KPMG

Competitive Alternatives

KPMG's guide to international business locations costs

2016 edition

CompetitiveAlternatives.com

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Introduction

Globalization continues to reshape the international economy. For many organizations, global expansion can have a tremendous positive impact on both top and bottom line. For others, expanding or relocating a business may be a matter of survival, as they face increasing pressure from foreign competitors.

If your organization is focused on growth, controlling costs, diversifying, and increasing value for shareholders, the impact of international expansion and location costs must be a part of your global strategy.

Business costs represent one of the many important factors considered in virtually all corporate location decisions. KPMG's 2016 Competitive Alternatives report explores the most significant business cost factors in more than 100 cities and 10 countries around the world. This study measures and provides insight on the impact of 26 key cost components, across 7 business to business service segments and 12 significant manufacturing sectors.

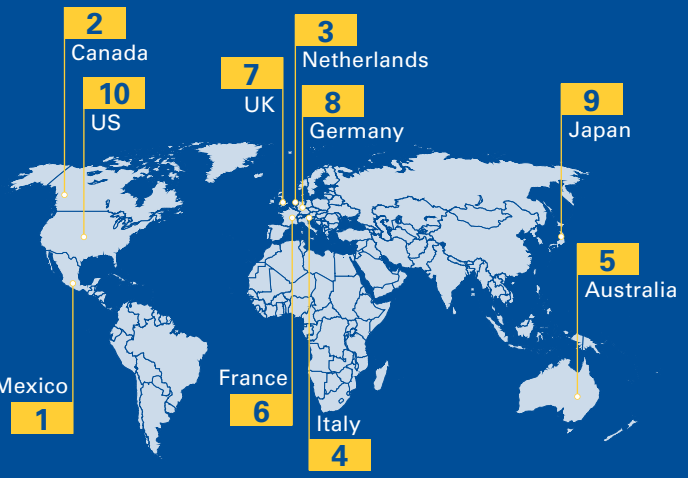
I hope this report helps your organization as you identify and compare potential locations for relocating or establishing new operations abroad. If you have any questions about our research or would like to discuss the impact that location cost competitiveness can have on your business, please feel free to contact me or any one of the KPMG professionals listed at the end of our report.

Greg Wiebe
Partner
KPMG LLP

Relocating your business?

Top countries with the lowest business costs

1. Mexico
2. Canada
3. Netherlands
4. Italy
5. Australia
6. France
7. UK
8. Germany
9. Japan
10. US



Top 3 cost competitive countries

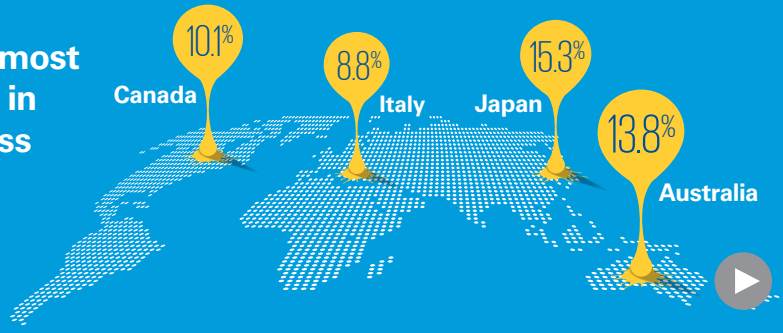
Major cost factors

	1st	2nd	3rd
Labor	Mexico	Canada	Italy
Facility Costs	Mexico	Germany	Canada
Transportation	Japan	Canada	Germany

Corporate income tax rates

	1st	2nd	3rd
Digital	Canada	UK	Netherlands
R&D	France	Netherlands	Canada
Corporate	UK	Canada	Netherlands
Manufacturing	UK	Canada	Netherlands

Countries with the most significant increase in cost competitiveness (2012 to 2016)



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 International'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 to support 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 incentives and support
- Set up new operations in a tax-efficient manner.

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

Corporate sponsors

- **MMK Consulting** directed this project on behalf of KPMG, including study design and execution, web development, and report authorship:

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- **Colliers International** supplied real estate costs for all locations examined.

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Other contributing organizations

- **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 organizations that assisted in developing the information on which this study is based. Selected data sources are detailed in Appendix C.

Contents

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Overview

A high-level overview of study results, scope and methodology

Overview

Business costs represent one important factor considered in virtually all corporate location decisions.

Since 1996, *Competitive Alternatives* has been providing insight into business location costs in cities and countries around the world, with special focus on North America and leading mature market economies in Europe and Asia-Pacific. *Competitive Alternatives* is designed to provide valuable information to business executives, economic developers and policy makers.

This 2016 edition of *Competitive Alternatives* compares business costs for:

— **Locations**: More than 100 individual cities in 10 countries

— **Sectors**: 19 distinct business operations in the manufacturing and the business-to-business service sectors

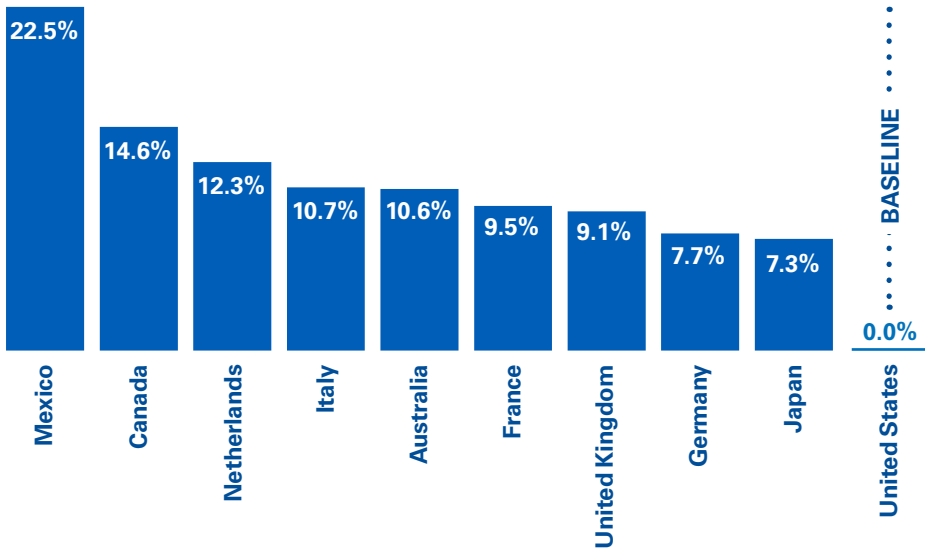
— **Cost factors**: 26 location-sensitive cost factors.

Locations

The surging value of the US dollar in 2015 has greatly impacted the global business landscape, constraining US competitiveness and driving down the cost of doing business in all other countries, when measured in US dollar terms. For US firms with international operations, this has the potential to translate into significant cost savings.

The United States now stands out as a high cost business location relative to its peers. The overall study results demonstrate that the cost gap that now exists between the US and ninth-ranked Japan is as wide as the range of costs between Japan through to second-ranked Canada. This also represents the first time that the US has ever placed this low in the *Competitive Alternatives* cost rankings.

Cost advantage relative to the US



National results for each country are based on business costs for major cities in the country and reflect combined results from the service and manufacturing sectors. Costs for all locations are compared to the US baseline, which reflects average business costs for the four largest US metro areas: New York City, Los Angeles, Chicago and Dallas-Fort Worth.

However, changes in local cost factors also impact the relative competitiveness of locations. For example, among major global cities, Sydney and Miami are two cities that have seen strong improvements in their relative cost positions since 2014. Meanwhile, Osaka and New York City have seen local costs rise relatively quickly since 2014, impacting their competitiveness against other cities regionally and nationally.

Sectors and cost factors

The leading positions of Mexico, Canada and the Netherlands, and the trailing position of the United States in the overall national results, also hold true for each of the major sectors examined in this study:

— Digital services

— Research and development (R&D) services

— Corporate services

— Manufacturing.

However, business cost differentials vary widely by sector. Sector costs are driven by factors relevant to each industry, such as salary levels for IT staff or finance professionals, tax and incentive treatment of R&D expenditures, or distribution costs for manufactured products.

Inside this report

This chapter provides an overview of the scope and approach for this major study. Subsequent chapters of this report, together with the study website CompetitiveAlternatives.com, provide the opportunity to access this wealth of international cost data, analyzed by location, by sector and by cost factor. A final chapter of this report then addresses location costs in the broader context of corporate site selection strategy.

"Even in an era of volatile exchange rates, it's important not to overlook the significance of local costs and taxes for international business."

Greg Wiebe, Partner, KPMG Canada

Trends

Exchange rates

All figures in this report are expressed in US dollars (unless otherwise stated) and study results are sensitive to exchange rates. The Locations chapter includes further discussion of exchange rate sensitivity and the study website, CompetitiveAlternatives.com, allows for interactive analysis of the impact of exchange rates on study results.

With the recent surge in value of the US dollar, all currencies have declined in value relative to the US dollar since 2014. The UK pound is the only study currency to come close to holding its value relative to the US dollar.

Business costs

Changes in local cost factors also impact cost competitiveness. While all countries except the US have seen strong improvements in their cost competitiveness over the last two years (expressed as a relative business cost index), these gains are not spread equally.

Australia, Italy and Germany have seen the greatest gains in competitiveness since 2014, due to local cost factor issues, such as moderate growth in labor costs or reductions in facility lease costs.

Australia and Mexico have both experienced a 22.3 percent currency depreciation relative to the US dollar since 2014. However, Australia's business cost index has improved by almost 10 percentage points over that time, versus a gain of less than 4 points for Mexico. Higher rates of salary growth and increased costs for industrial facilities both impact the final results for Mexico. In addition, for Mexico, lower wage levels and a higher share of business costs that are denominated in US dollars make total business costs in Mexico somewhat less susceptible to exchange rate swings than in the other study countries.

	Study exchange rates		Two-year appreciation relative to US$
	2014 edition	2016 edition	
Australian dollar	AU $1.08 (US $0.93)	AU $1.39 (US $0.72)	-22.3%
Canadian dollar	CA $1.05 (US $0.95)	CA $1.34 (US $0.75)	-21.6%
Euro	€ 0.73 (US $1.37)	€ 0.91 (US $1.10)	-19.8%
Japanese yen	¥ 100.43 (US $0.01)	¥ 121.44 (US $0.01)	-17.3%
Mexican peso	MX $13.02 (US $0.08)	MX $16.76 (US $0.06)	-22.3%
UK pound	£ 0.62 (US $1.61)	£ 0.66 (US $1.52)	-6.1%

Source: US Federal Reserve average rates for October - December 2015.

	Business cost index[1]		
	2014 edition	2016 edition	Change[2]
Australia	99.3	89.4	-9.9
Italy	98.8	89.3	-9.5
Germany	100.9	92.3	-8.6
Canada	92.8	85.4	-7.4
France	97.4	90.5	-6.9
Netherlands	94.5	87.7	-6.8
Japan	99.2	92.7	-6.5
Mexico	81.3	77.5	-3.8
United Kingdom	94.6	90.9	-3.7
United States	100.0	100.0	—

1 Cost index is in percentage terms, with US = 100.0.

2 Decrease in cost index represents a gain in cost competitiveness (decrease in relative business costs) since 2014.

Locations

This study represents an analysis of business costs in 10 countries, with a focus on North America (NAFTA) and leading mature market economies in Europe and Asia-Pacific.

Within North America, at least one city is compared in each of the 50 US states and the 10 Canadian provinces. National results are based on the average results for two or four comparable major cities within each country, highlighted in bold in the table here. Due to the reality that many businesses choose to locate their operations in suburban areas of large cities, the results of this study reflect business costs for the greater metropolitan area of each city.

This report includes analysis and discussion of business cost results for 111 featured cities, listed here. Summary results are also included for 22 smaller Canadian and US cities, benchmarked on a comparable basis.

North America

Canada

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

Central
- Barrie, ON
- Gatineau (National Capital Region), QC
- **Montreal, QC**
- Quebec City, QC
- Sault Ste. Marie, ON
- **Toronto, ON**

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

Pacific
- Kelowna, BC
- Vancouver, BC

Mexico

Mexico City
Monterrey

United States of America

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

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

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
- Kansas City, MO
- Madison, WI
- Minneapolis, MN
- Oklahoma City, OK
- Omaha, NE
- Phoenix, AZ
- Salt Lake City, UT
- San Antonio, TX
- Sioux Falls, SD
- St. Louis, MO
- Wichita, KS

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

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

Europe

France

Marseille
Paris

Germany

Berlin
Frankfurt

United Kingdom

London

Italy

Milan
Rome

Netherlands

Amsterdam
Rotterdam

Manchester

Asia Pacific

Australia

Adelaide
Brisbane
Melbourne
Sydney

Japan

Osaka
Tokyo

Sectors

This study compares 19 business distinct operations, 7 in the business-to-business (B2B) service sector and 12 in the manufacturing sector. The overall cost comparisons for each country and city are based on the average results for these two sectors.

Each of the business operations examined reflects a representative, industry-specific business that has been defined in detail and modeled to analyze its pro forma operating costs in each of the study locations. The operations reflect medium-sized enterprises, typically with between 50 and 150 employees. These business operations reflect a range of operating requirements, including labor, facility and capital requirements.

Sectors, industries and business operations

Services sector	Business operation modeled
Digital services	
Digital entertainment	Video game production
Software design	Software development
R&D services	
Biotechnology	Biomedical R&D
Clinical trial administration	Clinical trials management
Product testing	Electronic systems development and testing
Corporate services	
Professional services	International financial services
Support services	Shared services center

Manufacturing sector	Business operation modeled
Aerospace	Aircraft parts
Agri-food	Food processing
Automotive	Auto parts
Chemicals	Specialty chemicals
Electronics	Electronics assembly
Green energy	Advanced batteries
Medical devices	Medical device manufacturing
Metal components	Metal machining
Pharmaceuticals	Pharmaceutical products
Plastics	Plastic products
Precision manufacturing	Precision components
Telecommunications	Telecom equipment

Cost factors

This study examines 26 individual cost factors that are likely to vary significantly by location. These cost factors generally represent between 35 and 90 percent of total operating costs for the business operations examined in the study.

Some significant costs do not vary by location. Costs for commodity raw materials, parts and subcomponents for manufactured products, as well as major plant and equipment, tend to be governed by world market prices or are fixed at other levels of the supply chain. Therefore, these costs do not vary substantially by location and are held constant (in US dollars) for comparison purposes.

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

26 location-sensitive cost factors

Labor costs

Wages and salaries:

1. Pay rates for 42 job positions

Statutory plans:

2. Government pension plans
3. Public medical plans
4. Unemployment insurance
5. Workers' compensation

Other employee benefits:

6. Paid time off (holidays & vacation)
7. Private health insurance
8. Other discretionary benefits

Facility costs

9. Office leasing
10. Factory leasing
11. Industrial land
12. Industrial construction

Transportation costs

13. Surface freight (road & sea)
14. Air freight

Utility costs

15. Electricity
16. Natural gas

Cost of capital

17. Financing costs (interest)
18. Depreciation charges

Taxes other than income

19. Property taxes
20. Capital taxes
21. Sundry local business taxes
22. Transaction and sales taxes

Income taxes

23. National
24. Regional (state, provincial, etc.)
25. Local

Incentives

26. Tax and other incentives

Incentives

Generally-accessible incentives with clearly defined eligibility criteria are included among the cost factors addressed in this study. Such incentives include certain tax exemptions or abatements, favorable interstate income apportionment rules, research and development incentives, investment tax credits and job tax credits available in various jurisdictions. In the study analysis, these incentives are netted off directly against the tax or cost factor for which they represent a saving.

For major business investments, governments may also offer incentives negotiated on a discretionary basis. This study excludes discretionary incentives because the ultimate value of such incentives generally cannot be determined without entering into negotiations over a specific investment proposal. Instead, the primary focus of this study is on the fundamental business cost structures that apply to typical business operations within each jurisdiction.

Methodology

KPMG's cost model

This study is based on KPMG's proprietary *Competitive Alternatives* 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 held constant for all locations. The result is a comparison of the estimated cost of establishing and operating an equivalent facility in each location. The model generates 10-year pro forma reports, including income statements, cash flows and detailed tax calculations. These reports form the basis of the cost comparisons presented in this study.

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 initial investments in capital assets, including land and buildings (where relevant). Capital investments are reflected in annual depreciation, as well as in interest charges on the debt associated with facility start-up. This measurement approach has been chosen due to its widespread use in business and its usefulness in highlighting the sources of cost differences among locations.

Business cost index

Business costs are expressed as a percentage index, with the United States being assigned a baseline index of 100.0. An index below 100 indicates lower costs than the US. An index over 100 indicates higher costs than the US. For example, an index result of 95.0 represents a 5.0 percent cost advantage relative to the US base.

Physical productivity

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

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

Actual hours worked, including costs for paid time off (vacation and holidays), have been included in the analysis on the assumption that absent workers must be covered by temporary labor, overtime, or additional staffing to keep the facility running year round.

Capital and technology applied are assumed to be equal in all locations, as the model compares identical facilities in every location. The effort required to recruit workers with the required industrial and technology skills may vary from location to location and is not included in this analysis. However, all locations studied, including Mexico, have modern sophisticated industrial sectors, suggesting that generally skilled labor pools (of varying size) exist in each location.

Core workplace training provided to employees is also assumed to be equal in all locations for this comparison of identical facilities.

Physical productivity of workers recognizes the possibility that, given the same hours, tools and training, workers in some locations may be more productive (i.e., achieve higher output per hour worked). This factor is extremely difficult to assess in an objective manner and the comparisons in this study do not differentiate between locations on this basis.

