	86.5	86.8	85.3	86.2	76.3	79.6	81.1	79.4	87.5	83.1	56 1	59.1	50.3	60.5	61.4	54.5	38.9	78.4 (6)
Russla	0.1.1	00.1	00.0	00.0	00.0	0.0.2		.0.0	0		07.0		00.1	00.1	00.0	00.0	0.14	07.0	00.0	
Moscow	87.7	85.1	89.2	87.6	87.8	88.3	80.9	84.4	83.6	84.2	89.1	85.9	79.7	69.1	70.5	66.4	67.7	66.6	59.9	83.0 (8)
Saint Petersburg	84.0	81.7	86.1	84.8	84.5	84.2	75.8	79.8	79.7	79.3	86.5	82.4	63.3	56.5	54.1	54.9	53.5	54.2	48.0	77.5 (5)

EXHIBIT 4.5 (cor	nt'd)																			
Results by City -	North	Ameri	са																	
						Manu	facturing	I						R&D		Digi	tal	Corp.	Services	Overall Result
Industry	Aero- space	Agri- food	Auto- motive	Chemi- cals	Electro- nics	Green Energy	Medical Devices	Metal Compon	Pharma- ceuticals	Plastics	Precision Mfg	Telecom	Biotech	Clinical Trials	Product Testing	Digital Ent'mt	Software Design	Profess'I Services	Support Services	19
Operation	Aircraft Parts	Food Proc.	Auto Parts	Spec. Chem.	Electr. Assbly	Adv. Batteries	Medical Devices	Metal Mach.	Pharma- ceutic.	Plastic Prod.	Precision Comp.	Telecom Equip.	Biomed R&D	Clinical Trials Mgmt	Electronic Systems Dvlt/Test	Video Game Prod'n	Software Dvit	Int'l Financial Servives	Shared Services Center	Operations
New England/ Atlantic Canada																				
Bangor, ME	97.9	98.7	98.0	97.9	97.6	98.8	95.6	96.7	96.6	97.7	98.4	96.7 100.4	82.6	90.0 100.0	82.8	89.7	89.3	83.5	82.7 102.6	95.4 (6)
Burlington, VT	99.4	101.8	99.7	98.8	99.1	101.8	98.8	102.0	98.9	102.3	101.3	98.8	93.1	95.0	94.3	96.3	96.1	93.0	92.7	98.8(8)
Charlottetown, PE	96.2	98.9	96.3	96.8	95.1	96.6	92.9	94.4	94.5	95.3	96.3	94.3	80.9	86.7	75.3	80.2	85.9	75.9	82.2	93.0 (4)
Fredericton, NB	96.3	98.1	95.8	95.2	95.0	95.8	93.3	95.3	93.8	96.5	96.2	93.8	79.3	3 70.8	74.7	79.2	85.2	75.5	84.5	92.5(2)
Halifax, NS	96.2	98.2	96.4	95.6	95.7	95.9	94.0	95.4	94.1	96.1	96.1	94.2	80.2	74.7	74.6	72.2	87.4	77.7	85.9	92.7 (3)
Hartford, CT	100.8	101.8	100.9	100.1	100.3	101.6	100.5	102.3	100.4	103.0	101.3	100.4	96.6	6 98.6 0 0 0 0	97.2	89.9	98.7	95.7	98.2	100.1 (10)
Manchester, NH	100.1	101.5	05.0	99.9	99.9	06.5	99.3	101.3	99.3	07.0	100.8	99.1	90.8	90.5 60.4	91.8	96.8	96.6	90.8	92.0	99.1(9)
Providence RI	99.2	100.2	95.9	99.1	94.9	90.5	98.1	98.9	98.4	97.0	90.4 99.4	93.0 98.5	93.6	95.9	93.6	89.7	96.9	91.0	92.9	92.3(1)
St. John's, NL	97.3	104.8	99.4	96.4	95.4	103.0	95.0	102.3	95.0	104.3	99.5	94.1	79.8	72.8	74.6	81.3	86.9	77.6	85.9	95.3 (5)
Northeast US/																				
Canada Reltimore MD	001	0.0 1	00 0	00 2	001	077	07.2	06.7	07.6	06.7	00 2	0.0 1	00 F	05.6	00.2	06.1	05 P	01.1	01 /	97.0/11)
Buffalo NY	99.4	98.8	99.5	99.1	98.0	97.7	98.4	98.7	98.7	99.7	99.3	98.7	91 9) 95.0 1 96.1	90.2	95.8	95.0	90.1	90.1	97.8(15)
Charleston, WV	97.3	96.5	96.9	96.9	96.9	97.4	95.2	95.7	96.7	96.3	97.6	96.6	83.7	89.1	82.6	90.6	90.4	83.1	82.4	94.8 (5)
Cincinnati, OH	97.9	96.0	97.0	98.1	97.7	95.9	96.6	94.7	97.3	94.7	97.2	97.7	90.2	94.3	90.2	94.4	94.1	88.5	89.2	95.9 (9)
Cleveland, OH	98.9	97.4	98.2	98.7	98.7	97.8	97.9	96.8	98.3	96.9	98.1	98.5	91.1	95.2	91.1	95.2	95.0	89.7	90.7	97.1 (12)
Detroit, MI	100.2	99.1	99.3	99.4	99.8	99.1	99.9	99.6	99.8	99.2	99.8	99.9	93.8	97.0	94.1	96.8	96.5	91.9	94.6	98.7 (17)
Indianapolis, IN	98.1	96.8	97.4	98.4	98.2	96./	97.1	95.9	97.9	95.9	97.7	97.9	90.2	93.8	89.5	94.1	94.6	88.0	89.8	96.3(10)
Montreal OC	96.7	95.5	90.3	97.2	90.8	95.5	95.1	95.9	90.2	95.6	96.6	95.5	90.5	82.0	84.7	78.4	92.9	81.7	94.9	94.7 (4)
New York City, NY	103.0	102.1	103.0	101.7	102.4	103.0	103.5	104.2	102.3	104.6	101.9	102.5	106.4	104.5	107.1	104.5	104.2	111.1	107.9	103.4 (21)
North Virg. Metro DC	99.6	98.4	99.0	99.1	99.3	99.3	99.1	98.9	99.2	98.5	99.2	99.3	101.8	100.8	99.7	99.8	99.4	100.2	99.2	99.2 (18)
Philadelphia, PA	100.1	99.6	99.6	99.5	99.4	99.7	99.3	99.5	99.2	99.4	100.0	99.5	98.3	3 100.9	98.6	99.9	99.4	97.2	98.3	99.4 (19)
Pittsburgh, PA	99.3	97.7	98.4	98.5	98.5	98.1	97.7	97.2	98.1	97.7	98.4	98.2	91.3	96.1	91.0	96.0	95.4	89.3	89.7	97.2 (13)
Quebec City, QC	97.2	98.4	97.1	96.5	96.1	96.6	95.8	96.8	95.7	98.2	97.1	95.4	86.2	2 /9.5 : 06.1	80.9	/6.6	87.6	/8.6	90.0	94.2(2)
Toronto, ON	96.9	96.3	96.2	96.0	96.3	96.4	97.9	97.5	96.3	97.5	96.9	96.7	91.5) 90.1) 94.3	92.4 88.7	76.9	94.9	89.3	90.0	97.3(14)
Trenton, NJ	101.0	100.8	100.5	100.4	100.3	100.9	100.8	100.7	100.5	100.7	100.8	100.6	102.8	103.0	103.7	102.1	102.6	101.0	103.5	101.0 (20)
Trois-Rivières, QC	96.2	97.2	96.0	95.8	94.9	95.0	94.2	94.7	94.4	95.9	96.1	94.5	82.2	2 77.6	77.6	75.5	86.6	75.8	87.8	92.8(1)
Wilmington, DE	98.7	98.7	98.5	98.8	98.4	98.8	97.7	97.8	98.0	97.9	98.9	98.3	95.0) 98.7	94.7	98.3	98.1	92.7	93.8	98.0 (16)
Windsor-Essex, ON	97.4	99.5	97.9	96.8	96.5	98.4	97.0	98.3	96.7	100.0	98.0	96.1	84.9	89.6	80.5	73.6	89.8	79.3	91.5	95.1(7)
Youngstown, OH	97.2	96.3	96.9	97.5	96.8	96.6	95.5	95.0	96.4	95.0	97.3	97.0	84.5	92.0	85.7	92.1	91.8	82.5	84.5	94.9(6)
Southeast US																				
Atlanta, GA	97.5	96.9	97.1	97.8	97.7	96.7	96.5	95.5	97.4	95.4	97.7	97.5	93.9	94.0	92.9	89.5	94.5	90.1	91.2	96.2(11)
Baton Rouge, LA	96.9	97.5	96.8	96.7	96.6	97.3	94.8	95.4	96.2	95.6	97.4	96.1	87.2	91.3	85.8	80.1	83.6	86.0	84.2	94.3 (2)
Gulfport-Biloxi, MS	97.5	96.7	96.5	97.1	97.5	96.6	95.2	94.6	97.0	94.5	97.0	96.9	85.8	91.1	84.5	91.1	90.5	85.0	82.8	94.8 (3)
Jackson, MS	97.9	98.0	97.6	98.0	98.1	97.7	96.5	96.5	98.0	96.5	98.0	97.6	89.8	3 92.3	87.7	92.8	92.3	85.5	86.3	96.1 (10)
Miami FI	97.1	97.0	96.8 98 0	97.6	97.2	96./	95.4	95.0	96.8	94.9	97.3	96.8	95.6	92.5	93.0	89.5	92.7	92.5	84.3 91.0	95.1(5)
Mobile, AL	97.6	97.1	96.8	97.3	97.5	96.9	96.0	95.2	97.1	94.9	97.4	97.3	87.5	5 93.1	86.6	93.0	92.4	85.0	83.8	95.4 (6)
Montgomery, AL	96.9	96.3	96.2	97.0	96.7	96.1	95.2	94.2	96.5	94.0	96.9	96.7	88.8	3 93.1	88.0	93.4	92.7	86.2	85.0	95.0(4)
Nashville, TN	97.7	96.7	96.9	97.7	97.7	96.2	96.2	95.1	97.4	95.2	97.4	97.5	88.5	93.5	87.9	93.7	93.3	87.3	86.3	95.7(7)
New Orleans, LA	98.3	98.4	97.6	97.6	97.7	97.9	96.6	96.6	97.6	96.7	98.3	97.6	92.2	94.6	91.4	82.4	86.0	88.4	90.7	96.0 (9)
Orlando, FL	97.8	98.3	98.0	97.9	98.1	98.7	96.6	97.5	97.7	97.8	98.5	97.6	89.7	92.2	87.9	87.5	92.8	87.7	86.6	96.3 (12)

EXHIBIT 4.5 (con't)																				
Results by City - North	America																			
						Mar	nufacturin	g						R&D		Dig	Ital	Corp.	Services	Overall Result
Industry	Aero- space	Agri- food	Auto- motive	Chemi- cals	Electro- nics	Green Energy	Medical Devices	Metal Compon.	Pharma- ceuticals	Plastics	Precision Mfg	Telecom	Biotech	Clinical Trials	Product Testing	Digital Ent'mt	Software Design	Profess'I Services	Support Services	19
Operation	Aircraft Parts	Food Proc.	Auto Parts	Spec. Chem.	Electr. Assbly	Adv. Batteries	Medical Devices	Metal Mach.	Pharma- ceutic.	Plastic Prod.	Precision Comp.	Telecom Equip.	Biomed R&D	Clinical Trials Mgmt	Electronic Systems Dvlt/Test	Video Game Prod'n	Software Dvit	Int'I Financial Servives	Shared Services Center	Operations
Southeast US (con'td)																				
Raleigh, NC	98.0	98.0	97.8	98.0	97.8	98.2	96.6	96.8	97.5	97.2	98.3	97.5	90.1	94.4	89.3	94.6	94.9	89.4	88.7	96.6 (14)
Shreveport, LA	96.3	96.5	96.2	96.1	96.2	96.5	93.8	94.5	95.4	94.4	96.7	95.6	83.5	89.9	82.9	79.1	82.2	83.0	81.8	93.3 (1)
Tampa, FL	97.5	96.8	97.1	97.5	98.0	97.1	96.8	96.2	97.8	96.0	97.7	97.6 97.6	90.0	92.5	88.3	87.7	92.8	86.5	86.5	96.4 (13)
Midwoet US /	07.17	00.0	00.1	00.0	00.1	00.0	00.7	07.7	07.0	00.2	00.7	07.0	00.0	02.1	00.0	0	02.0	00.0	00.0	00.1(10)
Western Canada																				
Albuquerque, NM	97.6	99.3	98.3	98.2	98.1	99.0	96.7	98.0	98.0	98.4	98.5	97.2	85.6	91.2	84.5	88.8	92.1	83.9	83.5	96.1 (11)
Austin, TX	98.5	99.0	98.3	98.0	98.4	98.9	97.5	98.0	98.2	98.1	98.6	98.1	90.3	93.3	90.1	93.8	93.8	89.6	88.8	97.0 (15)
Beaumont, IX Billings MT	98.7	99.1 08.0	98.3	98.1	98.0	98.9	97.0	98.1	98.2	97.8	98.8	98.3	90.5	94.1 89.0	90.1 82.9	93.8	94.0 90.1	88.1	88.1 81.4	97.1(17) 95.4(6)
Calgary, AB	98.6	100.2	98.9	97.2	96.6	100.3	97.7	100.6	97.7	102.6	99.0	96.3	94.2	90.5	87.7	89.8	92.1	89.3	98.8	97.3 (20)
Cedar Rapids, IA	98.2	97.4	97.6	97.5	97.7	97.8	96.5	96.4	97.5	96.7	98.0	97.2	86.6	90.5	85.7	91.3	91.9	85.5	85.2	95.7 (9)
Champaign-Urbana, IL	98.8	96.4	97.2	98.1	98.5	96.5	96.9	95.1	97.8	94.9	97.4	98.0	88.8	94.1	89.8	94.8	94.6	86.9	88.6	96.1 (12)
Cheyenne, WY	97.4	98.9	98.2	96.7	96.9	100.3	95.5	98.4	96.9	99.7	98.7	96.1	82.5	87.7	80.3	88.0	87.0	80.8	80.5	95.2 (3)
Dallas-Fort Worth TX	99.9	98.4	98.8	99.7	99.7	97.9	99.3	97.5	99.5	97.3	99.1	99.7	92.6	95.1	92.2	94.8	94.9	99.8	90.6	99.3 (25)
Denver, CO	98.8	100.1	99.4	99.0	98.8	100.9	98.4	100.3	99.2	100.8	100.3	98.6	93.6	96.4	92.6	93.7	96.2	91.4	92.5	98.4 (24)
Edmonton, AB	97.9	100.0	98.3	96.7	95.9	99.6	96.6	99.7	97.0	101.8	98.7	95.6	88.2	86.3	82.3	86.3	89.4	84.2	93.9	96.0 (10)
Fargo, ND	99.0	100.5	98.7	97.5	98.2	100.9	96.9	99.1	98.1	99.9	99.1	97.1	84.5	89.7	83.0	90.5	90.5	81.1	82.0	96.3 (13)
Houston, IX	97.6	98.8	98.3	98.3	98.0	98.5	97.3	97.7	97.7	97.2	98.6	98.2	99.5	97.9	98.4	97.1	97.3	93.6	94.2	97.8 (22)
Minneanolis MN	99.4	98.5	98.3	98.8	99.2	97.8	98.1	96.9	98.7	97.1	98.4	98.7 98.7	90.9	94.6	91.1 94.9	92.1	94.0	92.8	90.4 95.4	97.2 (18) 98.3 (23)
Oklahoma City, OK	97.8	98.3	97.3	97.6	97.4	97.3	95.5	95.8	96.8	96.0	97.9	97.0	86.8	92.1	86.4	92.2	91.7	84.0	84.2	95.5 (7)
Omaha, NE	97.0	99.0	97.3	96.8	96.5	98.1	94.9	96.6	96.2	96.7	98.6	96.0	89.4	92.2	88.0	92.3	92.5	86.2	85.9	95.6 (8)
Phoenix, AZ	98.6	100.0	99.0	98.5	97.9	100.7	97.8	99.E	98.5	100.4	99.6	97.6	91.5	93.2	89.7	93.5	94.6	89.3	89.2	97.6 (21)
Salt Lake City, UI	98.7	99.5	98.6	98.0	98.2	100.3	97.3	99.1	98.4	99.7	99.4	97.5	89.7	92.2	88.4	92.8	93.6	88.3	87.5	97.2 (19)
Sioux Falls, SD	97.8	99.2	98.4	96.0	96.2	99.9	90.3	97.4	96.3	98.2	98.4 98.5	94.8 96.1	80.4	74.0 89.6	79.5 83.0	82.0	87.7	80.4	89.0	95.2 (4)
St. Louis, MO	97.9	97.5	97.8	98.5	98.3	97.6	97.4	97.0	98.3	96.9	98.4	98.3	93.7	95.7	92.9	95.8	95.5	88.9	91.0	97.1 (16)
Wichita, KS	97.4	98.0	97.4	97.4	97.4	97.4	95.5	95.9	96.5	95.9	97.7	97.0	85.0	91.9	85.7	92.7	92.2	83.7	84.6	95.4 (5)
Winnipeg, MB	96.9	101.5	98.0	95.9	95.5	100.5	95.1	99.7	95.8	101.2	98.4	94.5	83.2	73.3	77.3	80.9	87.9	80.3	88.9	94.8 (1)
Pacific US/ Western Canada																				
Anchorage AK	105.4	114.8	104.0	101 5	103.6	109 3	106.2	109 5	105.0	115.1	104 3	103.1	103 1	102.1	101.6	100 9	99.5	95.8	103 5	105.3 (14)
Boise, ID	98.3	99.9	99.1	98.3	98.4	101.0	97.4	100.0	98.4	100.8	99.7	97.4	86.8	91.8	85.2	92.8	92.5	83.6	84.7	97.0 (3)
Honolulu, HI	109.6	125.5	109.4	105.2	105.2	114.8	107.4	114.6	106.4	123.4	109.8	104.4	101.7	100.7	99.2	97.8	98.4	92.0	98.3	108.4 (15)
Las Vegas, NV	99.1	100.8	99.8	99.4	98.7	101.1	98.8	100.7	99.4	101.4	100.4	98.8	94.9	96.5	92.9	95.5	94.9	89.7	92.1	98.7 (7)
Los Angeles, CA	100.5	101.4	100.7	100.8	100.7	101.4	101.0	101.7	101.2	101.9	100.8	100.4	100.7	100.3	100.0	100.3	100.8	99.0	100.7	100.9 (11)
Prince George, BC	99.8 99.8	102.2	99.9	99.5	99.0	101.6	99.4	101.2	99.7	101.2	99.2	99.2 96.6	87.8	97.9 89.6	94.1 82.5	83.7	90.8 89.8	78.8	94.1 91.4	99.3 (8) 96.6 (2)
Riverside-San Bernardino,CA	99.2	100.4	99.5	99.8	99.5	100.0	99.1	99.5	99.7	99.9	99.8	99.0	92.8	96.0	91.9	96.4	97.0	92.2	93.5	98.6(6)
Sacramento, CA	99.9	101.9	100.4	100.3	99.9	101.6	100.1	101.5	100.6	102.1	101.0	99.6	96.6	97.9	95.7	98.1	98.7	94.5	96.6	100.0 (9)
Salem, OR	99.4	101.4	99.4	98.9	99.2	100.9	98.5	100.2	99.0	100.3	99.9	98.4	91.1	95.4	89.7	95.1	94.4	87.7	89.4	98.1 (5)
San Diego, CA San Francisco, CA	100.9	101.9	101.0	100.7	101.0	102.1	101.1	102.4	101.2	103.3	101.0	100.2	97.8	98.5	96.9 107.1	98.6	99.1 104.7	95.7	97.5	100.6 (10)
Seattle, WA	102.9	104.9	103.4	102.4	102.7	107.0	104.0	103.9	103.9	107.5	103.0	102.0	99.3	98.9	98.0	99.2	98.9	96.9	99.8	101.5 (12)
Spokane, WA	99.3	101.6	100.0	99.2	98.9	101.5	98.7	101.2	99.4	101.1	100.3	98.6	90.0	92.9	88.0	93.3	92.9	86.2	88.2	98.1 (4)
Vancouver, BC	98.7	98.7	97.8	97.0	96.7	98.1	97.0	98.5	97.2	98.8	98.0	96.4	95.5	94.0	88.7	86.4	92.0	87.0	97.2	96.5 (1)

