

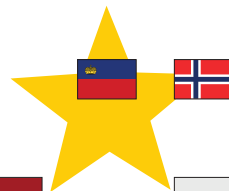
EU

EUROPE AND THE BAY AREA:

Investing in Each Other

BAY AREA

Economic Connections between the Bay Area and Europe
A Bay Area Council Economic Institute Report 2014



ACKNOWLEDGEMENTS

Sean Randolph (President & CEO) and Tracey Grose (Vice President) co-authored this report. Alex Foard (Research Associate) and Saori Hamidi (Research Associate) provided extensive research support. A number of interns at the Institute also provided valuable research support: Brad Zukerman, Debbie Yu, Nick Magnuson and Ben Bartlett.

The Bay Area Council Economic Institute would like to thank the European Commission for providing the research grant that enabled this report, and the other sponsors whose generous support made its production possible: Bank of the West, DLA Piper, San Francisco International Airport, Barbro Osher Pro Suecia Foundation, the Consulate General of Sweden, HSBC, United Airlines, Lufthansa, Wells Fargo and Europort.

The Economic Institute also wishes to thank the many businesses, consulates, and civic organizations that gave their time for interviews and provided supporting information. We particularly thank John Zysman (UC Berkeley), Olaf Groth (Emergent Frontiers), Stephen Goodman (Continuum Innovation LLC), and Burton Lee (Stanford University) who served as reviewers. (See Appendix A for a full list of interview partners and reviewers.)

THE BAY AREA COUNCIL ECONOMIC INSTITUTE

Bay Area Council Economic Institute is a partnership of business with labor, government, higher education, and philanthropy that works to support the economic vitality and competitiveness of the Bay Area and California. Its work builds on the twenty-year record of fact-based economic analysis and policy leadership of the Bay Area Economic Forum, which merged with the Bay Area Council in January 2008.

The Association of Bay Area Governments (ABAG) is a founder and key institutional partner. The Economic Institute also supports and manages the Bay Area Science and Innovation Consortium (BASIC), a partnership of Northern California's leading scientific research universities and federal and private research laboratories.

Through its economic and policy research and its many partnerships, the Economic Institute addresses key issues impacting the competitiveness, economic development, and quality of life of the region and the state, including infrastructure, globalization, science and innovation, energy, and governance. A public-private Board of Trustees oversees the development of its products and initiatives.

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EUROPE AND THE BAY AREA

INVESTING IN EACH OTHER

BILLION

\$3.3

BAY AREA INVESTING IN EUROPE

56% of Bay Area investment abroad goes to Europe

PRIVATE EQUITY & VENTURE CAPITAL INVESTMENT

EUROPE ACCOUNTS FOR

39%

of all Bay Area patents registered with foreign partners since 1999

COLLABORATIVE INVENTION

3200+
BAY AREA BUSINESS AFFILIATES ARE IN EUROPE

BUSINESS PRESENCE

TECHNOLOGY
DESIGN
R&D
RETAIL

BILLION

\$9.2

BAY AREA EXPORTS TO EUROPE

18% of total Goods exports
35% of total Services exports

TRADE

Innovation Ecosystems in Europe

Bi-national startups

35,000 airline seats per week

GROWING CROSS-BORDER ENTREPRENEURIAL NETWORK

A POST-NATIONAL INNOVATION SYSTEM

FORMAL EUROPEAN INSTITUTIONAL PRESENCE

HIGHLY SKILLED TALENT

BILLION

\$4.05

EUROPE INVESTING IN THE BAY AREA

49% of global investment in the Bay Area comes from Europe

1000+

EUROPEAN BUSINESS AFFILIATES

1/3 of all foreign business affiliates are from Europe

THE INNOVATION ECONOMIES OF EUROPE AND THE BAY AREA ARE BECOMING INCREASINGLY INTEGRATED AND SPURRING NEW BUSINESS GROWTH IN BOTH REGIONS OF THE WORLD.

Europe's economic ties to the Bay Area date back to California's Gold Rush. Today, the Bay Area is a global epicenter of technology and innovation, and Europe continues to be an essential partner in shaping the region's economic future. The region's business and economic ties with Europe are diverse, and led by technology. Cross investment with Europe is larger than with any other global region.

Corporate
Technology
Outposts

Venture Capital
Angel Investors

Incubators
Accelerators
Soft Landings

30 Diplomatic
Offices

14+ Bi-National
Business
Organizations

12+ Sister
Cities

11+ Public-private
Business Incubators/
Accelerators

12+ Trade &
Investment
Offices

170,000 European-born
Residents

26% with Advanced
Degrees

9% of All Foreign Born STEM
Workers in the Bay Area

Europe's economic ties to the Bay Area run extraordinarily deep. Current ties date back to California's Gold Rush and the founding of San Francisco through the present day development of the region as a global epicenter of technology and innovation. The Bay Area's European ties have evolved throughout this period, and despite the attention that Asia naturally receives as a dynamic and growing region, Europe continues to be an essential partner. Trade is strong, and despite the recent global recession and Europe's slow recovery, it is also growing.

The larger story, however, concerns two-way investment, where cross investment with Europe is greater than with any other global region. The region's relationship with Europe is remarkable, in fact, for its balance. While the Bay Area's very substantial trade with Europe is less than with Asia, it is in overall balance. And its value is understated since Bay Area companies manufacture extensively in Europe, reducing the need to export. This cross investment, which includes R&D, reflects deep integration between the Bay Area and Europe as advanced knowledge economies.

As connections between Europe and the Bay Area continue to increase, and with them, professional and creative networks, new points of innovation are appearing. The result is the emergence of a post-national innovation system, where the frame of reference is not bounded by national or even regional borders but by the diversity and geographic reach of a company or an individual's network.

Institutional ties reflect a deep history of engagement. Pioneers include Levi Strauss, the builders of San Francisco's Hetch Hetchy water system and the planners of its streets, and the founders of

major technology companies. This rich tapestry is reflected in a wide range of European cultural and community organizations that continue to provide a strong foundation for personal, business and economic interaction.

Europe's presence is reflected in the region's diplomatic community, where 30 European countries are represented, the largest European diplomatic presence in the United States after Washington, DC and New York.

It is also reflected in a diverse set of trade and investment offices sponsored by national governments as well as by European cities, states and provinces.

At the private sector level, 14 bi-national business organizations support commerce between the Bay Area and European countries.

European-born residents are an important part the Bay Area's innovation economy. Throughout its history, the region has drawn residents from around the world and now counts nearly 170,000 residents born in Europe, with the largest number coming from the UK and Germany, followed by France and Italy.

European-born residents have significantly higher levels of education than residents as a whole, with 26 percent having attained a master's degree or higher. Many play leadership roles in the region's major companies.

Europe accounts for nine percent of all foreign-born talent in science, technology, engineering and mathematics (STEM) in the region, with a total of 18,300 STEM workers. The UK and Germany together account for 43 percent of European STEM workers, followed by France.

Europe remains an important trade partner. With 500 million consumers, Europe accounts for 20 percent of the world's exports and imports.

Europe accounts for 18 percent of Bay Area exports, making it the region's third largest trading partner. Asia accounts for 42 percent and NAFTA (Canada and Mexico) 24 percent. Since 2010, trade with NAFTA countries has overtaken trade with Europe.

Exports to Europe from the Bay Area have been relatively stable since 2005, totaling \$9.2 billion in 2012. During the recent economic crisis, exports to Europe fell just 3 percent while exports to Asia dropped 33 percent.

Because of its accessibility, scale and legal transparency, Europe is often the first overseas market that US companies export to.

Trade with Europe is supported by robust air links, with nine carriers providing more than 35,000 seats per week on direct flights through SFO with Europe. Passenger traffic between the Bay Area and Europe through SFO grew 8.3 percent from 2012 to 2013.

International air cargo with Europe increased 4.3 percent in 2013, but with all other global regions fell.

Europe is by far the largest global investor in the Bay Area.

European firms, with more than 1,000 affiliates, account for one-third of all foreign companies operating in the region. The UK, Germany, Switzerland and France reflect the strongest presence. An even larger number of Bay Area companies—3,200—have affiliates in Europe.

Cross investment is diverse but led by technology. European companies from a range of sectors are setting up research and development (R&D) operations in the Bay Area in order to tap into research facilities and the region's world-class talent base.

For example, many European auto manufacturers have R&D centers in Silicon Valley, looking to tap into IT trends that will shape the future of automobiles.

Besides IT, other significant areas of focus include biotech, retail (design and fashion), engineering, financial services, and wine.

Europe is the Bay Area's most significant global innovation partner. Both are global leaders in research and technology, and they collaborate intensely.

Registered patents with partners outside the country represents a growing share of total Bay Area patents, and collaboration with Europeans has grown at a much faster rate than the number of total patent registrations, particularly in information and communications technology.

Patents co-registered by Bay Area and European inventors total nearly 12,800 and account for 39 percent of all Bay Area patents registered with foreign partners since 1999.

The UK and Germany account for the largest number, but growth rates are strongest with Ireland, Belgium, Denmark, Austria and Switzerland.

While patent activity has been increasing at a faster rate with China, India and Brazil, activity with Europe has increased by an annual average rate of 10 percent since 1990.

Europe and the Bay Area actively invest in each other.

Private equity investment with Europe is strong, building on market opportunity, shared business practices, and a mutual commitment to transparency and the rule of law.

In 2012 Bay Area private equity (including some venture capital) investment to Europe reached \$3.3 billion, exceeding total investment in the rest of the world.

As a percentage of total foreign flows into the region, investment from Europe has increased steadily since 2009, expanding from 19 percent to 49 percent in 2012. In 2012, the Bay Area attracted \$4.05 billion in investment from Europe and \$4.17 billion from the rest of the world.

While the Bay Area's investment in China since 2000 has been comparable to its investment in Europe, European investment to the region currently overshadows that from China by a large margin. China's investment accounted for three percent of total global investment in the Bay Area in 2012.

Technology-based European companies are seeking new opportunities to engage, while European entrepreneurs are increasingly active in the region's innovation economy.

As a global center for technology and innovation, the Bay Area attracts large numbers of entrepreneurs and technology-based companies from around the world. This is particularly the case with Europe.

In addition to R&D centers, many large European companies have technology listening posts in the region to connect with cutting edge technology and other emerging trends.

An array of European-sponsored incubators and accelerators support entrepreneurs coming to the region to learn about Silicon Valley and make business connections.

Whether through incubators and accelerators or independently, large numbers of European start-ups are establishing Bay Area roots. Those who succeed become bi-national companies, with Bay Area headquarters and a European subsidiary, or vice versa. Entrepreneurs come to find venture or angel investment, tap into the region's unique talent pool, access the US market, and scale their companies globally. Most create jobs in both the Bay Area and at home.

Europe is usually the first market outside the US that new US startups expand to, especially in information and communications technology.

Initiatives in several policy areas can strengthen the relationship further:

negotiation and passage of the Trans-Atlantic Trade and Investment Partnership (TTIP);

immigration reform that enables European and other entrepreneurs from overseas to more easily start companies and stay in the US;

regulatory streamlining to help entrepreneurs and investors from overseas more easily navigate California's complex regulatory environment;

better support for bi-national start-ups through deeper support in Europe and new US-European models for start-up finance.

INTRODUCTION

The San Francisco Bay Area was born cosmopolitan. California's earliest European settlers—the Spanish who built missions from San Diego in the south to Sonoma in the north, and the Russians who established fur-trapping camps and forts around Fort Ross (Sonoma County)—imposed a thin layer of settlement on a vast land. It was the gold rush that first lured large numbers of ambitious people from around the world, and particularly from Europe, to America's western frontier. Today, more than 150 years later, California continues to attract ambitious and creative people and companies to what is still the world's frontier of imagination and opportunity. As it was in 1849, the San Francisco Bay Area remains central to that dream.

While much attention in recent years has been appropriately focused on rapid economic growth in Asia, the Bay Area's ties with Europe remain deep and strong. The region's business and economic ties with Europe are highly diverse but led by technology. Trade is strong, and despite the recent global recession and Europe's slow recovery, it is also growing. The larger story, however, concerns two-way investment, where cross investment with Europe is larger than with any other global region. The innovation economies of Europe and the Bay Area are becoming increasingly integrated and spurring new value creation from which both are benefitting.

As connections between Europe and the Bay Area continue to increase, and with them, professional and creative networks, new points of innovation are appearing. The result is the emergence of a post-national innovation system, where the frame of reference is not bounded by national or even regional borders but by the diversity and geographic reach of a company or an individual's network. Evidence is emerging across multiple areas. Start-ups are launching as global companies with team members of different nationalities located across Europe and the Bay Area. Patents are increasingly registered by teams of inventors from multiple countries. Companies are setting up R&D centers in multiple countries to tap into specialized talent pools and facilities. All these activities support the movement of individuals and the exchange of ideas and best practices.

This report documents the breadth and nature of the ties linking Europe and the Bay Area, assessing their historical context and formal and informal relationships in both the public and private sectors. It analyzes linkages of trade, investment, research and talent, through business, government and institutional connections and diverse cross-border business relationships. It also identifies opportunities to strengthen the relationship further through new collaborative ties.

Section 1 begins with a brief introduction to Europe and its economic structures. Section 2 highlights the historical roots of Europeans and their presence today in the Bay Area. Section 3 lays out the rich landscape of formal, cultural, community and business associations that provide important context for the relationship between the Bay Area and Europe. Section 4 looks at the flows of skilled talent to the Bay Area originating from Europe. Section 5 examines trade between Europe and the region. Section 6 documents Europe's business presence in the region by industry. Section 7 tracks the process of cross-invention. Section 8 analyzes cross-investment patterns in private equity and venture capital. Section 9 explores the evolving linkages between the entrepreneurial communities of Europe and the Bay Area. Section 10 closes with a discussion of potential areas for collaboration, in both business and public policy.

Understanding Europe's economic connections to the Bay Area and California requires a familiarity not just with its individual countries, but also with the economic structures that were created in the wake of World War II with the purpose of binding the continent together. Since 1945, Europe has created a path toward closer union among its countries, with the aim of raising living standards and maintaining peace. These efforts began with, and remain based on, economic collaboration.

THE EVOLUTION OF THE EUROPEAN UNION

In 1950, French foreign minister Robert Schuman proposed integrating the production of coal and steel in Europe through the European Coal and Steel Community (ECSC), stating that this union should “make war not only unthinkable but materially impossible.”¹ The founding members of the ECSC were Belgium, France, Italy, Luxembourg, the Netherlands and West Germany.² The long, deliberative and painstaking process is summarized briefly below.³

The ECSC's success as Europe's first supranational community led to the Treaty of Rome in 1957 and the creation of two additional institutions: the European Economic Community (EEC) and the European Atomic Energy Community (Euratom).

Originally, Euratom was tasked with coordinating the research efforts of member countries around the peaceful use of nuclear energy. Today, Euratom provides both a sharing of knowledge and a centralized monitoring system for nuclear energy supply.⁴

Most importantly, the establishment of the EEC created a Common Market to ensure “the free movement of persons, services, goods and capital”. It also laid the groundwork for a closer political union of members. Referred to as the “inner six,” its founding members were France, West Germany, Italy, Belgium, the Netherlands and Luxembourg.

The Merger Treaty, enacted in 1967, created the EEC Commission and EEC Council to govern the ECSC, the EEC and Euratom, replacing their three separate executive committees, and producing the European Community (EC), the precursor of today's European Union.

Growing pains led to the first major revisions to the Treaty of Rome in the form of the Single European Act (SEA) of 1986. SEA strengthened the powers of the European Parliament and momentum toward a single market.

The Maastricht Treaty of 1993 formally established the European Union (EU), consisting of three components: the European Community, Common Foreign and Security Policy (CFSP), and police and judicial cooperation in criminal matters (JHA). It also introduced the European Monetary Union (EMU), which laid the groundwork for the introduction of a shared European currency, the euro, in 1999. With this step, European unification ventured beyond economic integration toward a closer political association.

THE EUROPEAN UNION TODAY

Today, the EU consists of 28 member countries, the most recent to join being Croatia in July 2013. The EU motto is “united in diversity,” signifying how the union has coalesced, while recognizing the region's diversity of cultures, languages, and national interests.

The EU consists of three governing bodies:

The European Council is composed of the heads of state of each of the member countries. It sets overall political direction and decides key policy issues.

The European Parliament consists of 766 members directly elected by the 500 million citizens of the EU. Along with the Council, it has legislative and budgetary power.

The European Commission is the main executive body. It can propose legislation to the Council and Parliament. The Commission, based in Brussels, is responsible for the implementation of shared laws and regulations across the member countries.

European law covers a wide range of topics from agriculture to transportation. The EU may only enact legislation in matters where it is more effective to act centrally than at the national or local level, and EU legislation can extend only to objectives agreed upon by the Council and Parliament.

EUROPEAN UNION



- EU MEMBER STATES
- EU NEW MEMBERS SINCE 2004
- EU NEW MEMBER 2013
- EFTA MEMBER STATES
- EU CANDIDATES

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The EU motto is “united in diversity,” signifying how the union has coalesced, while recognizing the region’s diversity of cultures, language, and national interests.

10

Other economic agreements since the war have helped to expand trade across Europe.

The European Free Trade Association (EFTA) was created by the Stockholm Convention in 1960 to facilitate free trade within Europe. Originally, seven countries were included in EFTA: Austria, Denmark, Norway, Portugal, Sweden, Switzerland and the United Kingdom (creating what was known as the “outer seven”). It did not agree to merge with the European Economic Community (EEC), however, and therefore did not become part of the European Union at its creation. Today, only non-EU members remain in EFTA: Norway, Switzerland, Iceland and Liechtenstein. It largely deals with trade in services and foreign direct investment; 80 percent of the EFTA’s merchandise trade is covered by preferential trade agreements with the EU.⁵

The European Economic Area (EEA), established in 1994, includes the EU member states and three EFTA states (excepting Switzerland). There are currently 31 EEA members. Its governing agreement allows EFTA States other than Switzerland to participate in the Single Market created by the EU. It also promotes basic tenets of unification, such as free movement of goods, capital, services and persons. To further support a uniform system of laws relating to the Single Market, all EU trade legislation must be fully integrated into EEA policy.⁶

THE EUROZONE

As of January 2014, with the joining by Latvia, 18 members of the EU share a single currency, the euro. Nine EU members do not currently use the euro: Bulgaria, the Czech Republic, Denmark, Croatia, Lithuania, Hungary, Poland, Romania and the United Kingdom. All countries wishing to adopt the euro are required to become members of the EU; EU members, however, are not required to adopt the euro. Under the Maastricht Treaty of 1999 which created the euro, the United Kingdom and Denmark are exempted. Through other mechanisms, Sweden has also opted out.

Monetary policy for the eurozone is handled by the European Central Bank (ECB), which is governed by a president and a board composed of the participating members’ national central banks. Since 2008 and the global financial crisis, the ECB has played an important role in facilitating and backstopping the resolution of member countries’ sovereign debt issues by providing emergency loans in return for economic reforms. Although the eurozone’s finance ministers (the Eurogroup) coordinate, the EU does not share a common fiscal policy. The lack of such a policy structure has emerged as a significant weakness in the EU system, as gaps between EU monetary strategy and fiscal policies at the national level have made systemic approaches to European debt and growth difficult.

CRISIS, DEBT AND GROWTH

The Stability and Growth Pact is a set of rules for coordinating national fiscal policies in the European Union. It was formed with the understanding that the economic policies of individual member states can impact all members. The agreement sets an annual limit of 3 percent of GDP on the national budgetary deficits of eurozone members, with penalties for states that do not comply. While members have at times exceeded that limit, no penalties have been assessed.

The global financial crisis of 2008 precipitated deep fiscal crises in many European countries (starting with Greece, Portugal, Spain and Ireland), exposing fiscal deficits and spending patterns that proved unsustainable. The depth of those crises became fully apparent in 2010. In response, the European Central Bank lowered interest rates to facilitate money flows between struggling European banks. The European Financial Stability Facility (EFSF) and the European Financial Stability Mechanism (EFSM) were also created in 2010 to provide backstop funds for indebted members, parallel to those provided by the International Monetary Fund (IMF), to ensure monetary stability and support fiscal reforms in the affected countries. As the crisis persisted, the eurozone’s response capacity was strengthened further with the European Stability Mechanism (ESM), a permanent mechanism with expanded resources and authority.