Interpretation of results

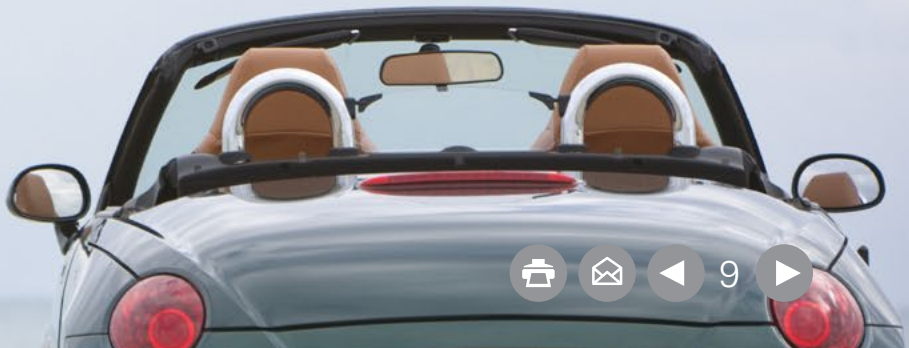
While great care has been taken in performing this analysis and developing the findings, the resulting comparisons are of a general nature. All factors examined in this study are subject to change over time due to changes in local laws, regulations and/or market conditions. The results of this study 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 any specific facility or operation.

Further information on methodology

Further details on methodology are contained in the appendices to this report, available as a separate download at CompetitiveAlternatives.com.

Locations

Results for 111 cities are presented by country and by region within North America



National results

The overall results, by country, represents the highest level of aggregation of business costs in this study, combining the results for all industries, locations and cost factors examined.

The surging value of the US dollar in 2015 has greatly impacted the global business landscape, constraining US competitiveness and driving down the cost of doing business in all other countries, when measured in US dollar terms. The US now stands out as a high cost business location relative to its peers, with the cost gap between the US and ninth-ranked Japan being as wide as the range of costs from Japan through to second-ranked Canada.

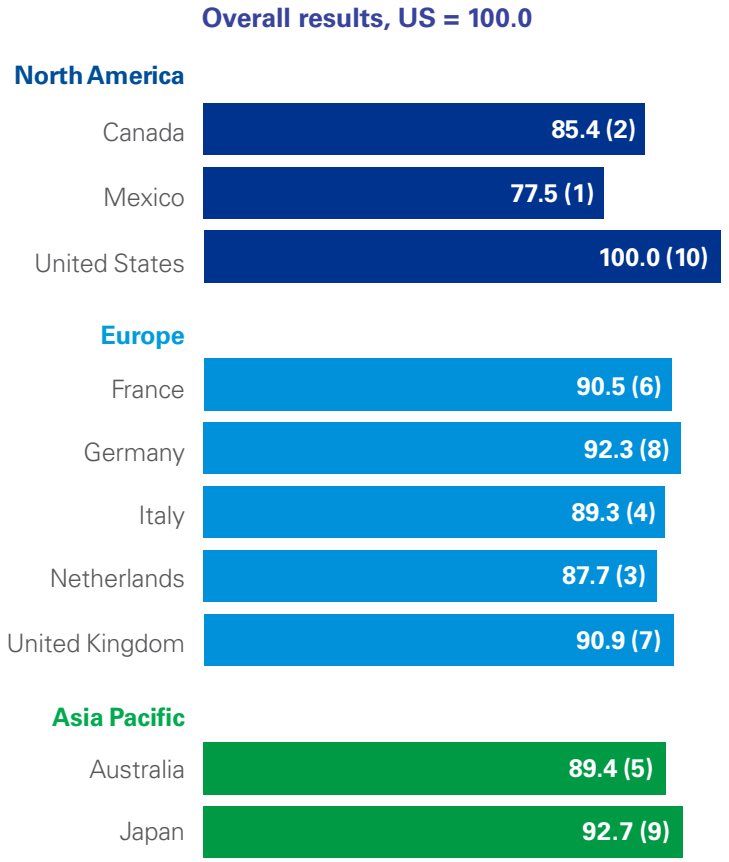
National results for each country are based on business costs for major cities in the country. Costs for all locations are compared to the US baseline of 100.0, which reflects average business costs for the four largest US metro areas: New York City, Los Angeles, Chicago and Dallas-Fort Worth. Rankings are based on ascending business costs, with the lowest cost country ranking first.

As a NAFTA member and the only high growth (emerging) country in the study, **Mexico** is the lowest-cost country examined. In 2016, Mexico's business cost advantage over the US stands at 22.5 percent, higher than at any point in this decade.

Canada maintains its second place rank among the 10 countries, with business costs 14.6 percent lower than in the US. Similarly, the **Netherlands** retains its third place ranking, with a 12.3 percent cost advantage over the US.

Italy and **Australia** move up in the rankings this year to fourth and fifth places, with similar overall business costs. **France** ranks sixth and the **United Kingdom** seventh, with France moving ahead of the UK and both countries now falling behind Italy.

Germany and **Japan** rank eighth and ninth, with Germany regaining a lead over Japan as had been seen previously in 2010 and 2012. The **United States** completes the set of countries, in tenth place—the only time the US has ever placed this low in *Competitive Alternatives* rankings.



Annual average business costs

The overall cost indices presented above are calculated based on average costs for the services and manufacturing sectors, reflecting all 19 model business operations analyzed in this study.

To briefly illustrate this methodology, this table presents sample results for Canada, Mexico and the United States, showing the annual average business costs for each country, by major cost category, and the calculation of the resulting cost index.

To provide some physical context to the annual cost values shown in the table, labor costs reflect all costs associated with an average workforce of 93 employees. The operations utilize a mix of leased and owned facilities, but with an average facility size of 50,866 square feet (4,727 square meters). Actual physical characteristics and model financial results vary for each business operation.

Exchange rate sensitivity

Exchange rates are a key consideration for businesses when comparing international locations and the cost comparisons presented in this study are sensitive to exchange rate changes. The tables presented on the following pages for each country include estimates of the sensitivity of study results to possible future exchange rate changes.

The sensitivity analysis presented in this chapter reflect the outputs of the *Competitive Alternatives* business cost model, which compares all costs in US dollars. Exchange rate changes do not affect local business costs expressed in local currency, but do impact international comparisons when local costs are converted to US dollars. If a country's currency appreciates relative to the US dollar, then the country's business costs increase in US dollar terms. Conversely, a depreciation in value of the local currency relative to the US dollar improves cost competitiveness.

The impact on business costs (in US dollars) from a change in exchange rate is less than the change in the exchange rate itself because some cost factors are generally priced in US dollars and are not impacted by exchange rate changes. Such cost factors include major plant equipment, commodity parts or materials and international freight. In addition, corporate taxes effectively dampen the impact of exchange rate changes, with tax costs increasing as other costs decrease, assuming constant revenue.

Overall average[1] annual income statement, US $'000

	Canada	Mexico	US
Revenues[2]	24,550	23,501	25,596
Expenses (costs)[3]			
Labor & benefits	6,652	3,102	9,667
Facility lease	328	335	443
Transportation & utilities	1,000	1,481	1,145
Interest & depreciation[4]	1,484	1,401	1,623
Non-income taxes	212	113	452
Location-insensitive costs	9,760	9,760	9,760
Profit before income tax	5,114	7,309	2,506
Income taxes	916	2,289	746
Effective tax rate	*17.9%*	*31.3%*	*29.8%*
Net profit after tax	4,198	5,020	1,760
Total annual costs	20,352	18,481	23,836
Cost index (US=100.0)	**85.4**	**77.5**	**100.0**
Rank	**2**	**1**	**10**

1 Average of services and manufacturing sectors, based on 7 service operations and 12 manufacturing operations. Annual average costs over a 10-year analysis horizon starting in 2016.

2 Revenues vary slightly by location because several underlying business operations are assumed to operate as cost centers. For taxation purposes, corporate revenues are allocated to cost center operations based on the cost of operation plus a fixed percentage markup.

3 Individual cost factors are grouped by major cost category.

4 Includes interest from financing of owned facilities and depreciation of owned buildings.

Australia

GDP per capita:
US$61,925 (2014)

GDP growth rate:
3.0% (2015)

Unemployment rate:
5.8% (Q4/2015)

Inflation rate:
1.7% (2015)

2016 business cost index **89.4**
Country ranking **5th / 10**

Locations[1]	2016 index	Rank[1]	2014 index	Rank[1]
Australia	**89.4**	**5**	99.3	8
Adelaide	**88.2**	**23**	98.9	86
Brisbane	**90.3**	**29**	100.5	97
Melbourne	**88.8**	**24**	97.6	72
Sydney	**90.1**	**28**	101.0	100

Sectors	2016 index	Rank[2]	2014 index	Rank[2]
Digital services	**84.1**	**5**	96.9	6
R&D services	**77.9**	**5**	94.1	6
Corporate services	**79.6**	**5**	98.1	7
Manufacturing	**93.0**	**6**	100.5	9

Cost factors[3]
— 22.3% currency depreciation against the US$
— Below-average increase in total labor costs
— Increase in lease costs for industrial and downtown office space
— Decrease in utility costs, for both electricity and natural gas

Exchange rate sensitivity[4]		Index	Change	Rank[5]
20% appreciation	US$1 = AU$1.11	96.4	-7.0	5
20% depreciation	US$1 = AU$1.67	84.8	+4.6	5

1 Overall results for the country and cities. Rank for Australia is relative to 10 countries in both 2016 and 2014. Ranks for cities are relative to 111 cities in 2016 and 107 cities in 2014.

2 Rank is relative to 10 countries in both 2016 and 2014.

3 Significant cost trends between 2014 and 2016.

4 "What if" exchange sensitivity scenarios based on appreciation or depreciation relative to the US dollar.

5 Rank among 10 countries assuming equal appreciation/depreciation of all currencies relative to the US dollar.

Locations

National results for Australia reflect the combined results for two major cities, Melbourne and Sydney, with Adelaide and Brisbane also included in the study.

Among these major cities, Adelaide and Melbourne are the cost leaders and appear to be in constant competition for the title of "lowest cost city" in Australia. These two cities have alternated between first and second place among the Australian cities compared in each edition of *Competitive Alternatives* since 2008.

Brisbane has experienced rising costs for industrial leasing and utilities since 2014. This has pushed Brisbane's total business costs above those of Sydney for the first time in the history of this study.

Sectors

Among the four study sectors, Australia ranks consistently as fifth among the 10 countries in all sectors except for manufacturing. Relatively high costs for industrial facility leasing and transportation (freight) contribute to Australia's lower ranking in the manufacturing sector.

Cost factors

The rise in value of the US dollar relative to the Australian dollar in 2015 is the primary driver of Australia's improved cost index in 2016 and the improvement in rankings for the Australian cities. However, other cost trends as noted in the table help Australia to move ahead of France, the UK and Japan in the current study.

Canada

GDP per capita:
US$50,235 (2014)

GDP growth rate:
1.2% (2015)

Unemployment rate:
7.0% (Q4/2015)

Inflation rate:
1.1% (2015)

2016 business cost index **85.4**
Country ranking **2nd / 10**

Locations[1]	2016 index	Rank[1]	2014 index	Rank[1]
Canada	**85.4**	**2**	92.8	2
Montreal, QC	**85.2**	**11**	92.0	11
Toronto, ON	**85.6**	**14**	93.6	15
Vancouver, BC	**86.2**	**17**	94.6	33

Sectors	2016 index	Rank[2]	2014 index	Rank[2]
Digital services	**74.0**	**2**	82.2	2
R&D services	**72.3**	**2**	84.2	3
Corporate services	**73.9**	**2**	87.5	3
Manufacturing	**90.3**	**2**	96.2	2

Cost factors[3]

- 21.6% currency depreciation against the US$
- Increase in lease costs for downtown and suburban office space
- Increase in costs for industrial land
- Reduction in R&D tax credits result in higher effective tax rate

Exchange rate sensitivity[4]		Index	Change	Rank[5]
20% appreciation	US$1 = CA$1.07	91.7	-6.3	2
20% depreciation	US$1 = CA$1.61	81.2	+4.2	2

1 Overall results for the country and cities. Rank for Canada is relative to 10 countries in both 2016 and 2014. Ranks for cities are relative to 111 cities in 2016 and 107 cities in 2014.
2 Rank is relative to 10 countries in both 2016 and 2014.
3 Significant cost trends between 2014 and 2016.
4 "What if" exchange sensitivity scenarios based on appreciation or depreciation relative to the US dollar.
5 Rank among 10 countries assuming equal appreciation/depreciation of all currencies relative to the US dollar.

Locations

National results for Canada reflect the combined results for two major cities: Montreal and Toronto.

Total business costs in these two cities are relatively similar, within 0.5 percentage points of each other. The cost gap between these two cities has diminished since 2014, with higher labor costs and reduced tax incentives in Montreal eating away at the cost advantage it holds over Toronto. Out west, Canada's third major city, Vancouver, has higher business costs than either Toronto or Montreal, with high property costs being the main distinguishing factor for Vancouver. However, costs for all three cities are well below the US baseline.

Sectors

Among the four study sectors, Canada consistently ranks second among the 10 countries across all sectors. Significant incentive support for R&D activities in Canada, from both federal and provincial governments, helps to position R&D services as the sector in which Canada holds its greatest cost advantage, with total costs 27.7 percent below the US baseline.

Cost factors

The rise in value of the US dollar relative to its Canadian counterpart through 2015 is the main driver of improved cost index results for Canada and its cities in 2016. As a result, Canada has managed to increase its overall cost advantage relative to the US to almost 15 percent, even as the cost trends noted in the table lead to somewhat higher local business costs in Canada.

France

GDP per capita:
US$42,733 (2014)

GDP growth rate:
1.3% (2015)

Unemployment rate:
10.2% (Q4/2015)

Inflation rate:
0.3% (2015)

2016 business cost index **90.5**
Country ranking **6th / 10**

Locations[1]	2016 index	Rank[1]	2014 index	Rank[1]
France	**90.5**	**6**	97.4	5
Marseille	**89.4**	**26**	95.4	46
Paris	**91.7**	**31**	99.4	89

Sectors	2016 index	Rank[2]	2014 index	Rank[2]
Digital services	**87.8**	**7**	95.4	5
R&D services	**77.6**	**4**	89.2	5
Corporate services	**84.1**	**8**	97.5	6
Manufacturing	**93.5**	**7**	98.8	5

Cost factors[3]

- 19.8% currency depreciation against the US$
- Above-average increase in total labor costs
- Large decrease in leasing costs for industrial facilities
- Abolition of fixed minimum tax based on gross receipts
- Temporary investment incentive for depreciable asset purchases

Exchange rate sensitivity[4]		Index	Change	Rank[5]
20% appreciation	US$1 = €0.73	97.0	-6.5	6
20% depreciation	US$1 = €1.09	86.3	+4.2	7

1 Overall results for the country and cities. Rank for France is relative to 10 countries in both 2016 and 2014. Ranks for cities are relative to 111 cities in 2016 and 107 cities in 2014.
2 Rank is relative to 10 countries in both 2016 and 2014.
3 Significant cost trends between 2014 and 2016.
4 "What if" exchange sensitivity scenarios based on appreciation or depreciation relative to the US dollar.
5 Rank among 10 countries assuming equal appreciation/depreciation of all currencies relative to the US dollar.

Locations

National results for France reflect the combined results for two major cities: Marseille and Paris. Total business costs in Marseille are 2.3 percentage points lower than in Paris. Since 2014, suburban office lease rates in Marseille have risen sharply, as compared to a small decrease in office costs in Paris. Combined with higher labor cost growth in Marseille, these factors result in a narrowing of the 4.0 point cost advantage that Marseille held over Paris in 2014.

Sectors

Among the four study sectors, France's national ranking ranges from eighth for corporate services to fourth for R&D services. France's generous R&D tax credit system, which includes a refund option for unused credits, results in France having the lowest effective corporate income tax rate among all study countries in the R&D services sector.

Cost factors

The rise in value of the US dollar relative to the euro in 2015 is the primary driver of France's improved cost index in 2016 and the significant improvement in rankings for the two French cities. The euro also lost value relative to the UK pound, allowing France to move ahead of the UK in the current rankings. However, other cost trends as noted in the table also contribute to France's overall results in the current study.

Germany

GDP per capita:
US$47,822 (2014)

GDP growth rate:
1.3% (2015)

Unemployment rate:
4.5% (Q4/2015)

Inflation rate:
0.2% (2015)

2016 business cost index **92.3**
Country ranking **8th / 10**

Locations[1]	2016 index	Rank[1]	2014 index	Rank[1]
Germany	**92.3**	**8**	100.9	10
Berlin	**91.9**	**33**	100.8	98
Frankfurt	**92.8**	**36**	101.0	99

Sectors	2016 index	Rank[2]	2014 index	Rank[2]
Digital services	**89.0**	**9**	102.0	10
R&D services	**84.0**	**7**	100.4	10
Corporate services	**83.9**	**7**	100.5	10
Manufacturing	**95.0**	**8**	100.9	10

Cost factors[3]

- 19.8% currency depreciation against the US$
- Below-average increase in total labor costs
- Decreases in all categories of facility-related costs
- Decrease in natural gas costs
- Decrease in property taxes due to lower property values

Exchange rate sensitivity[4]		Index	Change	Rank[5]
20% appreciation	US$1 = €0.73	99.6	-7.3	8
20% depreciation	US$1 = €1.09	87.5	+4.8	8

1 Overall results for the country and cities. Rank for Germany is relative to 10 countries in both 2016 and 2014. Ranks for cities are relative to 111 cities in 2016 and 107 cities in 2014.
2 Rank is relative to 10 countries in both 2016 and 2014.
3 Significant cost trends between 2014 and 2016.
4 "What if" exchange sensitivity scenarios based on appreciation or depreciation relative to the US dollar.
5 Rank among 10 countries assuming equal appreciation/depreciation of all currencies relative to the US dollar.

Locations

National results for Germany reflect the combined results for two major cities: Berlin and Frankfurt. Total business costs in Berlin are 0.9 percentage points lower than in Frankfurt. Since 2014, particularly low growth in labor costs in Berlin have helped it to increase its cost advantage relative to Frankfurt. Also over the last two years, relatively lower business costs have allowed both Berlin and Frankfurt to move ahead of London in the cost rankings among the major European cities.

Sectors

Among the four study sectors, Germany ranks seventh among the 10 countries for both R&D services and corporate services, with similar cost advantages relative to the US baseline in both of these sectors. Germany drops to eighth place for the manufacturing sector and to ninth place for digital services. These differences in sector rankings for Germany cannot be attributed to any one factor, but rather are the result of small changes in its relative advantages and disadvantages among all of the cost factors examined.