5. Comparison by Cost Component

This chapter compares the results among the 14 countries for each of the major location-sensitive cost components. Detailed results for all 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 by both operation and location. Figures shown here represent the typical range of results for all 14 countries.

Labor costs include wages and salaries, employer-paid statutory plans, and other employee benefits.

For the manufacturing operations examined, labor costs typically range from 40 to 57 percent of total location-sensitive costs. For the non-manufacturing (service) operations examined, labor costs typically range from 70 to 84 percent of location-sensitive costs.

Relative to the above ranges, labor costs represent a smaller percentage of locationsensitive costs in the high growth countries than in the mature countries, due to lower wage levels in the high growth countries. With these differences in the significance of labor costs, each of the other locationsensitive cost factors tends to represent a slightly higher proportion of total costs in the high growth countries than in the mature countries.

Facility costs represent the next significant cost factor. For non-manufacturing operations, office lease costs representing 5 to 19 percent of total location-sensitive costs. For manufacturing operations, industrial lease costs range from 2 to 7 percent of total location-sensitive costs.

For manufacturers, **transportation** is another major factor, representing 6 to 22 percent of total location-sensitive costs.

EXHIBIT 5.1

Relative Importance of Key Location-Sensitive Cost Factors

	Manufacturing Operations ¹	Non-Manufacturing Operations ²
Labor Costs		
Salaries & wages	28% - 40%	50% - 59%
Statutory plans	5% - 7%	8% - 10%
Other benefits	7% - 10%	12% - 15%
Total labor	40% - 57%	70% - 84%
Lease Costs	2% - 7%	5% - 19%
Transportation Costs (Road, Air, Sea)	6% - 22%	n/a
Electricity & Natural Gas	2% - 8%	1% - 1%
Cost of Capital (Depreciation, Financing)	9% - 21%	0% - 6%
Taxes		
Property	1% - 2%	0% - 0%
Other	1% - 1%	1% - 2%
Income taxes ³	8% - 15%	2% - 12%
Total taxes	10% - 18%	3% - 14%

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

2 Range for 6 non-manufacturing operations included in the overall results. (Refer to Exhibit 1.3) Clinical trials management has been excluded from this exhibit, due to atypical cost patterns for that operation.

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

Utility costs represent 1 to 8 percent of location-sensitive costs. Electricity and natural gas costs are more significant for manufacturers than for non-manufacturers.

Costs related to capital include both depreciation and interest. These are major cost items for manufacturers, ranging from 9 to 21 percent of location-sensitive costs. Capital-related costs are much less significant for non-manufacturers, at 0 to 6 percent of location-sensitive costs.

Taxes typically represent 10 to 18 percent of total location-sensitive costs for manufacturing operations, and 3 to 14 percent for non-manufacturing operations.

B. Labor Costs

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

The labor force required for each business operation is based on 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 is provided in Chapter 3.

1. Labor Costs Per Employee

Total labor costs per employee represent the sum of:

- Wages and salaries, including any other cash compensation customarily paid
- Employer-paid statutory plans, plus any other payroll-based taxes
- Other employment benefits customarily provided by employers.

Exhibit 5.2 compares each of these components, along with average total costs per employee, for the 14 countries examined in this study.

Not surprisingly, wage and salary costs in the high growth markets are substantially lower than in the mature markets. **India**, **China**, and **Mexico** have the lowest wage and salary levels among all countries examined. While wage and salary levels in **Russia** and **Brazil** are higher than in the three lowest-cost countries, they are still less than half of those in any of the mature countries.

Among the mature countries, wage and salary levels are lowest in **France**, the **United Kingdom**, and **Italy**. These results reflect in part the weakness of the euro and the British pound in 2011 and early 2012.

Statutory plans and payroll-based taxes, expressed as a percentage of payroll, are lowest in **India**, followed by the **United States** and **Canada**.

Other employer-sponsored benefits, also expressed as a percentage of payroll, are lowest in **Australia, China**, and **Japan**.

EXHIBIT 5.2

Labor Cost Comparison, Per Employee

		11						
				Ben				
	Salaries & V	Statut Plan	ory s	Other Be	nefits	Total Labor		
	Average per Employee ¹ (US\$)	Rank	Percent of Payroll	Rank	Percent of Payroll	Rank	Average per Employee ¹ (US\$)	Rank
MATURE MARKETS								
Americas								
Canada	\$63,995	10	10%	3	27%	10	\$87,228	7
United States	\$64,905	11	9%	2	38%	13	\$95,798	11
Europe								
France	\$51,428	6	47%	14	24%	7	\$88,256	9
Germany	\$72,615	12	16%	9	22%	5	\$100,422	12
Italy	\$57,164	8	28%	12	25%	8	\$87,558	8
Netherlands	\$61,220	9	13%	7	32%	12	\$88,602	10
United Kingdom	\$55,789	7	10%	4	30%	11	\$77,993	6
Asia Pacific								
Australia	\$79,366	13	18%	10	12%	1	\$103,754	13
Japan	\$91,840	14	12%	5	15%	3	\$117,155	14
HIGH GROWTH MARKETS ^{2,3}								
Brazil	\$27,508	5	32%	13	64%	14	\$53,906	5
China	\$16,252	2	19%	11	15%	2	\$21,694	2
India	\$11,995	1	3%	1	17%	4	\$14,473	1
Mexico	\$18,440	3	13%	6	26%	9	\$25,617	3
Russia	\$24,913	4	14%	8	24%	6	\$34,338	4

1 Average for 19 operations included in the overall results. (Refer to Exhibit 1.3) Represents 42 different job positions, including professional and management positions.

2 Wages and salaries for the high growth countries include an allowance for higher expected wage inflation over the study's 10-year analysis horizon.

3 This exhibit details labor costs <u>per employee</u>. To reflect productivity differences, the number of employees assigned to each model business is higher in the high growth countries than in the mature countries. Therefore, when comparing <u>total annual labor costs</u>, the cost differentials between the high growth countries and the mature countries are somewhat less than the per-employee differentials shown in this exhibit. However, the ranking of countries for total annual labor costs is the same as shown here for per-employee labor costs.

Combining these three elements, total labor costs per employee are lowest in the five high growth countries. India, China, and Mexico have the lowest total labor costs per employee. Total costs per employee are somewhat higher in Russia and higher still in Brazil, where high statutory plan and benefit burdens (related to social security, private medical and pension plans, employee transportation and meals, and a high number of holiday and vacation days) substantially increase the total cost per employee. Even with these costs, total labor costs per employee in Brazil are still 30 percent lower than in any of the mature countries.

Among the mature countries, total costs per employee are lowest in the **United Kingdom**, **Canada**, and **Italy**.

2. Basis for Comparison

As described in detail in Chapter 1, this analysis includes consideration of labor market differences between the mature and the high growth countries, as follows:

- An adjustment for higher expected rates of wage inflation in the high growth countries has been incorporated in the salary/wage costs reported in Exhibit 5.2. Wage inflation rates in the high growth countries are projected to continue to exceed the mature countries in the short term, but to decline over the 10-year analysis horizon of this study.
- Differences in worker productivity have been incorporated into the analysis of specific business operations by assigning higher numbers of workers in each high growth country to achieve a standard level of output for each operation.
C. Facility Costs

1. Factory Leasing

For the manufacturing operations examined in this study, facilities are assumed to be established in a leased suburban industrial building. Land requirements for these operations range from 2 to 7 acres (0.8 to 2.8 hectares) and factory sizes range from 30,000 to 120,000 square feet (2,790 to 11,148 square meters).

Factory lease costs for each location are based on rental costs for prime bulk industrial space. Lease costs only include net rent. Additional costs, including utilities and property taxes, are borne directly by the manufacturing firm and are considered in other sections of this chapter.

As illustrated in Exhibit 5.3, factory lease costs are lowest in **India**, followed by **Canada**, the **United States**, and **China**.

2. Office Leasing

For the non-manufacturing operations examined, facilities are assumed to be established in leased Class "A" office space, ranging from 10,000 to 45,000 square feet (929 to 4,180 square meters).

Office lease costs reflect gross rent, and include all operating costs, taxes, and insurance costs generally passed on by the landlord to the tenant in each location.

For most non-manufacturing operations examined in this study, costs are based on office space located in a suburban office park, or equivalent location. Suburban office lease costs are lowest in **India**, the **Netherlands**, **Italy**, and **Germany**.

The international financial services operation examined in this study is assumed to be located in a downtown (city center) office building. Downtown office lease costs for this operation are lowest in **Mexico**, **India**, **China**, and the **United States**.

Care should be exercised in interpreting these national rankings due to significant variations in leasing costs which may occur among cities within each country.

EXHIBIT 5.3

Facility Costs¹: Factory and Office Leasing Costs, by Country

	Manufactu	ıring	N	ufacturing			
	Factory Le	ase ²		Office Lease ³			
	Suburba	an	Suburba	an	Downtown		
	US\$ per sq.ft.4	Rank	US\$ per sq.ft.4	US\$ per sq.ft.4 Rank		Rank	
MATURE MARKETS							
Americas							
Canada	\$4.69	2	\$32.84	8	\$47.04	7	
United States	\$4.74	З	\$25.73	7	\$39.93	4	
Europe							
France	\$5.58	6	\$44.26	11	\$57.75	10	
Germany	\$8.18	8	\$23.37	4	\$43.68	6	
Italy	\$7.31	7	\$22.92	3	\$51.79	8	
Netherlands	\$9.11	9	\$20.40	2	\$40.50	5	
United Kingdom	\$10.55	11	\$51.70	13	\$104.11	13	
Asia Pacific							
Australia	\$9.48	10	\$37.61	10	\$61.29	11	
Japan	\$17.77	14	\$53.64	14	\$125.82	14	
HIGH GROWTH MARKETS							
Brazil	\$10.84	12	\$34.08	9	\$69.68	12	
China	\$4.94	4	\$25.47	6	\$33.96	3	
India	\$3.67	1	\$15.56	1	\$32.50	2	
Mexico	\$5.17	5	\$24.35	5	\$28.64	1	
Russia	\$11.11	13	\$46.34	12	\$57.54	9	

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 Net rent only for a prime bulk industrial facility. All operating costs are in addition and are borne directly by the tenant.

3 Gross rent for office facilities includes all operating, tax, and insurance costs passed on by the landlord to the tenant as additional rent.

4 Equals 0.09 m²; 10.76 sq.ft. = 1 m².

D. Transportation Costs

The manufacturing operations examined in this study are assumed to deliver their physical products by some combination of surface (land and sea) and air freight. Exhibit 5.4 illustrates the transportation modes typically used by each type of operation, as well as the relative significance of transportation costs.

Transportation costs are estimated based on the general assumption that each firm delivers product to major distribution centers 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, generally on a global basis. Figures shown here for all freight modes include relevant fuel and security surcharges.