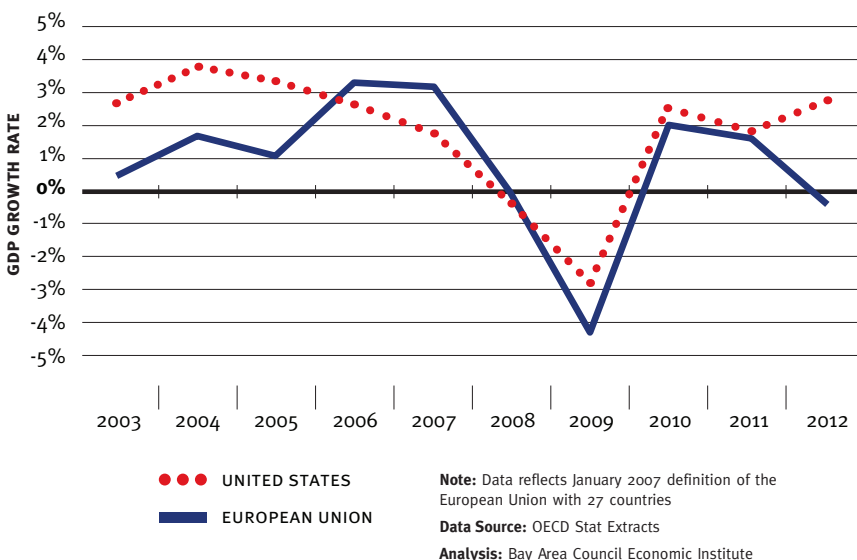
The crisis and its response have produced prolonged recession(s) in the eurozone. Governments have initiated deep spending cuts, and in some cases tax increases, to address their deficits. Lending by banks has been restricted, and both consumer spending and corporate investment have fallen. This has led to intense debate regarding the timing and severity of budget cutbacks and their implications for economic growth and recovery. While the drive for fiscal austerity and structural reform in the most impacted states has been led by Germany and other Northern European countries, more recently those pressures have abated in the face of continued unemployment and slow growth. Nonetheless, debate will continue on alternative visions for Europe's future, with Germany focusing on more discipline and centralized supervision of national budgets, and France and Southern Europe supporting increased burden sharing.

It has been a rocky road. In the fourth quarter of 2011, the eurozone entered its second recession since 2008. A modest recovery is now underway, with a return to growth in the last three quarters of 2013. The financial turmoil that beset the eurozone in recent years appears to have passed. Gross domestic product (GDP) was slightly negative for all of 2013 (-0.4%), and positive growth of 1 percent is expected for 2014.⁹

Still, major problems remain, as slow growth will not quickly resolve lingering problems of debt and unemployment. Unemployment across the eurozone

GDP ANNUAL GROWTH RATE

United States and the European Union



averages 12 percent, negatively impacting credit, consumption, business revenue, investment, and government resources. From the second quarter of 2012 to the second quarter of 2013, government debt to GDP ratio rose from 89.9 percent to 93.4 percent.¹⁰ Overall, today's eurozone economy is 2.6 percent smaller than it was in 2008.¹¹

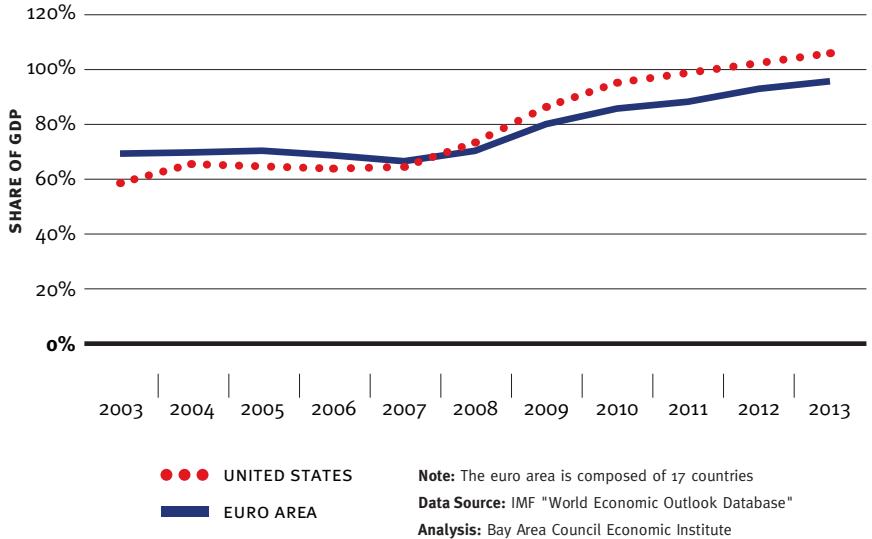
There has been considerable variation, however, between individual countries. Germany's economy has remained relatively stable over the crisis with growth of 0.5 percent in 2012. Nordic countries have also fared relatively well with GDP holding steady at 0.1 percent in Denmark, 1.6 percent in Norway, and 0.9 percent in Sweden. Similarly, the UK, France and Ireland have held steady without losses in GDP.

On the other hand, most of Southern Europe remains burdened by comparatively weak growth, still rising debt-to-GDP ratios, and record unemployment, particularly among youth. For example, the debt-to-GDP ratio is 175.7 percent in Greece, 132.3 percent in Italy, and 123.6 percent in Portugal. Unemployment in 2013 was 27 percent in Greece, 26.9 percent in Spain, and 17.4 percent in Portugal. By comparison, unemployment in Germany was 5.6 percent.

The crisis that seized Europe in the last five years has had a significant impact on international trade and investments. As European markets have cooled, imports and investment have fallen, and other regions of the world have experienced faster growth. eurozone figures, however, mask important differences between individual EU countries. This requires a closer, country-by-country approach to Europe's economic and business dynamics that recognizes the distinct policies, assets and circumstances that exist within its highly diverse environment.

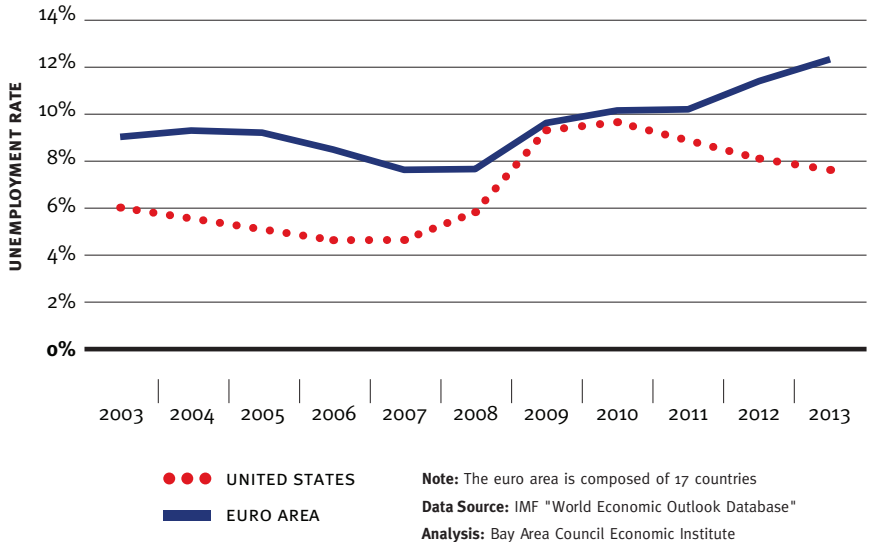
GOVERNMENT DEBT

General Gross Debt in the United States and the euro area



EMPLOYMENT TRENDS

Unemployment rates in the United States and the euro area



Throughout the Bay Area's history, Europe has played an influential role. Europe's permanent presence in the region began with the Spanish missions in Carmel, San Francisco, San Rafael and Sonoma (the farthest north in the chain of missions founded in California starting in 1769). They were linked by El Camino Real, the King's Highway. As the Spanish came up from the south, Russia arrived from the North, with a settlement in Fort Ross (Sonoma County) and fur trading stations along the northern coast. Europe and the rest of the world first came to the Bay Area in large numbers, however, with the California Gold Rush. Since then, the region's European partners have contributed in fundamental ways to the development of its community and its economy.

THE GOLD RUSH: WHEN THE WORLD Poured IN

When James Marshall discovered gold at Sutter's Mill near Sacramento in January 1848, California immediately became a magnet for people from around the world. As the port where most immigrants arrived, San Francisco quickly grew from an obscure village to a boomtown, with a massive influx of prospectors and businesses created to service them. In the four years after the discovery of gold, San Francisco's population swelled from 800 to more than 36,000.¹²

While most prospectors failed, many others succeeded. Among the most successful were enterprising individuals who created businesses in San Francisco to meet the miners' need for equipment, clothing, food, lodging, and entertainment. Out of this heady mix emerged an entrepreneurial spirit, a thriving (if volatile) economy, and a diverse multi-cultural community. European immigrants were at the forefront.

The influx of European immigrants produced its share of stories and characters, many of whom left an indelible mark on the region. The namesake of Sutter's Mill, John Sutter (born Johann Suter) was Swiss. Neighborhoods in San Francisco have deep European roots. South Park, now in the heart of San Francisco's fast-growing South of Market technology district, was developed in the 1850s by a forty-niner from Britain named George Gordon, who wanted to (and did) create a fashionable residential area modeled on London's Berkeley Square, with upscale townhouses around a shared green.¹³

Spurred by dreams of gold and a harsh political climate after the failed revolution of 1848, there was a particularly large exodus from France. As many as 30,000 Frenchmen descended on San Francisco, and subsequently built the first hotel on the site of today's Fairmont; established (in 1851) the French Hospital, the oldest continuously operating hospital in California; and

founded the church of Notre Dame de Victoires, on Bush Street near Union Square, which dates to the construction of a chapel on the site in 1849. French immigrants also established one of the city's first volunteer fire departments (critical in a city that burned frequently) and built the first railway in San Francisco, from Mission Dolores to the Bay.

Many Europeans made their fortunes not panning for gold, but from the booming commerce that resulted. Today, many of the region's iconic companies trace their histories back to European immigrants from the Gold Rush era. Brewing in San Francisco began with a German immigrant, whose brewery was later renamed Anchor, after the city's bustling port. Today's Anchor Brewing Company is one of the nation's leading microbreweries, and Anchor Steam beer is uniquely associated with San Francisco. The French culinary influence is enjoyed today by residents and visitors alike in the form of sourdough bread from Boudin Bakery, which was founded by French immigrants in 1849 and remains Francisco's oldest continuously running company. Other iconic San Francisco companies dating to the Gold Rush include Levi Strauss (incorporated in 1863) and Ghirardelli Chocolate (incorporated in 1852).

In the years that followed, Europeans continued to shape the Bay Area:

Dublin-born civil engineer Jasper O'Farrell was engaged in 1848 to revise and extend the street plan of the original Mexican settlement at Yerba Buena Cove. His plan shaped the design of Victorian San Francisco and the modern city, including Market Street and the street grid that was overlaid on the city's hills. O'Farrell's plan led to the public stairways and streetscape that now gives the city its unique ascents and vistas.

Decades later Michael O'Shaughnessy, another immigrant from Ireland, served as city engineer from 1912 to 1934. During his tenure, he planned and built the Hetch Hetchy water system that brings water through a complex series of tunnels, pipes and pumping stations from the Sierra Nevada mountains 160 miles to San Francisco. The Hetch Hetchy system today serves nearly six million Bay Area residents, from San Francisco to Silicon Valley.¹⁴

Norwegian fisherman Peder Sather came to San Francisco in 1850 to found the banking firm of Sather & Church. He also became a trustee of the College of California, which later was to become the University of California at Berkeley. Following his death, Sather's wife donated the funds to build Sather Tower (the Berkeley Carillon) and the campus' main entrance, Sather Gate. The Peder Sather Symposium, a biennial forum on political, economic and cultural issues sponsored by UC Berkeley and the governments of Norway and Sweden, continues his commitment to education and international cooperation.

LEVI STRAUSS



Born in Germany, Levi Strauss was eighteen when he immigrated to New York with his family. After working in his older brothers' wholesale dry goods business for six years, he headed to the West Coast via the Isthmus of Panama. When he arrived in 1853, San Francisco's swelling population was desperate for imported dry goods such as clothing, underwear, umbrellas, handkerchiefs and bolts of fabric.¹⁵

Noticing the need for a pair of pants that could withstand the toils of mining, Strauss began to make trousers out of canvas, but switched to denim because it was easier to sew. This sturdy blue fabric came from the French city of Nîmes, and "de Nîmes" became a staple of the gold rush and American culture. With strong demand for his denim jeans, Strauss was able to open his own store, Levi Strauss & Company, in 1856. In 1872 copper rivets were added to reinforce the pockets, and the name "Levi's" was copyrighted. By 1874 the company had opened two jeans factories in San Francisco to keep up with demand.

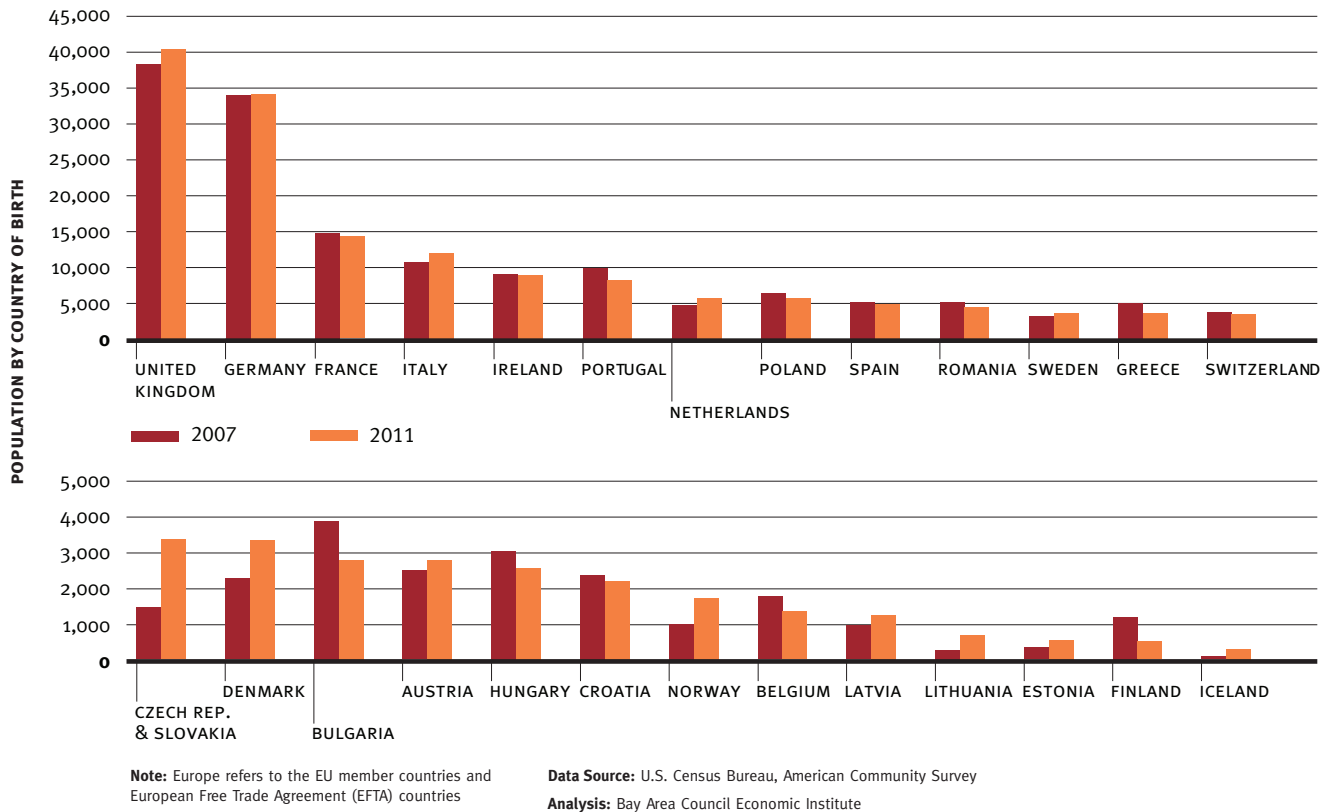
Today Levi Strauss & Co. is a Fortune 500 company with net revenues of \$4.6 billion. In May 2013 the National Football League's San Francisco 49ers team announced that the company had purchased naming rights for the new football stadium in Santa Clara. Company headquarters remain in downtown San Francisco.¹⁶

EUROPEAN IMMIGRANTS TODAY

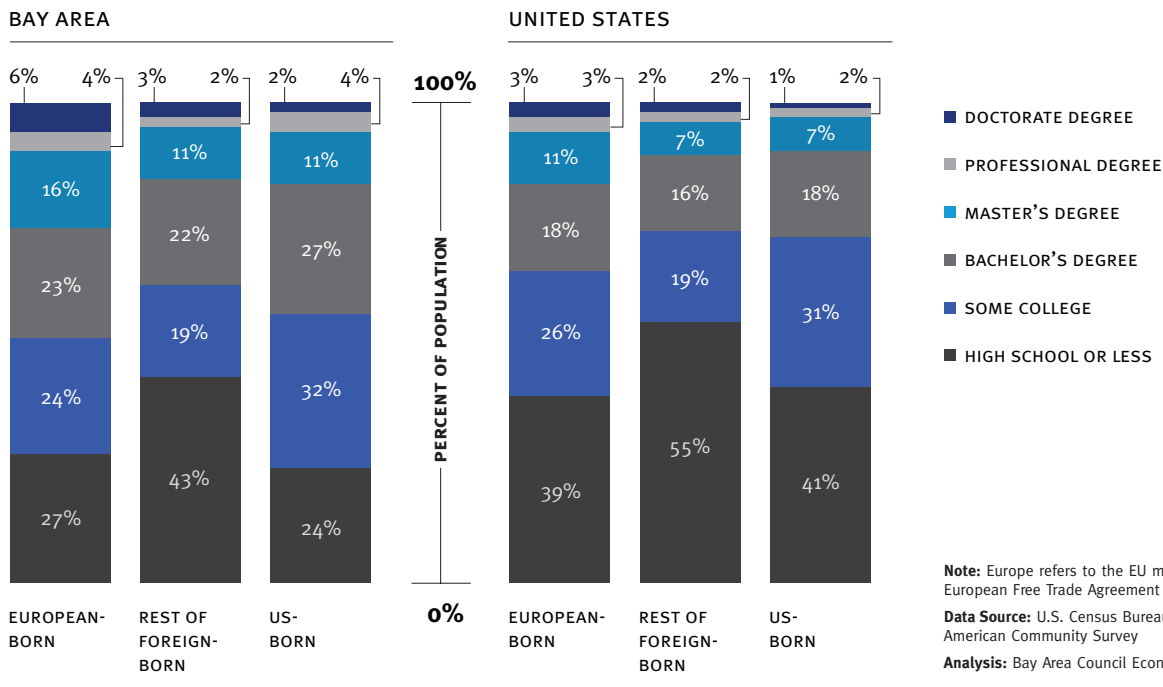
Reflecting the region's history as a place that has drawn immigrants from around the world, foreign-born residents make up 31 percent of the Bay Area's population. In 2011, nearly 170,000 Bay Area residents were born in Europe, accounting for 2.4 percent of the region's total population. The largest numbers come from the UK and Germany.

Within the region, European-born residents report higher levels of educational attainment than the rest of the population: 26 percent of European-born residents have attained a graduate degree. In contrast, 16 percent of other foreign-born and 17 percent of US-born residents have achieved educational levels beyond a bachelor's degree.

EUROPEAN-BORN BAY AREA RESIDENTS



EDUCATIONAL ATTAINMENT 25 YEARS OR OLDER (2011)



European immigrants have woven a rich tapestry of cultural and community organizations that continue to provide a strong foundation for personal, business and economic ties between the Bay Area and Europe. As a global center of technology and innovation with leading research universities and the world's fourth largest number of Fortune Global 1000 companies after New York, Tokyo and London, the Bay Area has also attracted a large European diplomatic presence and an array of business and technology-focused organizations.

CULTURAL AND COMMUNITY ORGANIZATIONS

Today a rich array of cultural and community organizations provides active connections among immigrants from European countries and between them and the larger Bay Area community. These organizations provide depth and color to Europe's presence, and serve as important context for Bay Area-European business ties.