Cost factors

The rise in value of the US dollar relative to the euro in 2015 is the primary driver of Germany's improved cost index in 2016 and the significant improvement in rankings for the two German cities. However, other cost trends as noted in the table help Germany to move ahead of Japan in the current study.

Italy

GDP per capita:
US$34,909 (2014)

GDP growth rate:
1.0% (2015)

Unemployment rate:
11.7% (Q3/2015)

Inflation rate:
0.1% (2015)

2016 business cost index **89.3**
Country ranking **4th / 10**

Locations[1]	2016 index	Rank[1]	2014 index	Rank[1]
Italy	**89.3**	**4**	98.8	6
Milan	**89.5**	**27**	98.3	81
Rome	**89.1**	**25**	99.2	88

Sectors	2016 index	Rank[2]	2014 index	Rank[2]
Digital services	**83.5**	**4**	99.3	8
R&D services	**79.0**	**6**	96.7	7
Corporate services	**79.1**	**4**	93.3	5
Manufacturing	**92.9**	**4**	99.6	7

Cost factors[3]

- 19.8% currency depreciation against the US$
- Lowest increase in total labor costs among study countries
- Decrease in leasing costs for industrial facilities
- Decrease in utility costs, for both electricity and natural gas
- Federal corporate income tax rate cut, plus new R&D tax credit

Exchange rate sensitivity[4]		Index	Change	Rank[5]
20% appreciation	US$1 = €0.73	96.3	-7.0	4
20% depreciation	US$1 = €1.09	84.7	+4.6	4

1 Overall results for the country and cities. Rank for Italy is relative to 10 countries in both 2016 and 2014. Ranks for cities are relative to 111 cities in 2016 and 107 cities in 2014.
2 Rank is relative to 10 countries in both 2016 and 2014.
3 Significant cost trends between 2014 and 2016.
4 "What if" exchange sensitivity scenarios based on appreciation or depreciation relative to the US dollar.
5 Rank among 10 countries assuming equal appreciation/depreciation of all currencies relative to the US dollar.

Locations

National results for Italy reflect the combined results for two major cities: Milan and Rome. Total business costs in these two cities are relatively similar, within 0.5 percentage points of each other in both 2014 and 2016. Since 2014, Rome has moved ahead of Milan in the rankings, primarily due to reductions in facility lease costs. This change has also allowed Rome to move up in the rankings among the European cities examined, from sixth among 10 European cities in 2014, to fourth in 2016.

Sectors

Among the four study sectors, Italy ranks consistently as fourth among the 10 countries in all sectors except for R&D services. The introduction of a new federal R&D tax credit in 2015 helps Italy to improve its relative cost advantage over the US in this sector, but more generous R&D incentives in other countries continue to suppress Italy's ranking in this sector.

Cost factors

The rise in value of the US dollar relative to the euro in 2015 is the primary driver of Italy's improved cost index in 2016 and the significant improvement in rankings for the two Italian cities. However, other cost trends as noted in the table help Italy to move ahead of both France and the UK in the current study.

Japan

GDP per capita:
US$36,194 (2014)

GDP growth rate:
0.5% (2015)

Unemployment rate:
3.2% (Q4/2015)

Inflation rate:
0.2% (2015)

2016 business cost index **92.7**
Country ranking **9th / 10**

Locations[1]	2016 index	Rank[1]	2014 index	Rank[1]
Japan	**92.7**	**9**	99.2	7
Osaka	**91.8**	**32**	96.3	59
Tokyo	**93.6**	**44**	102.1	103

Sectors	2016 index	Rank[2]	2014 index	Rank[2]
Digital services	**88.8**	**8**	98.2	7
R&D services	**87.2**	**8**	98.9	8
Corporate services	**84.3**	**9**	98.6	8
Manufacturing	**95.0**	**9**	99.5	6

Cost factors[3]

- 17.3% currency depreciation against the US$
- Below-average increase in wage and salary costs
- Above-average increase in employee benefit costs
- Increase in utility costs, for both electricity and natural gas
- Rate increases and decreases in various prefectural taxes

Exchange rate sensitivity[4]		Index	Change	Rank[5]
20% appreciation	US$1 = ¥97.15	100.0	-7.3	9 (tie)
20% depreciation	US$1 = ¥145.73	87.9	+4.8	9

1 Overall results for the country and cities. Rank for Japan is relative to 10 countries in both 2016 and 2014. Ranks for cities are relative to 111 cities in 2016 and 107 cities in 2014.
2 Rank is relative to 10 countries in both 2016 and 2014.
3 Significant cost trends between 2014 and 2016.
4 "What if" exchange sensitivity scenarios based on appreciation or depreciation relative to the US dollar.
5 Rank among 10 countries assuming equal appreciation/depreciation of all currencies relative to the US dollar.

Locations

National results for Japan reflect the combined results for two major cities: Osaka and Tokyo. Total business costs in Osaka are 1.8 percentage points lower than in Tokyo. Since 2014, reported labor cost differentials have shrunk between the two Japanese cities, with labor costs increasing in Osaka while Tokyo experienced a marginal decline. Construction costs for industrial facilities have also risen in Osaka and declined in Tokyo. Combined, these factors result in a narrowing of 5.8 point cost advantage that Osaka held over Tokyo in 2014.

Sectors

Consistent with its overall ranking, Japan ranks ninth among the 10 countries in the corporate services and manufacturing sectors, but moves into eighth place for digital services and R&D services. Relative differences in facility costs drive these sector results—Japan ranks last among the 10 countries for industrial facility costs (lease or own), ninth for downtown office costs, but eighth for the types of suburban office space utilized by the digital and R&D firms examined.

Cost factors

The rise in value of the US dollar relative to the yen in 2015 is the primary driver of Japan's improved cost index in 2016 and the significant improvement in rankings for the two Japanese cities. However, other cost trends as noted in the table also contribute to Japan's overall results in the current study.

Mexico

GDP per capita:
US$10,326 (2014)

GDP growth rate:
2.5% (2015)

Unemployment rate:
4.2% (Q4/2015)

Inflation rate:
2.1% (2015)

2016 business cost index **77.5**
Country ranking **1st / 10**

Locations[1]	2016 index	Rank[1]	2014 index	Rank[1]
Mexico	**77.5**	**1**	81.3	1
Mexico City	**78.6**	**2**	81.9	2
Monterrey	**76.5**	**1**	80.7	1

Sectors	2016 index	Rank[2]	2014 index	Rank[2]
Digital services	**65.6**	**1**	71.3	1
R&D services	**55.3**	**1**	63.4	1
Corporate services	**47.2**	**1**	54.0	1
Manufacturing	**86.1**	**1**	88.5	1

Cost factors[3]

- 22.3% currency depreciation against the US$
- Highest increase in total labor costs among study countries
- Increase in lease costs for industrial and downtown office space
- Decrease in freight costs, for both surface and air
- Decrease in utility costs, for both electricity and natural gas

Exchange rate sensitivity[4]		Index	Change	Rank[5]
20% appreciation	US$1 = MX$13.41	81.0	-3.5	1
20% depreciation	US$1 = MX$20.11	75.2	+2.3	1

1 Overall results for the country and cities. Rank for Mexico is relative to 10 countries in both 2016 and 2014. Ranks for cities are relative to 111 cities in 2016 and 107 cities in 2014.
2 Rank is relative to 10 countries in both 2016 and 2014.
3 Significant cost trends between 2014 and 2016.
4 "What if" exchange sensitivity scenarios based on appreciation or depreciation relative to the US dollar.
5 Rank among 10 countries assuming equal appreciation/depreciation of all currencies relative to the US dollar.

Locations

National results for Mexico reflect the combined results for two major cities: Mexico City and Monterrey. Total business costs in Monterrey are 2.1 percentage points lower than in Mexico City. Since 2014, suburban office lease rates have increased in Mexico City and declined in Monterrey. Mexico City has also seen higher relative growth in wages while Monterrey has experienced a greater relative reduction in transportation costs. As a result, the cost differential between the two cities has grown from 1.2 percentage points in 2014 to 2.1 percentage points in 2016.

Sectors

As the only high growth (emerging) country included in the study and consistent with its overall ranking, Mexico ranks first among the 10 countries in all sectors. Mexico sees its greatest cost advantage relative to its northern neighbor in the corporate services sector, with total business costs less than half of those in the US. Mexico sees higher cost savings for lesser-skilled clerical and administrative staff relative to highly skilled professional and technical staff, driving its greater cost advantage in the corporate services sector.

Cost factors

The rise in value of the US dollar relative to the peso in 2015 is the primary driver of Mexico's improved cost index results in 2016. However, other cost trends as noted in the table also contribute to Mexico's overall results in the current study.

Netherlands

GDP per capita:
US$52,172 (2014)

GDP growth rate:
1.2% (2015)

Unemployment rate:
6.7% (Q4/2015)

Inflation rate:
0.5% (2015)

2016 business cost index	**87.7**
Country ranking	**3rd / 10**

Locations[1]	2016 index	Rank[1]	2014 index	Rank[1]
Netherlands	**87.7**	**3**	94.5	3
Amsterdam	**87.8**	**22**	n/a	
Rotterdam	**87.5**	**21**	n/a	

Sectors	2016 index	Rank[2]	2014 index	Rank[2]
Digital services	**82.3**	**3**	92.3	4
R&D services	**74.0**	**3**	83.7	2
Corporate services	**77.8**	**3**	89.4	4
Manufacturing	**91.6**	**3**	96.9	3

Cost factors[3]

- 19.8% currency depreciation against the US$
- Labor cost increase in-line with average for all study countries
- Higher facility costs in 2016 study due to change in cities examined
- (major cities instead of regional cities)
- Changes in tax incentives applicable to R&D expenditures

Exchange rate sensitivity[4]		Index	Change	Rank[5]
20% appreciation	US$1 = €0.73	94.4	-6.7	3
20% depreciation	US$1 = €1.09	83.2	+4.5	3

1 Overall results for the country and cities. Rank for the Netherlands is relative to 10 countries in both 2016 and 2014. Ranks for cities are relative to 111 cities in 2016 and 107 cities in 2014.

2 Rank is relative to 10 countries in both 2016 and 2014.

3 Significant cost trends between 2014 and 2016.

4 "What if" exchange sensitivity scenarios based on appreciation or depreciation relative to the US dollar.

5 Rank among 10 countries assuming equal appreciation/depreciation of all currencies relative to the US dollar.

Locations

National results for the Netherlands reflect the combined results for two major cities: Amsterdam and Rotterdam. Total business costs in these two cities are relatively similar, with just 0.3 percentage points separating them. The Netherlands is the only country where the study cities have changed since the previous edition of *Competitive Alternatives*. However, national results for the Netherlands continue to be compared to its results in the 2014 study because the country's compact geography means that business costs are relatively homogeneous in both major and regional cities throughout the country, with only facility costs showing notable variations between larger and smaller cities.

Sectors

Among the four study sectors, the Netherlands consistently ranks third among the 10 countries across all sectors. Significant incentive support for R&D activities in the Netherlands helps to position R&D services as the sector in which the country holds its greatest cost advantage, with total costs 26.0 percent below the US baseline.

Cost factors

The rise in value of the US dollar relative to the euro in 2015 is the primary driver of the Netherlands' improved cost index in 2016. However, other cost trends as noted in the table also contribute to the Netherlands' overall results in the current study.

United Kingdom

GDP per capita:
US$46,332 (2014)

GDP growth rate:
1.9% (2015)

Unemployment rate:
5.0% (Q4/2015)

Inflation rate:
0.2% (2015)

2016 business cost index	**90.9**
Country ranking	**7th / 10**

Locations[1]	2016 index	Rank[1]	2014 index	Rank[1]
United Kingdom	**90.9**	**7**	94.6	4
London	**95.4**	**75**	99.9	93
Manchester	**86.4**	**18**	89.4	3

Sectors	2016 index	Rank[2]	2014 index	Rank[2]
Digital services	**85.6**	**6**	89.6	3
R&D services	**88.1**	**9**	88.8	4
Corporate services	**83.3**	**6**	87.3	2
Manufacturing	**93.0**	**5**	97.0	4

Cost factors[3]

- 6.1% currency depreciation against the US$
- Strong appreciation of UK pound relative to other currencies
- Increase in office leasing costs, mainly for suburban offices
- Large decrease in air freight costs
- Phased-in corporate income tax rate reduction

Exchange rate sensitivity[4]		Index	Change	Rank[5]
20% appreciation	US$1 = £0.53	99.1	-8.2	7
20% depreciation	US$1 = £0.79	85.4	+5.5	6

1 Overall results for the country and cities. Rank for the UK is relative to 10 countries in both 2016 and 2014. Ranks for cities are relative to 111 cities in 2016 and 107 cities in 2014.
2 Rank is relative to 10 countries in both 2016 and 2014.
3 Significant cost trends between 2014 and 2016.
4 "What if" exchange sensitivity scenarios based on appreciation or depreciation relative to the US dollar.
5 Rank among 10 countries assuming equal appreciation/depreciation of all currencies relative to the US dollar.

Locations

National results for the United Kingdom reflect the combined results for two major cities: London and Manchester. Business costs are very different between these two cities, with a spread of 9.0 percentage points separating them. Even with the current strength of the UK pound relative to the euro, Manchester enjoys the lowest business costs among the 10 major European cities compared, while London is the most costly location among the European cities.

Sectors

The results for the United Kingdom vary significantly by sector, ranging from fifth place ranking for manufacturing to ninth for R&D services. Moderate wage and salary levels represent an advantage for the UK in most sectors, but especially in the corporate services sector. However, the highest office leasing costs among the study countries drag down the UK rankings in the service sectors, especially for R&D which has a higher space requirement per employee than digital or corporate services.

Cost factors

The UK pound managed to hold some ground against the rising US dollar in 2015, resulting in a rise in value relative to other currencies. However, other cost trends as noted in the table also contribute to the overall results for the UK in the current study.

United States

GDP per capita:
US$54,629 (2014)

GDP growth rate:
2.4% (2015)

Unemployment rate:
5.0% (Q4/2015)

Inflation rate:
0.7% (2015)

2016 business cost index **100.0**
Country ranking **10th / 10**

Locations[1]	2016 index	Rank[1]	2014 index	Rank[1]
United States	**100.0**	**10**	100.0	9
Chicago, IL	**98.3**	**97**	99.1	87
Dallas-Fort Worth, TX	**96.2**	**83**	96.8	66
Los Angeles, CA	**100.8**	**105**	100.5	96
New York City, NY	**104.7**	**110**	103.6	104

Sectors	2016 index	Rank[2]	2014 index	Rank[2]
Digital services	**100.0**	**10**	100.0	9
R&D services	**100.0**	**10**	100.0	9
Corporate services	**100.0**	**10**	100.0	9
Manufacturing	**100.0**	**10**	100.0	8

Cost factors[3]
— Strong appreciation of US$ relative to most other currencies
— Increase in leasing costs for industrial facilities
— Decrease in freight costs, for both surface and air
— Increase in utility costs for electricity

Exchange rate sensitivity[4]		Rank[5]
20% appreciation	20% gain against all currencies[6]	10
20% depreciation	20% decline against all currencies[6]	9 (tie)

1 Overall results for the country and cities. Rank for the US is relative to 10 countries in both 2016 and 2014. Ranks for cities are relative to 111 cities in 2016 and 107 cities in 2014.

2 Rank is relative to 10 countries in both 2016 and 2014.

3 Significant cost trends between 2014 and 2016.

4 "What if" exchange sensitivity scenarios based on appreciation or depreciation of all currencies relative to the US dollar. Index number is not shown for the US, because the US baseline index is always 100.0.

5 Rank among 10 countries assuming appreciation/depreciation of the US dollar relative to all currencies.

6 For 20% appreciation: US$1 = AU$1.67, CA$1.61, €1.09, ¥145.73, MX$20.11 and £0.79.
For 20% depreciation: US$1 = AU$1.11, CA$1.07, €0.73, ¥97.15, MX$13.41 and £0.53

Locations

National results for the United States reflect the combined results for the four largest US metro areas: New York City, Los Angeles, Chicago and Dallas-Fort Worth. Business costs in these four cities are quite diverse, with a total cost spread of 8.5 percentage points separating low cost Dallas and high cost New York City. Since 2014, business cost increases have been more restrained in Chicago and Dallas, resulting in lower cost indices for these cities, while higher cost increases in Los Angeles and New York City have pushed up their cost index results.

Sectors

Among the four study sectors, the current high value of the US dollar consigns the United States to last place ranking in all four sectors. Manufacturing represents the sector where the US sees the lowest cost gap to other countries, with a 5.0 percent gap between the US and both Germany and Japan. However, the manufacturing sector has the lowest cost differentials between countries, with fixed costs for machinery, commodity parts and components making it more difficult to close a cost gap in this sector.

Cost factors

The surge in value of the US dollar relative to all other currencies in 2015 is the primary driver of the drop in rankings for the US and its cities in 2016. However, other cost trends, including cost increases noted in the table, also contribute to the overall results for the United States in the current study.

City results

Major global cities

The comparison of major global cities presented here reflects the results for the largest cities in each of the study countries, all with metro populations not less than 2.0 million.

Among this group of major global cities, all cities outside the US have experienced gains in cost competitiveness relative to the US in 2016, based on the surging value of the US dollar. However, changes in local cost factors also impact the relative competitiveness of these cities. For example, declining utility rates together with static costs for employee benefits help Sydney (Australia) move ahead of Osaka (Japan), where these same cost factors have seen sizable increases.

Among the major US cities, Miami has experienced the lowest increase in business costs since 2014 and moves up in the rankings. Recent reductions in transportation costs and suburban office lease costs both help Miami, along with enhancements in Florida state tax incentives.

Moving in the opposite direction, New York City has seen the largest increase in business costs among the big US cities, falling behind San Francisco in this year's rankings. Rising labor costs—both salaries and benefits—are an issue for New York City and more than offset gains from recent state tax reforms that assist New York firms.