Exhibit 5.5 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 global and regional product distribution patterns for each operation within each country. Operations with different product distribution patterns may have significantly different average transportation costs.

For surface freight—40' containers to global destinations and equivalent road freight to regional destinations—average costs per load are lowest in **Japan**, **France**, **India**, and the **Netherlands**.

Costs for air freight to a range of global destinations vary more significantly by region. Average air freight costs are lowest from **China**, **India**, the **United States**, and **Japan**.

Combining these two distribution channels, total global freight costs are lowest in **India**, followed by **Japan**, **China**, and **France**. The positive results for the Asian countries reflect both the growing importance of Asian markets for many types of products, plus a very competitive logistics market resulting in favorable transportation rates.

EXHIBIT 5.4

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

	Global Distributio	Transport as a Percent of Total Location-Sensitive	
Business Operation	Surface	Air	Costs ²
Manufacturing			
Advanced batteries	\checkmark		22%
Aircraft parts	\checkmark	\checkmark	21%
Auto parts	\checkmark		13%
Electronics assembly	\checkmark	\checkmark	12%
Food processing	\checkmark		19%
Medical devices	\checkmark	\checkmark	12%
Metal components	\checkmark		18%
Pharmaceuticals	\checkmark	\checkmark	14%
Plastic products	\checkmark		22%
Precision components	\checkmark		16%
Specialty chemicals	\checkmark	\checkmark	6%
Telecom equipment	\checkmark	V	8%

Only those operations that distribute products are included.

Includes all modes of transport.

EXHIBIT 5.5

Transportation Costs, by Country and Mode

	Global Dis	stribution	Total Annua	al Cost
	Surface Freight per Load ^{1,2}	Air Freight per Kg1	US\$'0003	Rank
MATURE MARKETS				
Americas				
Canada United States	\$2,190 \$1,967	\$2.42 \$1.76	\$2,522 \$2,214	12 10
Europe				
France	\$1,226	\$2.60	\$1,637	4
Germany	\$1,346	\$2.43	\$1,722	7
Italy	\$1,524	\$3.41	\$2,085	8
Netherlands	\$1,275	\$2.46	\$1,670	5
United Kingdom	\$1,393	\$5.10	\$2,224	11
Asia Pacific				
Australia	\$2,404	\$3.46	\$2,912	14
Japan	\$1,162	\$2.09	\$1,431	2
HIGH GROWTH MARKETS				
Brazil	\$1,313	\$2.41	\$1,705	6
China	\$1,379	\$1.22	\$1,553	3
India	\$1,242	\$1.27	\$1,422	1
Mexico	\$2,255	\$2.52	\$2,626	13
Russia	\$1,753	\$2.44	\$2,114	9

 Average for those manufacturing operations that utilize full load delivery logistics for each mode of distribution.

2 Per standard 40' container, or equivalent.

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

E. Utility Costs

3. Electricity

The operations examined in this study are not particularly energy-intensive, and electricity costs typically represent only 1 to 5 percent of total location-sensitive costs. Details of electricity demand and consumption requirements for each operation can be found in Chapter 3.

Exhibit 5.6 illustrates the relative cost for electricity in each country, expressed in US cents per kilowatt-hour. The lowest electricity costs are in **Russia**, **France**, **Canada**, and the **United States**.

4. 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 up to 4 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 the availability and cost of natural gas. For the few locations where natural gas is not readily available, costs of alternate fuel sources (propane or fuel oil) have been substituted based on energy equivalencies for the fuel source representing the most economical alternative in each location.

With these qualifiers, Exhibit 5.6 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 **Russia**, followed by **Mexico**, the **United States** and **Canada**.

EXHIBIT 5.6

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

	Electricity ¹		Natural Ga	s ²
	US¢ per kWh	Rank	US\$ per CCF ³ (100ft ³)	Rank
MATURE MARKETS				
Americas				
Canada	9.7¢	4	\$0.82	4
United States	9.5¢	3	\$0.66	3
Europe				
France	9.3¢	2	\$1.54	10
Germany	11.5 ¢	6	\$1.80	14
Italy	14.9 ¢	11	\$1.28	8
Netherlands	10.7 ¢	5	\$1.14	6
United Kingdom	12.2 ¢	8	\$1.01	5
Asia Pacific				
Australia	21.4 ¢	14	\$1.20	7
Japan	15.3 ¢	12	\$1.74	13
HIGH GROWTH MARKETS				
Brazil	17.5 ¢	13	\$1.61	11
China	12.0 ¢	7	\$1.47	9
India	12.2 ¢	9	\$1.64	12
Mexico	12.2 ¢	10	\$0.39	2
Russia	5.3 ¢	1	\$0.25	1

1 Average for 19 operations included in the overall results. (Refer to Exhibit 1.3)

2 Average for 12 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.

F. Financing Costs

The base interest rates used in this study, representing typical cash deposit rates and mid-class commercial bond/loan rates in each country in Q4 2011, are illustrated in Exhibit 5.7.

In the high growth countries, the borrowing rates reflect a mix of lending in local currency and US dollars, which tends to reduce the total cost of borrowing. Cash deposits are assumed to be kept in hard currency, a business practice frequently seen in emerging markets.

For operations in volatile industries or with limited fixed assets to offer as security, additional interest rate premiums have been added to the base borrowing rates shown in Exhibit 5.7, as appropriate.

G. Non-Income-Based Taxes

1. Property-Based Taxes

Exhibit 5.8 illustrates the average property taxes paid in each country, expressed in US dollars per square foot of building space. Property taxes include taxes levied based on the value of land and buildings, machinery and equipment, inventory, and other physical assets. National results should be interpreted with caution, as property tax costs can vary dramatically between locations based on local tax rates and property values:

- For manufacturing operations, property taxes typically account for about 2 percent of locationsensitive costs. The lowest property tax costs for manufacturing operations are in **Mexico**, followed by **India**, **Italy**, and the **Netherlands**.
- For non-manufacturing operations occupying leased office space, property taxes on real estate are typically levied on the landlord. The amount of tax passed on to the tenant is captured indirectly in total office leasing costs (above), but is not separately identifiable. In France, however, the liability for property tax on leased properties ("CFE") is legally transferred directly to the lessor, resulting in the high tax burden seen for France in this category.

Exhibit 5.8 shows that direct taxation of equipment and/or business occupancy impact the national results for 6 of the 14 countries. In the other 8 countries, the non-manufacturing operations are not subject to direct taxes on equipment and/or business occupancy in the local jurisdictions examined.

EXHIBIT 5.7

Interest Rates Used in This Study

	Cash Deposit Rate	Commercial Borrowing Rate
MATURE MARKETS		
Americas		
Canada	1.38%	5.66%
United States	0.62%	5.75%
Europe		
France	1.86%	5.97%
Germany	1.86%	5.97%
Italy	1.86%	5.97%
Netherlands	1.86%	5.97%
United Kingdom	1.90%	5.40%
Asia Pacific		
Australia	4.75%	7.49%
Japan	0.37%	4.68%
HIGH GROWTH MARKETS		
Brazil	2.13%	10.38%
China	0.75%	6.56%
India	2.10%	10.00%
Mexico	2.68%	9.68%
Russia	3.00%	9.30%

EXHIBIT 5.8 Total Property-Based Taxes Average US\$ per Square Foot of Building Space

	Manufacturing Operations ¹ (Leased Facilities)		Non-Manufacturing Operations ² (Leased Facilities)		
	US\$ per sq.ft. ³	Rank	US\$ per sq.ft.3	Rank	
MATURE MARKETS					
Americas					
Canada ⁴	\$4.33	10	\$0.00	1	
United States	\$5.55	12	\$0.52	10	
Europe					
France	\$2.54	8	\$9.17	14	
Germany	\$3.09	9	\$0.00	1	
Italy	\$0.45	3	\$1.94	13	
Netherlands	\$0.64	4	\$0.45	9	
United Kingdom	\$5.17	11	\$0.00	1	
Asia Pacific					
Australia	\$2.24	7	\$0.00	1	
Japan	\$12.14	14	\$1.79	12	
HIGH GROWTH MARKETS					
Brazil	\$1.66	6	\$0.00	1	
China	\$0.68	5	\$0.00	1	
India	\$0.33	2	\$0.00	1	
Mexico	\$0.11	1	\$0.00	1	
Russia	\$6.27	13	\$0.96	11	

1 Average for 12 manufacturing operations included in the overall results. (Refer to Exhibit 1.3) 2 Average for 7 non-manufacturing operations included in the overall results. (Refer to Exhibit 1.3)

3 Equals 0.09 m²; 10.76 sq.ft. = 1 m²

4 In Canada, a few jurisdictions do tax equipment and/or business occupancy, but not any of the cities included in the calculation of the national result.

2. Capital Taxes

Capital taxes include all taxes levied on business financial capital, including long term debt, share capital, and/or retained earnings/reserves. Capital taxes can include taxes levied annually, and/or one-time taxes levied at the time debt or shares are issued.

As illustrated in Exhibit 5.9, and detailed below, capital taxes only apply in certain countries and regions:

- In the United States, capital taxes apply (in various forms) in about 40 percent of all locations examined.
- In **Japan**, prefectural and municipal capital taxes apply in both locations considered in this study.
- In Brazil and Italy, national taxes apply to relevant corporate borrowings.
- In China and France, the minor capital tax costs reflect one-time taxes or fees on the issuance of share capital.

3. Transaction Taxes

Transaction taxes include:

Non-refundable sales taxes

Non-refundable sales taxes apply in Brazil, China, India, nearly all US states, and a minority of 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 \$60,000 and US \$350,000 per annum, or approximately 0.5 to 2.7 percent of location-sensitive costs.

Lower sales tax costs are seen in a few jurisdictions, including those in China, while non-refundable sales tax costs in both Mumbai, India, and Honolulu, Hawaii, are more than double those seen in any other location studied.

EXHIBIT 5.9

Capital Taxes		
	US\$'000 per Annum ¹	Percent of Location-Sensitive Costs ¹
MATURE MARKETS		
Americas		
Canada	nil	-
United States	<\$1 - \$66	<0.01% - 0.53%
Europe		
France	\$1	<0.01%
Germany	nil	-
Italy	\$2	0.01%
Netherlands	nil	-
United Kingdom	nil	-
Asia Pacific		
Australia	nil	-
Japan	\$30 - \$32	0.18% - 0.21%
HIGH GROWTH MARKETS		
Brazil	\$10	0.08% - 0.09%
China	<\$1	<0.01%
India	nil	-
Mexico	nil	-
Russia	nil	-

1 Average over 10 years. Range for those locations where capital taxes apply.

 Gross receipts taxes. Gross receipts taxes apply in Brazil, China, France, and a small but growing number of US jurisdictions (either instead of, or in addition to, state or local income taxes).

The tax burden in the locations where gross receipts taxes apply is typically up to US \$250,000 per annum, or up to 2.0 percent of location-sensitive costs. The highest costs for this type of tax are seen in Brazil, France, and China, with costs in relevant US locations generally being less than US \$100,000 per year.

• 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. These taxes do impose a cost on companies in terms of administration and cash flow timing, but such costs are not material to this study. Among the 14 countries studied, the US is the only country where refundable value added taxes do not exist.

4. Local Business Taxes

Sundry local business taxes, in a wide variety of forms, also apply in approximately 20 of the jurisdictions studied, and are included in the total cost calculations for this study.

H. Income Taxes

Effective income tax rates are calculated net of generally applicable tax credits, grants, and other government incentives. Exhibit 5.10 illustrates the effective combined corporate income tax rates (federal, regional, and local) for the four major sectors examined in this study.

The national results presented in Exhibit 5.10 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

For manufacturing operations, the countries with the lowest effective income tax rates are **Canada**, followed by **China**, **Russia**, and the **United Kingdom**, all with effective tax rates below 20 percent.

2. R&D

France, the **Netherlands**, and **Canada**, all offer significant R&D tax incentives which may be fully or partially refundable in certain situations, resulting in a "negative" tax cost (or net government subsidy) for R&D operations in some jurisdictions.

Australia, the United Kingdom, China, the United States, and India also offer R&D tax incentives, resulting in effective tax rates for R&D operations that are well below their respective nominal tax rates.

By contrast, in Brazil a portion of all R&D expenses are non-deductible for income tax purposes, resulting in effective tax rates for R&D that exceed the nominal tax rate.

3. Digital

Effective tax rates for digital operations are also partly influenced by tax incentives for R&D expenditures, as well as incentives for digital media production offered in some Canadian and US jurisdictions.

Canada, **China**, **France**, and **Australia** are the countries that offer the lowest effective corporate income tax rates in this sector.

EXHIBIT 5.10

Effective Combined Corporate Income Tax Rate¹ Percentage of Net Profit Before Tax for Representative Operations

				N	on-Manufa	acturin	g	
	Manufactu	uring ²	R&D ³		Digital ⁴		Corporate Services ⁴	
MATURE MARKETS								
Americas								
Canada	14.3%	1	-11.1%	З	-1.6%	1	21.0%	2
United States	27.1%	9	19.9%	8	34.6%	12	39.9%	13
Europe								
France	25.3%	6	-69.8%	1	15.8%	з	32.9%	10
Germany	28.4%	10	31.8%	11	30.8%	10	31.2%	8
Italy ⁵	33.8%	13	45.7%	13	43.1%	14	49.9%	14
Netherlands	22.0%	5	-14.0%	2	20.6%	6	24.9%	Б
United Kingdom	19.4%	4	7.5%	5	21.1%	7	22.9%	3
Asia Pacific								
Australia	25.6%	7	0.3%	4	17.8%	4	29.1%	7
Japan ⁶	30.4%	12	34.0%	12	31.0%	11	38.2%	12
HIGH GROWTH MARKETS								
Brazil	34.1%	14	51.1%	14	36.5%	13	34.2%	11
China	17.6%	2	9.5%	6	11.5%	2	24.2%	4
India	28.5%	11	23.1%	9	29.0%	9	29.1%	6
Mexico	26.9%	8	29.2%	10	28.1%	8	31.8%	9
Russia	18.3%	3	19.6%	7	19.3%	Б	19.3%	1

Net of government grants and incentives.

2 Average for 12 manufacturing operations included in the overall results. (Refer Exhibit 1.3.)

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

4 Average for two operations included in the overall results. (Refer Exhibit 1.3.)

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

6 For Japan, results for the manufacturing, R&D, and digital sectors are not meaningful due to marginal average profitability in certain industries. Results have been shown for specific industries reporting the highest net income before tax in each sector (and therefore the most "normalized" income tax calculation).

4. Corporate Services

For general corporate services operations, the lowest effective income tax rates are offered by **Russia**, **Canada**, the **United Kingdom**, and **China**.

5. Further Tax Analysis

Taxes are the subject of a separate KPMG report, *Competitive Alternatives Special Report: Focus on Tax*, that analyzes international tax issues in greater depth than this report on business costs. The *Focus on Tax* report is expected to be available as of June 2012 at

www.CompetitveAlternatives.com, along with all other study results and publications.

6. 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 focus of the preceding chapters is a detailed comparison of business costs across all study locations. While business cost comparisons are one important aspect of any site selection process, a wide variety of other factors also influence the competitiveness of different locations. Exhibit 6.1 illustrates a range of major factors that commonly influence the site location decision.

This chapter presents comparative information on a variety of other competitiveness factors, but does not attempt to draw any overall conclusions regarding the "total competitiveness" of each location. The relative importance of cost and non-cost factors will vary by firm—even for similar firms in the same industry—and will likely differ depending upon whether a firm is considering locations in mature markets or in high growth markets. Therefore, the results and ratings detailed in this chapter need to be interpreted by individual companies in relation to their specific needs.