Examples include the Swedish Club of San Francisco Bay Area, the Swedish Society of San Francisco, the Alliance Française (San Francisco, San Jose, Berkeley), the French American Cultural Society, the French-American International School, the Lycée Français, the United German-American Societies of San Francisco, the German School (in Palo Alto, Mountain View, Menlo Park, San Francisco), the German International School of Silicon Valley (in Mountain View, Berkeley, San Francisco), the German American International School (Menlo Park), the Bay Area Kinderstube

(Albany), the Goethe-Institut San Francisco, the Italian Cultural Institute of San Francisco, the Italian American Museum of San Francisco, the United Irish Cultural Center of San Francisco, Austrian Scientists and Scholars in North America (Silicon Valley), the IDESST Sausalito Portuguese Hall, the Dutch School Silicon Valley, SF Dutch, the Netherland-America Foundation, the Polish Club Inc. of San Francisco, and the Croatian American Cultural Center. Many organizations date back to the late 1800s and early 1900s and reflect the long history of their communities in the region. Most organize nationally-focused social events and cultural and educational programs.

The region's cultural and community ties are also evident in its diverse sister-city relationships. Sister-city relationships can be more or less active but typically involve student and cultural exchanges, mayoral visits, and often business delegations. The Bay Area's sister-city relationships include: San Francisco-Assisi, Italy (1969), San Francisco-Thessaloniki, Greece (1990), San Francisco-Paris, France (1996), San Francisco-Cork, Ireland (1984), Mountain View-Hasselt, Belgium (1988), San Francisco-Krakow, Poland (2009), San Francisco-Barcelona, Spain (2010), San Jose-Dublin, Ireland (1986), Santa Clara-Coimbra, Portugal (1986), Berkeley-Jena, Germany (1989), Walnut Creek-Noceta, Italy (1986), Walnut Creek-Suffolk, Hungary (1991), and Los Altos-Rustington, UK (2000).

Bay Area universities are leading sources of economic research on contemporary Europe, through entities such as the **European Center of Excellence** at UC Berkeley, and the **Wallenberg Research Link (WRL)** at Stanford. WRL aims to support Sweden's development as a knowledge society and establish research collaborations with the university. Funded by a gift of the Knut and Alice Wallenberg Foundation to Stanford, WRL facilitates visits to Stanford by individuals, scholars and government leaders from Sweden and identifies research projects at Stanford and in Sweden that are candidates for collaboration. Also based at Stanford, through the Stanford School of Engineering, is the **European Entrepreneurship and Innovation Thought Leaders Program**, an initiative now in its sixth year that features speakers from the European start-up, venture capital, corporate and university sectors. Weekly forums, organized during the winter term, are open to the public but are also offered as a credit course. Topics focus on entrepreneurship and technology innovation as practiced in Europe, with presentations by many of Europe's leading entrepreneurs and investors. The **Business Exchange and Student Training (BEST)** scholarship program, sponsored by the US Embassy in Italy, the Fulbright Commission in Italy, and Invitalia, aims to stimulate high-tech entrepreneurship in the Italian economy by transferring US business culture and best practices through the exchange of young Italian managers, economists, engineers and researchers. Hosted by Santa Clara University, the

program involves a two-month classroom session at the university, a hands-on matching of the participants with Silicon Valley startups in the same business field, networking with successful entrepreneurs and businesspeople, and six months of support by a qualified mentor to advance the launch of the start-up after returning to Italy. Candidates are screened and selected by the Fulbright Commission in Rome. The BEST Steering Committee includes Italian leaders and the US Ambassador to Italy.

Another important collaboration is **Silicon Valley Comes to UK**, managed by the Saïd Business School at Oxford. It connects the region with Oxford, Cambridge, Imperial and other universities. Each year the program brings Silicon Valley professionals to the UK to work with faculty, students, alumni and guests on issues facing high-growth companies. The program celebrated its 13th year in 2013.

Europe's cultural presence is also physical, as seen in iconic Bay Area structures. The California Academy of Sciences in Golden Gate Park, with its living roof suggestive of San Francisco's seven hills, was designed by famed Italian architect **Renzo Piano**. The de Young Museum, also in Golden Gate Park, was designed by the noted Swiss firm **Herzog & de Meuron**. The San Francisco Museum of Modern Art was originally designed by Italian architect **Mario Botta**, and its extension now under construction is designed by the Norwegian architectural firm **Snøhetta**.¹⁷



The de Young Museum designed by Swiss firm Herzog & de Meuron, image by Henrik Kam



Photo Credit: California Academy of Sciences



San Francisco Museum of Modern Art, conceptual rendering of expansion designed by Norwegian architectural firm Snøhetta

In commercial structures, acclaimed Danish architect Bjarke Ingels' **BIG Group** was recently selected to design a major mixed-use project in the heart of San Francisco's rapidly emerging Mid-Market area, incorporating a 75,000 square foot arts complex with retail, hotel and residential space. The project is Ingels' first on the West Coast.

Noted Dutch Architect **Rem Koolhaas** (Office for Metropolitan Architecture) has been chosen to design a 550 foot residential tower in the fast-growing South of Market area, and the UK architect **Norman Foster**, whose firm Foster+Partners is designing the Apple Store on Union Square, has also been selected to design a 2 million square foot mixed use project incorporating 60 and 85 story towers, adjacent to South of Market's new Transbay Transit Center.



THE ITALIAN CULTURAL INSTITUTE OF SAN FRANCISCO

Housed in a historic building in Jackson Square, the Italian Cultural Institute of San Francisco promotes Italian language and culture in Northern California, Oregon, Washington, Idaho, Utah, Montana, Alaska and Hawaii. It operates under Italy's Ministry of Foreign Affairs, through the Italian Consulate General in San Francisco, and also connects to Italy's Ministries of Culture and Education. Core activities focus on Italian language instruction, cultural exchanges, and initiatives that support intercultural dialogue. Public programs, numbering 40–50 per year, include art exhibits, film screenings, concerts, and lectures. In the future, the Institute plans to expand its focus beyond cultural themes to include programs focusing on science and technology.

Major programs in 2013 included an Italian design exhibit, Making in Italy/Making in USA: Artisanhip, Technology and Design – Innovating with Beauty. The event featured displays by artists and designers from Triennale Design Museum of Milan and a forum on design and manufacturing. Also in 2013, in recognition of the Year of Italian Culture in the United States as well as the bicentennial of the birth of composer Giuseppe Verdi, the orchestras and choruses of the San Francisco Opera and the Teatro di San Carlo in Naples combined to present Verdi's Requiem Mass. Nicola Luisotti, music director of both companies, directed the sold-out performance at San Francisco's War Memorial Opera House.

GOVERNMENT REPRESENTATION

The Bay Area hosts the largest European diplomatic presence in the United States outside Washington, DC and New York. Consulates provide official representation and visa services and support for nationals living abroad. In the Bay Area, however, there is a difference. Many consulates and government offices also support staffs that focus on business development and, in particular, on developing ties with the region's technology and innovation networks.

Consulates can be staffed by full-time diplomatic personnel (consulates general) or by distinguished local residents who are appointed to serve on a part-time basis (honorary consuls). With their support, large numbers of European business and government officials regularly visit the region for exchanges on business and technology, often with a focus on Silicon Valley and the model for innovation-led growth that the region has pioneered.

TRADE AND INVESTMENT OFFICES

Trade and investment development offices sponsored by national, provincial or local governments provide further connections to Europe's economies. These offices, often with assistance from private sector partners, support two-way business ties. Most often this activity is focused on investment attraction and export promotion for the home country, province, state or city. Like their consular counterparts, many also work to support the competitiveness of their local industries by developing links to technology and innovation networks. This is particularly the case in the Bay Area, where potentially game-changing technologies are being generated and global networks converge. Some examples of European trade and investment offices follow.

Accio Silicon Valley, located in San Jose, represents the Spanish region of Catalonia and its capital Barcelona in the Western United States. The office

connects potential investors with Invest Catalonia, which promotes Catalonia as a strategic destination for investment in Spain and Europe, providing information and introductions to potential partners. Assistance is also provided in developing opportunities for research funding in Europe and in identifying potential R&D partners. To date, Accio has helped 40 Spanish/Catalonian companies establish themselves in California.

The Bavarian U.S. Office for Economic Development assists US businesses in establishing a presence in Bavaria. The **Bavarian US Office for Economic Development – West Coast** is located in downtown San Francisco.

CzechInvest, a national entity focused on technology-oriented small and medium sized enterprises, cooperates with Czech Accelerator to host programs in Silicon Valley for businesses focused on IT, life science and nanotechnology.

Enterprise Estonia assists entrepreneurs, research institutions, the public sector and nonprofits by providing financial assistance, counseling, collaboration opportunities and training. Its nine overseas locations include a Silicon Valley office located in Sunnyvale.

With a presence in over 40 countries, **Germany Trade and Invest** provides foreign trade information and location services to Germany-based companies and to global companies interested in entering the German market. It also supports the German overseas Chambers of Commerce (AHK) with data and consultancy services. Its Bay Area office is located in San Francisco.

Ireland's inward investment promotion agency, **IDA Ireland** (Industrial Development Agency) is responsible for the attraction and development of foreign investment in Ireland. There are six regional offices in North America, with two in California, in Mountain View and Irvine.

EUROPEAN GOVERNMENT REPRESENTATION IN THE BAY AREA

CONSULATES AND
*HONORARY CONSULS

Austria
Belgium*
Cyprus*
Czech Republic*
Denmark*
Estonia*
Finland*
France
Germany
Greece
Hungary*
Iceland*
Ireland
Italy
Latvia*
Lithuania*
Malta*
Monaco*
Luxembourg
Netherlands
Norway
Poland*
Portugal
Romania*
Slovak Republic*
Slovenia
Spain
Sweden*
Switzerland
United Kingdom

Enterprise Ireland is the Irish government's trade and development organization, tasked with growing Irish headquartered companies and helping them compete in world markets. There are five offices in North America, with the California office located in Mountain View.

Invest Northern Ireland represents Belfast and the UK region of Northern Ireland and promotes inbound investment and entrepreneurial development. Its San Francisco office works with fast-growing companies to promote investment in Northern Ireland and helps Northern Ireland companies with connections in the US.

London & Partners, with 12 offices around the world, connects West Coast businesses with opportunities in London through its San Francisco office. Its activity focuses primarily on helping companies establish or expand a presence in London with location services.

Paris Region International Mission Enterprise (PRIME) fosters business and technology partnerships between Paris Region research centers and US companies and organizations. It does this by matching American companies and their needs with the appropriate Parisian research institution. Services offered to Parisian research institutions consist of drafting proposals, detailing the available funding, and negotiating contracts. PRIME is located in downtown San Francisco.

Scottish Development International (SDI) assists Scottish companies seeking to expand in global markets with overseas trade support. It also helps foreign companies hoping to locate in Scotland with information, investor support services, training, grants and funding. SDI's Silicon Valley Center, one of six offices in the United States, is located in San Jose.

Wales Cymru, working from the British Consulate General in San Francisco, represents the UK region of Wales.



swissnex

swissnex is an example of the commitment that European governments are making to the Bay Area, and to developing business and technology connections that can help advance innovation-led growth at home. Housed in upscale facilities on the edge of San Francisco's financial district, swissnex is an initiative launched by the Swiss government's State Secretariat for Education, Research and Innovation (SERI) and is managed in cooperation with the Swiss Department of Foreign Affairs and the Consulate General of Switzerland in San Francisco. Private sponsors and donors also support its operations. Similar centers exist in Bangalore, Boston, Rio de Janeiro, Shanghai and Singapore.

swissnex focuses on science, education, art and technology, with a pervading focus on trends and innovation. It does this through an active program of public events, deep dives, scouting mandates, networking opportunities, shared workspace and interdisciplinary initiatives designed to foster collaboration. In the education field it partners with, among others:

CTI Startup, an initiative of the Swiss Commission for Technology and Innovation (CTI), to make long-term workspace available for entrepreneurs-in-residence, and for CTI-sponsored start-ups seeking to enter the US market, through the three-month work-stay program CTI Start-up US Market;

Entry Camp;

Pro Helvetia, the Swiss Arts Council, to develop a stronger profile on the West Coast for Swiss artists and projects fusing art, science and technology;

the École polytechnique fédérale de Lausanne (EPFL) on branding and international press outreach in North America;

ETH Zürich, the Swiss federal institute of technology, to extend the university's reach in California;

the Universities of Geneva and Zürich to support connections and partnerships with relevant institutions in Western North America;

the Canton of Vaud to develop connections, joint summer-schools and degrees with local colleges and universities.

swissnex initiatives include:

the Digital Campus, a program to help Swiss higher education leverage emerging social media technologies and practices;

competitions such as the Urban Data Challenge, in which participants are asked to explore mobility sets from various cities—currently San Francisco, Geneva and Zurich—and to compare urban data through visualization.

Recent conferences and programs covered the future of the book in the digital age, genetic privacy, green architecture, and doing business in California for start-ups.

European companies and their Bay Area partners are supported by a rich network of bi-national business organizations that provide programs, information and networking opportunities for both members and non-members.

BI-NATIONAL BUSINESS ORGANIZATIONS

European companies and their Bay Area partners are also supported by a rich network of bi-national business organizations that provide programs, information and networking opportunities for both members and non-members. Some are small, but others are large and long established.

The British-American Business Council, for example, has been active since 1954 and engages more than 200 global UK companies with operations in the Bay Area and 350 Bay Area-headquartered companies with subsidiaries in the UK. Activities include business networking events, young professionals happy hours, business conferences, an annual economic luncheon, and an annual Christmas Luncheon that draws nearly 1,000 guests.

Most bi-lateral organizations organize business conferences that engage both large and small companies and senior government leaders, usually with a focus on bilateral business development, entrepreneurial development or both. **BAIA** (Business Association Italy America) organizes public forums and networking events connecting entrepreneurs, managers and professionals operating between Italy and the United States. The **California-Spain Chamber of Commerce**, launched in 2010, organizes a twice-yearly Spain Tech Week to promote innovation and technology from Spain with investor breakfasts, professional meetings and entrepreneur pitch sessions.

The government-sponsored **German-American Chamber of Commerce** cooperates with German companies located in the US to organize an annual economic outlook conference that also draws high-level participation. The **German American Business Association (GABA)**, a private body, also supports business and trade between Germany and the US. The **French-American Chamber of Commerce** provides information, networking and services to the French-American business community.

Other Bay Area organizations with global interests organize major European-focused business events. For example, **Portugal Ventures**, a European venture and private equity firm, partnered with Blumberg Capital to sponsor Portugal Ventures in the Bay in Redwood City in November 2013. BayBio, the region's biotech and life sciences association, supports **BioPartnering Europe**, an innovation and networking forum last held in Brussels in 2012. The event aims to connect US and European pharmaceutical and life sciences companies.

EUROPEAN BUSINESS ORGANIZATIONS IN THE BAY AREA

BelCham Bay Area

British-American Business Council

Business Association Italy America (BAIA)

California-Spain Chamber of Commerce

Danish American Chamber of Commerce of Northern California

French-American Chamber of Commerce

German-American Business Association (GABA)

German-American Chamber of Commerce

Hungarian American Chamber of Commerce

Irish Network San Francisco

Irish Technology Leadership Group (ITLG)

Latvian-American Business Association in California

Swiss-American Chamber of Commerce

Swedish-American Chamber of Commerce

U.S.-Polish Trade Council

22

The Bay Area is a magnet for talented people from around the world. Large numbers of European scientists, engineers and executives contribute valuably to Bay Area companies. European immigrants, such as Andy Bechtolsheim at Sun Microsystems and Aart de Geus at Synopsys, have played key roles in founding iconic Bay Area companies.

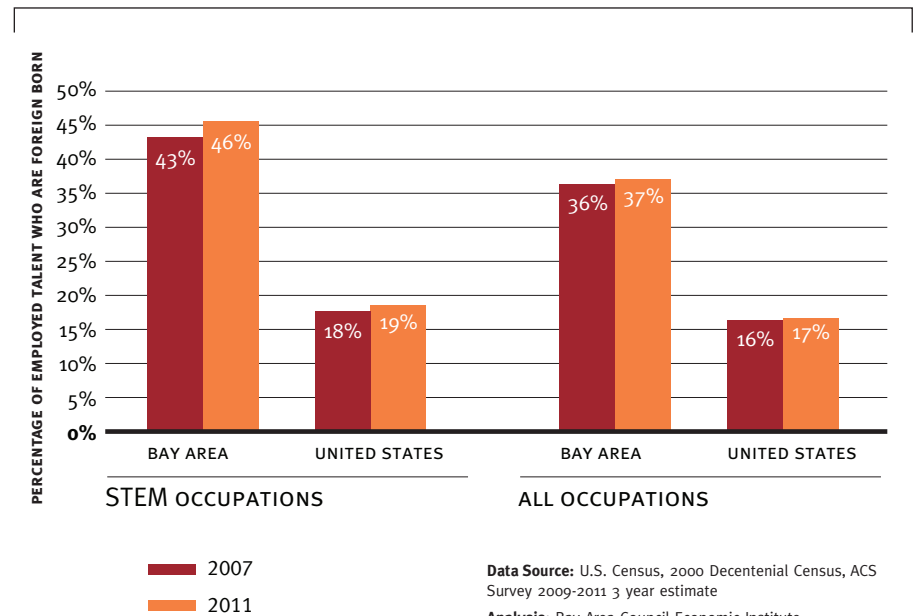
Foreign-born workers account for 37 percent of the Bay Area's employed workforce, compared to 17 percent of workers nationwide. In science, technology, engineering and math (STEM) fields, foreign-born talent is growing at a faster rate in the region than nationwide.

Foreign-born workers account for 46 percent of the region's STEM workers, increasing 3 percent between 2007 and 2011. By comparison, people born outside the US account for only 19 percent of STEM workers nationally and increased by only 1 percent over the same period.

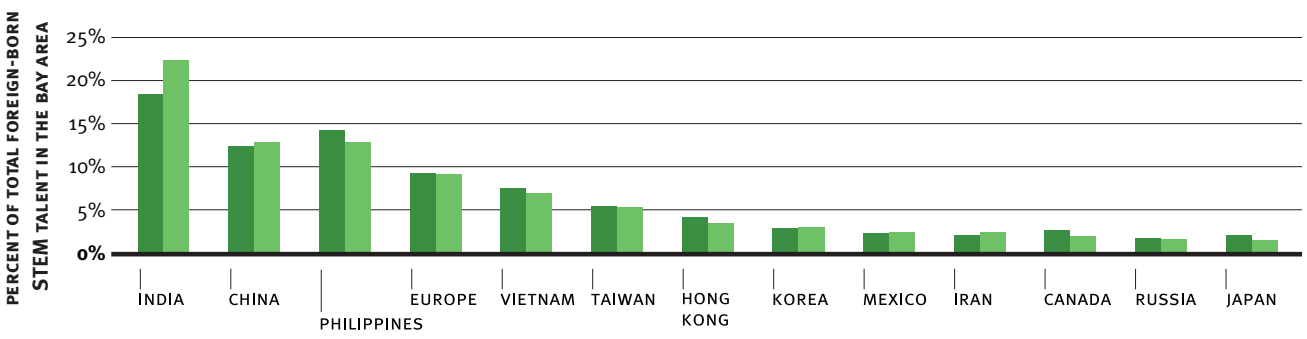
Since 2007, STEM talent flows from India and China have led other parts of the world. India represents 22 percent of total foreign-born STEM workers in the region, up from 19 percent in 2007. China represents 13 percent and increased from 12 percent in the same period.

European talent is significant in STEM fields, as executives, technologists, researchers and entrepreneurs from Europe occupy prominent positions across the region's leading companies. Accounting for 9 percent of all foreign-born STEM workers, Europe is the fourth largest source of STEM talent in the Bay Area. However, the total number of European-born STEM workers in the Bay Area dropped from 24,000 in 2007 to just over 18,000 in 2011.