Rank	City	Country	Index[1]
1	Monterrey	Mexico	76.5
2	Mexico City	Mexico	78.6
3	Montreal	Canada	85.2
4	Toronto	Canada	85.6
5	Vancouver	Canada	86.2
6	Manchester	UK	86.4
7	Rotterdam	Netherlands	87.5
8	Amsterdam	Netherlands	87.8
9	Melbourne	Australia	88.8
10	Rome	Italy	89.1
11	Milan	Italy	89.5
12	Sydney	Australia	90.1
13	Paris	France	91.7
14	Osaka	Japan	91.8
15	Berlin	Germany	91.9
16	Frankfurt	Germany	92.8
17	Tokyo	Japan	93.6
18	Atlanta	US	95.1
19	Miami	US	95.4
20	London	UK	95.4
21	Dallas-Fort Worth[1]	US	96.2
22	Houston	US	97.6
23	Chicago[1]	US	98.3
24	North Virginia, Metro DC	US	99.4
25	Philadelphia	US	99.8
	US BASELINE[1]		**100.0**
26	Los Angeles[1]	US	100.8
27	Boston	US	101.2
28	San Francisco	US	104.5
29	New York City[1]	US	104.7

1 US Baseline is the average of the four largest US metro areas.

"Certain types of investments need to locate in major global cities like New York or San Francisco, despite the high costs in these cities."

Ulrich Schmidt, Global Location and Expansion Services, KPMG in the US

New England/ Atlantic Canada

Within the New England/Atlantic Canada region, the two cost leaders, Fredericton and Moncton, are both located in the Canadian province of New Brunswick and have almost equivalent business costs—both with a cost index of 83.3. Along with their Atlantic Canada neighbors of Charlottetown, Halifax and St. John's, these cities all have business costs more than 14 percent below the US baseline. For international firms, the current weakness of the Canadian dollar further enhances the low labor and facility costs that are typical of this region and which make Atlantic Canada the lowest cost region within Canada.

Bangor is the cost leader among the US cities in this region, with business costs 5.2 percent below the US baseline. Providence, the second largest city in the region, has the second lowest business costs among the US cities compared, with costs below those of the smaller regional cities of Burlington (Vermont) and Manchester (New Hampshire).

Costs in Hartford are still below the US baseline, although only by 1.8 percent. Boston is the only major city in this region and has business costs significantly higher than any other city in the region, at 1.2 percent above the US base.

	Overall result	Services			Manu-facturing
		Digital	R&D	Corporate	
1 Fredericton, NB	**83.3**	73.2 (2)	63.1 (2)	65.6 (3)	89.7 (1)
2 Moncton, NB	**83.3**	73.1 (1)	62.8 (1)	65.5 (2)	89.9 (2)
3 Charlottetown, PE	**83.9**	74.8 (4)	65.5 (3)	64.5 (1)	90.2 (3)
4 Halifax, NS	**84.5**	75.4 (5)	66.6 (4)	67.5 (4)	90.5 (4)
5 St. John's, NL	**85.4**	74.4 (3)	69.7 (5)	70.8 (5)	91.1 (5)
6 Bangor, ME	**94.8**	90.1 (6)	84.4 (6)	84.0 (6)	98.2 (6)
7 Providence, RI	**96.7**	94.6 (8)	88.7 (7)	89.9 (8)	98.9 (7)
8 Burlington, VT	**96.9**	95.5 (9)	89.1 (8)	89.7 (7)	99.0 (8)
9 Manchester, NH	**97.2**	96.4 (10)	90.4 (9)	90.8 (9)	99.0 (9)
10 Hartford, CT	**98.2**	93.9 (7)	94.9 (10)	95.0 (10)	99.8 (10)
11 Boston, MA	**101.2**	101.3 (11)	101.8 (11)	103.5 (11)	100.8 (11)

Northeast US/ Central Canada

This regional comparison includes six cities from Central Canada and 17 cities from the US Northeast. The current high value of the US dollar gives all of the Canadian cities a clear cost advantage over their US counterparts, with a cost gap of 6.7 percentage points separating the highest cost Canadian city and the lowest cost US city in this region.

Quebec City, Barrie and Sault Ste. Marie are the cost leaders in this region, all with total business costs 15.0 percent or more below the US baseline. Costs are only marginally higher in the larger Canadian cities of Montreal, Toronto and Gatineau (being the Quebec portion of Canada's National Capital Region, which spans the border of Ontario and Quebec).

Youngstown is the cost leader among the US cities in this region and ranks second among all US cities in this study, behind only Shreveport (Louisiana). Together with Lexington and Charleston (West Virginia), these cities all have business costs more than 6.0 percent below the US base.

Among the larger US cities in this region, Cincinnati, Indianapolis and Cleveland are the cost leaders, ranking 10th through 12th among all cities in the region. At the bottom of the rankings, Trenton and New York City are the only cities in the region where business costs exceed the US base, with costs in New York City being 4.7 percent above the US baseline.

	Overall result	Services			Manu-facturing
		Digital	R&D	Corporate	
1 Quebec City, QC	**83.9**	70.7 (1)	66.2 (1)	68.7 (1)	90.2 (2)
2 Barrie, ON	**84.2**	72.9 (3)	68.2 (2)	69.6 (3)	89.9 (1)
3 Sault Ste. Marie, ON	**85.0**	72.6 (2)	68.2 (3)	68.8 (2)	91.3 (6)
4 Montreal, QC	**85.2**	73.3 (4)	71.8 (5)	73.3 (4)	90.3 (3)
5 Toronto, ON	**85.6**	74.7 (6)	72.8 (6)	74.5 (6)	90.4 (4)
6 Gatineau (National Capital Region), QC	**85.8**	73.7 (5)	70.9 (4)	74.0 (5)	91.1 (5)
7 Youngstown, OH	**92.5**	86.7 (7)	83.2 (7)	81.5 (7)	96.0 (8)
8 Lexington, KY	**93.2**	92.2 (12)	84.3 (8)	82.7 (8)	95.9 (7)
9 Charleston, WV	**93.8**	91.9 (10)	84.9 (9)	83.6 (9)	96.6 (10)
10 Cincinnati, OH	**94.0**	88.8 (8)	88.7 (12)	87.4 (12)	96.4 (9)
11 Indianapolis, IN	**94.6**	92.9 (13)	87.1 (11)	86.9 (11)	96.9 (12)
12 Cleveland, OH	**94.6**	89.6 (9)	89.6 (13)	88.0 (13)	96.9 (13)
13 Saginaw, MI	**94.7**	91.9 (11)	86.0 (10)	85.3 (10)	97.4 (14)
14 Richmond, VA	**95.5**	96.0 (17)	90.8 (15)	89.3 (14)	96.8 (11)
15 Baltimore, MD	**96.5**	96.6 (18)	93.1 (18)	91.4 (18)	97.6 (15)
16 Detroit, MI	**96.8**	94.9 (14)	90.1 (14)	90.2 (15)	98.8 (18)
17 Pittsburgh, PA	**97.0**	95.4 (15)	92.1 (17)	91.3 (17)	98.6 (16)
18 Wilmington, DE	**97.7**	97.7 (19)	94.2 (19)	93.4 (19)	98.6 (17)
19 Rochester, NY	**98.3**	95.9 (16)	91.1 (16)	90.8 (16)	100.6 (21)
20 North Virginia, Metro DC	**99.4**	100.4 (21)	101.4 (21)	100.8 (21)	98.8 (19)
21 Philadelphia, PA	**99.8**	99.6 (20)	97.8 (20)	99.0 (20)	100.1 (20)
22 Trenton, NJ	**101.8**	103.4 (22)	103.2 (22)	104.0 (22)	101.1 (22)
23 New York City, NY	**104.7**	106.2 (23)	107.7 (23)	112.5 (23)	103.1 (23)

Southeast US

The southeast represents the lowest cost region in the United States and all cities in the region have business costs more than 4.5 percent below the US baseline. The range of variation in business costs among cities in this region (from lowest cost to highest cost) is also less than in other regions of the US.

Louisiana claims the title for the lowest cost US state, with three cities—Shreveport, Baton Rouge and New Orleans—ranking among the top four cities in this region. Only Savannah (Georgia) is able to match the Louisiana cities and make it into the top three. Little Rock (Arkansas) rounds out the top five low cost cities in this region.

The next six cities on the list all rank according to their states. Gulfport-Biloxi and Jackson (Mississippi) rank sixth and seventh, followed by Montgomery and Mobile (Alabama) and then Nashville and Memphis (Tennessee).

While business costs are higher in the remaining cities, costs in Orlando and Tampa are still very low for cities of their size. Among all US cities with populations in excess of two million, only Cincinnati (Ohio) offers lower business costs than these two large Florida cities. Atlanta, Charlotte and Miami are the highest cost cities in this region, but business costs in these cities are still low relative to large cities in other regions of the US.

	Overall result	Services			Manu-facturing
		Digital	R&D	Corporate	
1 Shreveport, LA	**91.7**	83.8 (1)	83.8 (2)	82.4 (2)	95.1 (1)
2 Baton Rouge, LA	**92.8**	85.3 (2)	87.7 (12)	84.9 (9)	95.6 (4)
3 Savannah, GA	**93.1**	91.2 (10)	86.2 (5)	82.8 (4)	95.6 (3)
4 New Orleans, LA	**93.1**	85.6 (3)	87.5 (9)	86.6 (14)	95.8 (6)
5 Little Rock, AR	**93.3**	89.9 (6)	83.2 (1)	82.3 (1)	96.5 (12)
6 Gulfport-Biloxi, MS	**93.3**	90.9 (8)	85.8 (4)	83.3 (5)	95.9 (7)
7 Jackson, MS	**93.3**	90.6 (7)	84.5 (3)	82.7 (3)	96.2 (10)
8 Montgomery, AL	**93.4**	92.6 (14)	87.2 (7)	84.4 (7)	95.4 (2)
9 Mobile, AL	**93.7**	92.3 (12)	86.9 (6)	83.7 (6)	96.0 (8)
10 Nashville, TN	**93.8**	92.3 (13)	88.3 (13)	85.6 (11)	95.8 (5)
11 Memphis, TN	**94.4**	93.1 (15)	88.9 (14)	85.4 (10)	96.4 (11)
12 Orlando, FL	**94.4**	89.7 (4)	87.7 (10)	86.0 (12)	97.1 (16)
13 Spartanburg, SC	**94.5**	92.3 (11)	87.5 (8)	84.7 (8)	97.0 (15)
14 Tampa, FL	**94.6**	89.9 (5)	87.7 (11)	86.3 (13)	97.3 (17)
15 Raleigh, NC	**95.1**	94.6 (16)	89.6 (15)	88.0 (15)	96.7 (14)
16 Atlanta, GA	**95.1**	94.7 (17)	92.1 (18)	89.8 (18)	96.2 (9)
17 Charlotte, NC	**95.2**	94.8 (18)	90.1 (16)	88.7 (16)	96.7 (13)
18 Miami, FL	**95.4**	91.0 (9)	91.6 (17)	89.4 (17)	97.3 (18)

Midwest US/ Canada West

This regional comparison includes four cities from Western Canada and 23 cities from the US Midwest. The current high value of the US dollar gives all of the Canadian cities a clear cost advantage over their US counterparts, with a cost gap of 6.8 percentage points separating the highest cost Canadian city and the lowest cost US city in this region.

The spread of business costs among the four Canadian cities compared is 2.1 percentage points. Winnipeg is the clear leader among the Canadian cities, followed by Saskatoon, Edmonton and Calgary.

Cedar Rapids and Omaha are the cost leaders among the US cities in this region, both with business costs more than 6.0 percent below the US base.

In this region, the results reveal clusters of US cities with relatively similar costs. Ten cities all have costs between 5 and 6 percent below the US baseline—from Sioux Falls through to Beaumont, while a further six cities—from St. Louis through to Minneapolis—all have costs between 3 and 4 percent below the base.

Costs are moderate (relative to US standards) for even the most expensive cities in this region. While Houston, Denver and Chicago represent the lowest ranked cities in this region, their business costs range from 2.4 to 1.7 percentage points below the US baseline.

	Overall result	Services			Manu-facturing
		Digital	R&D	Corporate	
1 Winnipeg, MB	**84.9**	75.8 (1)	66.6 (1)	69.9 (1)	90.6 (1)
2 Saskatoon, SK	**85.9**	76.3 (2)	69.6 (2)	71.7 (2)	91.3 (3)
3 Edmonton, AB	**86.4**	77.9 (3)	71.3 (3)	74.6 (3)	91.2 (2)
4 Calgary, AB	**87.0**	79.3 (4)	72.9 (4)	76.4 (4)	91.4 (4)
5 Cedar Rapids, IA	**93.8**	90.6 (9)	83.2 (7)	83.6 (10)	96.9 (6)
6 Omaha, NE	**93.9**	90.4 (8)	86.4 (13)	84.2 (13)	96.7 (5)
7 Sioux Falls, SD	**94.1**	89.9 (6)	83.1 (5)	81.3 (6)	97.8 (17)
8 Fargo, ND	**94.3**	90.7 (10)	84.3 (8)	82.1 (7)	97.6 (13)
9 Albuquerque, NM	**94.4**	88.5 (5)	85.4 (10)	83.5 (9)	97.8 (16)
10 Billings, MT	**94.4**	90.8 (11)	83.2 (6)	81.2 (5)	98.1 (19)
11 Cheyenne, WY	**94.6**	90.0 (7)	84.7 (9)	82.6 (8)	98.1 (20)
12 San Antonio, TX	**94.7**	91.4 (13)	87.9 (17)	85.4 (15)	97.2 (8)
13 Wichita, KS	**94.7**	92.5 (16)	85.6 (11)	83.7 (11)	97.6 (11)
14 Oklahoma City, OK	**94.7**	92.1 (15)	86.9 (16)	83.9 (12)	97.5 (10)
15 Champaign-Urbana, IL	**94.8**	93.7 (22)	86.6 (14)	85.7 (17)	97.1 (7)
16 Beaumont, TX	**94.9**	91.2 (12)	86.8 (15)	85.6 (16)	97.7 (14)
17 Salt Lake City, UT	**95.0**	91.9 (14)	86.1 (12)	84.7 (14)	98.0 (18)
18 Madison, WI	**95.7**	93.6 (20)	89.1 (19)	88.9 (21)	97.7 (15)
19 St. Louis, MO	**96.1**	93.1 (18)	90.5 (22)	87.9 (19)	98.3 (22)
20 Kansas City, MO	**96.2**	92.8 (17)	90.2 (21)	87.1 (18)	98.6 (24)
21 Phoenix, AZ	**96.2**	93.2 (19)	89.8 (20)	88.1 (20)	98.5 (23)
22 Austin, TX	**96.2**	94.2 (23)	94.8 (25)	91.0 (24)	97.3 (9)
23 Dallas-Fort Worth, TX	**96.2**	94.3 (24)	93.5 (23)	90.2 (22)	97.6 (12)
24 Minneapolis, MN	**96.8**	94.7 (25)	89.0 (18)	90.5 (23)	99.0 (26)
25 Houston, TX	**97.6**	96.2 (26)	98.0 (27)	93.3 (26)	98.2 (21)
26 Denver, CO	**97.8**	93.7 (21)	93.8 (24)	91.1 (25)	99.8 (27)
27 Chicago, IL	**98.3**	98.5 (27)	95.4 (26)	96.4 (27)	98.9 (25)

Pacific US/ Canada

The Pacific region of the US and Canada represents the most costly region in this study. Business costs for the two Canadian cities in this region are above the Canadian average, while average costs for the 12 US cities compared exceed the US base. Only eight cities in the study have business costs above the US baseline, with five of them being in the Pacific region.

The current high value of the US dollar provides a strong cost advantage for the Canadian cities compared, Kelowna and Vancouver, relative to their US regional counterparts. These cities enjoy a business cost advantage of more than 8.0 percentage points over Boise, Spokane and Portland, the lowest cost US cities in the region.

Business costs in Las Vegas, Sacramento, Riverside-San Bernardino and San Diego are below, but within 2.0 percent of, the US baseline. Costs in Seattle and Los Angeles are similar, at 0.8 percent above the US baseline.

Business costs in Honolulu and San Francisco are well above the US baseline, but are still lower than in New York City. Meanwhile, Anchorage represents the most expensive city examined in this study, with business costs 8.1 percent above the US baseline.

	Overall result	Services			Manu-facturing
		Digital	R&D	Corporate	
1 Kelowna, BC	**85.5**	76.2 (1)	68.5 (1)	69.4 (1)	91.2 (2)
2 Vancouver, BC	**86.2**	77.6 (2)	72.9 (2)	73.3 (2)	91.0 (1)
3 Boise, ID	**94.3**	90.5 (3)	83.2 (3)	81.2 (3)	98.0 (3)
4 Spokane, WA	**96.0**	92.6 (4)	88.5 (4)	85.9 (4)	98.7 (4)
5 Portland, OR	**97.6**	96.3 (6)	91.9 (5)	91.3 (6)	99.4 (5)
6 Las Vegas, NV	**98.0**	95.6 (5)	94.9 (7)	91.1 (5)	99.6 (7)
7 Sacramento, CA	**98.5**	96.5 (7)	94.1 (6)	93.2 (7)	100.0 (8)
8 Riverside-San Bernardino, CA	**98.5**	97.4 (8)	96.5 (8)	94.6 (8)	99.4 (6)
9 San Diego, CA	**99.9**	98.9 (10)	100.0 (10)	97.2 (10)	100.3 (9)
10 Seattle, WA	**100.8**	100.2 (12)	100.7 (12)	99.8 (12)	101.0 (11)
11 Los Angeles, CA	**100.8**	101.0 (13)	103.5 (13)	100.8 (13)	100.4 (10)
12 Honolulu, HI	**103.9**	98.5 (9)	99.5 (9)	96.3 (9)	106.3 (13)
13 San Francisco, CA	**104.5**	105.0 (14)	107.4 (14)	108.5 (14)	103.5 (12)
14 Anchorage, AK	**108.1**	100.0 (11)	100.3 (11)	98.5 (11)	111.5 (14)

Other sponsored cities

In addition to the 111 cities featured in this report, 22 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 for these cities can be found at the end of this report.

These cities are generally smaller cities and, therefore, are not ranked among all cities (including the very large cities) within their respective regions. However, results for these cities have been developed on the same basis as for the featured cities and valid comparisons can be made between these cities and the mid-sized featured cities. Detailed results for all cities can be accessed and compared on the study website at CompetitiveAlternatives.com.