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

EXHIBIT 6.1					
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			

A. Relative Importance of Site Selection Factors

Exhibits 6.2 and 6.3 compare business-related and quality of life site selection factors most frequently cited as "important" by business executives in *Area Development Magazine's* US Annual Corporate Surveys from 2011 and 2009. These exhibits show some significant changes and some similarities in the ranking of these site selection factors between 2011 and previous years:

- Highway availability and labor costs continue to be the top ranked considerations of US executives.
- Tax exemptions, ranked as 3rd most important in the 2009 and 2010 surveys, dropped to 8th place in 2011, close to its 10th-place ranking in 2007. This shift likely reflects a diminished ability of US states to offer tax exemptions as they grapple with budget cutbacks. This phenomenon is also being experienced by some international jurisdictions, especially in Europe, as they deal with diminished government revenues and ongoing deficit and debt problems.
- Availability of skilled labor, ranked 6th and 7th in 2009 and 2010, is now tied for 2nd in 2011, indicating an increased focus on business operational considerations and growing concerns about accessing skilled talent as labor markets gradually strengthen again following the 2009 recession.
- Proximity to major markets, ranked 15th and 17th in 2009 and 2010, has moved up to become the 9th most important factor in 2011, likely reflecting the effects of increasing energy and transportation costs.
- The availability of advanced ICT services has dropped from 9th in 2009 to 13th in 2011, likely reflecting the growing ubiquity of such services, even in smaller cities.
- Rankings for the quality of life site selection factors tend to be more stable than those for the business-related factors.

Exhibits 6.2 and 6.3 also identify which cost-related factors are included in the cost analysis in this report, and which non-cost competitiveness factors are discussed in this chapter.

EXHIBIT 6.2

Site Selection Factors, by Indicated Frequency of Importance¹

Factors	Percenta Respondents Important	Analyzed in Competitive Alternatives Chapter		
	2011	2009	Ch 5	Ch 6
				,
Highway accessibility	93.8 (1)	92.9 (2)		N
Labor costs	88.4 (2)	96.7 (1)	V	
Availability of skilled labor	88.4 (2)	86.9 (6)		\checkmark
Corporate tax rate	86.0 (4)	87.0 (5)	V	
Occupancy or construction costs	85.9 (5)	86.7 (7)	V	
State and local incentives	85.9 (5)	84.9 (8)	$\sqrt{2}$	
Energy availability and costs	84.8 (7)	88.0 (4)	V	
Tax exemptions	83.6 (8)	88.4 (3)	$\sqrt{2}$	
Proximity to major markets	83.0 (9)	73.3 (15)		
Low union profile	81.0 (10)	75.8 (11)		
Inbound/outbound shipping costs	79.2 (11)	81.7 (10)	\checkmark	
Right-to-work state	77.5 (12)	74.0 (14)		
Availability of advanced ICT services	76.6 (13)	83.2 (9)		
Environmental regulations	76.4 (14)	71.2 (17)		\checkmark
Available buildings	76.3 (15)	75.7 (12)	$\sqrt{3}$	
Available land	73.9 (16)	75.7 (12)	√3	
Expedited or "fast-track" permitting	72.4 (17)	72.2 (16)		
Availability of long-term financing	70.0 (18)	65.4 (18)		
Proximity to suppliers	67.8 (19)	63.9 (19)		

1 Area Development, 2011 and 2009 Corporate Surveys. Factors considered by more than 60% of total respondents in either year to be either "very important" or "important."

2 All significant non-discretionary incentives and exemptions have been incorporated in the tax calculations and overall results for this study. Refer also to Chapter 1 for discussion of incentives methodology.

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

EXHIBIT 6.3

Factors	Percent Respondent Importan	Analyzed in <i>Competitive</i> <i>Alternatives</i> Chapter	
	2011	2009	Ch 6
Low crime rate	82.0 (1)	79.0 (1)	V
Healthcare facilities	71.0 (2)	68.4 (2)	V
Housing costs	69.9 (3)	61.5 (4)	V
Ratings of public schools	68.8 (4)	61.4 (5)	V
Housing availability	64.1 (5)	62.4 (3)	V
Colleges and universities in area	56.6 (6)	50.7 (8)	V
Recreational opportunities	53.2 (7)	52.7 (7)	
Climate	52.2 (8)	55.0 (6)	
Cultural opportunities	42.8 (9)	46.0 (9)	

Quality of Life Factors, by Indicated Frequency of Importance

1 Area Development, 2011 and 2009 Corporate Surveys. Percentage of total respondents who consider a factor to be either "very important" or "important."

B. General Business Environment

1. Overall Competitiveness

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 economic, institutional, and social factors in order to produce overall competitiveness indices by country. These two indices reflect somewhat different perspectives on international competitiveness, but are also similar in many ways. Exhibit 6.4 presents the 2011 results for the 14 countries covered in this study, along with their individual and combined rankings.

Among the 14 economies analyzed in this report, the United States, followed by Germany, Canada, and the Netherlands, offer the most broadly competitive business environments. Among high growth markets, China leads the way—being the only country to outrank a mature country (Italy) in the GCI, and, in the WCY, ranking ahead of the UK, Japan, France, and Italy. In the WCY, India and Mexico also outrank Italy.

EXHIBIT 6.4

Indices of Overall Economic Competitiveness, 2011

Country	GCI Score ¹	Rank	WCY Score ²	Rank	Combined Rank
MATURE					
Australia	5.11	8	89.26	з	5
Canada	5.33	6	90.78	2	3
France	5.14	7	71.39	9	9
Germany	5.41	2	87.82	4	2
Italy	4.43	10	62.75	12	10
Japan	5.40	4	75.21	8	6
Netherlands	5.41	3	85.71	5	3
United Kingdom	5.39	5	80.28	7	6
United States	5.43	1	100.00	1	1
HIGH GROWTH					
Brazil	4.32	11	61.04	13	12
China	4.90	9	81.10	6	8
India	4.30	12	70.65	10	10
Mexico	4.29	13	64.03	11	12
Russia	4.21	14	58.38	14	14

1 Global Competitiveness Index (GCI) by the World Economic Forum, Switzerland 2011.

2 World Competitiveness Yearbook (WCY) copyright © 2011, IMD International, Switzerland, World Competitiveness Center, www.imd.ch/wcc.

2. Positions in the Global Economy

The 14 economies included in this study play a major role in global production, trade, and financial flows. As shown in Exhibit 6.5, in 2010 these 14 countries accounted for 73 percent of the world's GDP and 56 percent of exports, and, in the 2008-2010 period, accounted for 51 percent of foreign direct investment (FDI) inflows and 66 percent of FDI outflows.

Exhibit 6.5 also illustrates how the high growth countries have increased their share of the global economy. The five high growth countries featured in this report generated more than 19 percent of the world's GDP in 2010, up from 10 percent in 2000. In 2010, China overtook Japan as the world's second largest economy, in terms of GDP, and now ranks behind only the United States. China is also now the world's leading exporter, having surpassed Canada, the UK, France, Japan, Germany and the US in the last decade.

The high growth economies also account for an increasing share of global investment flows. The sluggish recovery and continuing financial instability in the mature economies has further enhanced the attractiveness of the high growth markets as investment destinations in recent years. The share of global FDI flows into the five high growth countries examined has increased from 11.8 percent in 2005-07 to 17.8 percent in 2008-2010. Over the same period, the mature economies studied have seen their share of global FDI inflows decline from 46.8 percent to 33.5 percent. The United States, Australia, and Japan are the only mature countries to have seen an increased share in global FDI inflows between these two time periods.

With the strength of their domestic economies growing, the high growth economies have also increased their levels of outward FDI, from 5.2 percent of global outward FDI in 2005-07 to 9.6 percent in 2008-10. This change is driven primarily by strong growth in outward FDI from China and Russia.

EXHIBIT 6.5

Positions in the Global	Economy											
Country	Share of	World G	DP ¹	Share of W	/orld Exp	orts ²	Share of Wo	orld FDI, li	nflows ³	Share o Ou	of World F Itflows ³	DI,
	2000	2010	Papk	2000	2010	Papk	2005-	2008-	Pank	2005-	2008-	Pank
	2000	2010	папк	2000	2010	nank	2007	2010	папк	2007	2010	панк
MATURE												
Australia	1.2	2.0	12	1.0	1.4	13	1.2	2.5	7	0.2	1.7	11
Canada	2.3	2.5	10	4.3	2.5	10	4.5	2.4	9	2.9	3.6	7
France	4.1	4.1	5	5.1	3.4	6	5.7	3.2	5	8.7	7.8	2
Germany	5.9	5.2	4	8.5	8.3	3	4.2	2.1	10	8.2	5.9	3
Italy	3.4	3.3	8	3.7	2.9	7	2.3	0.4	14	3.9	2.5	10
Japan	14.5	8.7	3	7.4	5.1	4	0.4	0.8	12	3.8	5.9	4
Netherlands	1.2	1.2	14	3.6	3.8	5	3.9	0.5	13	5.6	2.9	9
United Kingdom	4.6	3.6	6	4.4	2.7	8	12.0	5.0	3	9.8	4.9	5
United States	30.9	23.1	1	12.1	8.4	2	12.6	16.5	1	14.2	20.9	1
9 mature economies	68.1	53.6		50.2	38.5		46.8	33.5		57.5	56.1	
HIGH GROWTH												
Brazil	2.0	3.3	7	0.9	1.3	14	1.6	2.9	6	0.8	0.5	14
China	3.7	9.3	2	3.9	10.4	1	5.2	7.4	2	1.3	4.0	6
India	1.5	2.6	9	0.7	1.4	12	1.2	2.5	8	0.8	1.1	12
Mexico	2.1	1.6	13	2.6	2.0	11	1.7	1.4	11	0.5	0.5	13
Russia	0.8	2.4	11	1.6	2.6	9	2.2	3.7	4	1.8	3.4	8
5 high-growth economies	10.1	19.3		9.6	17.7		11.8	17.8		5.2	9.6	
All 14 economies	78.2	72.9		59.8	56.2		58.6	51.4		62.6	65.6	

1 Current prices. World Economic Outlook Database, IMF, September 2011.

2 Current prices. Exports and imports of merchandise and services, total merchandise trade, exports. UNCTAD

3 FDI/TNC database, UNCTAD. Refer to Appendix C for full details on sources.

3. Macro-Economic Conditions

Exhibit 6.6 illustrates several key indicators related to macro-economic conditions for each country over the past decade.

Despite the significant size of their economies and rapid economic growth, the average per capita GDP in the high growth countries covered in this report is still well below that of the mature countries. For example, GDP per capita in Russia is the highest among the five high growth countries, yet is only 53 percent of Italy's GDP per capita, which is the lowest among the mature economies.

GDP growth rates in three of the high growth countries–China, India, and Brazil– have been much higher than in the other countries studied. In China, GDP grew at an average annual rate of 9.6 percent between 2008 and 2011, while India grew at an annual rate of 7.6, and Brazil at 3.7 percent over the same period. Average growth rates have been lower in Russia (1.4 percent) and Mexico (1.1 percent), due in part to the impact of the 2009 recession in North America and Europe on the energy exports of these two countries. However, annual GDP growth was back above 4 percent in both 2010 and 2011, in both Russia and Mexico.

Among the mature countries, Australia has had the strongest GDP growth in recent years, with an annual average increase of 2.1 percent between 2008 and 2011, including positive growth in 2009 when all other mature countries experienced sharp contractions. Subsequent to the 2009 recession, Germany's recovery has been relatively strong, with GDP growth of 3.6 percent in 2010 and 3.0 percent in 2011. Japan's GDP grew by 4.4 percent in 2010, but contracted by 0.9 percent in 2011 in the aftermath of the Fukushima earthquake.

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

Price stability (inflation) is another concern, particularly in some high growth countries. With the exception of Mexico's 3.4 percent inflation rate in 2011, inflation rates in the other four high growth countries ranged from 5.4 percent in China to 8.9 percent in India in 2011. In the mature market economies, inflation rates have been in the range of 2.1 percent to 3.4 percent, with the notable exceptions of the UK (4.5 percent) and Japan (-0.3 percent).

EXHIBIT 6.6

Key Macro-Economic Indicators										
Country			GDP Grov	vth Rate ¹						
	2000-2007 average	2008	2009	2010	2011	2008-2011 average	2008-2011 Avg Rank	GDP/ Capita (US\$, PPP)2	Rank	Inflation Rate ³ 2011
MATURE										
Australia	3.4	2.6	1.4	2.7	1.8	2.1	4	39,764	3	3.4
Canada	2.9	0.7	-2.8	3.2	2.3	0.9	7	39,171	4	2.9
France	2.1	-0.2	-2.6	1.4	1.6	0.0	11	33,910	7	2.1
Germany	1.7	0.8	-5.1	3.6	3.0	0.6	8	36,081	5	2.3
Italy	1.5	-1.3	-5.2	1.5	0.4	-1.2	14	29,480	9	2.8
Japan	1.7	-1.2	-6.3	4.4	-0.9	-1.0	13	33,885	8	-0.3
Netherlands	2.2	1.8	-3.5	1.6	1.6	0.4	9	40,973	2	2.3
United Kingdom	2.7	-0.1	-4.9	2.1	0.9	-0.5	12	35,059	6	4.5
United States	2.6	-0.3	-3.5	3.0	1.8	0.3	10	46,860	1	3.2
HIGH GROWTH										
Brazil	3.5	5.2	-0.6	7.5	2.9	3.7	3	11,273	12	6.6
China	10.5	9.6	9.2	10.4	9.2	9.6	1	7,544	13	5.4
India	7.2	6.2	6.8	9.9	7.4	7.6	2	3,408	14	8.9
Mexico	2.8	1.2	-6.2	5.4	4.1	1.1	6	14,406	11	3.4
Russia	7.2	5.2	-7.8	4.0	4.1	1.4	5	15,612	10	8.4

1 World Economic Outlook Database, IMF, September 2011 and January 2012 update. Reporting annual GDP growth rates.

2 World Economic Outlook Database, IMF, September 2011.

3 Consumer Prices (MEI), OECD.

The initial response of many countries to the 2008-09 financial crisis was to undertake further borrowing to stimulate economic activity. (On the other hand, Mexico moved quickly to introduce tax increases in 2010 to address the issue of declining government revenues.) As illustrated in Exhibit 6.7, government debt burdens have increased sharply in all of the mature economies since 2007. With the exception of Australia, high debt loads are now a cause for concern in all mature countries.

Amidst the concerns about the worsening economic outlook and the ability to handle high levels of public debt, the credit ratings of France, Italy, Japan and the United States have all been downgraded in 2011 and/or early 2012. Following its downgrade in January 2012, Italy's credit rating is now only one level higher than that of Brazil, Mexico and Russia. In contrast, the credit rating of China was upgraded in December 2010, and is now higher than Italy and is at the same level as Japan. Brazil also received a rating upgrade in November 2011.

Compared to the mature economies, public debt in the high growth economies generally represents a relatively smaller share of GDP and in most cases has remained relatively stable in recent years. India has actually decreased its ratio of debt to GDP by nine percentage points since 2007, in part due to its strong economic growth.

Although China has a relatively low debt to GDP ratio, its 2008-09 stimulus package extended substantial loans to local governments. While some concerns have been expressed about local governments' ability to repay these loans, China's very high national savings rate and strong current account surplus provides it with financial flexibility to help tackle debt issues that may emerge.