OCCUPATIONAL SHARES OF FOREIGN-BORN TALENT (2007 AND 2011)



FOREIGN-BORN STEM TALENT IN THE BAY AREA



2007 - 2011 FOREIGN-BORN STEM TALENT IN THE BAY AREA

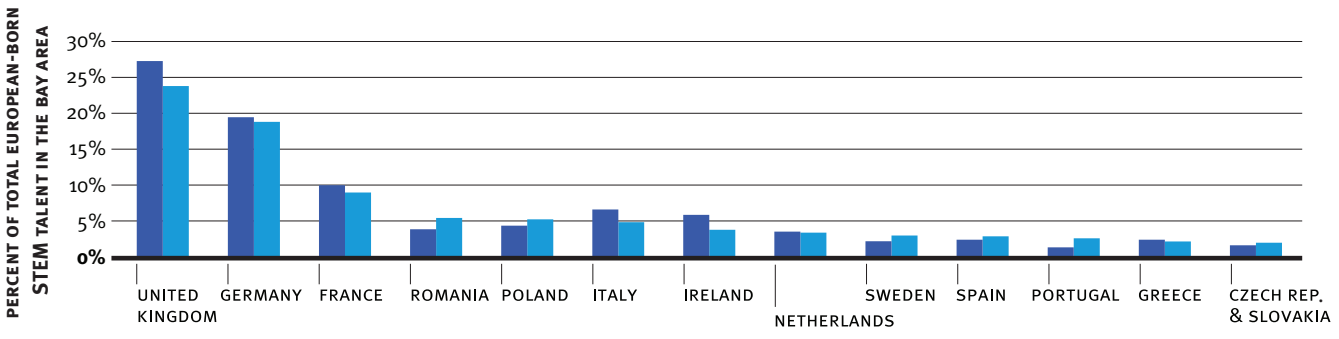
YEAR	INDIA	CHINA	PHILIPPINES	EUROPE	VIETNAM	TAIWAN	HONG KONG	KOREA	MEXICO	IRAN	CANADA	RUSSIA	JAPAN
2007	48,687	32,451	37,450	24,161	19,557	14,217	10,653	7,290	5,863	5,080	6,661	4,354	5,146
2011	44,996	25,886	25,837	18,316	13,722	10,509	6,757	5,847	4,805	4,742	3,676	3,159	2,699

Note: Europe refers to the EU member countries and European Free Trade Agreement (EFTA) countries

Data Source: U.S. Census Bureau: 2000 Decennial Census, American Community Survey 2009-2011 3 year estimate

Analysis: Bay Area Council Economic Institute

EUROPEAN-BORN STEM TALENT IN THE BAY AREA



2007 - 2011 EUROPEAN-BORN STEM TALENT IN THE BAY AREA

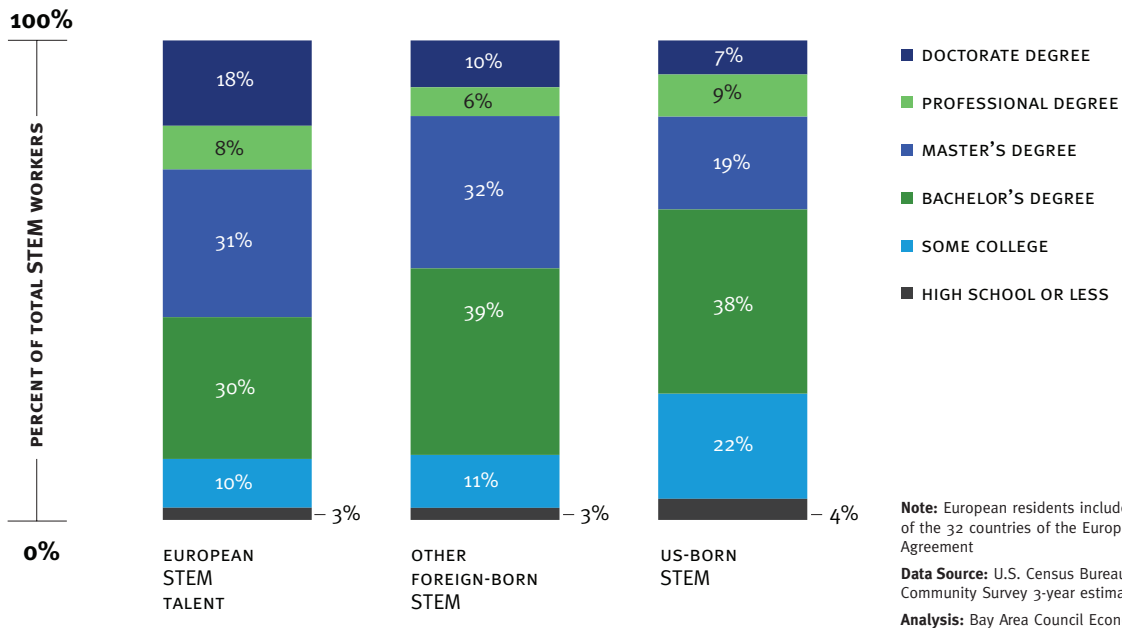
YEAR	UK	GERMANY	FRANCE	IRELAND	NETHERLANDS	SWITZERLAND	POLAND	ITALY	ROMANIA	SWEDEN	HUNGARY	CZECH REP. & SLOVAKIA	SPAIN
2007	6,591	4,694	2,400	1,399	832	453	1,035	1,581	913	509	422	372	560
2011	4,374	3,455	1,640	681	608	139	949	875	986	533	296	349	513

Note: Europe refers to the EU member countries and European Free Trade Agreement (EFTA) countries

Data Source: U.S. Census Bureau: 2000 Decennial Census, American Community Survey 2009-2011 3 year estimate

Analysis: Bay Area Council Economic Institute

ACADEMIC ACHIEVEMENT OF STEM WORKERS IN THE BAY AREA (2011)



24

The United Kingdom and Germany account for the largest share of European-born STEM talent in the region, together making up 43 percent. Although numbers for most European countries have declined since 2007, some countries, such as Romania and Sweden, have expanded their presence.

These workers contribute to the Bay Area's high level of educational attainment. Fifty-eight percent of European-born STEM workers in the region have at least a master's degree, compared to 48 percent of other foreign-born STEM workers and 35 percent for US-born workers. Again outpacing other geographies, 18 percent of European-born STEM workers have a Ph.D., compared to 10 percent of other foreign-born and 7 percent of US-born STEM workers.

CONTRIBUTIONS BY STEM OCCUPATION

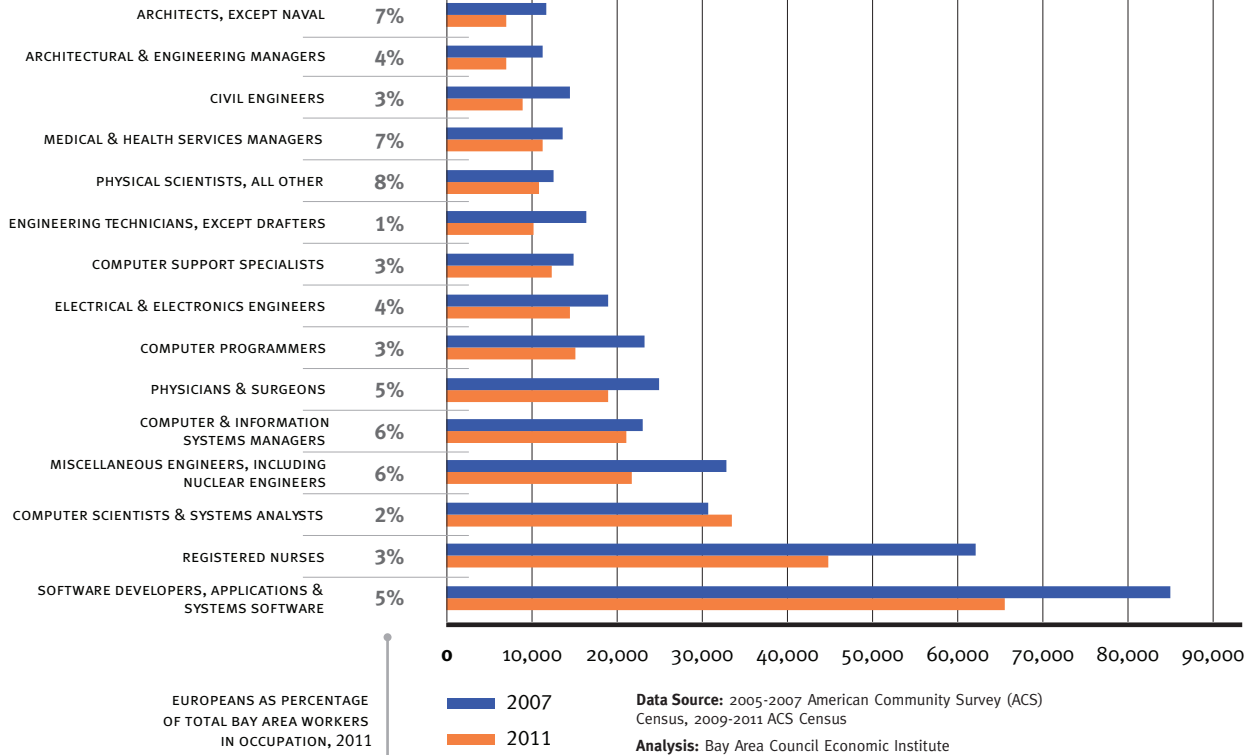
Europeans are strongly represented in the region's top 15 STEM occupations. Although they account for just 2.4 percent of the region's total population, Europeans make up 6 percent of Computer & Information Systems Managers, 8 percent of Physical Scientists, and 11 percent of Medical & Life Scientists.

Furthermore, in six of the top 15 STEM occupations with large employment of European-born workers, the presence of European-born workers is growing. The strongest growth between 2007 and 2011 was in Computer & Information System Managers (+33%), Computer Support Specialists (+46%), and Medical & Health Services Managers (+137%).

Relative to regional distributions (in which a normal distribution is equal to 1), European-born workers are highly concentrated in Medical & Life Sciences (2.5), Drafters (2), Physical Scientists (1.9), Architects (1.7), Computer & Information Systems Managers (1.5), and Miscellaneous Engineers (1.5).

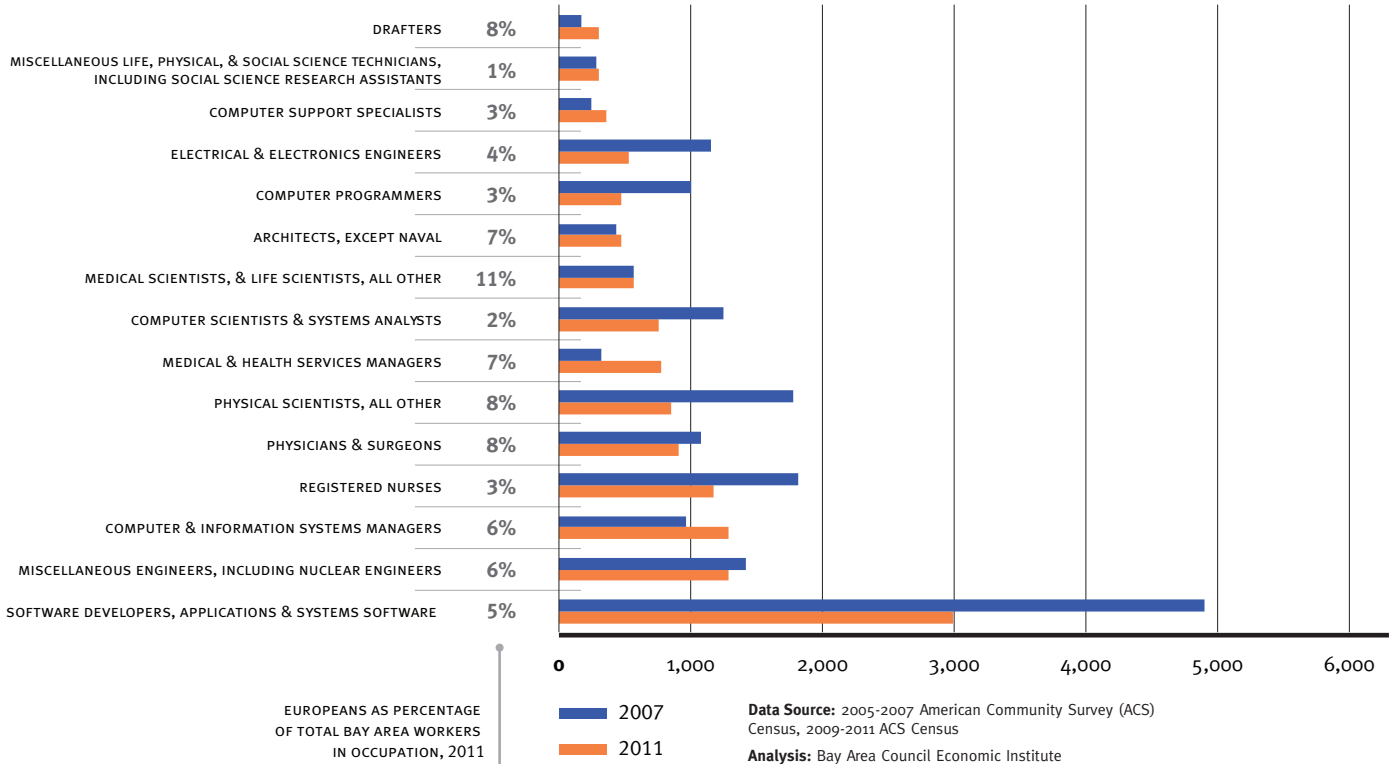
BAY AREA STEM WORKERS

Top Fifteen Occupations



EUROPEAN-BORN STEM WORKERS

Top Fifteen Occupations



Trade is a cornerstone of the Bay Area-Europe relationship, and even as the Bay Area's trade with Asia has grown dramatically, Europe remains a major partner. With 500 million consumers, Europe is the world's largest economy and accounts for almost 20 percent of the world's exports and imports.

AIR CONNECTIONS

Air connections enable tourism, business travel, and the export and import of high-value goods in wide-bodied or dedicated cargo aircraft. The efficiency of those links—the number of flights and whether they are direct or indirect—is important to both manufactured and service trade. Despite its distance from Europe, the Bay Area benefits from particularly strong connections.

Nine airlines (Air France, British Airways, KLM, Lufthansa, SAS, Swiss, United, Virgin Atlantic, and XL Airways France currently provide direct flights from San Francisco International Airport (SFO) to Europe through Paris, London, Amsterdam, Frankfurt, Munich, Copenhagen, and Zurich, with a total of 35,675 passenger seats per week.¹⁸ European carriers such as Lufthansa, and US partners such as United, connect to extensive domestic networks within Europe. In April 2014, Aer Lingus will resume direct service to Ireland with five weekly non-stop flights to Dublin, adding an additional 1,335 seats per week. In May 2014, Norwegian Air Shuttle will also offer direct air service from Oakland International Airport to Oslo (with three weekly flights) and Stockholm (with two flights per week).

Passenger and cargo trends can vary considerably year-to-year, with the changing availability of service and trends in the global economy. In recent years, passenger traffic with Europe has seen steady growth, while air cargo has held up well despite an overall trend of declining international air cargo through San Francisco International Airport SFO.

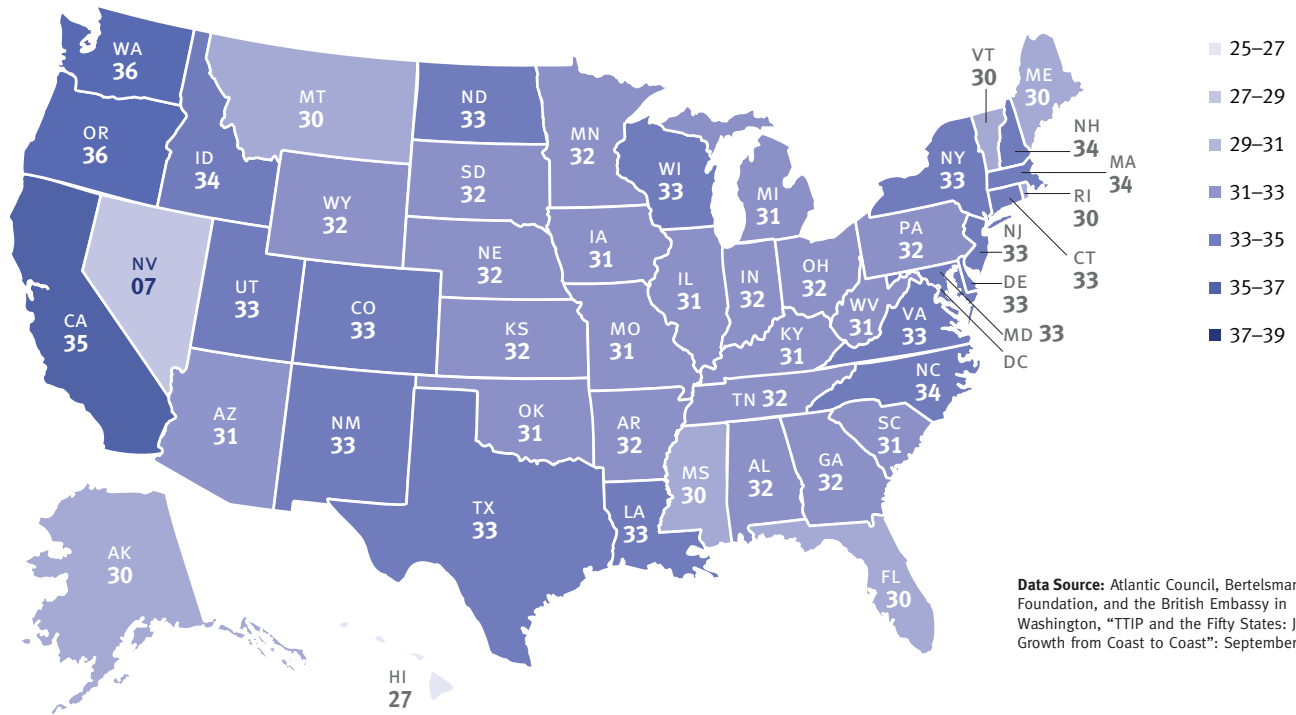
According to San Francisco International Airport's air traffic statistics data sets¹⁹, 2013 passenger traffic between the Bay Area and Europe (enplanements and deplanements) through SFO grew 8.3 percent, expanding from 2.5 to 2.7 million passengers out of a total 9.7 million international passengers transiting the airport. The number of passengers traveling to and from Europe was the second largest for any worldwide region, trailing only Asia and the Middle East (4.2 million), and surpassing Latin America (1 million), and Canada (1.3 million).

International air cargo with Europe increased 4.3 percent in 2013 by weight, while air cargo trade with other major regions declined: Canada (-16.2%), Latin America (-3.9%), and Asia/Middle East (-0.6%).

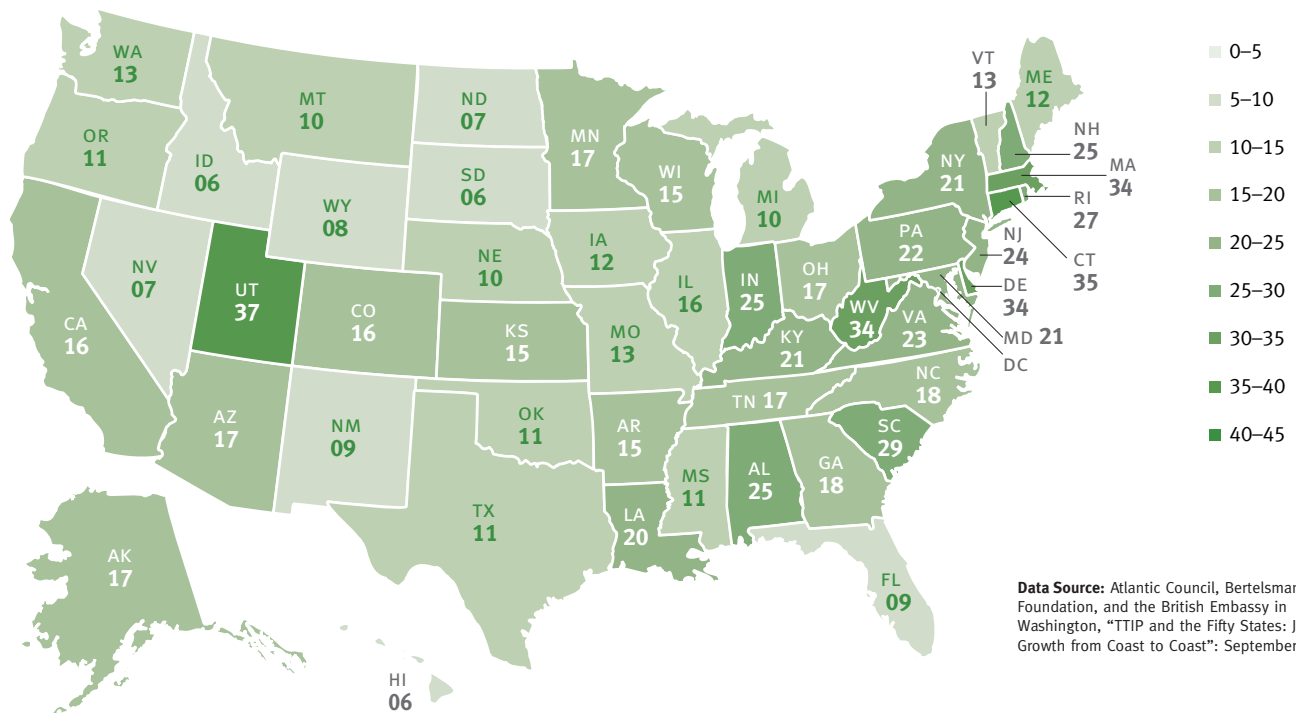
CALIFORNIA AND THE BAY AREA

International trade is a major factor in the California economy. Europe absorbs 18 percent of California's goods exports. This is a lower figure than generally prevails for states in the East, South and Midwest, but is higher than for most Western states. Thirty-five percent of California's service exports go to Europe, one of the highest rates in the nation.