	Overall result	Services			Manu-facturing
		Digital	R&D	Corporate	
Atlantic Canada					
Saint John, NB	**83.4**	73.6	62.5	65.8	90.0
Sydney, NS	**83.9**	73.4	62.3	65.7	90.6
Truro, NS	**84.1**	73.2	62.5	65.6	91.0
Central Canada					
Belleville-Quinte West, ON	**83.9**	72.3	67.5	68.3	89.8
Niagara Region, ON	**84.0**	72.1	67.0	68.8	90.0
Sherbrooke, QC	**83.2**	70.3	66.0	67.2	89.5
Thunder Bay, ON	**85.6**	72.7	68.2	68.7	92.0
Windsor-Essex, ON	**84.3**	72.6	67.9	69.3	90.2
Canada West					
Brandon, MB	**84.2**	74.3	62.9	67.2	90.7
Grande Prairie, AB	**86.2**	76.2	66.9	73.6	91.9
Lethbridge, AB	**85.3**	76.6	66.7	69.8	91.1
Lloydminster, AB	**85.4**	76.1	66.8	70.8	91.2
Medicine Hat, AB	**84.6**	75.5	65.8	69.7	90.4
Moose Jaw, SK	**85.0**	74.8	66.1	69.0	91.0
Prince Albert, SK	**85.4**	74.7	65.2	70.3	91.7
Red Deer, AB	**85.2**	76.1	67.6	71.0	90.8
Regina, SK	**86.0**	76.6	71.0	72.0	91.2
US Southeast					
Alexandria, LA	**93.2**	85.6	87.3	85.3	96.1
Houma, LA	**91.9**	84.1	85.2	83.0	95.1
Lafayette, LA	**92.0**	83.9	84.3	82.8	95.4
Lake Charles, LA	**92.5**	84.4	86.2	83.3	95.7
Monroe, LA	**91.3**	83.4	82.9	81.7	94.9

Sectors

Results for 19 distinct business operations are summarized in four main sector groups

Sectors & operations

The hierarchy of the analysis for *Competitive Alternatives* includes overall results, sectors and individual business operations.

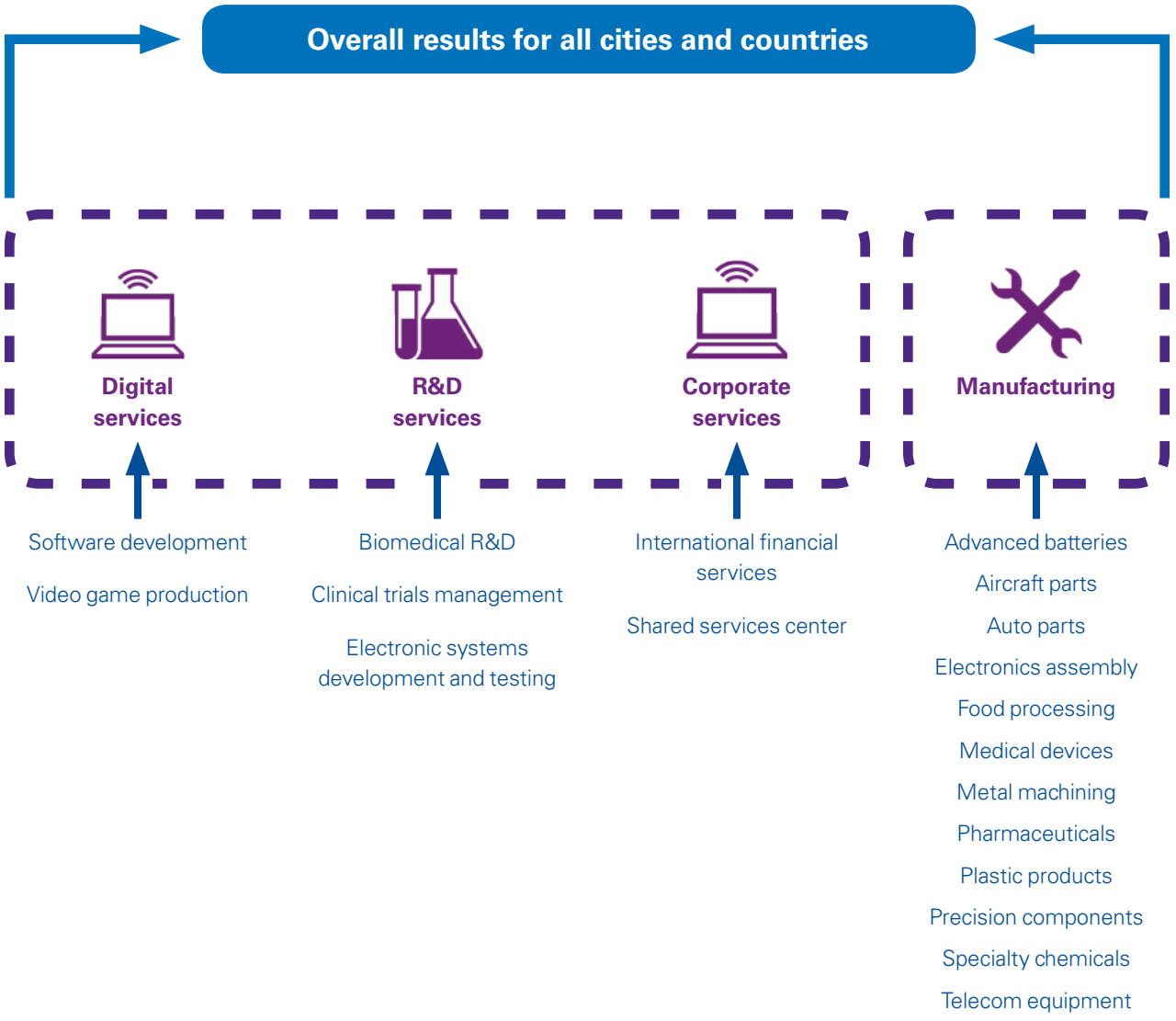
The overall results for all cities and countries represent the top level of the hierarchy and combine results from the services and the manufacturing sectors.

Those results are ultimately based on the analysis of 19 individual industry-specific business operations, as shown at the bottom of the hierarchy. These business operations have been chosen to reflect industries that are regularly seen making site selection decisions through the assessment of multiple jurisdictions.

The 19 operations have been developed with reference to specific industries, but are also potentially relevant to a wider range of industries. For example, the metal machining operation examined is potentially relevant to the industrial equipment, agricultural equipment, transportation equipment and hardware industries. Similarly, the biomedical R&D operation examined is potentially applicable to diverse fields including biotechnology, pharmaceuticals, nutraceuticals, agricultural biotechnology and marine biotechnology.

Results for each of the 19 business operations are available at CompetitiveAlternatives.com/industries.

The sectors form the middle layer of the analysis hierarchy, connecting and combining results for reasonably similar types of business operation. This chapter presents the results for the four sectors highlighted—digital services, R&D services, corporate services and manufacturing.



Digital services

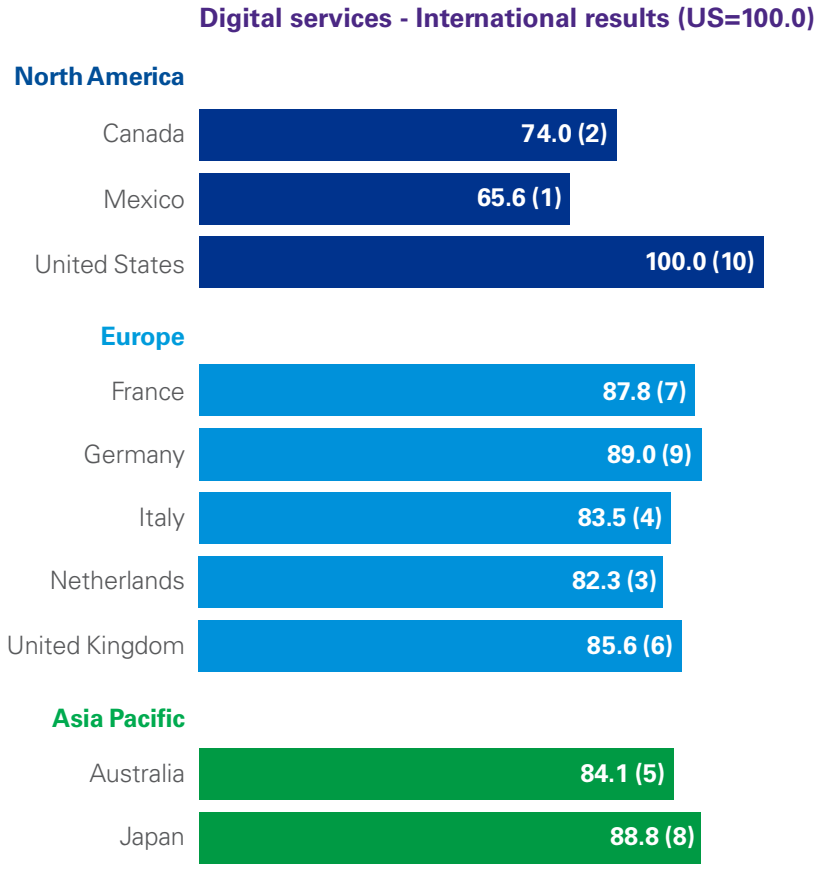
Results for the digital services sector are based on the combined analysis of two representative operations, a video game production studio and an independent software development firm. A summary of the business operating parameters for these firms can be found at the end of this section.

Results by country

International results for this sector are expressed as a cost index for each country, relative to the US baseline index of 100.0.

Mexico, Canada and the Netherlands are the cost leaders in the digital services sector, with business costs ranging from 17.7 percent below the US baseline for the Netherlands to 34.4 percent below the US baseline for Mexico.

In this sector, Canada holds a greater cost advantage relative to the Netherlands, Italy and the other mature market countries than in any other sector. This strong result for Canada is due in part to substantial incentives that several Canadian provinces provide to digital media production firms.



"Digital media and animation is a priority sector in Canada, with strong incentive support encouraging growth and reducing costs for firms in this sector."

Greg Wiebe, Partner, KPMG Canada

Results by city

Comparing the results in this sector for selected cities, the Mexican cities have the lowest business costs, consistent with Mexico's national ranking. Costs in Monterrey are 2.3 percentage points lower than in Mexico City.

Among the Canadian cities highlighted for their prominent or emerging digital clusters, costs are lowest in Montreal (Quebec) and Toronto (Ontario), while among the highlighted US cities costs are lowest in Baton Rouge (Louisiana) and Albuquerque (New Mexico). Of these jurisdictions, both Quebec and Louisiana offer significant incentives to a wide range of e-business and/or software development firms. These incentives have much broader reach among digital sector firms than the targeted digital media production incentives offered by numerous North American jurisdictions, including both Ontario and New Mexico.

Among the international cities, Manchester (United Kingdom), Adelaide (Australia) and Rotterdam (Netherlands) are the cost leaders. Business costs in each of these cities are lower than their respective national results.

Among the cities highlighted here, business costs for the digital services sector are highest in Honolulu, Seattle and San Francisco.

Digital services - Results for selected cities, by country

		Index	Rank[1]
North America - Selected cluster cities			
Canada	Calgary, AB	79.3	20
	Edmonton, AB	77.9	18
	Montreal, QC	73.3	8
	Toronto, ON	74.7	11
	Vancouver, BC	77.6	17
Mexico	Mexico City	66.8	2
	Monterrey	64.5	1
United States	Albuquerque, NM	88.5	36
	Austin, TX	94.2	80
	Baton Rouge, LA	85.3	30
	Denver, CO	93.7	77
	Honolulu, HI	98.5	100
	Orlando, FL	89.7	39
	Providence, RI	94.6	82
	San Francisco, CA	105.0	110
	Seattle, WA	100.2	105
International locations - All cities			
Australia	Adelaide	80.7	21
	Brisbane	83.4	26
	Melbourne	83.3	25
	Sydney	84.9	29
France	Marseille	85.7	32
	Paris	90.0	43
Germany	Berlin	87.9	35
	Frankfurt	90.0	45
Italy	Milan	84.4	28
	Rome	82.5	24
Japan	Osaka	87.5	34
	Tokyo	90.2	47
Netherlands	Amsterdam	82.4	23
	Rotterdam	82.1	22
United Kingdom	London	92.9	72
	Manchester	78.2	19

1 Rank among 111 featured cities.

Business operating parameters

Results for the digital services sector are based on the combined analysis of two representative business operations:

— **Digital entertainment**: a video game production studio that is a subsidiary of a large games publishing house, developing and releasing new games on multiple gaming platforms

— **Software design**: an independent software development firm performing original and ongoing application development for packaged software.

The operating parameters table shows the combined operating characteristics of these firms, which include:

— Leased office space, with sufficient space to create a modern, collaborative and social high tech work environment

— A technically oriented workforce, but also with significant sales and customer support functions

— A significant level of activities eligible for either R&D tax incentives or specific digital media production incentives.

Cost results for these two individual business operations can be accessed on the study website, at CompetitiveAlternatives.com/industries.

Digital services - Operating parameters

Facilities requirements	
Class A office space leased[1]	21,375 ft²
Other initial investment requirements	
Office equipment - US $'000	$2,300
Equity financing - % of project costs	67%
Workforce	
Management	6
Sales and administration	22
Dedicated product development	71
Customer support	6
Total employees	105
Energy requirements	
Electricity monthly consumption - kWh	60,000
Other annual operating characteristics	
Sales at full production - US $'000	$22,250
Operating costs - % of sales	11%
Investment in tax-eligible R&D - % of sales	9%

1 21,375 ft² = 1,986 m².

R&D services

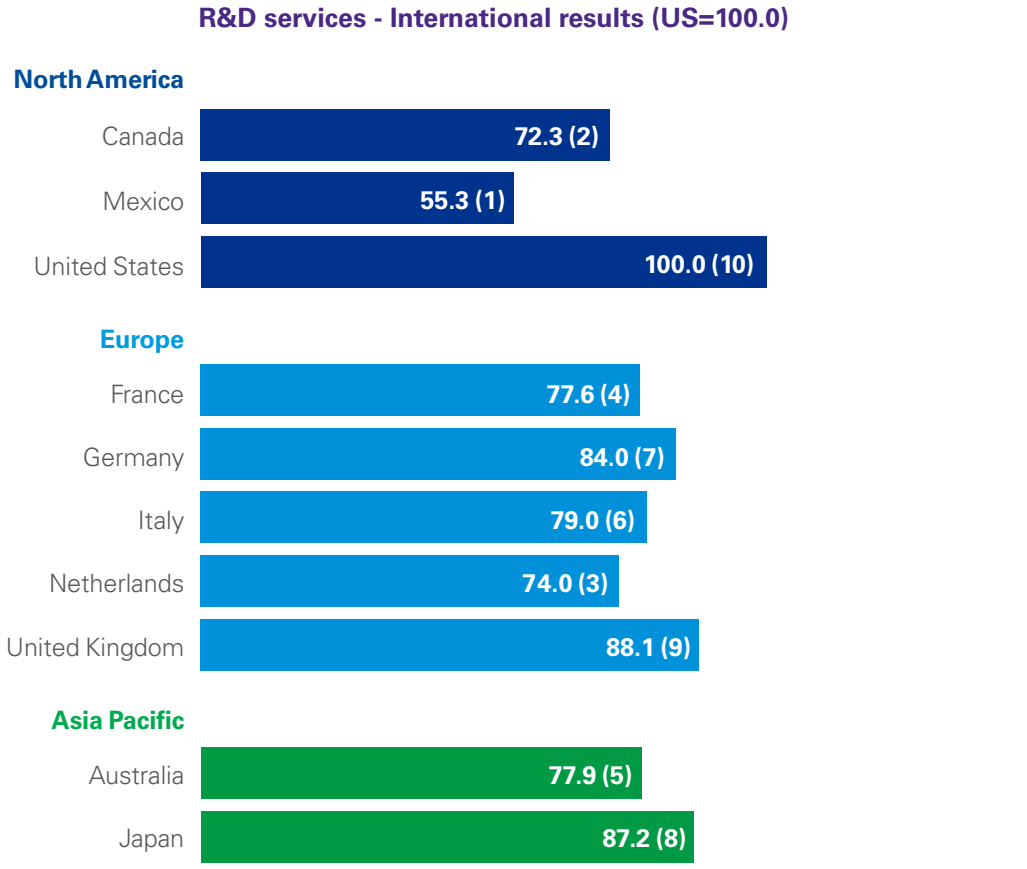
Results for the R&D services sector are based on the combined analysis of three representative business operations, a biomedical research facility, an electronic systems design/test facility and a clinical trials management firm. A summary of the business operating parameters for these firms can be found at the end of this section.

Results by country

International results for this sector are expressed as a cost index for each country, relative to the US baseline index of 100.0.

Mexico, Canada and the Netherlands are the cost leaders in the R&D services sector, with business costs ranging from 26.0 percent below the US baseline for the Netherlands to 44.7 percent below the US baseline for Mexico. Costs in France, Australia and Italy are also more than 20 percent below the US baseline.

Canada, the Netherlands, France and Australia all achieve their best result relative to the US baseline in this sector, achieving their highest (or equal highest) rankings among the countries. All four of these countries offer significant government incentive support for R&D activities.



"The Netherlands sees its strongest results in the R&D sector, with competitive business costs further enhanced by a generous R&D tax credit program."

Elbert Waller, Global Location & Expansion Services, KPMG and KPMG Meijburg (Tax Lawyers) in the Netherlands.

Results by city

Comparing the results in this sector for selected cities, the Mexican cities lead with the lowest business costs, consistent with Mexico's national ranking. Costs in Monterrey are 4.3 percentage points lower than in Mexico City.

Among the Canadian and US cities highlighted for their prominent or emerging R&D clusters (in diverse fields of research), costs are lowest in Winnipeg (biomedical research), Saskatoon (agricultural biotechnology) and St. John's (oceanographic research). Among the listed US cities, Salt Lake City, Indianapolis and Minneapolis are the cost leaders. These three cities all have specializations in biotech research, among other fields.