EXHIBIT 6.7

Key National Finance Indicators

Country	Gross Government Debt as % GDP1		Credit Rating ²	Gross National Savings as % GDP1		Current Account Balance as % GDP1		
	2007	2010	Rank	2012	2010	Rank	2010	Rank
MATURE								
Australia	9.6	20.5	2	AAA	24.9	5	-2.7	10
Canada	66.5	84.0	10	AAA	19.1	9	-3.1	11
France	64.2	82.3	9	AA+	18.6	10	-1.7	7
Germany	65.0	84.0	11	AAA	23.0	8	5.7	2
Italy	103.6	119.0	13	BBB+	16.9	12	-3.3	14
Japan	187.7	220.0	14	AA-	23.8	7	3.6	5
Netherlands	45.3	63.7	5	AAA	25.8	3	7.1	1
United Kingdom	43.9	75.5	8	AAA	11.8	14	-3.2	12
United States	62.3	94.4	12	AA+	12.5	13	-3.2	13
HIGH GROWTH								
Brazil	65.2	66.8	7	BBB	17.0	11	-2.3	8
China	19.6	33.8	3	AA-	53.4	1	5.2	З
India	72.7	64.1	6	BBB-	34.2	2	-2.6	9
Mexico	37.8	42.9	4	BBB	24.4	6	-0.5	6
Russia	8.5	11.7	1	BBB	25.1	4	4.8	4

1 World Economic Outlook Database, IMF, September 2011. Reporting data as % of GDP.

2 Standard and Poor's. January 2012.

4. Government Stability and Institutional Effectiveness

While concerns regarding government stability and institutional effectiveness have traditionally been most prevalent in emerging countries, in recent years mature countries have also come under the spotlight in this regard-from deficit-reduction gridlock in Washington to a recent change in government leadership in Rome.

Exhibit 6.8 compares four measures of government stability and institutional effectiveness. Among the 14 study countries, Canada, Australia, and the Netherlands are seen as countries with the highest levels of government effectiveness, the strongest rule of law, and the lowest levels of corruption. These three countries also all scored high rankings in terms of the adaptability of government policy to economic change.

The high growth countries consistently rank below the mature countries in three areas-government effectiveness, rule of law, and corruption. Among the high growth countries, Brazil receives the highest ranking in the rule of law and corruption categories, while Mexico is the highest ranking in the government effectiveness category. Russia's performance is viewed as being the weakest among all 14 countries across each of these three indicators.

The mature and high growth country results are mixed with respect to policy adaptability to economic change. For this indicator, business executives in France, Italy, and Japan are most negative about the adaptability of government policy to economic change, while business executives give China the highest rating for its ability to adapt government policy favorably to economic change. Business executives also rate the Indian government relatively well in this regard, resulting in India ranking fifth among the 14 countries on this measure. These rankings likely reflect reforms undertaken by the high growth countries over the last decade to further strengthen a range of market institutions and promote economic growth.

EXHIBIT 6.8

Country	Government Effectiveness ¹ Rank		Policy Ada to Econ Chan	ptability omic ge ² Rank	Rule o	of Law ¹ Rank	Corruption ³				
MATURE											
Australia	8.6	2	5.8	2	8.5	3	8.7	3			
Canada	8.7	1	5.7	3	8.6	2	8.9	1			
France	7.9	6	3.2	12	8.0	7	6.8	8			
Germany	8.1	5	4.5	9	8.3	5	7.9	4			
Italy	6.0	9	2.1	13	5.8	9	3.9	9			
Japan	7.8	8	2.1	14	7.6	8	7.8	5			
Netherlands	8.5	3	5.2	4	8.6	1	8.8	2			
United Kingdom	8.1	4	5.1	6	8.5	3	7.6	6			
United States	7.9	6	4.9	7	8.2	6	7.1	7			
HIGH GROWTH											
Brazil	5.1	12	4.8	8	5.0	10	3.7	10			
China	5.2	11	6.3	1	4.3	12	3.5	11			
India	5.0	13	5.1	5	4.9	11	3.3	12			
Mexico	5.3	10	3.5	10	3.9	13	3.1	13			
Russia	4.2	14	3.3	11	3.4	14	2.1	14			

1 World Governance Indicators, World Bank, 2010. Rescaled to scale of 0 to 10 where 0=low and 10=high. See Appendix C for details.

2 Scale of 0 to 10 where 0=low and 10=high. World Competitiveness Yearbook (WCY) copyright © 2011, IMD International, Switzerland, World Competitiveness Center, www.imd.ch/wcc.

3 Scale of 0 to 10 where 0 = highly corrupt and 10 = highly clean. Transparency International, 2010. Refer to Appendix C for full details on sources.

C. Labor Markets

1. Labor Force Activity

Exhibit 6.9 provides labor force participation and unemployment data for the 14 countries.

Employment and unemployment rates are key indicators of the health of a country's labor market and overall economy. In the mature countries, unemployment rates in 2011 ranged from 4.2 percent in the Netherlands (Q2 2011) to 9.1 percent in the United States (Q3 2011).

Following the 2008-09 financial crisis, the subsequent economic recovery has not yet resulted in a return to pre-recession employment levels in the mature countries. As a result, long term unemployment has risen in these countries. In 2010, nearly half of all the unemployed in Germany and Italy had been out of work for one year or more. The incidence of long term unemployment (expressed as a percent of total unemployment) is lowest in Canada and Australia.

Long term unemployment is particularly worrisome, as prolonged periods of unemployment both erode human capital and discourage unemployed workers.

Youth unemployment rates (among workers under the age of 25) have also risen sharply in the mature countries, with 27.8 percent of Italian youth and 22.5 percent of French youth being out of work in 2010. The rates of youth unemployment in the United Kingdom and the United States are also high, at nearly 20 percent. Meanwhile, the Netherlands has the lowest rates of both unemployment and youth unemployment among the mature economies studied.

Unemployment rates only tell one part of the labor market story, and should be interpreted within the broader context of economic activity (participation) rates. 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. Individuals can be inactive for a variety of reasons, but low activity rates can be symptomatic of sluggish labor markets that reduce the incentive for people to look for work. Among the mature economies, Canada has the highest economic activity rate, at 66.6 percent, more than 18 percentage points higher than Italy, the lowest ranked country.

Exhibit 6.9 also presents the economic activity and unemployment rates for high growth economies. This data should be interpreted with caution, due to relatively large informal labor markets that exist in these countries and the high prevalence of underemployment. These issues make the accurate measurement of employment and unemployment more challenging in the high growth countries. Based on the available data, China reports the highest economic activity rate, and the lowest unemployment rate, among all countries in the study.

Detailed data on economic activity rates and unemployment rates for featured cities in the mature countries are provided in Appendix C.

EXHIBIT 6.9

Labor Force Size and	ACTIVITY							
Country	Economic Activity (Participation) Rate ¹	Total Rank	Unemployment Rate ²	Total Rank	Incidence of Long- Term Unemployment ^{1,3}	Rank	Youth Unemployment Rate ^{1,4}	Rank
MATURE								
Australia	65.5	4	4.9	4	18.5	2	11.5	4
Canada	66.6	3	7.4	9	12.0	1	14.8	5
France	56.4	12	8.7	12	40.1	7	22.5	8
Germany	59.6	11	5.9	6	47.4	8	9.7	З
Italy	48.3	14	7.8	10	48.5	9	27.8	9
Japan	60.4	10	4.7	З	37.6	6	9.2	2
Netherlands	64.8	Б	4.2	2	27.6	3	8.7	1
United Kingdom	61.9	8	7.8	10	32.6	5	19.1	7
United States	63.7	6	9.1	13	29.0	4	18.4	6
HIGH GROWTH								
Brazil	69.9	2	6.3	7	n/a		n/a	
China	74.2	1	4.1	1	n/a		n/a	
India	55.6	13	n/a	n/a	n/a		n/a	
Mexico	61.7	9	5.2	5	n/a		n/a	
Russia	62.7	7	6.6	8	n/a		n/a	

1 KILM database, 7th edition, ILO. Reporting 2010 data.

2 Labour Force Statistics (MEI), OECD. Reporting data for Quarter 2, 2011 (Quarter 1, 2011 for Brazil, Quarter 3, 2011 for Canada and US). World Economic Outlook database, IMF, reporting 2010 annual average rate for China.

3 As percentage of total unemployment.

4 Unemployment rate among labor force participants aged 15-24 years

2. Population Demographics

Exhibit 6.10 provides an overview of key population demographics in each of the study countries.

With an aging population and the large "baby boomer" generation beginning to retire, future labor supply is an issue in most mature economies. Unless these countries increase their fertility and/or immigration rates in the near future, the pool of available labor is expected to diminish in the coming decades. By 2030, the median age in all mature economies (except the US) is projected to be more than 40 years of age, with Japan having a median age of 51 years, and both Germany and Italy having a median age in excess of 48 years. As a result, the ratio of elderly to the working age population ("old-age dependency ratio") is also expected to rise, placing an additional burden on the working age population and increasing existing pressures on healthcare and social services.

Germany, Italy and Japan face the most immediate challenges in terms of aging population. The populations of Germany and Japan are already shrinking, with Italy expected to follow suit by 2020. By 2030 in Japan, Germany and Italy, there will be only two workers to support each pensioner, compared to three workers today. Among the mature countries, the current and projected balances between the elderly and the working-age population are most favorable in Australia and the US. With the exception of Russia, the high growth countries examined in this report currently have relatively low median ages and old-age dependency ratios. Russia's demographic profile is closer to that of the mature economies, with a relatively high median age and old-age dependency ratio, as well as a declining population. Median ages in China and Brazil are expected to increase more rapidly in the future than in India and Mexico. By 2030, China and Brazil are projected to approximately double their old age-dependency ratios, and the median age in China is expected to exceed that of several mature economies. While Brazil's median age will increase rapidly, by 2030 it will still be lower than that of any of the mature countries.

EXHIBIT 6.10

Some countries exhibit significant regional variations in age profiles. For example, the old age dependency ratios of the states of Alaska and Utah in the United States, at 10 and 14 percent respectively, are similar to those of the high growth countries. On the other hand, the proportion of the elderly to the working age population in the Chinese provinces of Sichuan and Shanghai, at 17 and 18 percent respectively, are close to the 20 percent ratio currently seen in both Australia and Canada.

A table providing detailed data by region for this topic can be found in Appendix C.

The sector operation crowthand Ager tomes										
Country	Projected Population Growth Rate		2025-	Median Age		2030 Rank	Old Depen Rat	Age idency tio ²	2030 Rank	
	2010-15	2025-30	Rank	2010	2030		2010	2030		
MATURE										
Australia	1.33	0.88	1	36.9	40.0	5	20	31	6	
Canada	0.92	0.65	5	39.9	43.2	9	20	38	9	
France	0.51	0.37	8	39.9	42.4	7	26	39	10	
Germany	-0.20	-0.22	12	44.3	48.8	12	31	48	13	
Italy	0.23	-0.09	11	43.2	49.7	13	31	44	12	
Japan	-0.07	-0.42	14	44.7	51.4	14	35	53	14	
Netherlands	0.28	0.13	9	40.7	44.3	11	23	41	11	
United Kingdom	0.60	0.50	6	39.8	41.3	6	25	34	8	
United States	0.85	0.67	3	36.9	39.1	4	20	33	7	
HIGH GROWTH										
Brazil	0.84	0.39	7	29.1	37.4	3	10	20	З	
China	0.42	-0.03	10	34.5	42.5	8	11	24	4	
India	1.32	0.87	2	25.1	31.2	1	8	12	1	
Mexico	1.14	0.66	4	26.6	34.2	2	10	17	2	
Russia	-0.10	-0.38	13	37.9	43.3	10	18	29	5	

1 World Population Prospects: The 2010 Revision, United Nations Secretariat.

piected Population Growth and Age Profiles¹

2 65+ population as % of population 15-64 year-old population

Urbanization is another indicator of potential labor supply. As seen in Exhibit 6.11, the mature economies, together with Mexico, Brazil and Russia, are all highly urbanized, with at least two thirds of the population living in urban areas.

In contrast, less than a half of China's population lives in urban areas, even though the proportion of urban dwellers in China has almost doubled since 1990. China's large influx of rural labor into the major cities has created a large pool of migrant workers, which in turn is creating challenges related to healthcare, education, and housing.

India is by far the least urbanized among the countries analyzed in this study, with only 30 percent of its population being urban based, and with a pace of urbanization much slower than in China over the last two decades. The dispersion of a large population across rural areas, typically with poor infrastructure, makes it challenging to access and train these workers.

While China's and India's urban areas are growing faster than in the other countries studied, the urbanization will need to be accompanied by a significant investment in physical and social infrastructure of the cities. According to the World Bank, nearly half of the urban populations in both China and India currently lack access to improved sanitation.

Brazil, Mexico and Russia had already experienced significant urbanization prior to 1990, and their urban populations have much greater access to improved sanitation facilities than in China and India. Developing a robust urban infrastructure is still a challenge in Mexico and Brazil, where poverty and lower health and education outcomes have become entrenched among some sectors of the urban populations.

EXHIBIT 6.11

Urbanization Indicators

Country	Ροι	Urban oulation,	%1	Urban An Annual Gr Rate, %	reas owth 62	Urban Population Density per	Improved
	1990	2010	Total Rank	2010-2015	Total Rank	Km2 ³	Sanitation Access, % ⁴
MATURE							
Australia	85.4	89.1	1	1.2	5	2,000	100
Canada	76.6	80.6	6	1.1	7	2,500	100
France	74.1	85.3	3	1.0	8	3,400	100
Germany	73.1	73.9	9	0.0	13	3,500	100
Italy	66.7	68.4	11	0.5	11	3,200	n/a
Japan	63.1	66.8	12	0.2	12	5,300	100
Netherlands	68.7	82.9	4	0.8	9	2,500	100
United Kingdom	78.1	79.6	7	0.7	10	5,100	100
United States	75.3	82.3	5	1.2	4	2,400	100
HIGH GROWTH							
Brazil	73.9	86.5	2	1.1	6	7,000	87
China	26.4	47.0	13	2.3	2	6,400	58
India	25.6	30.0	14	2.4	1	27,100	54
Mexico	71.4	77.8	8	1.2	3	9,700	90
Russia	73.4	73.2	10	-0.2	14	3,800	93

1 Human Development Index, United Nations, 2010. Urban population as % of total population.

2 World Urbanization Prospects, United Nations, 2009.

3 World Urban Areas (World Agglomerations), Demographia, 2011. Data for each country represent the highest-density metro area among the cities featured in this study.

4 Urban Development Indicators, World Bank, Reporting % of urban population with access to improved sanitation facilities as at 2008.

Refer to Appendix C for full details on sources.

High population density in the high growth cities further adds to the challenge of providing adequate housing, transportation, healthcare, and education. Indian cities are particularly densely populated. The two Indian cities studied have population densities of 12,500 persons per square kilometer in Chennai (32,000 persons per square mile) and 27,100 persons per square kilometer in Mumbai (69,500 persons per square mile). Such high density cities are common in India, where 45 major cities have population densities equal to or greater than Chennai—far higher than any of the other major cities included in this study.

A table containing detailed urban density data for other cities in the study can be found in Appendix C.

3. Availability of Skilled Labor

The availability of skilled labor is consistently ranked by expanding and relocating firms as a leading site selection factor.

Despite most countries experiencing increased unemployment in the aftermath of the 2009 recession, as detailed in Exhibit 6.12, employers in many countries have been struggling to fill available positions due to a lack of skilled talent. This problem is particularly acute in Japan and India, where 80 and 67 percent of employers, respectively, report problems filling skilled job vacancies due to a lack of qualified candidates. More than half of surveyed employers in Australia, Brazil and the United States also report the same problem.