INDIVIDUAL US STATES SERVICES EXPORTS TO THE EU AS A PERCENT OF TOTAL SERVICES EXPORTS (2011)



INDIVIDUAL US STATES GOODS EXPORTS TO THE EU AS A PERCENT OF TOTAL GOODS EXPORTS (2012)

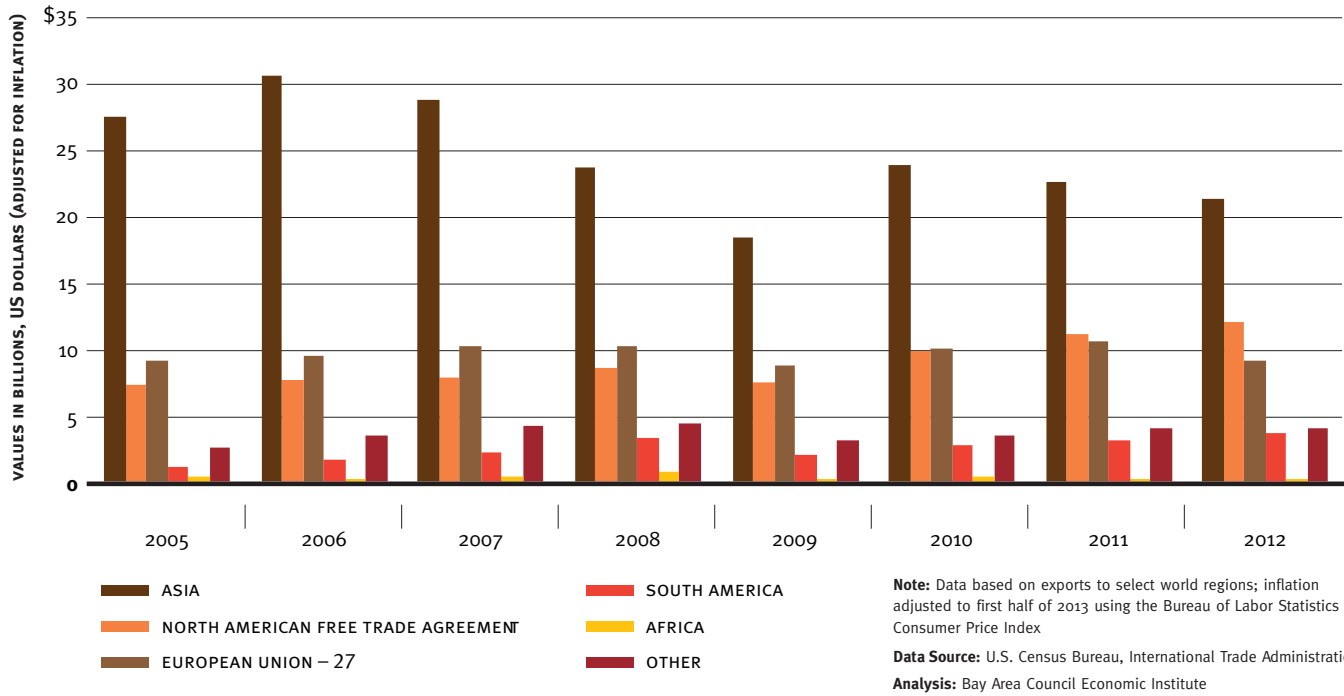


Bay Area companies exported a total of \$50.6 billion in goods worldwide in 2012. This represented a recovery from the depths of 2009 and the global financial crisis, and exceeded export values of \$48.4 billion reported in 2005. In 2012 goods exports to Europe totaled \$9.2 billion. While total exports by Bay Area companies dropped 16 percent in 2009 from 2005, exports to Europe dropped by just 3 percent during the economic downturn.

The EU currently accounts for 18 percent of Bay Area exports. Asia remains the region's largest trading partner, taking in 42 percent of the region's exports, with NAFTA (Canada and Mexico) ranking second largest with 24 percent. This relative ranking reflects higher growth rates in Asia, Canada and Mexico.

Overall, the Bay Area enjoys a modest trade surplus with Europe. As with many parts of the world, its exports to Europe are led by technology, followed by agricultural products (including wine, but primarily high-value specialty crops originating in California's Central Valley) and refined chemicals. Because of its accessibility and legal transparency, Europe is often the first overseas destination for first-time US exporters.

BAY AREA EXPORTS BY WORLD REGIONS



Region	2005		2009			2012			
	\$bn	%	\$bn	%	%Δ ('05-'09)	\$bn	%	%Δ ('05-'12)	%Δ ('09-'12)
■ Asia	27.6	57%	18.5	45%	-33%	21.4	42%	-23%	16%
■ EUROPEAN UNION - 27	9.2	19%	8.9	22%	-3%	9.2	18%	0%	3%
■ North American Free Trade Agreement	7.4	15%	7.6	19%	3%	12.1	24%	63%	58%
■ South America	1.2	2%	2.2	5%	86%	3.7	7%	215%	69%
■ Africa	0.4	1%	0.3	1%	-21%	0.3	1%	-23%	-2%
■ Other	2.6	5%	3.2	8%	22%	4.0	8%	53%	25%
Total Exports from Bay Area	48.4	100%	40.7	100%	-16%	50.6	100%	5%	24%

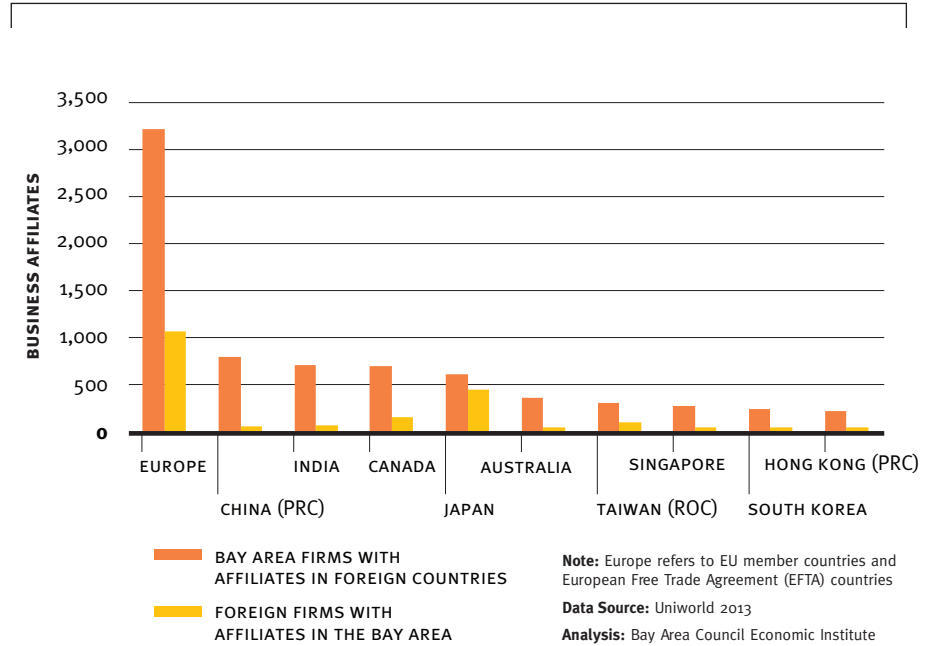
BUSINESS PRESENCE: FOREIGN DIRECT INVESTMENT

While Europe is a major trading partner for the region, Asia is the region's largest trading partner by a large margin. The reverse is true, however, when it comes to foreign direct investment (FDI), where Europe is by far the largest investor in the region. European companies, with an estimated 1,065 affiliates, account for 33 percent of all foreign firms in the Bay Area. Japan accounts for the second largest number of affiliates, with 444.

Of European countries, the largest numbers of foreign affiliates in the region come from the UK (370), Germany (150), Switzerland (137) and France (135). This cross investment goes in both directions. As of 2013, there were 3,224 affiliates of Bay Area companies in Europe. Typically, there are more Bay Area affiliates in each European country than there are affiliates from those countries in the Bay Area. Switzerland and Iceland are the exceptions to this pattern.

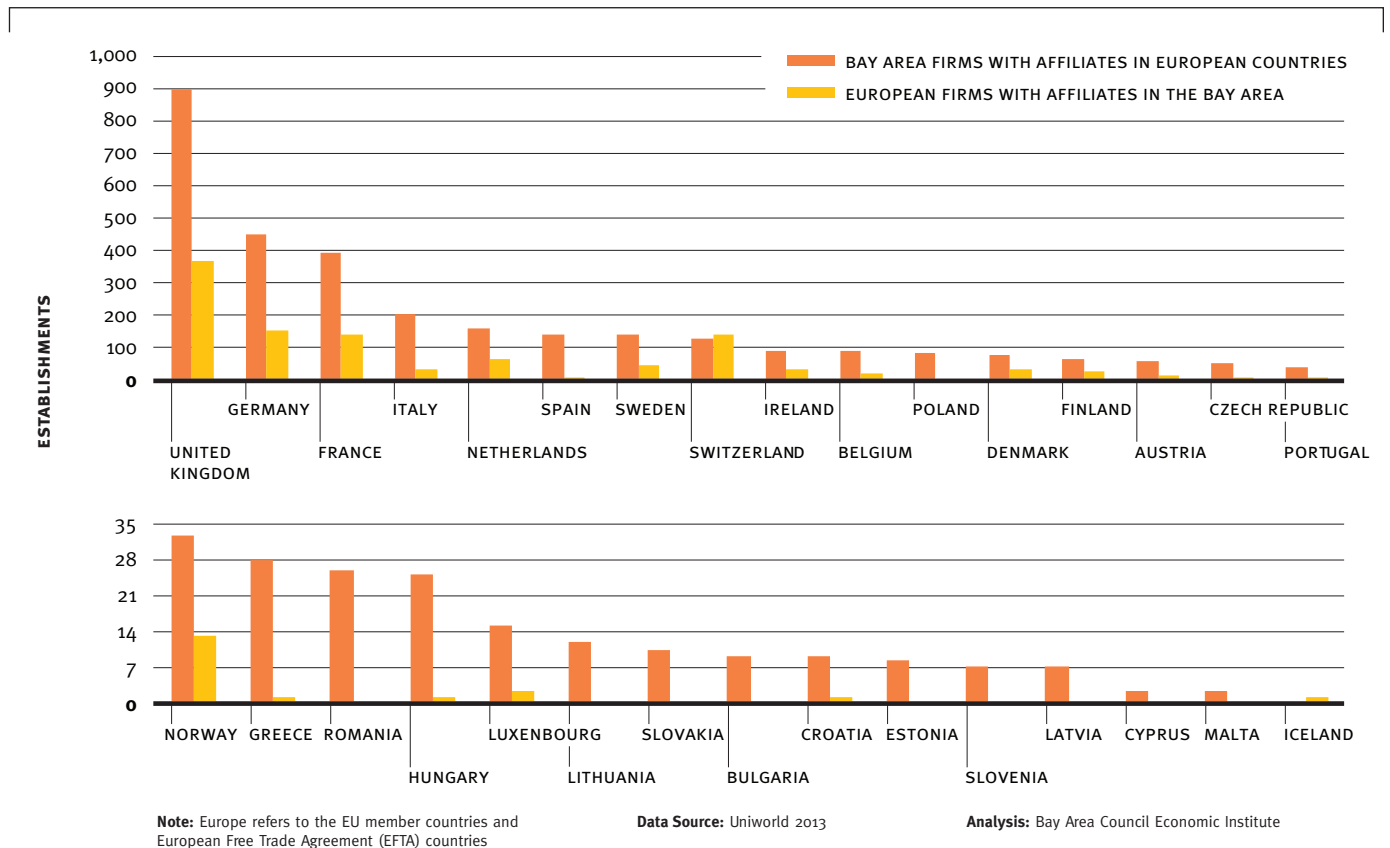
GLOBAL BUSINESS PRESENCE

Foreign Affiliates in the Bay Area and Bay Area Affiliates Abroad

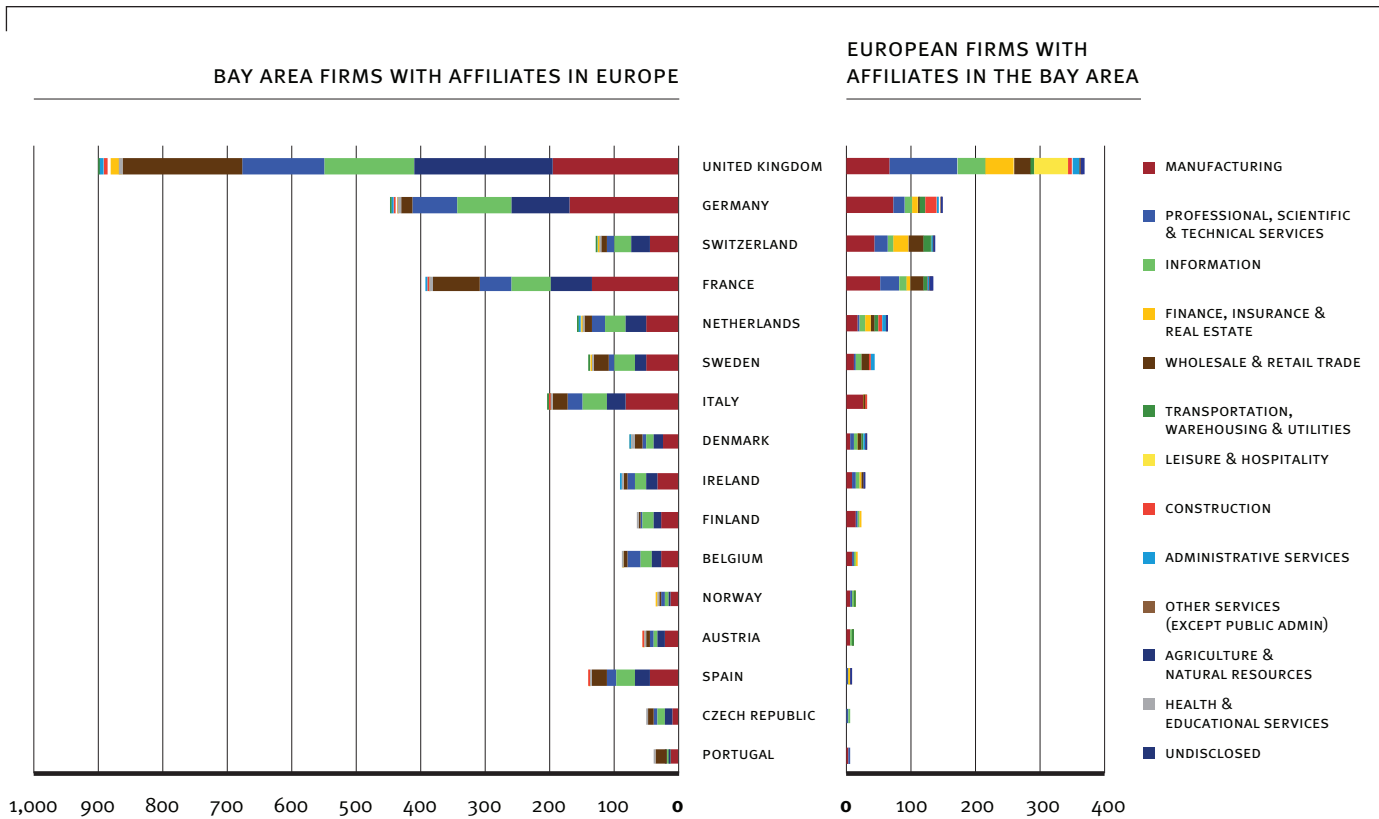


EUROPEAN BUSINESS PRESENCE

European Affiliates in the Bay Area and Bay Area Affiliates in Europe



BAY AREA AND EUROPEAN AFFILIATES BY INDUSTRY (2012)



Note: European refers to EU member countries and European Free Trade Agreement (EFTA) countries

Data Source: Uniworld 2013

Analysis: Bay Area Council Economic Institute

By industry sector, Manufacturing accounts for the largest percentage of foreign affiliates in the region. Most affiliates do not actually manufacture in the region, but instead establish research and development operations to tap into the Bay Area's rich pool of research facilities and talent. The Professional Services sector accounts for the largest percentage of affiliates from the United Kingdom. In terms of Bay Area companies setting up affiliates in Europe, again manufacturing firms comprise the largest group. This is followed by Wholesale & Retail Trade, Information, and Health & Educational Services.

EUROPEAN COMPANIES WITH A PRESENCE IN THE BAY AREA

Cross-border investment between Bay Area and European companies spans a wide range of industries. Many of Europe's most recognized companies populate the region's business landscape. Still, compared to the East Coast, European companies are underrepresented in the Bay Area and

California. The main connection to the Bay Area is through technology, building on the region's status as the leading global innovation hub. A number of examples follow.

In life sciences, **Boehringer Ingelheim**, a German developer and manufacturer of biopharmaceuticals, operates a contract manufacturing facility at a Fremont site once owned by Amgen. Biotech giant Genentech was acquired in 2009 by Swiss pharmaceutical company **Roche**, which has continued to expand its investment in the company. **Novo Nordisk**, a Danish pharmaceutical company and the world's largest maker of insulin, has a facility in Hayward and recently concluded a \$100 million licensing agreement with Fremont's Zosano Pharma for Zosano's ZP Patch system, which provides a minimally invasive vehicle to self-administer its key diabetes product.

In information technology, leading Spanish software companies **Softonic** and **Panda** have operations in the region.

Spain's **Telefonica** has a presence in San Francisco, and Spanish company, **Gowex**, a world leader in creating WiFi cities, provides free WiFi in the city. British semiconductor design company **ARM** employs 300 at its San Jose facility, 700 in North America and more than 3,000 worldwide across facilities in Cambridge (UK), Austin and Bangalore. ARM's technology is licensed to partners, who in 2013 shipped more than 10 billion ARM-powered chips. Its designs are used in 95 percent of the world's smartphones and increasingly in other digital products.

Sweden's **Ericsson**, the world's third largest provider of telecommunications infrastructure equipment, employs more than 1,000 in San Jose. It has broadened its Bay Area presence with the acquisition of two companies that focus on mobile routing and internet content delivery: Redback Networks (2007) and Microsoft's Media Room division (2013). Ericsson executives see Silicon Valley as uniquely positioned to accelerate the world's shift to ubiquitous mobile technology.

BAYER

Germany's Bayer has a particularly important presence. With 110,000 employees worldwide, Bayer has operated in Berkeley since 1974, when the company bought the Cutter Labs site to build its global hematology/cardiology business. "Biotech had started here, and great universities were nearby to give us a pipeline of diverse talent," says Joerg Heidrich, senior vice president and Berkeley site head. In 1992 the company made Berkeley its global center for biotech operations, and in 2011 established its US Innovation Center (USIC) and R&D hub in San Francisco's Mission Bay district, one of three R&D centers worldwide. A year later it opened the CoLaborator, an incubator providing space and equipment, along with Bayer expertise, to help early-stage life sciences companies speed the development of technologies and therapies. In 2014 the company will open a CoLaborator in Berlin, modeled on San Francisco's, to foster a start-up community there.