For the international cities, Marseille (France), Rotterdam and Amsterdam (the Netherlands) and Adelaide (Australia) are the cost leaders. Comparing business costs for the two UK cities in this sector, costs in Manchester are 23.8 percent lower than in London due to substantially lower facility and labor costs in Manchester. As a result, Manchester finishes 78 places ahead of London in the ranking of cities.

Among the cities highlighted here, business costs for the R&D services sector are highest in London, San Diego and Boston.

R&D services - Results for selected cities, by country

		Index	Rank[1]
North America - Selected cluster cities			
Canada	Gatineau (National Capital Region), QC	70.9	14
	Saskatoon, SK	69.6	12
	St. John's, NL	69.7	13
	Toronto, ON	72.8	17
	Winnipeg, MB	66.6	7
Mexico	Mexico City	57.5	2
	Monterrey	53.2	1
United States	Baltimore, MD	93.1	89
	Boston, MA	101.8	107
	Dallas-Fort Worth, TX	93.5	90
	Indianapolis, IN	87.1	58
	Minneapolis, MN	89.0	71
	Philadelphia, PA	97.8	99
	Raleigh, NC	89.6	74
	Salt Lake City, UT	86.1	51
	San Diego, CA	100.0	103
International locations - All cities			
Australia	Adelaide	74.6	23
	Brisbane	78.5	27
	Melbourne	76.3	25
	Sydney	79.6	28
France	Marseille	73.1	20
	Paris	82.2	30
Germany	Berlin	82.8	31
	Frankfurt	85.2	46
Italy	Milan	80.8	29
	Rome	77.1	26
Japan	Osaka	83.6	38
	Tokyo	90.8	82
Netherlands	Amsterdam	74.6	22
	Rotterdam	73.3	21
United Kingdom	London	100.0	102
	Manchester	76.2	24

1 Rank among 111 featured cities.

Business operating parameters

Results for the R&D services sector are based on the combined analysis of three representative business operations:

— **Biotechnology**: A "pure" biomedical research facility, operating as a wholly owned subsidiary of a parent firm with no external commercial sales

— **Product testing**: An electronic systems development and testing facility, also operating as a wholly owned subsidiary of a parent firm with no external commercial sales

— **Clinical trial administration**: An independent clinical trials management firm, overseeing the design, conduct and statistical analysis of clinical trials commissioned by drug companies and other clients. (This operation is a trials management firm; hospital/clinical operations are not included in the model.)

The operating parameters table shows the combined operating characteristics of these firms, which include:

— Leased office/commercial space sufficient to meet the laboratory space requirements of the biomedical and electronic systems operations

— Significant investments 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.

Cost results for these three individual business operations can be accessed on the study website, at CompetitiveAlternatives.com/industries.

R&D services - Operating parameters

Facilities requirements	
Class A office space leased[1]	33,333 ft^2
Other initial investment requirements	
Machinery and equipment - US $'000	$333
Office equipment - US $'000	$383
R&D equipment - US $'000	2,667
Equity financing - % of project costs	95%
Workforce	
Management	5
Sales and administration	11
Dedicated product development	46
Total employees	62
Energy requirements	
Electricity monthly consumption - kWh	58,333
Other annual operating characteristics	
Sales at full production[2] - US $'000	$8,750
Operating costs - % of sales	2%
- plus, fixed in US $'000	$1,267
Investment in tax-eligible R&D - % of sales	30.0%

1 33,333 ft^2 = 3,097 m^2.

2 Two of the three R&D operations examined represent cost centers. For taxation purposes, corporate revenue is allocated to these operations based on the cost of operation plus a fixed 10% markup. The sales revenue shown represents the sales revenue of the one profit-center R&D operation examined.

Corporate services

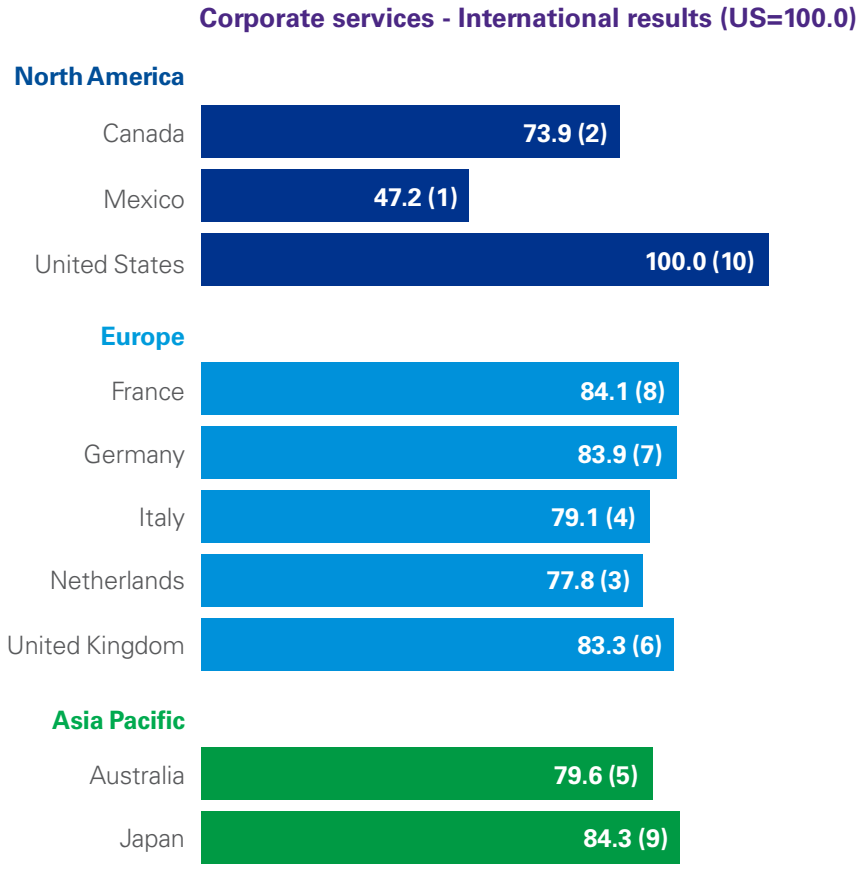
Results for the corporate services sector are based on the combined analysis of two representative business operations, a professional financial services firm and a shared services (support services) center. A summary of the business operating parameters for these firms can be found at the end of this section.

Results by country

International results for this sector are expressed as a cost index for each country, relative to the US baseline index of 100.0.

Mexico ranks first among the 10 countries in all sectors but sees its greatest cost advantage relative to the US baseline in this sector. With a cost index of 47.2, costs in Mexico are 52.8 percent lower than in the United States. The large number of lower-wage administrative staff in this sector result in this extremely large cost advantage for Mexico.

Germany and Japan see their strongest results in the corporate services sector, with greater cost advantages relative to the US than in any of the other sectors examined. These two countries are less active with incentives than most other countries, so the lesser significance of incentives generally for this sector (relative to the digital and R&D sectors) works in favor of Germany and Japan.



"Foreign investment in Mexico tends to focus on the manufacturing sector, but Mexico also presents a strong value proposition for back office operations."

Oscar Silva, Global Location and Expansion Services, KPMG in Mexico

Results by city

Comparing the results in this sector for selected cities, the Mexican cities have the lowest business costs, consistent with Mexico's national ranking. Costs in Monterrey are 3.4 percentage points lower than in Mexico City.

Among the Canadian and US cities, the lowest cost cities in each country have been highlighted in this table—reflecting a greater sensitivity to costs, and especially labor costs, in this sector (as compared to the knowledge-intensive digital and R&D services sectors).

The five lowest cost Canadian cities highlighted here remain unchanged in their rankings (within Canada) when compared to the results for this sector in *Competitive Alternatives* 2014. However, for the US, the list of low cost cities in this sector is quite different from 2014. Billings and Boise move up to the top of the list, both with a reduction in cost index compared to 2014, and are joined by four new cities—Youngstown, Little Rock, Shreveport and Lexington.

For the international cities, Manchester (United Kingdom), Adelaide (Australia) and Rotterdam (the Netherlands) are the cost leaders. Costs for this sector in these cities are all more than 22 percent below the US baseline.

Among the cities highlighted here, business costs for the corporate services subsector are highest in Tokyo, Paris and London.

Corporate services - Results for selected cities, by country

		Index	Rank[1]
North America - Lowest cost cities			
Canada	Charlottetown, PE	64.5	3
	Moncton, NB	65.5	4
	Fredericton, NB	65.6	5
	Halifax, NS	67.5	6
	Quebec City, QC	68.7	7
Mexico	Monterrey	45.5	1
	Mexico City	48.9	2
United States	Billings, MT	81.2	29
	Boise, ID	81.2	30
	Sioux Falls, SD	81.3	31
	Youngstown, OH	81.5	33
	Fargo, ND	82.1	35
	Little Rock, AR	82.3	36
	Shreveport, LA	82.4	37
	Cheyenne, WY	82.6	39
	Lexington, KY	82.7	40
International locations - All cities			
Australia	Adelaide	74.7	20
	Brisbane	79.7	26
	Melbourne	77.9	23
	Sydney	81.4	32
France	Marseille	80.0	27
	Paris	88.2	75
Germany	Berlin	82.6	38
	Frankfurt	85.2	56
Italy	Milan	80.1	28
	Rome	78.0	24
Japan	Osaka	81.7	34
	Tokyo	86.9	67
Netherlands	Amsterdam	78.3	25
	Rotterdam	77.3	22
United Kingdom	London	94.3	97
	Manchester	72.2	14

1 Rank among 111 featured cities.

Business operating parameters

Results for the corporate services sector are based on the combined analysis of two representative business operations:

— **Professional services**: an international finance firm providing services that may include securities trading, foreign exchange, funds management and/or treasury, with a focus on serving non-resident corporate clients

— **Support services**: a corporate shared services center providing centralized accounting, customer call center and internal IT support functions.

The operating parameters table shows the combined operating characteristics of these firms, which include:

— Leased office space, downtown for the financial services operation and suburban for the shared services center

— A workforce weighted towards lesser-skilled administrators—such as clerks, teleservice and help desk staff—for the shared services center, but still with a significant tally of professionals in the financial services operation and the shared services accounting function

— Both operations are assumed to operate as wholly owned subsidiaries of their parent firms.

Cost results for these two individual business operations can be accessed on the study website, at CompetitiveAlternatives.com/industries.

Corporate services - Operating parameters

Facilities requirements	
Class A office space leased[1]	18,250 ft^2
Other initial investment requirements	
Office equipment - US $'000	$1,750
Equity financing - % of project costs	100%
Workforce	
Management	9
Sales and administration	61
Customer support	21
Other	7
Total employees	98
Energy requirements	
Electricity monthly consumption - kWh	39,000
Other annual operating characteristics	
Sales at full production - US $'000	–[2]
Operating costs - US $'000	$2,125

1 18,250 ft^2 = 1,695 m^2.

2 These operations represent cost centers. For taxation purposes, corporate revenues allocated to the operations are assumed to be cost-of-operation, plus a fixed percentage markup.

Manufacturing

Results for the manufacturing sector are based on the combined analysis of 12 representative, industry-specific business operations. A listing of these operations, along with a summary of the business operating parameters for these firms, can be found at the end of this section.

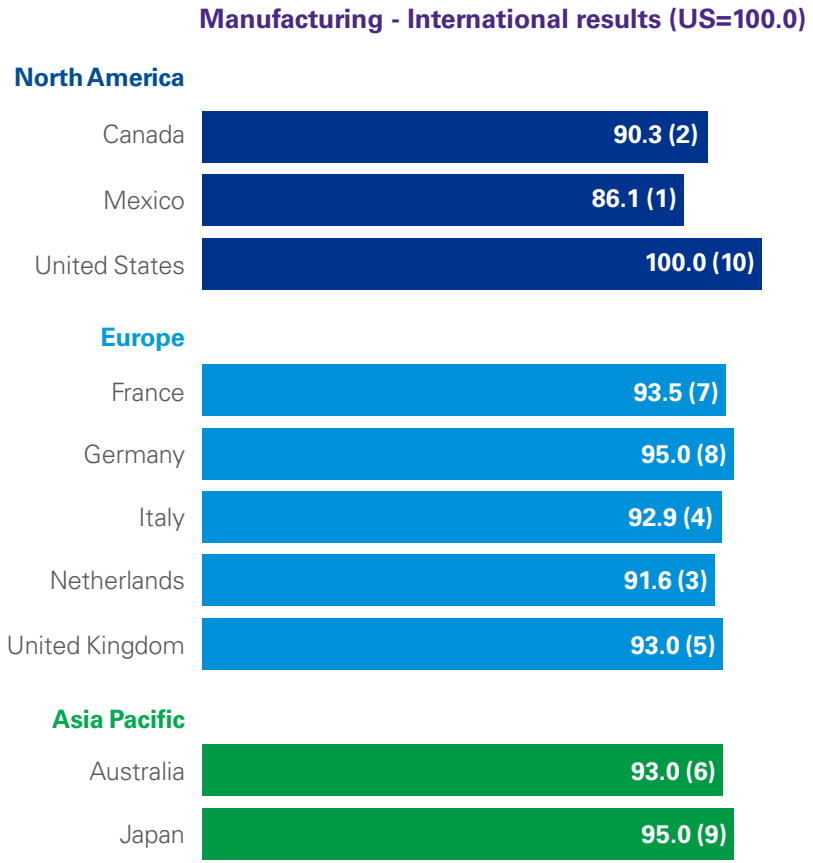
Results by country

Costs for globally sourced machinery, materials, parts and subcomponents are similar by location, resulting in lower cost differences among the countries in this sector.

Mexico is the cost leader once again, with a clear cost advantage relative to Canada, the Netherlands, Italy and all other countries.

The United Kingdom achieves its highest ranking in this sector, in fifth place – two places better than its overall ranking of seventh. Moderate manufacturing labor costs and a low corporate income tax rate contribute to the favorable result for the UK in this sector.

The United States has its lowest cost differentials relative to other countries in this sector. Moderate industrial land costs, below-average industrial facility lease costs and relatively low utility costs all benefit the US in this sector.



"While UK manufacturing is still being affected by offshoring, the automotive and aerospace industries have seen strong growth in recent years."

David Ashworth, Global Location & Expansion Services, KPMG in the UK

Results by city

Comparing the results in this sector for selected cities, the Mexican cities have the lowest business costs, consistent with Mexico's national ranking. Costs in Monterrey are 1.6 percentage points lower than in Mexico City.

Among the Canadian and US cities, the lowest cost cities in each country have been highlighted in this table—reflecting a greater sensitivity to costs, and especially labor costs, in the manufacturing sector (as compared to more knowledge-intensive sectors).

The lowest cost locations in Canada are found in Central and Eastern Canada, led by Fredericton, Barrie and Moncton. In the United States, the southeast represents the lowest cost region, with 8 of the 9 lowest cost cities being in the southeast. Shreveport, Montgomery and Savannah are the US cost leaders. Generally low labor and facility costs are key advantages for most of these cities.

For the international cities, Manchester (United Kingdom) is the cost leader, ranking 12th among 111 international cities even though the UK ranks in the middle of the pack, at 5th among 10 countries for this sector. Among the other international cities examined, Rotterdam and Amsterdam (the Netherlands) and Milan (Italy) offer the lowest business costs for manufacturing.

The high current value of the US dollar means that most international cities rank ahead of the lower cost US cities illustrated in this table. Among the 33 cities listed here, none rank higher than 45th among 111 featured study cities, with the majority of the US cities examined falling in the lower half of the city rankings.

Manufacturing - Results for selected cities, by country

		Index	Rank[1]
North America - Selected cluster cities			
Canada	Fredericton, NB	89.7	3
	Barrie, ON	89.9	4
	Moncton, NB	89.9	5
	Charlottetown, PE	90.2	6
	Quebec City, QC	90.2	7
Mexico	Monterrey	85.3	1
	Mexico City	86.9	2
United States	Shreveport, LA	95.1	33
	Montgomery, AL	95.4	37
	Savannah, GA	95.6	38
	Baton Rouge, LA	95.6	39
	Nashville, TN	95.8	40
	New Orleans, LA	95.8	41
	Lexington, KY	95.9	42
	Gulfport-Biloxi, MS	95.9	43
	Mobile, AL	96.0	44
International locations - All cities			
Australia	Adelaide	92.9	25
	Brisbane	94.3	30
	Melbourne	92.7	24
	Sydney	93.4	28
France	Marseille	93.4	27
	Paris	93.6	29
Germany	Berlin	94.9	32
	Frankfurt	95.2	34
Italy	Milan	92.6	23
	Rome	93.1	26
Japan	Osaka	94.8	31
	Tokyo	95.3	35
Netherlands	Amsterdam	91.6	22
	Rotterdam	91.5	21
United Kingdom	London	95.3	36
	Manchester	90.8	12

1 Rank among 111 featured cities.

Business operating parameters

Results for the manufacturing sector are based on the combined analysis of 12 representative, industry-specific business operations:

- **Aerospace**: aircraft parts manufacturer
- **Agri-food**: food processing
- **Automotive**: auto parts manufacturer
- **Chemicals**: specialty chemical producer
- **Electronics**: electronics assembly operation
- **Green energy**: advanced batteries and/or fuel cell systems manufacturer
- **Medical device**: medical device manufacturer
- **Metal components**: metal machining shop
- **Pharmaceutical**: pharmaceutical drug producer
- **Plastics**: plastic products manufacturer
- **Precision manufacturing**: precision component shop
- **Telecommunications**: telecom equipment manufacturer.

The operating parameters table shows the combined operating characteristics of these firms, which include:

- Mid-sized industrial facilities, with six of the business operations examined assumed to own their facilities, while the other six lease their facilities.
- Significant investments in machinery and equipment
- A production workforce oriented toward technical and skilled positions
- Moderate energy requirements.

Cost results for these 12 individual business operations can be accessed on the study website, at CompetitiveAlternatives.com/industries.