To better assess this issue, Exhibit 6.12 also presents a number of measures related to basic education (literacy and high school completion) and education expenditures, while Exhibit 6.13 details measures related to tertiary education (college/university degrees). For the measures of basic education and education expenditures:

- Universal literacy is a given in the mature countries, and also in Russia—the only high growth country in this study to have achieved universal literacy. While India has emerged as a global IT and call center hub, nearly 40 percent of its population is still illiterate.
- France and Italy lag the other mature countries in terms of high school completion, yet all mature countries outrank those emerging countries for which comparable data are available.
- High-school students from Shanghai outperformed all other countries' national results in the 2009 PISA test science skills. While these results are impressive, they are only for one highly urbanized area of China, and even some educators in Shanghai acknowledge that innovative critical thinking skills are lagging these test-oriented skills.

 The United States ranks first among the countries in terms of education expenditures and second in terms of high school completion, but has weaker results for education outcomes (PISA scores for high school science skills).
Canada and Japan generally rank well on both of these measures.

The shift towards a knowledge economy requires a well-educated labor force that is able to work with advanced technologies and adapt to innovative business processes. As a result, completion of some tertiary education has become the norm in the mature countries.

EXHIBIT 6.12

Skills Gap, Education Attainment and Outcomes, Education Expenditure

Country	Employer Difficulty in Filling Skilled Jobs %1	Rank	Literacy Rate %2	Secondary School Attainment %2	Rank	High School Science Skills (PISA Score) ³	Rank	Education Expendit. as % GDP ⁵	Rank	Expendit. per Student as % of GDP per Capita ⁶	Rank
MATURE											
Australia	54	10	n/a	73.4	4	527	4	5.2	8	22.9	11
Canada	29	5	n/a	79.6	3	529	3	6.0	2	28.0	З
France	20	3	n/a	55.7	8	498	9	6.0	3	27.9	4
Germany	40	7	n/a	97.2	1	520	6	4.8	11	24.5	9
Italy	29	5	98.8	46.7	9	489	10	4.8	10	27.5	5
Japan	80	13	n/a	71.9	5	539	2	4.9	9	28.5	2
Netherlands	17	2	n/a	67.4	6	522	5	5.6	6	25.0	8
United Kingdom	15	1	n/a	58.2	7	514	7	5.7	5	27.3	6
United States	52	9	n/a	89.7	2	502	8	7.2	1	31.8	1
HIGH GROWTH											
Brazil	57	11	90.0	21.9	13	405	13	5.3	7	22.0	12
China	24	4	93.7	38.4	11	575 ⁴	1	3.3	13	26.7	7
India	67	12	62.8	22.2	12	n/a	n/a	n/a	n/a	n/a	n/a
Mexico	42	8	92.9	40.3	10	416	12	5.8	4	18.2	13
Russia	n/a	n/a	99.5	n/a	n/a	478	11	4.7	12	23.8	10

1 The Talent Shortage Survey, Manpower Group, 2011.

2 Human Development Index, United Nations, 2010. Literacy rate: % of all population aged 15 and over who is literate. Reporting data for 2005-2008. Secondary School Attainment: % of all population aged 25 and over with at least secondary education. Reporting data for 2010 or earliest available.

3 Programme for International Student Assessment (PISA), 2009, science competencies, OECD.

4 Score for China reflects the results for students from Shanghai only.

5 Expenditure on all levels of education (primary and above), from public and private sources. 2008 or latest data available, OECD.

6 Expenditure on educational institutions per student for all services relative to GDP per capita. 2008 or latest data available, OECD. 2002 data for Canada.

Refer to Appendix C for full details on sources.

© 2012 KPMG LLP, a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity. All rights reserved

As detailed in Exhibit 6.13, Russia and Canada are the leaders in higher education attainment, with at least 50 percent of their labor forces being educated at the tertiary level. In Mexico, the proportion of workers with tertiary qualifications is similar to Italy, while only a small proportion of workers in each of Brazil, China, and India currently hold tertiary degrees.

All countries except the United Kingdom have seen an increase in the proportion of university/college students relative to the university-age population over the past decade. While most of the mature economies had moderate increases in the number of students graduating from universities between 1999 and 2009, the number of new graduates per year in Italy and Australia more than doubled over that 10-year timeframe. In comparison, Brazil more than tripled and China more than quadrupled their annual numbers of new graduates between 1999 and 2009. China is now granting nearly 8 million new degrees each year, a figure that far exceeds any other country.

Educational attainment rates at the regional level generally follow the national rates, although some variations exist in certain countries. Detailed data on educational attainment for featured cities in the mature economies are available in Appendix C.

EXHIBIT 6.13												
Tertiary Edu	Tertiary Education Indicators											
	Tertiary		Ter	tiary Educa Access, % ²	tion ?	Tertia Gra	Tertiary Education Graduates ²					
Country	Attain- ment %1	Rank	2009	1999- 2009 % Change	2009	1999- 2009 % Change	Rank					
MATURE												
Australia	37	5	76	15	2	306,901	102	11				
Canada	50	2	n/a	n/a	n/a	n/a	n/a	n/a				
France	29	8	55	2	8	621,444	25	7				
Germany	26	9	n/a	n/a	n/a	466,196	48	8				
Italy	15	11	66	39	4	400,021	110	10				
Japan	44	З	59	27	6	1,014,795	-9	4				
Netherlands	33	7	63	26	5	126,931	64	12				
United Kingdom	37	6	59	-2	7	674,411	42	6				
United States	41	4	89	22	1	2,881,557	39	2				
HIGH GROWTH												
Brazil	11	12	36	148	9	1,008,876	214	5				
China	5	13	24	261	11	7,716,957	335	1				
India	n/a	n/a	16	73	12	n/a	n/a	n/a				
Mexico	16	10	27	46	10	451,929	65	9				
Russia	54	1	76	48	3	2,064,473	73	3				

1 Percentage of 25-64 population with tertiary education, 2008, OECD.

2 Tertiary Education Access: Gross Enrolment Ratio, Tertiary Education. Reporting 1999 and 2009 data or earliest/latest available. UNESCO Institute of Statistics. Tertiary Education Graduates: Total tertiary graduates in all programs. Refer to Appendix C for full details on sources.

4. Labor Market Flexibility

Labor market flexibility is another area frequently indicated as important by expanding and relocating firms. Rapidly changing competitive pressures and economic conditions can necessitate swift action in order to remain competitive.

Exhibit 6.14 provides indicators of labor market flexibility within each country. Low union density rates are often considered to indicate a flexible labor market, but should be interpreted within the wider context of collective bargaining agreements. For example, in France, only 7.6 percent of workers were members of unions in 2008, yet 95 percent were covered by collective bargaining agreements.

Regulations governing other aspects of labor markets also affect labor flexibility. Employment protection legislation has an impact on the processes and costs involved in hiring and firing workers, as well as on employer practices in managing workers.

Among the mature economies, the United States generally ranks as having the most flexible labor market, according to the indicators presented in Exhibit 6.14. On the other hand, the continental European countries tend to have relatively low levels of labor market flexibility.

Among the high growth economies, China has the lowest overall collective bargaining coverage and the second lowest union density. However, there are significant regional differences and union density among urban workers is estimated to be over 50 percent.

Legislation protecting regular employees is considerably stronger in India and China than in the other high growth countries, particularly Brazil and Mexico. For temporary workers, Brazil, France and Mexico provide the highest level of legislative protection.

EXHIBIT 6.14

Labor Market Flexibility Indicators

	Union	Collective		Employer Flexibility Under Employment Protection Legislation ²					
Country	Density ¹	Bargai Cover	ning age ¹ Rank	Regular Employ- ment	Rank	Temporary Employ- ment	Rank		
MATURE									
Australia	18.0	60.0	8	1.37	4	0.79	4		
Canada	27.5	32.0	4	1.17	2	0.22	1		
France	7.6	95.0	13	2.60	9	3.75	12		
Germany	18.6	63.0	10	2.85	12	1.96	8		
Italy	35.1	80.0	11	1.69	6	2.54	10		
Japan	18.4	16.0	2	2.05	7	1.50	7		
Netherlands	19.4	82.0	12	2.73	10	1.42	6		
United Kingdom	26.5	35.0	5	1.17	2	0.29	2		
United States	11.4	13.0	1	0.56	1	0.33	3		
HIGH GROWTH									
Brazil	25.0	35.0	5	1.49	5	3.96	13		
China	18.2	22.3	3	3.31	13	2.21	9		
India	n/a	n/a		3.65	14	2.67	11		
Mexico	14.4	36.0	7	2.25	8	4.00	14		
Russia	34.0	62.0	9	2.79	11	0.79	4		

1 Percentage of total workforce, various sources. 2010 or latest available data. 2 Rating: 0 = most flexible, 6 =least flexible, OECD. Reporting 2008 data.

D. Innovation

A substantial share of global manufacturing and back-office operations have been captured by the high growth countries, reflecting the significant labor cost advantages offered by these countries.

To date, the high growth countries have tended to build on the technologies and practices initially developed in the mature economies, rather than undertaking the lengthy R&D processes associated with original product and technology design.

These general trends are borne out the innovation indicators contained in Exhibit 6.15, where the relative sciencerelated employment and R&D expenditures tend to be higher in the mature countries than in the higher growth countries.

As discussed elsewhere in this report, current rates of wage inflation in the high growth markets are significantly higher than in the mature markets, causing an erosion over time of the labor cost advantages offered by the high growth countries. As this trend continues, consumers in the high growth countries become more affluent, and levels of education continue to improve, the high growth economies are generally expected to focus more on original product and technology design.

As illustrated in Exhibit 6.15, there are some indications that China is already moving in this direction. In an international survey of business executive opinions, China is rated ahead of Canada, Italy, and Australia for the capacity of its companies to innovate. In addition, numerous large multinational companies have established R&D facilities in high growth countries in recent years, particularly in India and China.

While the indicators of innovation vary in different contexts, they include the existence of a highly educated labor force coupled with investments in R&D.

Exhibit 6.15 presents data on the following measures of the innovation workforce:

- Human resources in science and technology (HRST) is a broad international definition that includes all university and college graduates plus any other workers actually employed in science and technology occupations for which a degree would normally be required. Not all HRST workers are directly employed in occupations related to science and technology, but this definition views all tertiary graduates as assets in innovative societies. For example, the film industry employs large numbers of people trained in the arts, but is also driving major innovations in the field of digital imaging.
- Researchers (as a percentage of total employment) represents a narrower measure of the innovation workforce, counting only those who are actively involved in R&D.

EXHIBIT 6.15

Innovation Indicators

		S	cience Emplo		R&D Sper	Capacity for Innovation ³				
	HI	RST Workforce Total Employr	as % of nent		Researchers		B&D		Company	
Country	HRST Professionals	HRST Technicians	Total	Rank	per 1,000 Employment	Rank	Expendit. as % GDP	Rank	Level Innovation	Rank
MATURE										
Australia	21.4	14.7	36.1	3	8.4	5	2.2	4	4.0	10
Canada	21.3	14.3	35.5	4	8.6	4	1.9	6	4.1	8
France	14.3	19.2	33.5	7	8.9	3	2.1	5	5.1	4
Germany	15.3	22.1	37.4	2	7.7	7	2.8	2	5.7	2
Italy	10.1	20.8	30.9	8	4.1	10	1.3	10	4.0	9
Japan ²	10.9	3.9	14.9	11	10.4	1	3.3	1	5.8	1
Netherlands	20.3	18.0	38.3	1	5.4	9	1.8	8	5.0	5
United Kingdom	15.3	12.9	28.1	9	8.3	6	1.9	7	4.8	6
United States	17.1	18.1	35.2	5	9.5	2	2.7	3	5.2	3
HIGH GROWTH										
Brazil	6.7	7.7	14.4	12	1.3	12	1.0	12	3.8	11
China	5.8	5.8	11.6	13	1.5	11	1.7	9	4.2	7
India	4.3	2.8	7.2	14	0.2	14	0.7	13	3.6	12
Mexico	n/a	n/a	17.5	10	0.9	13	0.4	14	3.0	14
Russia	18.5	15.2	33.7	6	6.4	8	1.2	11	3.5	13

1 OECD, reporting 2010 or latest available data. HRST = Human resources in science and technology.

2 OECD notes that HRST workforce percentages for Japan are likely understated due to structural reporting issues.

3 Scale of 1 to 7 where 1=low and 7=high. Global Competitiveness Report by the World Economic Forum, 2011.

In most of the mature economies, HRST workers represent at least 30 percent of the total workforce, with the Netherlands and Germany leading on this measure. Japan is the leader in terms of the portion of its workforce consisting of researchers, followed by the US and France.

Exhibit 6.15 also compares each country's R&D expenditures as a percentage of GDP. In most cases there is a close correlation between R&D expenditures (as a percent of GDP) and researcher employment. The three top-ranked countries for R&D expenditures are Japan, Germany and the United States.

Among the high growth economies:

- Russia's indicators on innovation employment are generally similar to those of the mature economies, but its R&D spending is lower than in the mature economies and the business executive survey rates Russia's capacity to innovate as quite low.
- Brazil, Mexico, and India all score poorly across this range of innovation measures.

Within each country, R&D investments tend to be concentrated in research and innovation hubs, typically situated in close proximity to 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 6.16 identifies a number of regional and national jurisdictions with a particularly high level of R&D expenditure. While Japan is top-ranked at the national level, there are a number of US states that rank above the Japan national average (regional data for Japan are not available). The highly-ranked US states have strong reputations in defense (New Mexico, California, New Hampshire), life sciences (Maryland, Massachusetts, New Jersey), automotive (Michigan), and/or aerospace (Washington State, Connecticut). Apart from the United States, Exhibit 6.16 also identifies two regions in Germany, as well as one region in Canada and France, where R&D expenditures form a significant portion of GDP.

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

EXHIBIT 6.16

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

Rank	State/Region ²	Cities in This Study	R&D Expendit. as % GDP
1	New Mexico	Albuquerque	7.65
2	Maryland	Baltimore	5.90
3	Massachusetts	Boston	5.49
4	Connecticut	Hartford	5.01
5	Washington State	Seattle, Spokane	4.99
6	New Jersey	Trenton	4.28
7	California	Los Angeles, Riverside-San Bernardino, Sacramento, San Diego, San Francisco	4.25
7	New Hampshire	Manchester	4.25
9	Michigan	Detroit, Saginaw	4.13
	Japan national average ³	Osaka, Tokyo	3.33
10	Berlin	Berlin	3.31
11	lle de France	Paris	3.11
11	Darmstadt	Frankfurt	3.11
13	Alabama	Mobile, Montgomery	2.87
14	Virginia	North Virginia, Metro DC	2.85
15	Oregon	Portland, Salem	2.75
16	Delaware	Wilmington	2.72
17	Arizona	Phoenix	2.69
18	Quebec	Montreal, Quebec City, Trois-Rivières	2.61
19	Rhode Island	Providence	2.60
20	Minnesota	Minneapolis	2.55

1 Data represents 2009 or most recent available. Data has been collected from multiple sources, refer to Appendix C for further details.

2 European regions represent statistical regions 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 wide range of regulations impact on businesses, both in the countries where they operate and in the countries with which they trade. Exhibit 6.17 presents several indicators of the business regulatory environment, as discussed below.

Permitting for new facilities is an important aspect for expanding and relocating firms, with permitting delays having the potential to represent a major cost associated with establishing a new facility.

To assess this issue, Exhibit 6.17 includes a World Bank comparison of the number of days required to obtain all necessary permits for building a new warehouse. According to the World Bank, the permitting process for building a new warehouse in a mature country is fastest in the United States (26 days), followed by Canada (73 days), Germany (97 days), and the United Kingdom (99 days). The permitting process is estimated to take 258 days in Italy (almost 8.5 months).