With 1,400 employees from 50 countries at its two sites (Berkeley and Mission Bay), Bayer is the third largest biotech employer in the Bay Area, and the largest private employer in Berkeley. Its treatment for Hemophilia A, which is manufactured in Berkeley, is one of the company's top-selling drugs globally. Proximity to UCSF at Mission Bay is expected to strengthen Bayer's future drug discovery pipeline.

In the last five years, Bayer has increased its investment in the region, including \$250 million for Berkeley operations. Asked why Bayer has made such an investment in the region, company leaders point to the Bay Area's leadership in R&D and biotech investment, its innovation ecosystem, and the benefits of having its scientists work in proximity with the world's best and brightest people. Heidrich notes, "The Bay Area boasts an unparalleled pool of talent, and the innovation system that creates. It also is an imaginative community that's in the lead on issues connected to our longer-term needs."

British defense and aerospace company **BAE Systems** employs 1,400 in Santa Clara. Part of United Defense Technologies (FMC) before it was acquired by BAE in 2005, the Santa Clara facility designed and developed the Bradley Combat System, the M113 Advanced Personnel Carrier and the Amphibious Assault Vehicle, and is home to the Combat Simulation Integration Lab, which tests vehicle hardware and software systems, and the Power and Energy System Integration Lab, which integrates and tests hybrid electric components and systems.

The depth of the European technology presence can particularly be seen in three global companies—Siemens (headquartered in Germany), SAP (also headquartered in Germany) and Philips (headquartered in the Netherlands), all of which are deeply invested in the region.

German electronics and electrical engineering powerhouse **Siemens**, headquartered in Munich and Berlin, employs 2,000 in Northern California across four sectors: healthcare, energy, industry, and infrastructure and cities. Its global ultrasound business is headquartered in Mountain View. Several hundred employees in Hayward help install, integrate and maintain security, fire safety and building efficiency technology for clients in the region. The company's mobility and logistics business is headquartered in Novato, providing intelligent traffic solutions to reduce congestion in cities across the US. In Sacramento, Siemens operates the only permanent light rail manufacturing facility in the United States, producing one out of every three light rail vehicles in North America; recently it has expanded beyond light rail to manufacture electric streetcars and electric locomotives that will be used in Amtrak's Northeast Corridor.

Siemens conducts R&D for its molecular and microbiology business in Berkeley, which is also home to its Technology-to-Business Center (see Section 9).

SAP Labs opened a high tech center in Palo Alto in 1996. The parent company in Germany saw the Bay Area as an important source of innovation with a potentially rich array of partners. Today it has 3,350 employees in facilities around the region (Palo Alto, Dublin, South San Francisco and Sunnyvale), including recent acquisitions Sybase, Ariba, and SuccessFactors. Enterprise applications and the cloud are major focal points, as are mobile, consumer and sustainability applications. Sybase, which supports 98 percent of the text messages sent in the world, is a major factor in SAP's mobile strategy. As Senior Vice President Katharina Rock observes, "We couldn't drive our cloud strategy without these acquisitions in the Bay Area, and we will continue to invest."

SAP Labs in the Bay Area is primarily an engineering center, and most of its employees are engineers. Resources are focused on research and on co-innovation with partners such as Adobe, Apple and Cisco, to enable products to work together. Work done in the region also connects to SAP's other engineering centers—in Germany, Bangalore, Shanghai and Vancouver—which have complementary roles. The Bay Area is also home to the company's Startup Forum and its venture arm, SAP Ventures, which to date has supported more than 100 companies in multiple countries.

Philips Lumileds is one of the world's top three manufacturers of chips that go into LED lighting and other applications. Part of Philips Lighting, Philips Lumileds ranks first in LED Flash technology (the flash devices in most smartphones), second in Automotive LED lights, and third in LED street and retail lighting. The company began in 1999 as a joint venture between Hewlett-Packard and Philips and later became a joint venture with Agilent when it spun off from HP. In 2006 Philips acquired the remaining 50 percent of the company. Today it employs 600 people in San Jose, including 400 in R&D (100 with PhDs) and 200 in manufacturing.

The first step in Philips' global LED production process takes place in San Jose where two billion LEDs are produced annually. The work done in San Jose is called epitaxy, the growing of one material on top of another, and it is the most R&D intensive phase of the production process. From there the units are sent to Singapore and Malaysia for further processing.

The company currently invests \$100 million a year in R&D, and CEO Pierre-Yves Lesaichere notes that local manufacturing is closely linked to the lab: "We work on the future of lighting, and the key technology is developed and produced here." The region's global workforce is seen as an asset, and Lumileds hires heavily from top universities such as UC Berkeley and Stanford. Key disciplines include chemistry, materials science, electrical engineering, mechanical engineering and quantum physics.

Lumileds products are highly visible to many Bay Area residents. The Bay Lights, the kinetic display of moving lights currently installed on the Bay Bridge, is the product of Lumileds LEDs and lighting controls by Massachusetts-based Color Kinetics, another Philips company. Independently funded to celebrate the 75th anniversary of the opening of the bridge, the installation features 25,000 programmable white LED lights that play across the western span in artist-designed patterns that

will never repeat in two years. Other recognizable lighting installations include the entrance to San Francisco International Airport, and in New York City, the lighting on the Empire State Building and the Times Square New Year's Eve Ball.

Smaller European technology companies are also expanding their presence in the region. In a sign of the times, the space once occupied by the Carnelian Room at the top of the Bank of America tower (555 California Street) was leased in late 2013 to **Supercell**, a \$3 billion Finnish gaming company that until recently has operated out of San Francisco's RocketSpace incubator.

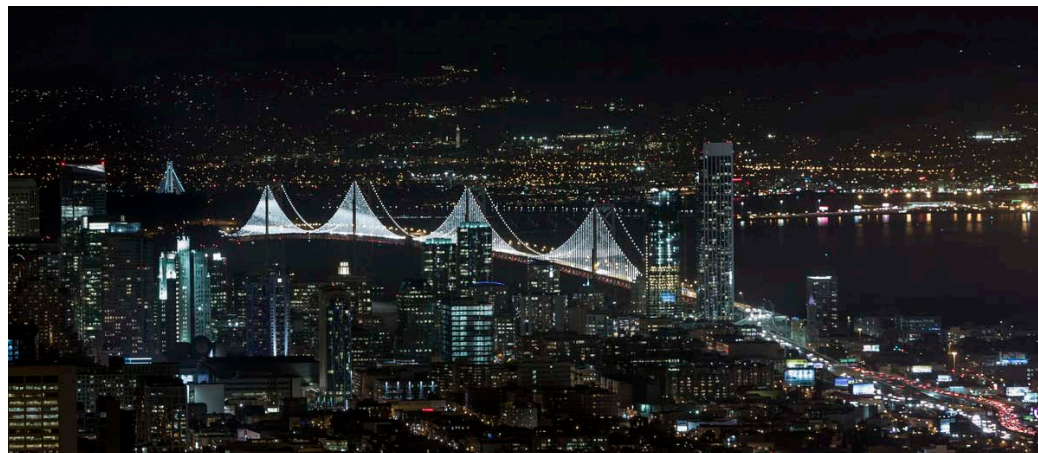
In consumer retail, leading retailers with a presence in the region include, among many others, design and fashion houses **H&M** (Sweden), **Prada** (Italy), **Bulgari** (Italy), **Hermes** (France), **Burberry** (UK), **Zara** (Spain), **Swatch** (Switzerland), and **Ikea** (Sweden).

In financial services, Novato-based insurance company Fireman's Fund is an operating unit of Germany's **Allianz**. **Credit Suisse** provides investment banking and technology consulting services in San Francisco, one of six US offices that include Boston, Chicago, Houston, Los Angeles and New York.

London-based **HSBC**, founded in 1865 to finance the growing trade between Europe, India and China, opened its first US office in California in 1875. Today it offers services that benefit from the company's strong global presence. International trade in and out of California is a strategic focus, with more than 100 banking professionals at HSBC currently charged with supporting the international expansion of Bay Area companies.

France's BNP Paribas Group, one of the world's largest financial groups, has been part of the Bay Area's banking sector since 1980 through its ownership of **Bank of the West** (founded in the Bay Area in 1874 and headquartered in San Francisco). Its \$2.4 billion in US revenue (2013) is derived from retail, commercial banking and wealth management. Bank of the West has a special focus on international companies doing business in the US, particularly those starting or expanding business to the US from countries where BNP Paribas has a strong presence, including France, Belgium and Italy. Services are coordinated with BNP Paribas' investment banking business in New York and with sister companies in Europe and Asia. In addition to Bank of the West, BNP Paribas also supports L'Atelier, a technology outpost in the region (see Section 9, Entrepreneurs and Outposts).

European engineering firms such as **Arcadis** (Netherlands) and **Currie + Braun** (UK) also have a presence in the region.



Philips Illuminates The Bay Bridge, James Ewing Photography



WINE REGIONS CONNECT

The Bay Area's modern wine industry began with European immigrants who brought their traditions and expertise to California. While winegrowing in the state was rooted in the Spanish missions, commercial development began in the mid-1850s.

Jacob Gundlach, a German immigrant, founded Rhinefarm Estate just outside the town of Sonoma in 1858. Today, more than 150 years later, **Gundlach Bundschu** continues to make premium wine, including the Gewürztraminers and Rieslings so closely identified with Germany.

Nearby, Hungarian nobleman Agoston Haraszthy purchased land in 1856 for **Buena Vista Winery**, California's oldest. Appointed by California Governor John Downey as a state commissioner to study the potential for grape growing in California, Haraszthy traveled to Europe for six months, returning with 100,000 vines representing 300 varieties and with recommendations for how to promote and develop a winemaking industry. Haraszthy built a grand villa on the property, and with the help of investors, established Buena Vista offices in Sonoma, San Francisco, New York, Paris and London.

"I visited various parts of France, the Netherlands, Holland, Rhenish Prussia, Bavaria, Nassau, Baden, Switzerland, Spain, Italy, and England. Various examinations confirmed my previous conviction that California is superior in all the conditions of soil, climate, and other natural advantages, to the most favored wine-producing districts of Europe..."

Agostin Haraszthy, *Grape Culture, Wines and Winemaking, with Notes upon Agriculture and Horticulture*, 1862.

Other German immigrants pioneered Napa Valley's wine industry, most notably Charles Krug, an immigrant from Prussia who founded **Charles Krug Winery** in 1861, and Jacob Beringer, an immigrant from Mainz who came to work as cellar foreman at Charles Krug in 1869 after hearing that the soils and hillsides of Napa resembled those of his native Germany. Several years later, in 1875, Jacob and his brother Frederick founded **Beringer Vineyards** on 215 acres near St. Helena and built a stone winery, 1200 feet of caves and Rhine House, the iconic home now visited by thousands of visitors each year.

At about the same time, French growers settled in Santa Clara County—now the heart of Silicon Valley but then an emerging agricultural area. Pierre Pellier brought vines from the Bordeaux region in the early 1850s, and returned with more and better cuttings in 1856. Another Frenchman, Antoine Delmas of San Jose, developed the largest assemblage of varietals in the state, having imported 10,000 cuttings in 1854, and took first prize for wine at the state fair in 1859.

Other Europeans arrived in the later 1800s. Finnish sea captain Gustave Niebaum founded **Ingleneook Vineyard** in 1879, now owned by director Francis Ford Coppola, in Rutherford (Napa Valley). Perhaps most recognizably, however, Italian immigrants put their stamp on the region's wine industry. Guiseppe Simi left Tuscany for the California goldfields in 1849 and first produced wines under the **Simi** name in 1876. The winery has been in continuous production at its historic facility outside Healdsburg since 1890.

In 1881 Genoa-born Andrea Sbarboro established the village of Asti, named for the Piedmont town famous for its wines, in northern Sonoma County as part of the Italian Swiss Agricultural Colony, a cooperative created to provide work for Italian and Swiss immigrants who had flocked to San Francisco. The **Italian Swiss Colony** became a full commercial-scale winery with the construction of a 300,000 gallon production facility in 1887, and subsequently went on to ship wines not only to established US wine markets such as New York, Chicago and New Orleans, but also to South America, China, Japan and much of northern Europe. By the turn of the 20th century the label was producing more than 14 million gallons annually, garnering awards from expositions around the world, and Asti was the largest source of table wine in California. Like other wineries in California, prohibition devastated the business, but the label survived and is now owned by Constellation Brands.

A stonemason from Tuscany who quarry-mined the Sonoma hills for cobblestones that were used to build the streets of San Francisco, Samuele Sebastiani founded **Sebastiani Vineyards and Winery** in Sonoma in 1894. In 1943, Charles Krug Winery was sold to another Italian immigrant, Cesare Mondavi. His son, Robert, later founded **Robert Mondavi Winery** in Rutherford in 1966, which led the emergence of Napa Valley as a premium wine-producing region in the decades that followed.

Today, the natural link between wine regions continues with several major European wineries invested in properties and wineries in both in Napa and Sonoma: **Gloria Ferrer** (Spain), **Artesa** (Spain), **Marimar Estate** (Spain), **Domaine Carneros** (France), **Domain Chandon** (France), and **Mumm Napa** (France). London-based **Diageo** owns four premium Bay Area wineries: **Chalone Vineyard** (Monterey County), **Beaulieu Vineyard** (Napa), **Rosenblum Cellars** (Alameda), and **Sterling Vineyards** (Napa).

CLEANTECH, GREEN CITIES

Cleantech is an area where perspectives from Europe and the Bay Area align particularly closely. European cities such as Amsterdam, Barcelona, Copenhagen, London, Paris and Stockholm have stepped forward as global leaders in sustainable city design and planning, presenting a rich field for cooperation and the exchange of best practices. Seventeen of the 66 members of C40 Cities (Amsterdam, Athens, Barcelona, Basel, Berlin, Copenhagen, Heidelberg, London, Madrid, Milan, Oslo, Paris, Rome, Rotterdam, Stockholm, Venice and Warsaw), the world's leading network of cities taking action to address climate change, are European. San Francisco participates from the Bay Area.

Cisco's Connected Urban Development initiative, a five-year program launched in 2006 as part of the Clinton Global Initiative, has connected cities around the world that are developing urban communications infrastructure to help reduce carbon emissions. Founding partners included the cities of San Francisco, Amsterdam, Seoul, Birmingham, Hamburg, Lisbon and Madrid. Today Cisco remains active in the urban sustainability field through its Smart Connected Communities Initiative and in ongoing exchanges between Amsterdam and San Francisco.

Another point of connection, at the commercial level, is **Orange Goes Green** (OGG), a San Francisco-based public-private partnership of the government of the Netherlands with Dutch companies and universities. OGG works to engage US counterparts on projects where sustainability is a focus and Dutch experience and technology can be brought to bear. It is pursuing projects in the Bay Area that focus on district energy, digitally connected eBikes, zero emission ferries and rainwater management, with similar projects being pursued in Los Angeles, Portland, British Columbia and Hawaii.

Europe also presents market opportunities for Bay Area companies. Even as US demand is increasing, **Tesla** sees growing markets in Europe. Deliveries grew from a zero base in the

second quarter of 2013 to more than 1,000 cars in the third quarter. CEO Elon Musk foresees European demand for 10,000 vehicles in the near future. In September 2013, its second month in the market, Tesla's Model S became the best-selling car in Norway, where it benefited from Norwegian government incentives including an electric vehicle exemption from the country's 25 percent value-added tax. Anticipating growth in Europe, Tesla has established a warehouse and logistics facility in the Netherlands.

Energy R&D is another strong connector with Europe. This can take the form of policy dialogue but also research and investment. The Energy Biosciences Institute (EBI) at UC Berkeley, founded in 2007, is supported by a 10-year, \$500 million grant from the UK energy company **BP**. The Institute is a collaboration between BP, Berkeley, Lawrence Berkeley National Laboratory, and the University of Illinois at Urbana-Champaign that focuses on interdisciplinary research on biofuels. Uniquely, the program connects BP scientists and engineers with academic researchers to explore commercially viable pathways to biofuels production, with cellulosic fuels (derived from non-food plants) and fossil fuel microbiology making up the primary fields of inquiry. Since 2007 more than 1,000 researchers have been engaged in EBI investigations. Intellectual property produced through EBI is the property of the University of California and can be licensed to BP or to other external partners. EBI's first patent was awarded in June 2013, with approximately 50 additional patents pending.

In the cleantech space, French energy company **Total** purchased 60 percent of Silicon Valley solar panel maker **SunPower** in 2011, providing critical capital that allowed it to compete in the face of low-cost Chinese competition. Total joined French nuclear power company **Areva**, which in 2010 acquired Silicon Valley solar thermal company **Ausra** (now Areva Solar), as a renewable energy investor in the region.

BAY AREA COMPANIES ENTER EUROPEAN MARKETS

While this study focuses primarily on the European economic presence in the Bay Area, several examples illustrate the range of Bay Area companies' presence in Europe.

Not surprisingly all of the region's leading technology companies have a strong presence in Europe, with locations in multiple countries for R&D, manufacturing and sales. But non-technology companies also have a major presence particularly in apparel, engineering and financial services.

For example, in France, Italy, Ireland and the UK, The **Gap** has offices or retail outlets in (among other locations) Paris, Strasbourg, Montpellier, Aix-en-Provence, Nancy, Lilles, Dijon, Dublin, Cork, Rome, Bologna, Milan, York, London, Cheshire, Leeds, Liverpool, Edinburgh, Perth, Sheffield, Manchester, Cheltenham, Colchester, Doncaster, Tunbridge Wells, Guildford, Cambridge, Nottingham, Bournemouth, Cardiff, Bath, Windsor, Coventry, Belfast and Oxford. **Levi Strauss** has 192 offices or sales outlets in 19 European countries.

In the engineering sector, San Francisco-based engineering company **URS** had been in the UK, Germany, France, Italy, the Benelux countries and Spain for years, but its presence was small. In 2010, however, the company invested \$330 million to acquire Scott Wilson, a UK company with 8,200 employees in Europe, India, China and the Middle East. With help from the French Consulate in San Francisco, they were also introduced to Oxytech, a French engineering company based in Le Havre. The two companies agreed to pursue joint projects in France and Belgium, under which URS will be introduced to Oxytech clients, providing state-of-the-art sustainability planning and environmental, waste and air quality management services. And Oxytech's technology will be introduced to URS clients.

URS was attracted by the size of Europe's infrastructure and engineering market—\$14 trillion—as well as Europe's rule of law and transparent

BAY AREA COMPANIES WITH MORE THAN 10 AFFILIATES IN EUROPE

Bay Area Companies	Affiliates in Europe	European Countries	Global Revenue (millions, US\$)
Levi Strauss	195	18	\$4,674
The Gap	182	4	\$15,700
HP	102	28	\$120,400
Oracle	85	29	\$37,121
The North Face	77	16	*
Apple	67	6	\$156,510
Robert Half	63	10	\$3,780
URS	61	14	\$11,000
Cisco	58	30	\$46,100
Intel	48	19	\$53,300
Hitachi Data Systems	39	14	\$333
Net App	37	19	\$6,332
Tectura	35	19	\$43
Sybase	31	23	\$1,170
Symantec	30	18	\$6,700
Google	25	18	\$52,200
Synopsys	25	14	\$1,540
Autodesk	25	13	\$2,312
Vmware	22	21	\$3,767
Epicor Software	22	15	\$845
Tibco Software	21	11	\$1,025
Juniper Networks	20	17	\$4,450
McAfee	20	17	\$2,065
Maxim Integrated Products	20	7	\$2,400
Brocade	18	13	\$2,147
BioRad	17	17	\$1,930
Applied Biosystems	17	16	\$2,090
Franklin Templeton	17	14	\$7,101
Lifescan	16	16	\$178
Adobe	16	15	\$4,220
Informatica	16	13	\$650
Varian	16	11	\$2,597
Gilead Science	15	14	\$9,700
Agilent	15	13	\$6,900
Riverbed Technology	14	12	\$837
Silicon Graphics	14	10	\$630
Synrac	14	9	\$99
Trimble Navigation	14	7	\$1,640
Wind River	14	7	\$148
Digital Realty Trust	14	4	\$1,063
Copart	14	1	\$872
Polycom	13	13	\$1,496
Salesforce	13	12	\$2,266
Extreme Networks	13	12	\$322
Fortinet	13	11	\$433
Nvidia	13	7	\$4,000
Lam Research	13	7	\$3,240
JDS Uniphase	12	10	\$1,680
Dialogic	12	10	\$200
Dionex	12	9	\$419
Cadence Design Systems	12	8	\$935
Tesla	12	8	\$204
KLA-Tencor	12	7	\$3,175
Netgear	11	11	\$1,181
Genesys Telecommunication Laboratories	11	11	\$162
Ariba	11	10	\$361
Grass Valley USA	11	9	*
Autonomy	11	8	\$13
Yahoo!	11	7	\$4,987
McKesson	11	3	\$122,700

*Revenues not reported by data source.

business culture. With \$10 billion in US revenue, their goal is to replicate that figure in Europe, which has a similar GDP. The company is serving multiple clients in Italy and Spain in the fields of environmental management, energy and sustainability. URS also sees Germany, with its large industrial base, as a strong prospect, as well as the UK, Poland, Sweden and Norway, all of which have ample engineering talent and large infrastructure budgets.