Manufacturing - Operating parameters

Facilities requirements	
Factory size[1]	76,125 ft^2
Site size[1]	4.7 acres
Other initial investment requirements	
Machinery and equipment - US $'000	$15,796
Office equipment - US $'000	$331
R&D equipment - US $'000	$265
Equity financing - % of project costs	51%
Workforce	
Management	5
Sales and administration	13
Production/non-dedicated product development	
- Professional, technical	31
- Operators	34
- Unskilled laborers & other	15
Total employees	98
Energy requirements	
Electricity monthly consumption - kWh	242,667
Gas monthly consumption - CCF[1]	12,670
Other annual operating characteristics	
Sales at full production - US $'000	$37,750
Materials & other direct costs - % of sales	43%
Operating costs - % of sales	5%
Investment in tax-eligible R&D - % of sales	2.1%

1 76,125 ft^2 = 7,072 m^2. 4.7 acres = 18,885 m^2. 12,670 CCF = 35,894 m^3.

Costs

Specific business cost factors represent the foundation for the analysis of locations and sectors

Cost factors

The significance of the location-sensitive cost factors examined varies by location and industry, with significant variations existing between service operations and manufacturing operations.

Labor costs include wages and salaries, employer-paid statutory plans and other employee benefits. Labor costs represent the largest category of location-sensitive cost factors for all industries examined. For service operations, labor costs typically range from 72 to 86 percent of location-sensitive costs, while for manufacturing operations the typical range is from 40 to 57 percent.

Facility costs represent the next significant cost factor. For service operations, office lease costs represent 4 to 15 percent of total location-sensitive costs. For those manufacturing operations that lease their facilities, industrial lease costs range from 2 to 5 percent of location-sensitive costs. For manufacturing operations that own their facilities, facility costs are capitalized but impact the cost of capital (interest on debt and depreciation of buildings).

Transportation costs are only assessed for manufacturing operations, reflecting the costs of moving finished goods to markets. For the manufacturing firms examined, transportation costs represent 6 to 21 percent of total location-sensitive costs.

Utility costs represent up to 7 percent of location-sensitive costs. Electricity and natural gas costs are more significant for manufacturers than for non-manufacturers.

Costs of capital include both depreciation and interest. These are major cost items for manufacturers, ranging from 11 to 25 percent of location-sensitive costs. Capital-related costs are much less significant for service operations, at 0 to 8 percent of location-sensitive costs.

Taxes include income, property, transaction and other business taxes. Collectively, taxes typically represent 3 to 16 percent of total location-sensitive costs for the service operations examined and 10 to 18 percent for manufacturing operations.

Relative significance of key location-sensitive cost factors

	Services [1]	Manufacturing [2]
Labor costs	**72% – 86%**	**40% – 57%**
Salaries and wages	52% – 61%	28% – 40%
Statutory plans	8% – 10%	5% – 7%
Other benefits	12% – 14%	7% – 10%
Facility costs (office, industrial[3] facilities)	**4% – 15%**	**2% – 5%**
Transportation costs (road, sea, air)	**n/a**	**6% – 21%**
Utility costs (electricity, natural gas)	**0% – 1%**	**2% – 7%**
Cost of capital (depreciation, financing)	**0% – 8%**	**11% – 25%**
Taxes	**3% – 16%**	**10% – 18%**
Income taxes[4]	1% – 15%	9% – 15%
Property taxes	1% – 2%	1% – 2%
Other taxes	0% – 1%	0% – 1%

1 Range for 7 service operations included in the overall results.
2 Range for 12 manufacturing operations included in the overall results.
3 Percentages reflect those manufacturing operations that lease their facilities.
4 Varies with revenue. Modeled operations are assigned revenues in line with typical industry targets.

Labor costs

Labor costs represent the largest group of cost factors examined and include salaries and wages, employer-paid statutory plans and other employee benefits.

The workforce required for each business operation is built from 42 benchmark job positions, which reflect the range of skills required by the various operations examined. The Sectors chapter includes a summary of the average workforce profile for each sector and the Overview chapter includes a discussion on the methodology applied to standardize labor productivity.

Salaries and wages include regular pay, as well as any additional cash compensation customarily paid to employees (shift bonuses, incentive pay, etc.) Mexico has the lowest average salary/wage levels by far among the 10 countries examined. Italy, France and Canada lead the mature market countries for this factor.

Statutory plans and payroll-based taxes are compared as a percentage of payroll. These costs are lowest in the United States, Canada and the United Kingdom, at or below 10 percent of payroll. France has the highest statutory labor costs, at 40 percent of payroll.

Other employee benefits include a wide range of employer-paid perks, such as vacation entitlements, additional retirement savings and private medical coverage. These costs, compared as a percentage of payroll, are lowest in Australia, Germany and Japan. The United States has the highest costs for employee benefits, with private health insurance a key driver.

Total labor costs, which combine all of the above labor-related cost elements, are lowest in Mexico, by a wide margin. Among the mature market countries, total labor costs are lowest in Canada, Italy and the Netherlands.

Labor cost comparison, per employee

	Salaries & wages		Benefits: Statutory plans		Benefits: Employee benefits		Total labor	
	Average per employee[1] (US$)	Rank	Percent of payroll	Rank	Percent of payroll	Rank	Average per employee[1] (US$)	Rank
North America								
Canada	$55,778	4	10%	2	25%	8	**$75,373**	**2**
Mexico	$25,981	1	12%	4	23%	6	**$35,168**	**1**
United States	$74,889	10	9%	1	37%	10	**$109,542**	**10**
Europe								
France	$52,182	3	40%	10	20%	4	**$83,387**	**8**
Germany	$65,793	9	16%	7	19%	2	**$88,921**	**9**
Italy	$50,917	2	28%	9	23%	5	**$76,979**	**3**
Netherlands	$57,676	5	15%	6	24%	7	**$80,181**	**4**
United Kingdom	$59,498	6	10%	3	29%	9	**$82,517**	**6**
Asia Pacific								
Australia	$60,570	7	19%	8	15%	1	**$81,100**	**5**
Japan	$62,502	8	13%	5	20%	3	**$83,050**	**7**

1 Average for services sector (7 business operations) and manufacturing sector (12 business operations), as per the overall results. Represents 42 different job positions, including professional and management positions.

Facility costs

Office leasing

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

For most service operations examined, costs are based on office space located in a suburban office park, or equivalent location. Suburban office lease costs are lowest in Germany, Mexico and Canada.

The financial services operation examined is assumed to locate in a downtown (city center) office building. Downtown office lease costs for this operation are lowest in Mexico, Canada and the Netherlands.

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

Office lease costs for each location reflect base rent plus operating and insurance costs passed on by the landlord to the tenant as additional rent. Property taxes passed on as rent are excluded here, but are considered in the analysis of property taxes. This identification and re-classification of property taxes implicit in office rent represents a new feature of the study analysis in 2016.

Industrial leasing

For 6 of the 12 manufacturing operations analyzed, the business is assumed to locate in a modern leased suburban industrial building. Factory sizes range from 50,000 to 100,000 square feet (4,645 to 9,290 m^2) located on 3 to 6 acres (1.2 to 2.4 hectares) of land.

Facility costs: Office and industrial leasing[1]

	Suburban office[2]		Downtown office[2]		Industrial[3]	
	US$ per sq.ft.[4]	Rank	US$ per sq.ft.[4]	Rank	US$ per sq.ft.[4]	Rank
North America						
Canada	$19.09	3	$27.24	2	$4.10	1
Mexico	$18.18	2	$21.97	1	$5.30	3
United States	$25.92	7	$34.54	5	$5.51	6
Europe						
France	$31.91	9	$40.66	8	$4.65	2
Germany	$17.19	1	$30.35	4	$5.34	4
Italy	$23.65	5	$37.95	6	$5.42	5
Netherlands	$19.46	4	$29.63	3	$6.84	7
United Kingdom	$42.69	10	$82.89	10	$10.85	9
Asia Pacific						
Australia	$25.12	6	$39.79	7	$8.19	8
Japan	$31.86	8	$76.32	9	$12.17	10

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

2 Gross rent for office facilities includes all operating and insurance costs passed on by the landlord to the tenant as additional rent. However, property taxes paid by the landlord and passed on to the tenant are excluded and are classified under property taxes in this analysis.

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

4 Equals 0.09 m^2; 10.76 sq.ft. = 1 m^2.

Factory lease costs for each location are based on rental costs for prime bulk industrial space and only reflect basic net rent. Additional costs for utilities and property taxes are borne directly by the tenant.

Based on these parameters, industrial lease costs are lowest in Canada, France and Mexico.

Industrial land and construction

Many manufacturers choose to own their facilities, with custom-built facilities potentially offering design advantages that can enhance productivity.

Recognizing this reality, 6 of the 12 manufacturing operations examined in this study are assumed to purchase an available industrial site and build a new factory on that site. For these operations, land requirements 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 m^2).

Land costs for each location are based on costs for serviced sites in suburban areas zoned for light to medium industrial use. Prices reflect the availability of suitable land in each metro area. Land costs include all land transfer taxes. Construction costs reflect both hard costs and soft costs (e.g., development fees) required to build a single-level turnkey factory shell, with 10 percent finished office space.

Industrial land and construction costs collectively form the total initial investment in the new industrial facility. For the study business operations, total facility investment costs are lowest in Mexico, due to low construction costs, followed by Germany and France.

Facility costs: Industrial land and construction[1]

	Industrial land		Construction		Total facility investment[2]	
	US$'000 per acre[3]	Rank	US$ per sq.ft.[4]	Rank	US$ per sq.ft.[4]	Rank
North America						
Canada	$437	3	$90.80	8	**$117.76**	**6**
Mexico	$242	1	$29.82	1	**$44.74**	**1**
United States	$485	4	$108.74	10	**$138.65**	**8**
Europe						
France	$416	2	$57.94	6	**$83.63**	**3**
Germany	$539	5	$42.36	3	**$75.64**	**2**
Italy	$739	6	$38.29	2	**$83.91**	**4**
Netherlands	$1,096	8	$56.15	5	**$123.81**	**7**
United Kingdom	$1,176	9	$75.65	7	**$148.19**	**9**
Asia Pacific						
Australia	$893	7	$50.04	4	**$105.17**	**5**
Japan	$3,816	10	$102.58	9	**$338.03**	**10**

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

2 Represents total investment in both industrial land and factory construction, including hard and soft construction costs, expressed per square foot of building space.

3 Equals 0.405 hectares; 2.47 acres = 1 hectare.

4 Equals 0.09 m^2; 10.76 sq.ft. = 1 m^2.

Transportation costs

The manufacturing operations examined in this study are assumed to distribute all or most of their product via surface freight channels (road, rail and/or sea). For the higher value operations examined, including aircraft parts, electronics, medical devices, pharmaceuticals and telecom equipment, a portion of production is assumed to be distributed via air freight. Transportation costs typically represent between 6 and 21 percent of total location-sensitive costs for the manufacturing firms examined.

Transportation costs are estimated based on a general practice that firms deliver product to major distribution hubs or major customers in full load or standardized less-than-full load quantities, using normal delivery schedules. (In other words, the model assumes that firms are not selling to customers requiring just-in-time or other specialized 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. Costs for all freight modes include relevant fuel and security surcharges. The transportation cost results should be interpreted only as general indicators of cost relationships among countries, since they are based on assumed product distribution patterns for each operation within each country. Operations with different product distribution patterns may have significantly different average transportation costs.

For **surface freight**—40' containers to global destinations and equivalent road or rail freight to regional destinations—average costs per load are lowest in Japan, Canada and the Netherlands. Average costs for **air freight** to a range of global destinations are lowest from Japan, Germany and Canada. Combining these distribution channels, **total freight costs** are lowest in Japan, Canada and Germany. The positive results for Japan reflect the growing importance of Asian consumer markets, plus a very competitive logistics market resulting in favorable transportation rates.

Transportation costs for all countries have decreased significantly since 2014, due to lower global oil prices and/or weaker local currency values relative to the US dollar. For the United States, annual total freight costs in this study decreased by 12.6 percent between 2014 and 2016.

Transportation costs: Product distribution costs

	Global distribution		Total annual cost	
	Surface freight per load[1,2]	Air freight per kg[1]	US$'000[3]	Rank
North America				
Canada	$1,418	$1.71	**$1,607**	**2**
Mexico	$2,384	$1.86	**$2,568**	**10**
United States	$1,593	$2.13	**$1,846**	**7**
Europe				
France	$1,489	$1.93	**$1,734**	**5**
Germany	$1,523	$1.46	**$1,685**	**3**
Italy	$2,014	$2.46	**$2,325**	**9**
Netherlands	$1,437	$2.13	**$1,714**	**4**
United Kingdom	$1,635	$3.05	**$2,051**	**8**
Asia Pacific				
Australia	$1,560	$2.09	**$1,815**	**6**
Japan	$802	$1.26	**$929**	**1**

1 Average for nine manufacturing operations that utilize full-load delivery logistics.
2 Per standard 40' container, or equivalent.
3 Average for 12 manufacturing operations included in the overall results.

Utility costs

Electricity

The operations examined in this study are not particularly energy-intensive and electricity costs typically represent only 1 to 4 percent of total location-sensitive costs. Details of average electricity demand and consumption requirements for each sector can be found in the Sectors chapter.

Compared in US cents per kilowatt-hour, electricity costs are lowest in Canada, the Netherlands and Mexico.

Natural gas

Natural gas costs are analyzed only for manufacturing operations, as natural gas is generally not relevant or immaterial for service operations. For the manufacturing operations examined, natural gas costs typically represent up to 4 percent of total location-sensitive costs.

Care should be exercised in interpreting national results, since there may be significant differences in the availability and cost of natural gas among study locations. For the few locations where piped natural gas is not readily available, costs of alternate fuel sources have been substituted based on energy equivalences for the fuel source representing the most economical alternative (generally fuel oil).

Subject to these qualifiers, natural gas for each country are compared on the basis of US dollars per 100 cubic feet (CCF). The lowest natural gas costs are in Mexico, followed by the United States and then Canada.

Utility costs: Electricity and natural gas

	Electricity[1]		Natural gas[2]	
	US¢ per kWh	Rank	US$ per CCF[3] (100 ft^3)	Rank
North America				
Canada	9.0 ¢	1	$0.56	3
Mexico	10.2 ¢	3	$0.29	1
United States	10.5 ¢	5	$0.55	2
Europe				
France	10.4 ¢	4	$1.39	7
Germany	15.5 ¢	8	$1.45	9
Italy	16.5 ¢	10	$1.30	5
Netherlands	9.4 ¢	2	$1.45	8
United Kingdom	15.7 ¢	9	$1.32	6
Asia Pacific				
Australia	12.1 ¢	6	$0.94	4
Japan	14.5 ¢	7	$1.72	10

1 Average for 19 operations included in the overall results.

2 Average for 12 manufacturing operations included in the overall results. Natural gas costs have not been analyzed for non-manufacturing operations.

3 Equals 2.83 m3 or 29.87 gJ.

Financing & taxes

Financing costs

The base interest rates used in this study represent typical cash deposit rates and mid-class commercial bond/loan rates in each country in Q4 2015.

In Mexico, the borrowing rate reflects 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 Mexico.

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 as appropriate for each specific industry.

Taxes and incentives

The analysis of taxes includes all material business taxes in each study location. All taxes are classified into one of the following five categories, based on the substance of the tax rather than its specific name:

— Property taxes

— Capital taxes

— Sundry local business taxes

— Transaction and sales taxes

— Income taxes (national, regional and/or local).

Generally-accessible tax incentives with clearly defined eligibility criteria are also included in the analysis. Such incentives include certain tax exemptions or abatements, favorable interstate income apportionment rules, research and development incentives, investment tax credits and job tax credits available in various jurisdictions. In the study analysis, these incentives are netted off directly against the taxes for which they represent a saving.

Interest rates used in this study

	Cash deposit rate	Commercial borrowing rate
North America		
Canada	0.61%	4.47%
Mexico	1.55%	8.79%
United States	0.49%	4.91%
Europe		
France	0.15%	4.04%
Germany	0.15%	3.87%
Italy	0.15%	4.39%
Netherlands	0.15%	3.96%
United Kingdom	0.64%	4.91%
Asia Pacific		
Australia	1.85%	6.02%
Japan	0.00%	3.86%

Property taxes

Property taxes paid in each country are compared on the basis of US dollars of tax per square foot of building space. Property taxes include taxes levied 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 significantly between locations based on local tax rates and property values.

For service operations occupying leased office space, property taxes on real estate are typically levied on the landlord. New in this edition of *Competitive Alternatives*, the amount of property tax passed on to the tenant has been separately identified and deducted from office leasing costs for inclusion here as part of total property tax costs. In locations that directly tax business equipment or business occupancy, such taxes are also included here.

For the service operations examined, property taxes typically account for about 1 to 2 percent of location-sensitive costs. The lowest property tax costs for these operations are the Netherlands, Germany and Australia.

For manufacturing operations, property taxes also typically account for 1 to 2 percent of location-sensitive costs. The lowest property tax costs for the manufacturing operations examined are in Mexico, the Netherlands and Italy.

Total property taxes

	Services[1]		Manufacturing[2]	
	US$ per sq.ft.[3]	Rank	US$ per sq.ft.[3]	Rank
North America				
Canada	$5.78	6	$3.74	7
Mexico	$3.57	4	$0.31	1
United States	$6.19	8	$5.63	9
Europe				
France	$11.37	10	$2.32	6
Germany	$2.67	2	$1.72	5
Italy	$5.95	7	$0.97	3
Netherlands	$1.05	1	$0.56	2
United Kingdom	$7.69	9	$5.58	8
Asia Pacific				
Australia	$2.80	3	$1.63	4
Japan	$5.74	5	$8.89	10

1 Average for 7 service operations. Property taxes levied on the landlord for leased multi-tenant office space have been separated from gross rent and are included here.

2 Average for 12 manufacturing operations. Includes all property taxes related to leased industrial facilities on the same basis as if they were owned facilities.

3 Average US$ per square foot of building space. 1 sq.ft. = 0.09 m^2; 10.76 sq.ft. = 1 m^2.

Capital taxes

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

Capital taxes only apply in certain countries and regions:

— In the United States, capital taxes apply (in various forms) in about one third of all locations examined

— In Japan, prefectural and municipal capital taxes apply in both locations considered in this study

— In Italy, a national tax applicable to relevant corporate borrowings imposes a minor one-time tax cost

— In France, the minor capital tax costs reflect one-time taxes or fees on the issuance of share capital.