Among the high growth countries, Mexico is the only country where permitting can be completed in a timeframe comparable to the leading mature countries (81 days). The permitting process takes longest in Brazil (469 days), Russia (423 days), and China (311 days). In India (227 days), permitting is estimated to be a month faster than in Italy.

Transparency of commercial real estate markets is another important consideration in investment and location decisions. Among the mature economies, Australia, Canada, the United Kingdom, and the United States lead in this regard, while Italy and Japan are rated as least transparent. Commercial real-estate markets are less transparent in the high growth economies, with Russia's commercial real estate market rated as most transparent among the high growth countries, and markets in Mexico and China rated as being least transparent.

The Market Access Index by the World Economic Forum ranks countries according to the extent to which the country's policy framework welcomes foreign goods and enables access to foreign markets for its exporters. Mexico receives the strongest score among all study countries on this index, likely due to its programs designed to facilitate cross-border manufacturing by US and international firms. Among the mature countries, Canada, Australia, and the United States are rated as having the most open markets. China also scores well on this measure, ranking fifth among the 14 countries. India, Japan, and Russia are the countries with the weakest scores on the market access index.

Finally, combining a number of regulatory measures, the World Bank's *Ease of Doing Business Index* provides an overall comparison of countries based on their business regulatory environments. The United States receives top ranking among all study countries, followed by the United Kingdom, Canada, and Australia. By this measure, Mexico and China represent the high growth countries that offer the greatest ease of doing business.

Indicators of Business Regulatory Environment											
Country	Days to Fi Permittin Wareho	inalize g for a use1	Commerci Estat Transpat Index	ial Real ce rency c ²	Market Inde	Access ex ³	Ease of Busir Rank	Doing tess ing4			
Country		Rank		Rank		Rank		Rank			
MATURE											
Australia	147	6	1.22	1	3.83	3	15	4			
Canada	73	2	1.23	2	3.15	2	13	З			
France	184	8	1.28	Б	4.25	9	29	7			
Germany	97	4	1.38	6	4.26	10	19	Б			
Italy	258	11	1.89	8	4.13	5	87	10			
Japan	193	9	2.30	9	4.80	13	20	6			
Netherlands	176	7	1.38	6	4.21	7	31	8			
United Kingdom	99	5	1.24	3	4.23	8	7	2			
United States	26	1	1.25	4	3.83	3	4	1			
HIGH GROWTH											
Brazil	469	14	2.95	11	4.28	11	126	13			
China	311	12	3.14	13	4.13	5	91	11			
India	227	10	3.11	12	4.58	12	132	14			
Mexico	81	3	3.14	13	3.10	1	53	9			
Russia	423	13	2.64	10	5.32	14	120	12			

1 World Bank 2012

EXHIBIT 6.17

2 Scale of 1 to 5 where 1=strong and 5=weak. La Salle Investment Management, 2010.

3 Original scale of 1 to 7 inverted so that 1=strong and 7=weak. The Global Enabling Trade Report, World

Economic Forum, Switzerland 2010.

4 Ranking among 183 countries, World Bank, 2012

2. Environmental Regulation

Environmental concerns and regulations have received increasing attention from policy makers, the general public, and businesses in recent years. Balancing environmental stewardship with regulation that does not stifle enterprise and economic growth is a growing challenge for governments in both mature and high growth economies. With environmental concerns becoming more prominent, companies are having to meet increasingly stringent regulatory requirements that are significantly increasing business costs in some areas. On the other hand, innovative energy-efficient solutions can help reduce business costs in some situations, while emerging "green" industries are opening new business opportunities.

Exhibit 6.18 compares the countries for:

- Their environmental public health and ecosystem vitality, as assessed in the Environmental Performance Index
- The degree to which each jurisdiction's environmental laws and regulations support or hinder competitiveness.

Exhibit 6.18 illustrates the generally inverse relationship between the two measures for the mature countries. France, Italy, and the United Kingdom achieve the highest scores among the mature countries (and among all study countries) for their environmental performance. At the same time, their environmental laws are ranked below average in terms of supporting business competitiveness. In comparison, environmental laws in Canada, Japan, and Australia are seen as most competitive, but these countries rank less well in terms of environmental performance.

Among the high growth countries, environmental performance tends to be lower than in mature countries, with only Brazil being rated ahead of any of the mature countries. China and India have notably lower environmental performance scores than the other study countries. The high growth countries are also assessed as being relatively weak in terms of environmental laws supporting competitiveness, with the exception of China which has a similar rating to some of the mature countries. China's prioritization of economic growth ahead of environmental performance has been well documented, and has led to significant issues in dealing with air and water pollution, among other environmental problems.

EXHIBIT 6.18

Indicators of Environmental Performance and Regulation

Country	Environmental	Pank	Environmental Laws and	Pank
MATURE	Ferformance index*	ndlik	Competitiveness	ndlik
Australia	56.6	9	68.9	3
Canada	58.4	8	70.5	1
France	69.0	1	62.8	7
Germany	66.9	4	64.7	4
Italy	68.9	2	57.9	9
Japan	63.4	6	69.7	2
Netherlands	65.7	5	64.0	6
United Kingdom	68.8	3	56.1	10
United States	56.6	10	64.2	5
HIGH GROWTH				
Brazil	60.9	7	46.9	14
China	42.2	13	62.6	8
India	36.2	14	55.7	11
Mexico	49.1	11	50.6	13
Russia	45.4	12	55.0	12

1 Yale Center for Environmental Law and Policy et. al., 2012. Environmental Performance Index: Scale of 0 to 100 where 0=low and 100=high.

2 Scale of 0 to 100 where 0=laws hinder competitiveness and 100=laws do not hinder competitiveness. World Competitiveness Yearbook (WCY) copyright © 2011, IMD International, Switzerland, World Competitiveness Center, www.imd.ch/wcc.

F. Energy Supply and Demand

A rising global demand for energy, coupled with high oil prices in recent years and concerns about finite supply of fossil fuels, pose a range of energy related challenges for governments, corporations, and individuals. Reflecting this issue, energy availability and costs remain among the toprated factors in the *Area Development Magazine* Corporate Survey.

While the mature countries are large consumers of energy, demand for energy has surged in the high growth countries over the past decade. China has overtaken the United States as the world's largest energy user, and its energy demand is expected to rise by 75 percent between 2008 and 2035. Global primary energy demand is expected to increase by 36 percent in the same period.

Given the current and future constraints on energy supply, both governments and businesses are increasingly searching for innovative ways to generate energy, reduce emissions, reduce dependence on external suppliers and fossil fuels, and to use energy more efficiently. Exhibit 6.19 compares the situation for each of the study countries with respect to energy consumption, selfsufficiency, and efficiency.

Only Australia and Canada are energy selfsufficient among the mature economies studied, with Mexico and Russia being the only self-sufficient high growth countries. These four countries all produce more energy than they need to meet their domestic needs and are net energy exporters. Brazil and China are close to selfsufficient, meeting more than 90 percent of their total energy demand.

Among the 14 study countries, Italy and Japan are by far the most dependent upon imports to meet their national energy needs, while India is more dependent on energy imports than any of the other high growth countries studied.

EXHIBIT 6.19

Energy Consumption, Self-Sufficiency and Efficiency¹

	Energy Cons	umption	Energy Self-S	ufficiency	Energy Efficiency		
Country	Total En Consumj mtoe	ergy otion 2 Rank	Producti Consump	on/ tion³ Rank	Consumption	n/ GDP4 Rank	
MATURE							
Australia	131	13	237	1	0.19	11	
Canada	254	8	153	3	0.25	13	
France	256	7	51	11	0.15	7	
Germany	319	6	40	12	0.14	4	
Italy	165	12	16	14	0.11	1	
Japan	472	5	20	13	0.14	з	
Netherlands	78	14	81	8	0.15	7	
United Kingdom	197	10	81	7	0.11	2	
United States	2,163	2	78	9	0.19	12	
HIGH GROWTH							
Brazil	240	9	96	5	0.15	5	
China	2,257	1	92	6	0.19	10	
India	676	3	74	10	0.15	6	
Mexico	175	11	126	4	0.16	9	
Russia	647	4	183	2	0.42	14	

1 International Energy Association. Reporting 2009 data.

2 Million tonnes of oil equivalent.

3 Equals domestic energy production as a % of total primary energy consumption.

4 Equals consumption, in million tonnes of oil equivalent, divided by GDP (\$ billion at PPP).

Refer to Appendix C for full details on sources.

There is generally an inverse correlation between energy self-sufficiency and efficiency of energy use. Countries that are most highly dependent on external energy supplies are among the most efficient users of energy, with Italy, the United Kingdom, Japan, Germany, Brazil, and India leading the way among the study countries. China's energy efficiency has improved dramatically in recent decades. In 1980, the intensity of China's energy use was 80 percent higher than the world average, whereas today it rates only slightly above the world average.

Russia uses the most energy per unit of GDP by a wide margin, both compared to the high growth and the mature countries. Other countries with abundant energy supplies also tend to use these resources less efficiently than others, with Canada and Australia being relatively inefficient in their energy use. The US is the one exception to this rule, being significantly dependent on external energy supplies, yet still being a relatively inefficient user of energy.

G. Infrastructure Quality

Infrastructure is a key determinant of a jurisdiction's business attractiveness, since it facilitates business operations and directly impacts productivity.

The proliferation of technology in all aspects of business operations has made highquality ICT (information and communications technology) infrastructure indispensable to business. At the same time, in a globalized economy where reaching domestic and international customers and suppliers is a necessity, efficient transportation and distribution networks remain vitally important. Indeed, highway accessibility was rated as the most important site selection factor in the *Area Development Magazine* 2011 Corporate Survey.

Exhibit 6.20 compares the quality of ICT and physical distribution infrastructure across the study countries, and identifies Germany as the leading country on both measures. These two factors do not follow the same trends for all countries. The United Kingdom ranks second for ICT infrastructure, but ranks seventh for physical distribution infrastructure, while Japan ranks second for physical distribution infrastructure, but eighth for ICT networks.

The infrastructure of the mature economies remains much more developed than in the high growth countries, although aging infrastructure is often cited as posing a threat to competitiveness for the mature countries. With public finances in the mature economies being tight, it may prove challenging for governments to fund necessary infrastructure upgrades.

In the high growth countries, the emphasis has been on building the new infrastructure to meet the demands of rapidly expanding economies, growing populations and fastpaced urbanization. China is the top rated high growth country for the quality of its physical distribution networks, ranking ahead of Italy, and reflecting its massive expansion of transportation infrastructure in recent years.

EXHIBIT 6.20

Indicators of Quality of Infrastructure

Country	ICT Development Index - Access ¹	Rank	Quality of Distribution Infrastructure ²	Rank
MATURE				
Australia	6.91	7	7.97	8
Canada	7.14	5	8.29	6
France	7.50	4	8.70	4
Germany	8.23	1	9.19	1
Italy	6.59	9	5.87	10
Japan	6.82	8	8.76	2
Netherlands	8.10	3	8.73	З
United Kingdom	8.18	2	8.11	7
United States	6.93	6	8.65	5
HIGH GROWTH				
Brazil	4.02	11	3.68	14
China	3.18	13	7.26	9
India	1.52	14	5.28	12
Mexico	3.27	12	5.77	11
Russia	5.98	10	4.83	13

1 Scale of 0 to 10 where 0 = low and 10 = high. Rescaled. Measuring The Information Society, ITU, 2011 (reporting 2010 data).

2 Scale of 0 to 10 where 0 = low and 10 = high. World Competitiveness Yearbook copyright © 2011, IMD International, Switzerland, World Competitiveness Center, www.imd.ch/wcc.

Refer to Appendix C for full details on sources.

By contrast, the physical infrastructure improvements in India have been much slower, and chronic problems with its transportation networks persist.

Russia ranks first among the high growth countries for the quality of its ICT infrastructure, but it still ranks behind all of the mature countries on this measure. Russia also has the second lowest score among the 14 countries for its physical distribution infrastructure, which has suffered from decay since the collapse of the Soviet Union.

Brazil ranks second among the high growth countries for the quality of its ICT networks, but ranks behind all other study countries for quality of physical distribution networks.

H. Quality of Life

Crime rates, healthcare facilities, housing cost and availability, and the quality of public schools represent the most important quality of life location factors identified in the 2011 *Area Development Magazine* Corporate Survey.

The United Nation's Human Development Index offers a high-level comparison of general socio-economic development between countries, broadly based on life expectancy, education levels, and income components. As seen in Exhibit 6.21, all of the mature economies have very high levels of human development. Australia ranks first among the 14 countries included in this study, and ranks second among all 169 included in the Human Development Index. The United States, the Netherlands, Canada, and Germany also rank among the top 10 countries globally for this index. While the United Kingdom ranks last among the nine mature countries examined in this study, its 26th place global ranking still far exceeds Mexico, which in 56th place globally ranks ahead of the other high growth countries considered in this study.

Among the high growth economies, Mexico, Russia and Brazil are considered to have achieved "high levels" of human development according to the UN, while China and India still rank among the countries with "medium" human development.

EXHIBIT 6.21			
$Overall Wellbeing^1$			
Country	Human Development Index ²	Rank out of 169 HDI Countries ³	Rank out of 14 Countries
MATURE			
Australia	0.937	2	1
Canada	0.888	8	4
France	0.872	14	7
Germany	0.885	10	5
Italy	0.854	23	8
Japan	0.884	11	6
Netherlands	0.890	7	3
United Kingdom	0.849	26	9
United States	0.902	4	2
HIGH GROWTH			
Brazil	0.699	73	12
China	0.663	89	13
India	0.519	119	14
Mexico	0.750	56	10
Russia	0.719	65	11

1 Human Development Report, United Nations, 2010.

2 Scale of 0 to 1 where 0 = low and 1 = high.

3 The full Human Development Report ranked a total of 169 countries.

1. Safety and Crime

For any firm considering a move to a new location, personal and property safety and crime are key concerns. High rates of crime and violence not only have high personal and social costs, but are also disruptive to business.

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 report crimes. For this reason, homicide rates, as presented in Exhibit 6.22, are considered the most reliable comparator for violent crime between countries.

Based on these statistics, Japan and Germany have the lowest homicide rates among all countries studied. The homicide rate in the United States is more than triple that of all other mature countries, and also exceeds the homicide rates in China and India. Brazil and Mexico have the highest rates of homicide, by a significant margin.

The results of an international executive survey conducted by the *World Economic Forum* provide some further insights into safety in different countries. Germany and Canada score highest among the study countries on measures of both police reliability and low business cost of crime. Among the mature economies, the police are seen as least reliable in Italy and the United Kingdom, while the business cost of crime is perceived as highest in Italy and the United States.

Overall, police are seen as less reliable in the high growth countries than in the mature countries, with only China ranking ahead of any of the mature countries. Yet, at the same time, the business cost of crime is perceived as being lower in China, India, and Russia than in the US and Italy. Mexico is the lowest ranked country, both for police reliability and the business cost of crime.

EXHIBIT 6.22

Crime and Physical Safety												
Country	Homicides per 100,000 Population ¹	Rank	Police Reliability ²	Rank	Business Cost of Crime ³	Rank						
MATURE												
Australia	1.2	7	2.0	4	2.7	4						
Canada	1.7	9	1.8	1	2.5	2						
France	1.4	8	2.3	7	2.7	4						
Germany	0.8	2	1.8	1	2.3	1						
Italy	1.2	4	3.4	10	3.6	12						
Japan	0.5	1	2.2	6	3.1	8						
Netherlands	1.0	3	1.8	1	3.0	7						
United Kingdom	1.2	5	2.6	8	3.3	9						
United States	5.2	11	2.1	5	3.4	11						
HIGH GROWTH												
Brazil	22.0	14	4.3	12	4.7	13						
China	1.2	6	3.3	9	2.6	З						
India	2.8	10	3.5	11	2.8	6						
Mexico	18.0	13	5.3	14	5.3	14						
Russia	14.2	12	4.9	13	3.3	9						

1 UN, Intentional Homicide, reporting data from 2007 or 2008. Mexico data updated to 2010 based on domestic (ICESI) statistics to reflect its rapid increase in homicides since 2007.