A number of Bay Area companies at the forefront of innovation are entering European markets and sometimes with disruptive effects. San Francisco-based **Uber** is gaining traction in cities such as Paris, where (as in the US) traditional taxi companies are being challenged. **YELP**, with European headquarters in Dublin and sales and engineering teams in London and Hamburg, is expanding across Europe. **Airbnb** is also growing. **Netflix**, which is currently available in the UK, Ireland, the Netherlands and Scandinavia, will soon launch in Germany and France. Since launching in Sweden in 2012, the company has become the largest video-streaming provider in the country. Germany and France are the fourth and sixth largest broadband markets in the world, and Western Europe has 134 million broadband-connected homes, compared to 88 million in the US, making Europe a compelling market. Large continental media companies are gearing up for competition.²⁰

In the area of financial services, Silicon Valley Bank and Wells Fargo are two Bay Area banks expanding into Europe in response to the movement of their clients into European markets.

Silicon Valley Bank (SVB) was granted a commercial banking license in the UK in 2012 and offers full corporate banking services through its 65-person London office. SVB Managing Director Andy Tsao notes that the UK is the top global destination for commercial banking clients, even ahead of China. Clients typically are expanding to Europe and ask to open UK accounts: "It's where clients want to go." In this regard, the London

office also serves as a jumping-off point to serve the rest of Europe. Among the reasons are language, a transparent legal system, and a business culture similar to the US. UK Branch President Phil Cox adds that having an office in both California and the UK allows clients with a presence in Europe and California to fluidly move their funds.

The bank's services parallel those it provides in the US and China, focusing on technology companies and the innovation economy. Clients range from early stage to growth and mid-sized companies, as well as larger companies served through collaborations with private equity. While the bank is commonly identified with technology start-ups, not all companies will succeed or grow, and some will remain local. For that reason, SVB also targets high-quality mid-sized companies in the technology sector.

Recently a satellite office was established in Dublin, as well as a fund financed by the Irish government and managed by SVB, to provide debt finance to early stage companies ("venture debt"). The bank also provides funding to companies in Scandinavia, Germany and the Benelux countries and plans further expansion in Europe, where it sees technology pockets and a growing number of exciting companies. The French market comes with challenges in the form of difficult banking, insolvency and labor regulations which can increase risk and uncertainty for clients (and the bank). Germany, with its large number of mid-sized companies that mirror in scale many of its domestic clients, offers particular opportunities.

Tsao also notes new interest by US venture capital firms in Europe. Venture funding in Europe is fraction of that in the US, and it has been slower to recover from the global recession. Europe's venture industry has yet to build a track record among potential investors, and the big rush of venture funds to China, India and emerging markets such as Brazil that began a decade ago has slowed. As venture firms reconsider risk in emerging markets, many are turning back to Europe, where business risks are lower and the venture market is underserved.

While business through SVB's new China branch is growing rapidly, activity through London is growing 50–100 percent per year and is currently larger.

Wells Fargo has 1,000 employees at its major European base in London and supporting presences in Dublin (200 employees) and Frankfurt (80). Ireland offers multiple advantages through its membership in the eurozone (the UK is not a member). Banks licensed in one EU country can provide services in all member countries, which enables the London office to serve as its European base. Not all services are covered, however, so eventually the bank plans branches in France, the Netherlands, Spain, Italy and Scandinavia.

European companies entering US markets through the acquisition of US companies is a growth area, but the bank's main focus is on serving US clients going to Europe. Notwithstanding a slow recovery in most of Europe, Wells Fargo foresees growth in its business, because "it's where our customers want to be." The reasons: more transparency, clearer laws and market rules and a shared business culture. Wells Fargo Executive Vice President Sanjiv Sanghvi feels that with those advantages, more of the bank's customers (which are primarily mid-market companies) are likely to be successful in Europe than elsewhere. As a result, the bank expects to invest more in servicing their clients in Europe than in Asia in the next five years. Currently it serves more than 1,000 US companies with activity in the UK alone. New initiatives include the establishment of a merchant bank to focus on real estate, formation of a team focused on lending for North Sea energy exploration, and acquisition of Burndale, a UK company involved in asset-based lending.



THE IRISH CONNECTION

The Bay Area benefits from a particularly strong Irish presence, reflected in a cluster of business and economic development organizations. In addition to the **Consulate General of Ireland** in San Francisco the Irish government has two trade development and investment organizations located in Mountain View. **Enterprise Ireland** helps Irish companies do business internationally. In the Bay Area, its activities are focused on technology. **IDA Ireland** works with US companies that are expanding their European operations to invest in Ireland.

The Irish economy was one of the first in Europe to enter the last recession and one of the first to come out. In contrast to other European economies, it quickly embraced austerity to address growing debt and is now in its third year of growth. While the rate and scale of inbound investment has slowed from past years, Ireland has benefitted from the need by multinationals to consolidate their European operations in a period of relative austerity. The recession also served to lower costs for both housing and labor, which had been rising.

Ireland is a major European center for multinational activity, especially tech companies. Its advantages include a large pool of technical and multilingual talent, access to European Union markets, membership in the eurozone, cultural affinity, an English-speaking business environment, and advantageous tax policies. The corporate tax rate in Ireland is a relatively low 12.5 percent.²¹

Approximately 80 percent of Irish exports are now accounted for by multinational companies; and roughly 40 percent of inward investment into Ireland is from the US West Coast, predominantly from the Bay Area. A total of 190 West Coast companies have multi-jurisdictional offices in Ireland employing 36,000 people.

On the technology side, Intel employs approximately 5,000 people in Ireland, including operations at a new wafer fabrication facility, and at Intel Labs Europe outside Dublin. Other Bay Area companies that have established their European headquarters or have a significant presence are Google, LinkedIn, Apple, Twitter, Ebay, McAfee, Airbnb, Facebook, Dropbox, Zendesk, FireEye, VMware, Electronic Arts, Hewlett-Packard, Oracle, Yahoo!, Yelp, Symantec, Electronic Arts, Cisco, Adobe, Wells Fargo, and Salesforce. Ireland also serves as a major European base for US and Bay Area pharmaceutical, medical devices and life sciences companies including Gilead, Biomarin and Jazz Pharmaceuticals. Life sciences companies generally do both R&D and manufacturing in Ireland with the largest clusters in Dublin, Galway and Cork.

The Bay Area is important to both Irish start-up and established companies. Enterprise Ireland (EI) works with over 800 companies who export close to \$2 billion in software, manufactured goods and services to the US every year. It is also one of the most active seed funding organizations in Europe, with the Irish government investing over \$30 million per year in matched funding equity positions in more than 160 companies. There are over 50 Irish companies with operations in the Bay Area, mostly sales and marketing offices. Preparing Irish start-ups for the challenges of the Silicon Valley environment is critical, and EI has partnered with the Bay Area accelerators and New Frontiers Programme to prepare start-ups and accelerate their entry to the US market. Enterprise Ireland also works closely with Stanford Graduate School of Business to run CEO and CFO programs to broaden the vision and ambitions of more established Irish companies.

In 2014, Enterprise Ireland will help more than 100 Irish companies visit the Bay Area on structured programs for start-ups, such as Dreamforce, the Game Developers Conference, the RSA Conference, Oracle Open World and other trade events. Many of these trade events are attended by members of the Irish government to emphasize how important the US is to Ireland.

Irish companies established in the region include Creganna, a large Irish medical devices company which recently acquired Bay Area medical devices company Tactx Medical, Inc., and PM Group, a technology-focused engineering firm in Ireland that in 2010 acquired San Jose-based Greene Engineers which, like PM, also focuses on high-tech facilities. A recent phenomenon has been the emergence of Irish tech start-ups establishing headquarters in Silicon Valley, with engineering teams in Ireland. Examples include Altocloud, Mcor, Trustev and Viddyad.

The work of Ireland's government agencies is supported by a well developed business network, including the **Irish Technology Leadership Group (ITLG)**, which is composed of senior executives of Silicon Valley companies who are Irish or Irish-American and assist in the development of technological linkages with Ireland. Former Intel chairman Craig Barrett serves as chair. Its objectives include the scaling up of Irish tech companies with capital, mentorship, and connections provided by prominent leaders in the U.S. diaspora and to provide space and supportive services for Irish companies seeking to connect with or establish a presence in the region. A number of Irish startups in the Bay Area are backed by the ITLG network and venture fund SVG Partners.

In 2013 the ITLG partnered with the **Cork-San Francisco Sister City Committee** to organize the "Silicon Valley Comes to Ireland" conference in 2013. This annual event takes Silicon Valley companies and investors to Ireland to showcase Irish entrepreneurs.



THE LUXEMBOURG HUB

Luxembourg, with only 500,000 residents of which 45 percent are foreign citizens, serves as an important hub for satellite television distribution, a major international financial services center, and a European distribution hub for the online media industry.

More than 110 satellites are operated by Luxembourg-based Intelsat and SES (Société Européenne des Satellites), which purchase spacecraft from Bay Area companies such as Palo Alto based SSL. SES also partners with Google to support the OB3 project, which aims to bring Internet services via satellite to the 3 billion people in countries without terrestrial access to the Internet.

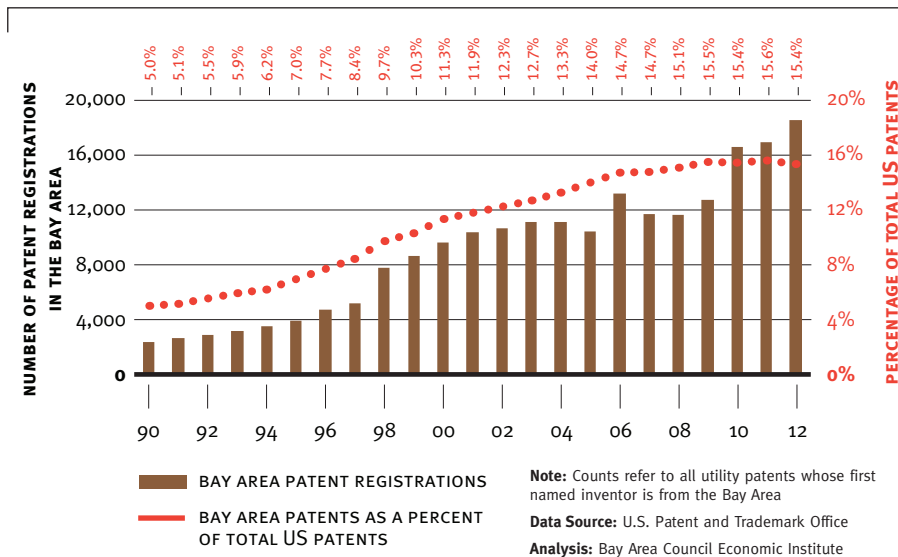
As an online media distribution and e-commerce hub, Luxembourg hosts the European operations of Bay Area companies like iTunes, eBay, PayPal, StubHub and Netflix. Luxembourg-headquartered Skype (which also has roots in Sweden and Estonia) has a significant technology development presence in Silicon Valley.

Bay Area tech companies such as Zynga, Kabam and Symantec along with other international digital service and entertainment leaders use Luxembourg for such functions as localization, customer service, international revenue collection, risk management and treasury. Such location decisions are supported by Luxembourg's legal and regulatory environment, high-end hosting facilities and ultra-high-speed connectivity to Europe's markets, as well as Europe's lowest Value Added Tax (VAT) rate.

These operations are also enabled by Luxembourg's historic role as an international financial services center. In this capacity, it serves as the world's largest center for cross-border investment fund distribution outside the US, with more than \$3.5 trillion under management. Bay Area companies with significant deposit, administration and distribution operations include BlackRock and Franklin Templeton Investments.

PATENT REGISTRATIONS

Bay Area and US



As a global innovation hub, the Bay Area is a leader in the generation of new ideas and the registration of patents across a wide range of technology sectors. The region represents 15 percent of total US patent registrations, up from just 5 percent in 1990. The Bay Area leads all other US regions (notably New York, Los Angeles, Seattle, Austin, San Diego, Minneapolis and Boston) by a wide margin in the total number of patents generated as well as in patents generated per million inhabitants. Sixty percent of those patents are registered in information technology fields.

Increasingly, the new ideas codified and protected in a patent stem from a collaborative process among multiple individuals from around the world. Patents are typically reported by the location of the first named inventor on the patent registration. However, examining the locations of all the inventors named on a patent sheds light on the scope of global collaboration.

CROSS-BORDER COLLABORATION

Bay Area inventors are increasingly collaborating with inventors outside the country. Patent registrations that include a Bay Area inventor and at least one foreign co-inventor increased 307 percent between 2000 and 2012. In total, the number has grown from 643 to 2,612. This foreign co-patenting represents a growing share of Bay Area patents, expanding from 5.7 percent in 2000 to 11.3 percent in 2012.

Measured by collaborative patenting, Europe is by far the Bay Area's most significant innovation partner. The 12,789 patents registered with a Bay Area and a European co-inventor since 1999 represent 39 percent of the total 33,133 patents registered with all foreign co-inventors over the same period. Building from a solid base, co-patenting with Europe has increased at an average annual rate of 12.6 percent since 1999.

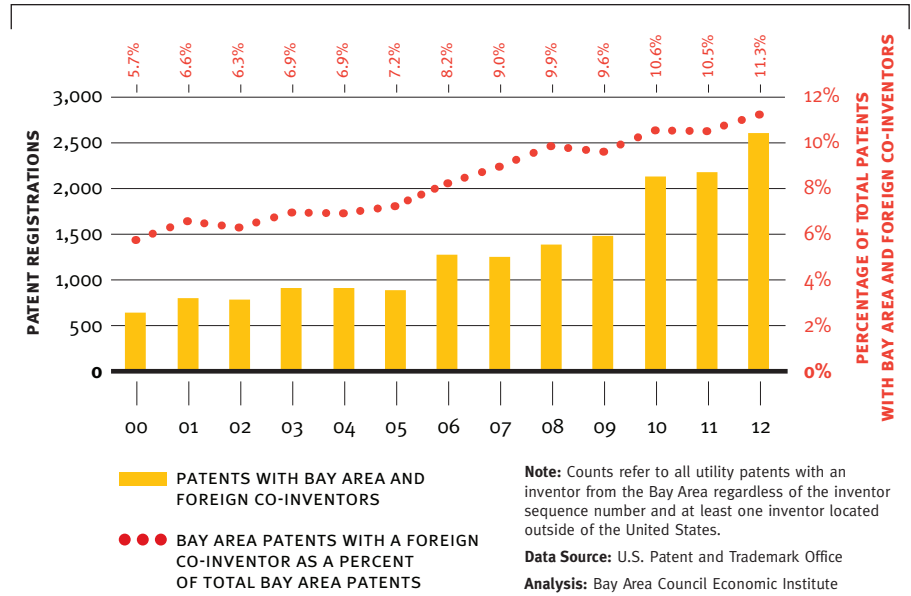
From 2000 to 2012, European co-patents increased in total number by 292 percent. As a share of all Bay Area patents, registrations with European partners increased from 2 percent in 2000 to 4 percent in 2012.

For non-European collaborators, co-patenting has increased 13.7 percent annually over this period, but for the vast majority of countries, this activity is building from a much smaller base. Japan follows Europe in terms of total number of co-patents, but growth has been strongest in China, India, and Brazil.

Europe's strong position is attributable in part to its historically high investment in higher education and R&D. In the 2013 Global Innovation Index produced by Cornell University, INSEAD and the World Intellectual Property Organization (WIPO), seven of the top-ranked countries in the world for their investment in higher education and R&D are European: Switzerland, Sweden, the United Kingdom, Netherlands, Finland, Denmark and Ireland.²²