Capital tax levies

	US$'000 per annum[1]	Percent of location-sensitive costs
North America		
Canada	nil	-
Mexico	nil	-
United States	$2 - $63	0.02% - 0.50%
Europe		
France	$1	<0.01%
Germany	nil	-
Italy	$2	0.01%
Netherlands	nil	-
United Kingdom	nil	-
Asia Pacific		
Australia	nil	-
Japan	$56 - $66	0.46% - 0.52%

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

Sundry local taxes

In addition to property and capital taxes, which represent the most common forms of local business tax, sundry local business taxes also apply in more than 20 of the jurisdictions studied. These taxes take a variety of forms, including taxation based on employee headcount, total payroll and/or gross receipts. Because of this diversity, no summary comparison is presented for these taxes but they are included in the total cost calculations for this study.

Transaction taxes

Gross receipts taxes apply in France and a small number of US jurisdictions, either instead of, or in addition to, state or local income taxes. The United States also imposes an industry-specific gross receipts tax on manufacturers of medical devices, a tax which is currently the subject of political efforts seeking its repeal.

The tax burden in the locations where gross receipts taxes apply is typically up to US $100,000 per annum, although the burden in France is higher, at close to US $200,000 per annum. Among US locations that are subject to gross receipts taxes, the highest costs are seen in Seattle and Spokane (Washington State) and Charleston (West Virginia).

Non-refundable sales taxes apply in 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 $320,000 per annum, or approximately 0.4 to 2.5 percent of total location-sensitive costs.

Refundable value-added taxes (VAT/GST) have been excluded from the analysis 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 10 countries studied, the US is the only country where refundable value added taxes do not exist.

Income taxes

Effective income tax rates are calculated to reflect combined corporate tax rates (national, regional and local), net of generally applicable tax credits, grants and other common government incentives. The national results presented here represent the average for the representative cities within each country. Effective tax rates may vary by jurisdiction due to the existence of regional (state, provincial, etc.) and local corporate income taxes. Effective tax rates are compared by sector.

Effective tax rates for **digital services** are partially influenced by tax incentives for R&D expenditures, as well as incentives for video game and/or software production offered in some Canadian and US jurisdictions. Canada, the United Kingdom and the Netherlands are the countries that offer the lowest effective corporate income tax rates in the digital services sector.

For **R&D services**, France, the Netherlands and Canada all offer significant R&D tax incentives which may be fully or partially refundable in certain situations, potentially resulting in a "negative" tax cost (net government subsidy) for some R&D operations in some locations. The UK, Australia, the US, Italy and Japan also offer R&D incentives, all resulting in effective tax rates for R&D operations that are lower than their nominal corporate tax rates.

In the **corporate services** sector, effective tax rates generally tend to be closer to a jurisdiction's nominal tax rate due to fewer applicable incentives in this sector. However, in Mexico, restrictions on the deductibility of employee benefit costs result in a relatively high effective tax rate in this highly labor-intensive sector. The lowest effective tax rates for this sector are found in the United Kingdom, Canada and the Netherlands.

For **manufacturing** operations, the United Kingdom, Canada and the Netherlands offer the lowest effective corporate income tax rates, with effective rates that are below 23 percent.

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 in late June 2016 at CompetitiveAlternatives.com.

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.

Effective combined corporate income tax rate[1]

	Services						Manufacturing[4]	
	Digital[2]		R&D[3]		Corporate[2]			
	%	Rank	%	Rank	%	Rank	%	Rank
North America								
Canada	13.1%	1	1.4%	3	22.9%	2	21.1%	2
Mexico	31.4%	8	34.4%	10	43.4%	10	30.7%	9
United States	31.9%	10	20.0%	6	36.9%	8	29.4%	7
Europe								
France	25.5%	4	-38.0%	1	32.9%	6	24.6%	5
Germany	31.0%	7	31.4%	9	31.0%	5	30.2%	8
Italy	27.3%	5	24.9%	7	37.9%	9	23.4%	4
Netherlands	22.4%	3	-8.1%	2	24.9%	3	22.7%	3
United Kingdom	16.5%	2	2.3%	4	18.8%	1	15.8%	1
Asia Pacific								
Australia	28.1%	6	11.5%	5	29.7%	4	28.5%	6
Japan	31.4%	9	30.4%	8	36.1%	7	32.2%	10

1 Percentage of net profit before tax for representative operations, net of government grants and incentives.

2 Average for two operations.

3 Average for three R&D operations. Most activities represent tax-eligible 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 12 manufacturing operations.

Context

Costs in the broader context of corporate site selection and emerging economic issues

Costs in context

A typical site selection process will assess a broad range of factors, including aspects of the business environment, cost of living and quality of life of each location, in addition to business costs. The appropriate selection and balance of these factors is integral to making an informed location choice.

The relative importance of cost and non-cost factors (those illustrated in this table and potentially others) varies both between industries and among individual firms within a particular industry. The final ranking and prioritization of relevant site selection criteria vary for each unique location project.

Within this context, the objective of *Competitive Alternatives* is to provide a detailed source on the relative costs of doing business across international locations. This study is intended to be one source for this one aspect of the site selection process, as highlighted in the top left quadrant of the table.

This chapter provides a brief overview of investor perceptions regarding the relative importance of these site selection factors and highlights the fact that many of the top factors are cost considerations directly addressed in *Competitive Alternatives*. This chapter also provides some additional context on the recent slump in global oil prices and highlights the impact on economic activity, business costs and competitiveness.

Key site selection factors

	Cost factors	Other key factors
Business	**Business costs** • Facilities: industrial, office • Labor: wages, salaries, benefits • Transportation & distribution • Utilities • Financing • Federal, regional, local taxes	**Business environment** • Labor availability and skills • Access to markets, customers, suppliers • Road, rail, port, airport infrastructure • Utility, telecom, internet services & reliability • Suitable sites and facilities • Regulatory environment
Personal	**Cost of living** • Personal taxes • Cost of housing • Cost of consumer products & services • Healthcare costs • Education costs	**Quality of life** • Healthcare facilities • Schools & universities • Crime rates • Climate • Culture and recreation

Site selection factors

Area Development Magazine's annual US Corporate Survey provides a valuable assessment of site selection factors considered to be important by survey respondents, including both corporate executives and site selection consultants. These exhibits show some significant changes and some similarities in the ranking of these site selection factors between 2015 and previous years:

— Availability of skilled labor and highway accessibility continue to top the list of important site selection factors in 2015, unchanged from 2013. Occupancy or construction costs also remains unchanged near the top of the list, in fourth place.

— Quality of life ranks third in importance among the site selection factors. *Area Development* no longer breaks out individual quality of life factors in their survey, but in both 2013 and 2011 the top rated quality of life factors were consistent: low crime rates, healthcare facilities, housing costs and ratings of public schools.

— Issues related to labor cost and flexibility have declined in their relative importance over the last two years. Labor costs, right-to-work status and low union profile all rank lower in 2015 than in 2013. These issues tend to have a somewhat cyclical aspect to them, with companies placing greater emphasis on these issues when labor is plentiful and corporate profit margins are tight and lesser emphasis when the labor market is tighter and corporate profits are stronger.

— The perceived importance of training programs and technical colleges has risen from 22nd place in 2013 to 15th place in 2015. This change is also likely a result of a tighter labor market in the US, with greater emphasis being placed on the need to train workers rather than being able to recruit workers with existing skills.

— Proximity to major markets and environmental regulations have also moved up in the rankings. These changes appear to align with, respectively, the movement of some production from Asia back to North America (closer to customers) and the growing focus on climate issues, electricity sources and potential carbon pricing.

The table on this page identifies that almost half of these site selection factors have direct implications on the cost of business and are included within the scope of *Competitive Alternatives*.

Site selection factors, by indicated importance[1]

	% citing as important		Analyzed in Competitive Alternatives
	2015	2013	
Availability of skilled labor	**92.9 (1)**	95.1 (1)	
Highway accessibility	**88.0 (2)**	93.5 (2)	
Quality of life	**87.6 (3)**	n/a	
Occupancy or construction costs	**85.4 (4)**	87.4 (4)	
Available buildings	**83.7 (5)**	83.3 (6)	✓ 3
Labor costs	**80.8 (6)**	90.8 (3)	✓
Corporate tax rate	**78.8 (7)**	82.4 (7)	✓
Proximity to major markets	**76.3 (8)**	75.6 (15)	
State and local incentives	**75.8 (9)**	81.9 (8)	✓ 2
Energy availability and costs	**75.3 (10)**	80.8 (10)	✓
Tax exemptions	**74.7 (11)**	80.6 (11)	✓ 2
Expedited or "fast-track" permitting	**74.2 (12)**	76.3 (14)	
Available land	**73.9 (13)**	80.3 (13)	✓ 3
Environmental regulations	**69.8 (14)**	71.7 (17)	
Training programs/technical colleges	**68.7 (15)**	54.0 (22)	
Right-to-work state	**67.7 (16T)**	80.6 (11)	
Availability of long-term financing	**67.7 (16T)**	74.8 (16)	
Low union profile	**66.3 (18)**	81.4 (9)	
Inbound/outbound shipping costs	**64.6 (19)**	70.9 (18)	✓
Proximity to suppliers	**64.3 (20)**	67.7 (19)	

1 Area Development, 2015 and 2013 Corporate Surveys. Factors considered to be "very important" or "important" by more than 60% of respondents in 2015.

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

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

Impact of low oil

The rapid growth of shale oil and gas in North America during this decade, together with increased oil output by the OPEC countries, has led to a crash in global oil prices during 2015, with real prices for crude oil dropping to levels last seen in 2002.

This dramatic change in oil prices has an immediate cost impact on many businesses. In the current *Competitive Alternatives* study, all locations experienced a decrease in freight transportation costs between 2014 and 2016. These cost decreases varied by country and mode of transport, but ranged from small percentage reductions for sea freight on most routings, to savings of about 10 percent on long distance road freight in the US, to reductions of 20 percent or more on global air freight.

The drop in oil prices is also impacting the cost and economic environments in which businesses operate. These impacts will vary significantly by country and region, with a key distinction being whether a country (or region) is a net exporter or net importer of oil. This issue is assessed by the rankings for energy self sufficiency in the table, revealing that most study countries are net importers of energy (less than 100% self sufficient), while Australia, Canada and Mexico are large net energy exporters. With oil (and closely related gas) being the major forms of exportable energy, it can be anticipated that these three countries may experience more negative economic impacts from a prolonged trough or further declines in oil prices, while lower energy costs should provide a net economic stimulus in the other study countries.

Examining GDP growth to Q3 2015, Canada is already feeling the effects of the oil shock, ranking last among the 10 countries for real GDP growth. Australia still tops the list of nations for GDP growth, with strong mineral exports so far offsetting the declines in oil and gas, but with a notable decline in new engineering investment in the extractive industries likely to impact future growth. Mexico currently ranks second for GDP growth, equal with the US. However, as an emerging market country, higher growth rates are expected. Mexico's current 2.5 percent GDP growth is well below its annual growth rates of 4 to 5 percent seen from 2009 through 2012.

In order to bypass the time lag effects of measuring GDP, a more current assessment of the economic situation can be seen from measures of consumer confidence. As at November 2015, Australia, Canada and Mexico rank 7th, 8th and 10th among the study countries, with consumers experiencing negative sentiments about their economic outlook. Japan is the only other country with negative consumer sentiment.

Energy self-sufficiency, GDP growth & consumer confidence

	Energy self-sufficiency[1]	GDP growth[2]	Consumer confidence[3]
Australia	266% (1)	3.0% (1)	99.9 (7)
Canada	172% (2)	1.2% (7T)	99.8 (8)
France	54% (7)	1.3% (5T)	100.1 (6)
Germany	38% (8)	1.3% (5T)	100.4 (5)
Italy	24% (9)	1.0% (9)	102.5 (1)
Japan	6% (10)	0.5% (10)	99.7 (9)
Mexico	113% (3)	2.5% (2)	99.2 (10)
Netherlands	90% (4)	1.2% (7T)	100.8 (3)
United Kingdom	58% (6)	1.9% (4)	101.8 (2)
United States	86% (5)	2.4% (3)	100.6 (4)

1 Domestic energy production as a % of total primary energy supply (consumption). International Energy Agency, 2015 Key World Energy Statistics, reporting 2013 data.

2 Real annual GDP growth rate for 2015. Eurostat and national statistical agencies.

3 November 2015. OECD, amplitude adjusted consumer confidence , neutral confidence=100.0.

In the measure of consumer confidence, the United States ranks fourth among the study countries. Combined with the direct effect of low oil on retail gasoline prices, this buoyant consumer mood in the US translated into a record year for new vehicle sales in 2015. As shown in the top chart, US light vehicle sales reached 209 million units in 2015, equaling the year 2000 for the highest annual total in the last 40 years.

This chart also highlights the inverse trend that exists between oil prices and US vehicle sales. With the exception of 2009 to 2011, where the Great Recession caused oil prices and vehicle sales to dip in unison, the data show general trends of a gradual decline in vehicle sales as real oil prices rise and growth in vehicles sales as oil prices fall. This is just one example of the stimulative economic effects of lower oil prices.

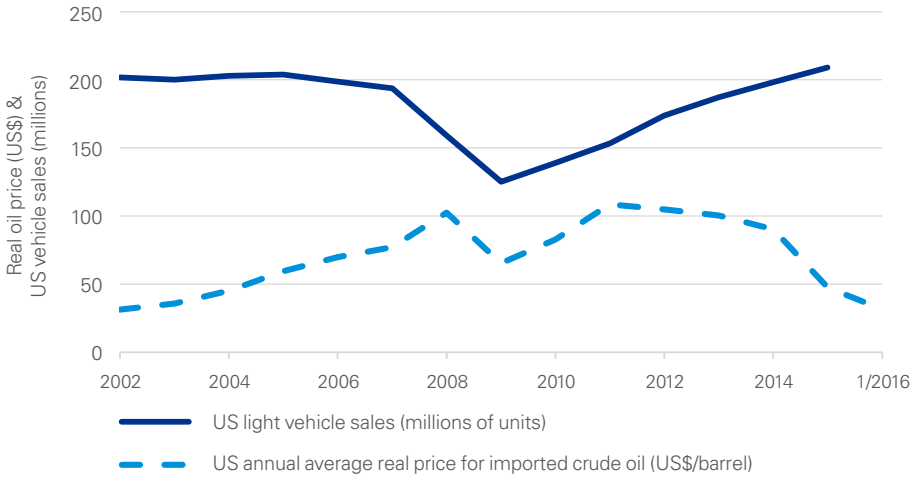
However, for regions that are major oil producers, the current impacts of low oil are anything but stimulative. The current economic pain being experienced in oil dependent regions may have one positive side effect—the potential for improved business cost competitiveness.

In commodity-driven cities, business costs often rise along with commodity prices. To illustrate this point, the lower chart tracks relative business costs over time for two western Canadian "oil cities", Edmonton and Saskatoon, relative to Toronto in central Canada, which is not significantly impacted by oil. The chart also includes a proxy to illustrate the growth of oil production in western Canadian over the same time period. Through this commodity super-cycle, as the boom saw strong growth in regional oil production, both Edmonton and Saskatoon experienced an erosion of business cost advantages that they formerly held relative to Toronto. As the chart shows for 2016, in the current study, these cities do not yet show an improvement in their business costs relative to Toronto.

However, the effects of economic slowdowns take time to trickle through the economy. Office rents tend to move relatively quickly with the economy and study data shows downtown rents in Edmonton and Saskatoon in late 2015 were down by 17 percent compared to the same point in 2013. Wage levels take longer to adjust, as slower wage growth for existing workers and potentially lower wage rates for new hires gradually blend to form a more competitive overall wage structure.

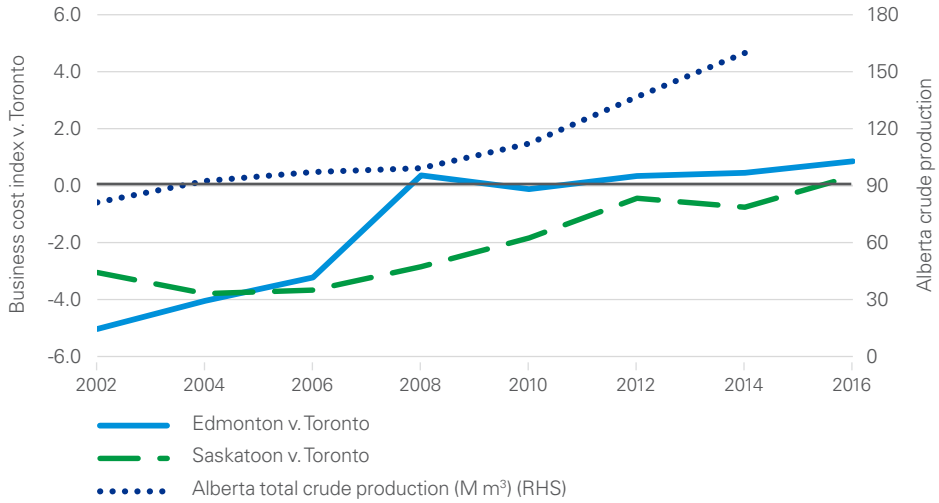
As this period of low oil continues, future editions of *Competitive Alternatives* will report ongoing changes in the cost competitiveness of study countries and cities.

Relationship of oil prices to US vehicle sales



Sources: Trading Economics, Energy Information Administration.

Rise in city business costs during the oil boom



Sources: KPMG Competitive Alternatives, Statistics Canada CANSIM Table 126-0001.

KPMG LLP has conducted an analysis of the relative costs of doing business in 10 countries in North America, Europe, and Asia Pacific. This report was made possible through the support of our research contributors and sponsors, as identified in this report.

The analysis in this publication is based on cost information collected primarily between July 2015 and January 2016. Taxes reflect tax rates in effect on January 1, 2016, and also incorporate any announced changes at that time to take effect at specified later dates. Exchange rates and other cost factors will, of course, change over time. Tax rates and other tax-related information are also subject to change as a result of new legislation, judicial decisions, and administrative pronouncements.

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

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