2 Original scale inverted such that 1 = highly reliable and 7 = highly unreliable. The Global Enabling Trade Report, World Economic Forum, Switzerland 2010.

3 Original scale inverted such that 1 = low cost of crime and 7 = high cost of crime. The Global Enabling Trade Report, World Economic Forum, Switzerland 2010.

2. 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, good healthcare services contribute to a healthy workforce, lower costs from illness-related absenteeism, and improve employee recruitment and retention. Exhibit 6.23 compares several indicators related to healthcare.

Doctors per 100,000 inhabitants represents a basic measure of the accessibility of healthcare to the population. Russia and the continental European countries— Italy, the Netherlands, Germany, and France—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 in the mature economies can be found in Appendix C.

Healthcare also represents a point of convergence between personal quality-oflife 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.

In terms of health expenditures, the United States spends the largest proportion of GDP on medical care among the countries studied—at least 36 percent more than any other country. Dissecting total medical expenditures between public and private spending, the US is the only mature economy where more than 50 percent of total medical costs are paid by private sources (individuals and/or businesses). In all other mature economies, less than a third of healthcare expenses are financed privately. In the high growth countries, businesses and individuals generally carry a higher burden of healthcare costs, ranging from 36 percent of all healthcare costs in Russia to 68 percent of healthcare costs in India.

Combining these measures, businesses and individuals in the United States spend a full 7.9 percent of US GDP on medical care. This compares to 4.7 percent in Brazil, and 3.1 percent or less in every other country studied. Japan, the United Kingdom, and Russia have the lowest privately-borne medical costs, at below 2.0 percent of GDP in each country.

EXHIBIT 6.23

Looking beyond resources invested in the medical system, life expectancy is a broad indicator of medical outcomes. Japan, Italy, and Australia have the longest life expectancy among all 14 countries in this study. While the United States invests, by far, the largest share of GDP into healthcare, its life expectancy is the lowest among the mature countries.

All high growth countries lag behind the mature countries on this measure, with an 18 year difference between 1st-ranked Japan (83 years) and 14th-ranked India (65 years). However, the life expectancy gap between the 9th-ranked United States and 10th-ranked Mexico is only three years (79 versus 76 years).

Healthcare Indicators ¹												
	_											
Country	Doctors per 100,000 Inhabitants		Total Private Private Expend. as % of SDP Total ² % of GDP		Private Expend. as % of GDP ²	Pank	Life Expectancy					
MATURE		ank				nalik		nalik				
Australia	299	6	8.5	29.1	2.5	8	82	2				
Canada	191	11	9.8	30.5	3.0	10	81	4				
France	350	5	11.2	21.4	2.4	7	81	4				
Germany	353	4	10.5	22.0	2.3	6	80	7				
Italy	424	2	8.7	23.7	2.1	4	82	2				
Japan	206	10	8.3	18.0	1.5	1	83	1				
Netherlands	392	3	9.9	16.5	3.1	11	81	4				
United Kingdom	274	8	8.7	17.4	1.5	2	80	7				
United States	267	9	15.2	52.2	7.9	14	79	9				
HIGH GROWTH												
Brazil	172	12	8.4	56.0	4.7	13	73	12				
China	142	13	4.3	52.7	2.3	5	74	11				
India	60	14	4.2	67.6	2.8	9	65	14				
Mexico	289	7	5.9	53.1	3.1	11	76	10				
Russia	431	1	4.8	35.7	1.7	3	68	13				

1 World Health Statistics 2011, The World Health Organisation. Reporting data 2000-2010.

2 Private expenditures include both expenditures by individuals and corporation (i.e., all non-public expenditures). Private expenditure as % of GDP = Total expenditure as % GDP x Private expenditure as a % of total.

3. Housing

Volatility in housing markets can have detrimental consequences for both individuals and national economies, adding risk and uncertainty to businesses considering expansion or relocation. Until mid-2007, housing markets had been generally buoyant in most mature countries, but have since seen steep price declines in some markets, but sustained high prices in other markets. Continuing uncertainty surrounding the housing markets, particularly in the United States, means that housing-related issues are likely to remain a key consideration in personal relocation decisions for the foreseeable future.

Exhibit 6.24 presents the "median multiple" measure of housing affordability (median house price as a multiple of median household income) for several countries included in this study. The country level results are based on an average of the cities included in this study.

This comparison indicates that, in general, housing is relatively more affordable in the United States and Canada than the United Kingdom and Australia.

While directly comparable data are not available for other study countries, research by J.P. Morgan indicates that the median multiple in China (based on an average of Chengdu and Shanghai) for a 90 square meter apartment could be as high as 9.8 times income. Rapid economic growth, housing market reforms, and urbanization have resulted in surging house prices in major Chinese cities, leading to the recent introduction of government measures aimed at cooling the country's housing market.

While these ratios between housing prices and income, based on an average of the selected cities, give a broad picture of housing affordability, significant variations exist among local markets in each country. Housing affordability data by city for these five countries are presented in Appendix C.

EXHIBIT 6.24

Housing Affordability									
Country	Affordability (household income multiple) ¹								
Australia	8.1								
Canada	3.9								
United Kingdom	6.1								
United States	3.5								
China	9.8								

1 International Housing Affordability Survey, Demographia. Median house price as a multiple of median household income. Reporting data from 2010. Asian Property Yardstick, J.P. Morgan. Price of a 90 m² apartment divided by annual household income. Estimates for 2010. Based on the average of cities featured in this study: 4 local markets in Australia, 16 in Canada, 2 in the UK, 71 in the US and 2 in China.

4. Quality of Public Schools

Exhibit 6.12 (page 74) presents the results of an international assessment in science skills among 15 year old high school students, and helps to gauge the relative quality of schools in the different countries. Japan, Canada, and Australia are the topranked countries based on this measure, while students from Shanghai, China, performed best among all students tested.

I. Conclusion

Both business costs and other factors significantly influence the competitiveness of locations for different types of business. The findings of this report should be interpreted by firms in relation to their particular needs, and should be considered only as a starting guide to the various issues covered herein.

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 113 cities featured in this report, 20 additional cities in Canada and the United States 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.

EXHIBIT 7.1

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.

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.

Results by City - North America																				
						Manu	facturing							R&D		Di	gital	Corp.	Services	Overall Result
Industry	Aero- space	Agri-food	Auto- motive	Chemi- cals	Electro- nics	Green Energy	Medical Devices	Metal Compon.	Pharma- ceuticals	Plastics	Precision Mfg	Telecom	Biotech	Clinical Trials	Product Testing	Digital Ent'mt	Software Design	Profess'I Services	Support Services	19
Operation	Aircraft Parts	Food Proc.	Auto Parts	Spec. Chem.	Electr. Assbly	Adv. Batteries	Medical Devices	Metal Mach.	Pharma- ceutic.	Plastic Prod.	Precision Comp.	Telecom Equip.	Biomed R&D	Clinical Trials Mgmt	Electronic Systems Dvlt/Test	Video Game Prod'n	Software Dvlt	Int'I Financial Servives	Shared Services Center	Operations
CANADA																				
Atlantic Saint John, NB Sydney, NS Truro, NS	96.3 95.9 95.8	8 98.1 9 99.1 8 98.7	95.8 96.0 96.0	95.3 96.2 96.1	95.0 95.0 94.9	95.9 95.8 95.9	93.4 92.9 92.8	95.3 94.8 94.9	93.8 93.8 93.8	96.5 95.5 96.0	5 96.2 5 96.1 0 96.0	93.9 93.6 93.4	78.5 76.8 77.3	70.6 71.6 71.3	74.1 71.4 71.5	79.0 68.2 68.1	0 85.1 2 85.6 1 84.9	76.8 75.6 74.7	84.9 82.5 81.7	92.5 92.0 91.9
Northeast Belleville-Quinte West, ON Durham Region, ON Middlesex , ON	96.7 98.1 97.0	7 98.3 99.0 98.9	97.1 98.0 97.5	96.3 97.2 96.6	95.7 97.0 96.0	97.2 98.0 97.6	95.8 97.9 96.5	97.1 98.4 97.6	96.0 97.5 96.3	98.9 99.9 99.4	9 97.2 9 97.9 1 97.6	95.1 96.7 95.7	84.4 86.9 88.3	85.4 91.2 89.3	79.1 82.3 82.8	72.3 74.7 74.1	87.2 91.0 89.6	78.0 81.9 80.4	88.7 94.0 92.0	94.0 95.6 94.9
West Brandon, MB Lethbridge, AB Medicine Hat, AB Moose Jaw, SK Prince Albert, SK Red Deer, AB Regina, SK	96.9 98.0 97.8 96.4 97.8 98.2 98.2 97.1	9 100.8 9 99.9 8 99.5 4 99.7 8 100.3 2 100.0 99.9	97.6 98.3 97.9 97.2 98.2 98.7 97.7	95.7 96.5 96.1 95.3 95.7 96.7 96.7 95.7	95.4 96.1 95.8 94.8 96.0 96.3 95.5	99.9 99.8 99.4 98.8 100.4 100.3 99.4	94.8 96.5 96.1 94.6 95.9 96.9 96.9 96.9	99.0 99.7 99.3 98.3 100.0 100.3 99.1	95.7 96.8 96.5 95.2 96.2 97.1 95.8	100.7 101.8 101.0 100.2 102.2 102.7 101.0	7 98.1 98.6 98.2 2 98.0 2 98.4 7 98.8 0 98.2	94.2 95.5 95.2 93.8 94.5 95.5 94.4	80.7 85.8 81.2 75.2 75.8 84.8 81.2	70.5 85.0 83.2 69.1 69.2 83.9 72.1	75.0 80.5 76.6 70.2 70.6 79.4 75.4	79.7 85.4 83.4 78.7 84.3 80.8	7 86.2 4 88.6 4 87.1 7 84.4 7 84.4 3 87.8 8 86.6	77.9 79.0 78.0 75.3 75.0 78.7 78.7	86.7 90.8 88.0 83.8 83.5 90.2 87.1	94.2 95.6 94.8 93.2 94.1 95.7 94.3
Pacific Kamloops, BC Victoria, BC	99.5 100.1	5 99.4 101.6	98.3 99.6	96.9 97.8	97.0 97.8	100.1 103.0	97.4 98.3	99.7 102.0	97.9 98.5	101.1 103.6	98.5 99.4	96.3 96.6	87.9 93.1	87.8 90.0	82.1 86.2	82.4 83.9	4 88.5 9 89.6	77.8 79.8	90.2 92.7	95.9 97.4
UNITED STATES Alexandria, LA Hourna, LA Lafayette, LA Lake Charles, LA Monroe, LA	96.5 96.7 96.1 97.0 95.9	5 97.0 7 96.9 96.5 9 97.3 9 95.8	96.4 96.3 95.8 96.6 95.5	96.2 96.1 95.9 96.5 95.8	96.2 96.3 95.7 96.7 95.6	97.0 96.9 96.3 97.3 95.8	93.9 94.0 93.3 94.6 93.0	94.8 94.7 93.9 95.2 93.3	95.5 95.5 94.9 95.9 94.9	95.1 94.8 93.8 94.9 93.2	97.0 96.9 96.6 97.3 97.3 96.2	95.6 95.6 95.3 96.3 95.2	82.7 87.8 85.8 87.9 83.4	89.5 91.0 90.5 92.5 89.6	82.9 86.5 85.4 87.5 82.8	79.1 79.9 79.7 80.8 79.1	90.8 9 91.4 7 91.6 5 92.8 1 90.5	83.9 84.2 84.3 84.9 83.2	80.5 82.8 82.6 83.4 80.5	93.8 94.1 93.6 94.6 93.1

Bronze Sponsors	Phone	E-mail	Internet
City of Belleville Economic Dev Belleville, ON, Canada	elopment +1 613 967 3238	ecdev@city.belleville.on.ca	www.city.belleville.on.ca
City of Medicine Hat Business I Medicine Hat, AB, Canada	Development Office +1 403 529 8373	business@medicinehat.ca	www.medicinehat.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 Developme Truro, NS, Canada	ent Association +1 902 893 1694	ajohnson@corda.ca	www.wherebusinessmoves.ca
Durham Economic Developmen Whitby, ON, Canada	t Partnership +1 905 668 7711	business@durham.ca	www.durhambusiness.ca
Economic Development Brando Brandon, MB, Canada	+1 204 729 2132	econdev@brandon.ca	www.economicdevelopmentbrandon.com
Economic Development Lethbridge, AB, Canada	idge +1 403 331 0022	info@chooselethbridge.ca	www.chooselethbridge.ca
Enterprise Cape Breton Corpora Sydney, NS, Canada	ation +1 902 564 3600	information@ecbc-secb.gc.ca	www.ecbc-secb.gc.ca
Enterprise Saint John Saint John, NB, Canada	+1 506 658 2877	info@enterprisesj.com	www.enterprisesj.com
Greater Victoria Development Victoria, BC, Canada	Agency +1 250 360 3473	sangus@gvda.ca	www.gvda.ca
Investissement Québec Montreal, QC, Canada	+1 514 873 4375	infoiq@invest-quebec.com	www.investquebec.com
Manitoba Agriculture, Food and Winnipeg, MB, Canada	d Rural Initiatives +1 204 945 2427	Leo.Prince@gov.mb.ca	www.gov.mb.ca/agriculture
Manitoba Entrepreneurship, Tra Winnipeg, MB, Canada	aining & Trade +1 204 945 1055	investmb@gov.mb.ca	www.investinmanitoba.ca
Manitoba Innovation, Energy & Winnipeg, MB, Canada	Mines +1 204 945 6298	Douglas.McCartney@gov.mb.ca	www.manitoba.ca/iem
Middlesex County Economic De London, ON, Canada	evelopment +1 519 434 7321	info@investinmiddlesex.ca	www.investinmiddlesex.ca
North Central Enterprise Region Prince Albert, SK, Canada	n +1 306 953 4030	reception@ncer.ca	www.ncer.ca
Regina Regional Opportunities Regina, SK, Canada	Commission +1 306 789 5099	info@reginaroc.com	www.reginaroc.com
South Central Enterprise Regio Moose Jaw, SK, Canada	n +1 306 693 7332	debthorn@southcentralenterprise.ca	www.southcentralenterprise.ca
Venture Kamloops Kamloops, BC, Canada	+1 250 828 6818	info@venturekamloops.com	www.venturekamloops.com

B. Contact Information for Other Sponsored Cities

Colliers International

Colliers International is a leader in global real estate services, defined by our spirit of enterprise. Through a culture of service excellence and a shared sense of initiative, we integrate the resources of real estate specialists worldwide to accelerate the success of our partners—our clients, professionals and communities.

We offer a complete range of services to owners, investors and occupiers on a local, regional, national and international basis. The foundation of our service is the strength and depth of our direct, local specialists. Our clients depend on our ability to draw on years of direct local market experience.

CORE SERVICES:

- > Brokerage Sales and Leasing
 - Landlord Representation
 - Tenant Representation
- > Corporate Solutions
- > Investment Services
- > Project Management
- > Residential Marketing and Sales Services
- > Real Estate Management Services
- > Valuation and Advisory Services

512 offices in**61** countries

www.colliers.com





Colliers INTERNATIONAL

Accelerating success.

www.CompetitiveAlternatives.com