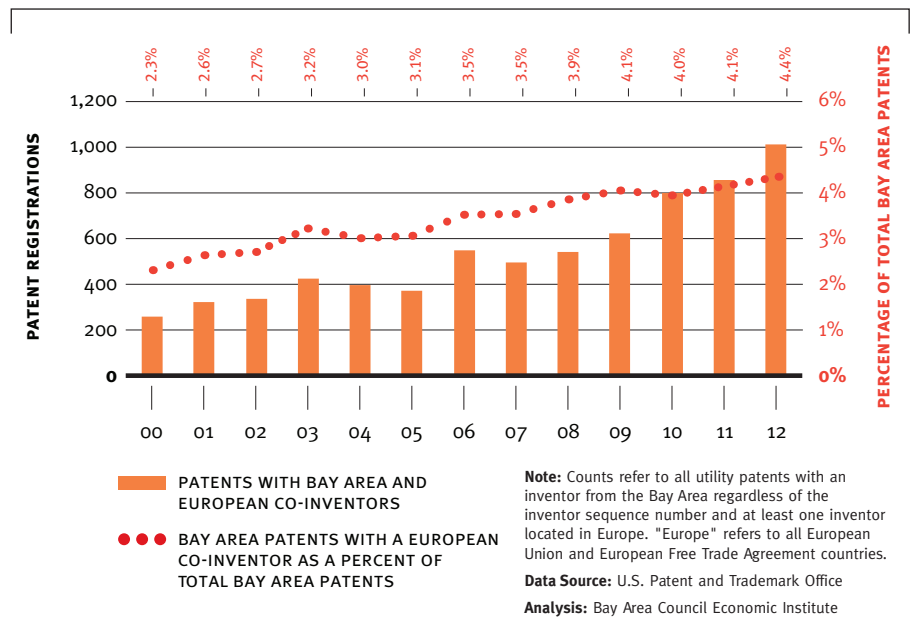
GLOBAL COLLABORATION

Patents with Bay Area and Foreign Co-Inventors



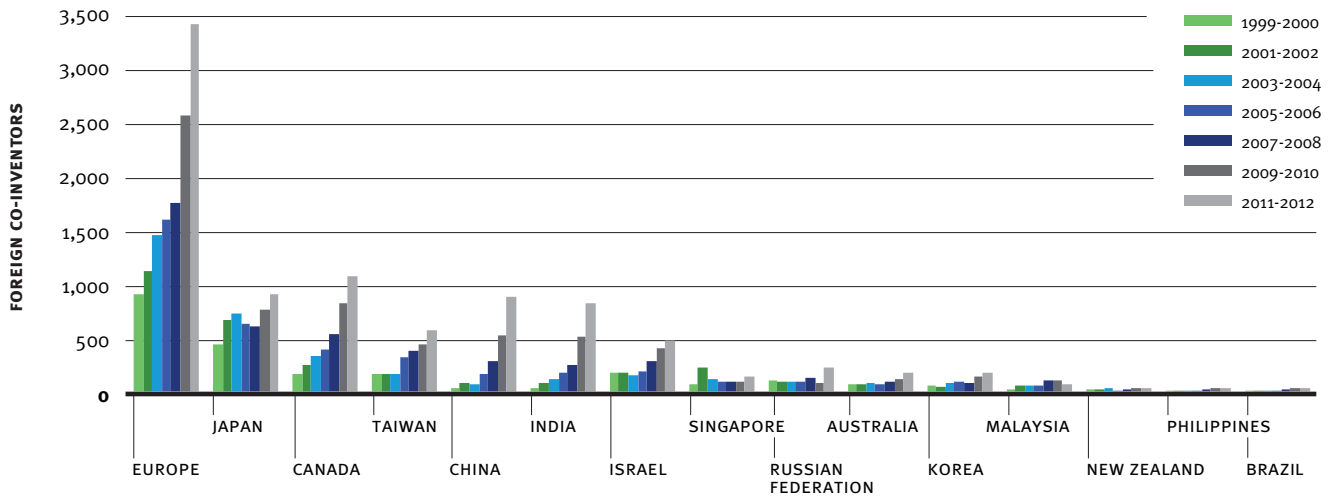
EUROPEAN COLLABORATION

Patents with Bay Area and European Co-Inventors



PATTERNS OF GLOBAL COLLABORATION

Patents with Bay Area and Foreign Co-Inventors by Country or Continent

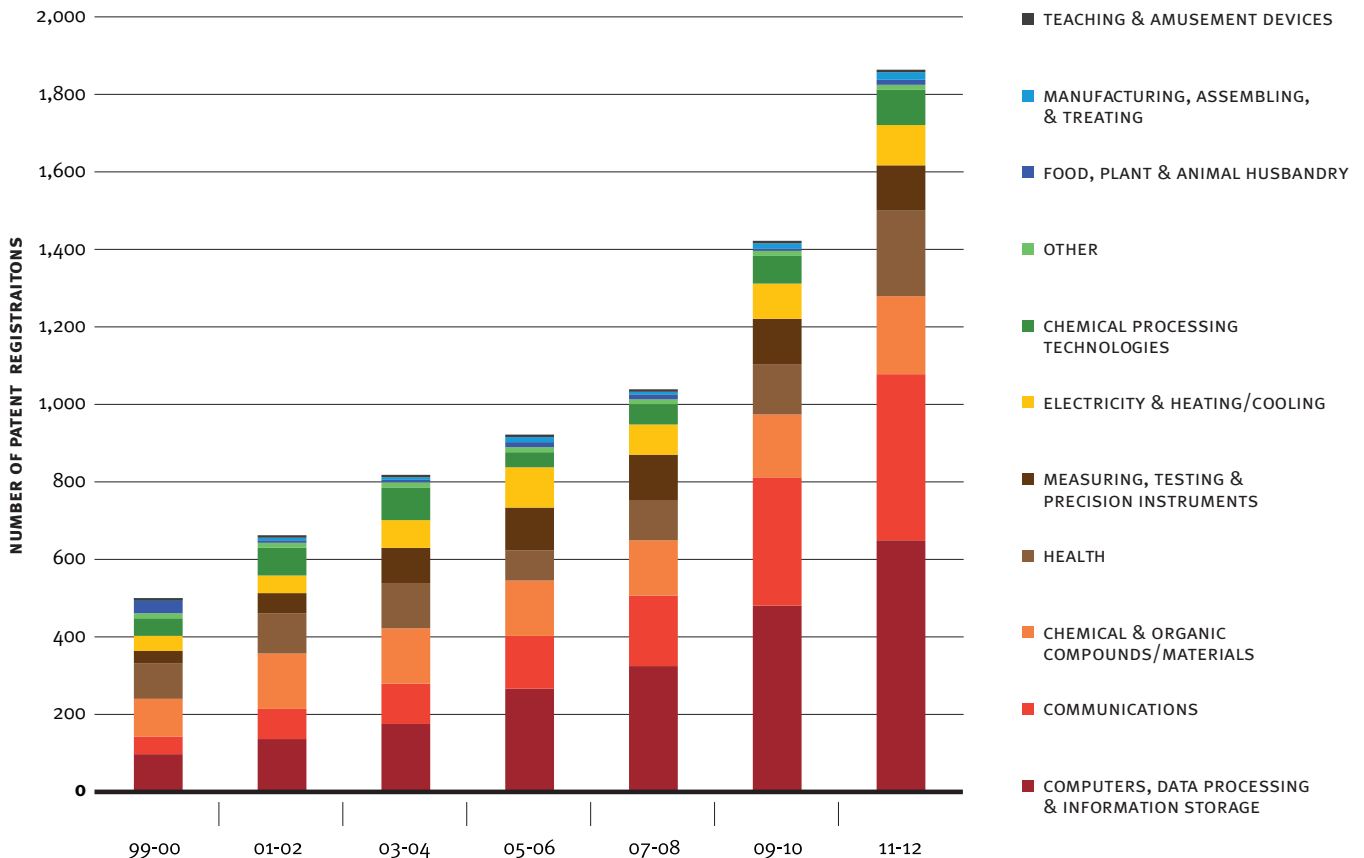


Note: Counts refer to all utility patents with an inventor from the Bay Area regardless of the inventor sequence number and at least one inventor located outside of the United States. Geographic areas are ordered by total number of patents registered

Data Source: U.S. Patent and Trademark Office
Analysis: Bay Area Council Economic Institute

PATENT REGISTRATIONS BY TECHNOLOGY AREA

Patents with Bay Area and European Co-Inventors



Note: Counts refer to all utility patents with an inventor from the Bay Area, regardless of inventor sequence number, and at least one inventor located in Europe. Other refers to Ammunition & Weapons, Nuclear, Apparel, Textiles & Body Adornment, Transportation/Vehicles, Construction & Building Materials, Furniture & Receptacles, & Dispensing & Material Handling technology areas. "Europe" refers to all countries included in the European Union and European Free Trade Agreement

Data Source: U.S. Patent and Trademark Office
Analysis: Bay Area Council Economic Institute

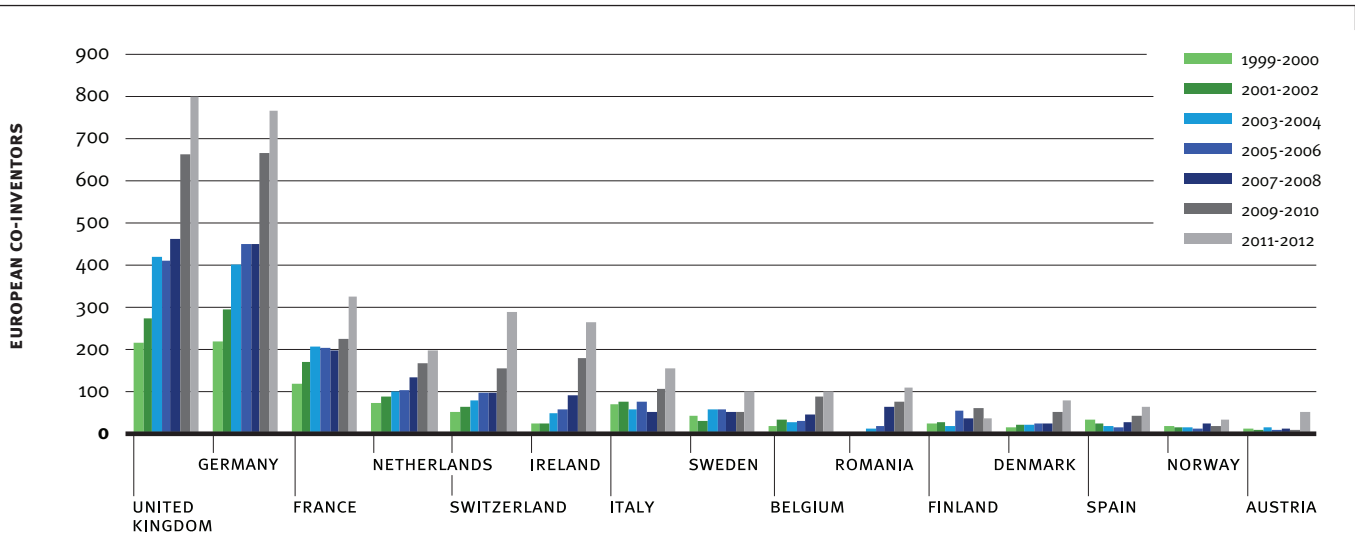
European co-patent registrations have grown significantly faster than total Bay Area patent registrations, especially in top performing sectors. For instance, registrations in Computers, Data Processing & Information Storage have grown by more than a factor of 6 since 1999. This category includes computer hardware as well as code and methodology for data processing and storage.

Patent registrations in Communications have increased by more than a factor of 10 since 1999, with 24 percent average annual growth. Other sectors, including Health and Measuring, Testing & Precision Instruments, have experienced nearly four-fold expansion. Teaching & Amusement Devices increased by a factor of 6. (This recent growth is likely associated with new tools enabled by tablet computers and other devices.)

Among European collaborators, Germany and the UK account for the greatest share of co-patenting activity. Both account for more than 3,000 co-patent registrations and a 12 and 15 percent annualized rate of growth respectively. Co-patenting with both Switzerland and Austria has grown by over 38 percent per year, and with Belgium and Denmark by just over 50 percent. By far, however, the strongest increase in collaboration among European countries over this period is with Ireland, which has nearly doubled every year since 1999.

PATTERNS OF GLOBAL COLLABORATION

Patents with Bay Area and European Co-Inventors by Country



Note: Counts refer to all utility patents with an inventor from the Bay Area, regardless of the inventor sequence number, and at least one inventor located in Europe. "Europe" refers to all European Union and European Free Trade Agreement countries. Geographic areas are ordered by total number of patents registered since 1999.

Data Source: U.S. Patent and Trademark Office
Analysis: Bay Area Council Economic Institute

INVESTMENT TRENDS IN PRIVATE EQUITY AND VENTURE CAPITAL

The Bay Area is a top recipient of global capital and a top investor around the world. Even during the recent recession, global investment in the Bay Area grew in 2008 and 2009. Since 2006, the region has attracted over \$5 billion of foreign private equity (and some venture) investment each year. In 2012, 422 foreign investment deals were made in the Bay Area with a total value of \$8.2 billion. This represented an increase of \$1 billion over 2009 and \$2.5 billion over 2010.

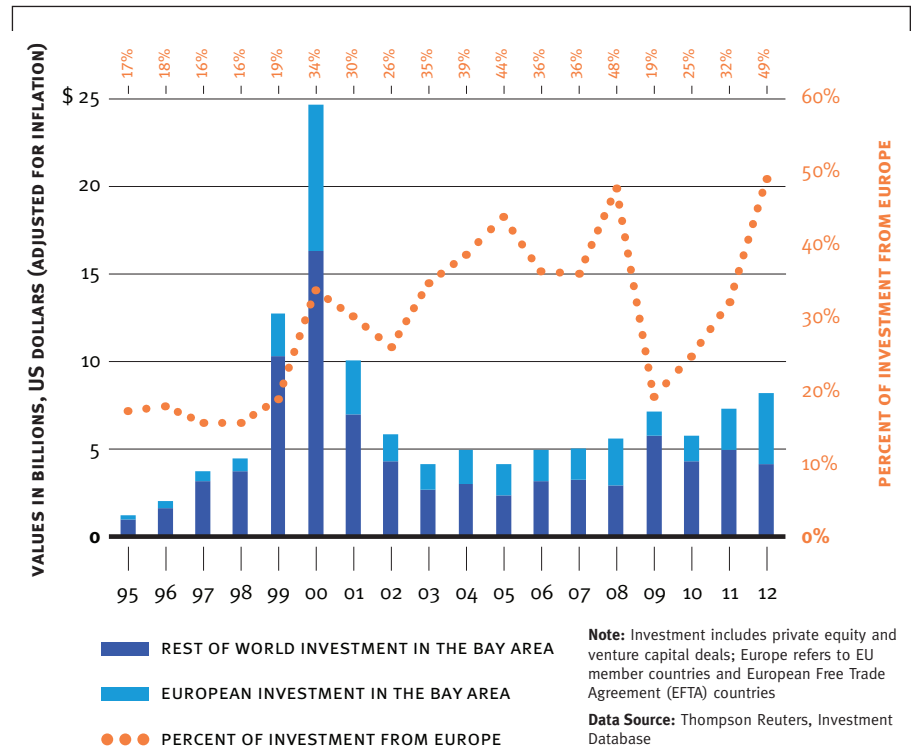
This activity has dimensions that extend well beyond the dollars invested. Particularly with venture capital, it also represents the exchange of business expertise across geographies and business cultures as well as access to both technology and talent.

INVESTMENT WITH EUROPE

Investment in the form of private equity and venture capital between Europe and the Bay Area has been robust over the past decade. Corporate (non-venture) investment dominates. Investment flows from Europe represent a large share of global investment in the region. In addition to the long-term character of the region's linkages with Europe, Europe's highly developed financial services sector is a supporting factor.

The Bay Area is also a strong investor in Europe. In 2012 Bay Area investment abroad totaled \$6.0 billion, with 56 percent directed to companies in Europe. Flows to Europe reached \$3.3 billion, exceeding total investment in the rest of the world. Since 1995, Europe has accounted for at least one third of the region's total overseas investment in all but three years (2001, 2008, 2010).

GLOBAL INVESTMENT IN THE BAY AREA



China provides an interesting point of comparison. Since 2000, the Bay Area has been investing heavily in China, at levels similar to investment in Europe. While investment in China has grown strongly, investment in Europe has been comparable or greater.

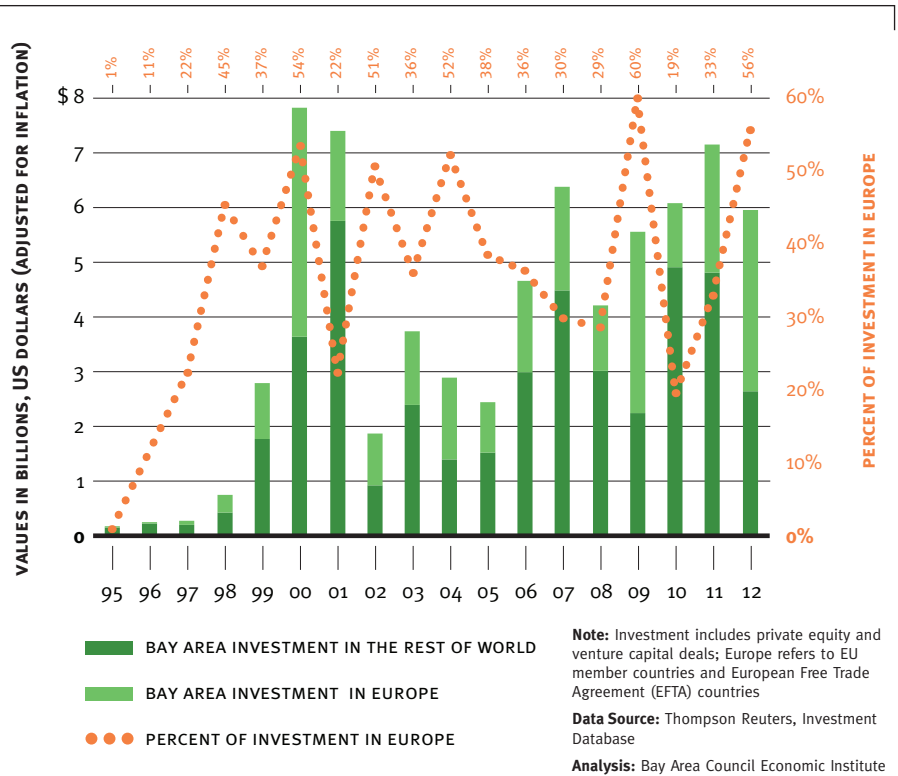
Europe is a committed investor in the Bay Area. As a percentage of total foreign inflows, investment from Europe has increased steadily, growing from 19 percent in 2009 to 49 percent in 2012. The Bay Area attracted \$4.05 billion in investment from Europe and \$4.17 billion from the rest of the world in 2012. That year marks the highest levels of investment between the Bay Area and Europe since the all-time peak of 2000.

Again, investment from China provides an interesting contrast. In 2011 China accounted for 7 percent of global private equity and venture capital investment in the region, or \$500 million. In 2012, \$222 million invested from China accounted for 3 percent of global investment in the region. Financial investment from China is likely to accelerate in future years, but remains small at present compared to investment from Europe and other global sources.

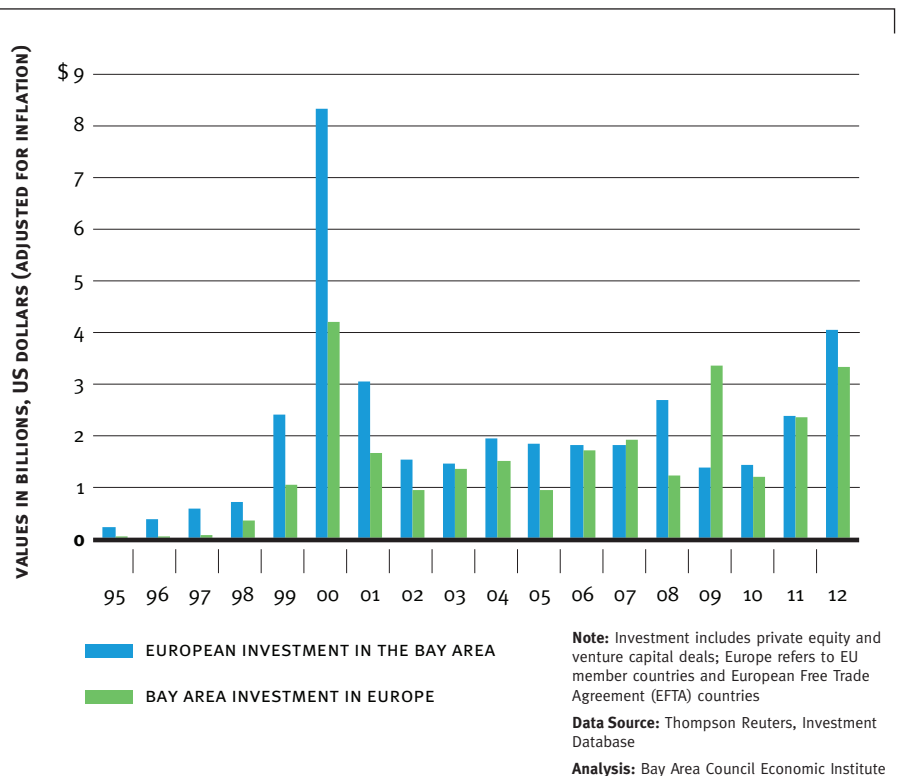
EUROPEAN CORPORATE VENTURE CAPITAL

European technology companies are joining their American counterparts in establishing corporate venture capital arms to identify and support emerging companies and technologies that can directly or indirectly support their global business models and produce new strategies. SAP's Bay Area-based venture arm, **SAP Ventures**, raised more than \$1 billion in 2013, distributed across three funds. The first direct investment fund of \$353 million, raised in 2011, is fully committed; the second fund has \$405 million and invests indirectly; the third fund of \$650 million was announced in November 2013. Other Bay Area-based funds have been established by Siemens (**Siemens Corporate Ventures**), Bosch (**Bosch Corporate Ventures**), DSM (**DSM Corporate Ventures**), Spanish bank BBA (**BBA Ventures**), Spanish energy company Repsol (**Repsol Ventures**), and Spanish telecommunications company Telefonica (**Telefonica Ventures**).

BAY AREA INVESTMENT ABROAD



INVESTMENT FLOW BETWEEN BAY AREA AND EUROPE



For many years, entrepreneurs from around the world have been coming to the Bay Area to access venture capital and tap into local talent and global networks. Many have innovative technology but seek Silicon Valley's unique capacity to turn a new technology into a viable new product. This trend has continued with the establishment of formal "bridge" institutions to support foreign entrepreneurs in the region and the growth of multi-national start-ups with close ties to the Bay Area.

The exchange of people and capital between Europe and the Bay Area is growing. With this, business and investment opportunities as well as professional and creative networks are also expanding. This growing interaction generates new economic value. It is producing a post-national innovation system—a system in which the frame of reference is not bounded by national or even regional borders but by the diversity and geographic reach of a company or an individual's network. Evidence is emerging across multiple areas. Start-ups are launching as global companies, with team members of different nationalities located across Europe and the Bay Area. Patents are increasingly registered by teams of inventors from multiple countries. Companies are setting up R&D centers in multiple countries to tap into specialized talent pools. All these activities support the movement of individuals and the exchange of ideas.

GROWING INNOVATION ECOSYSTEMS IN EUROPE

Silicon Valley's innovation ecosystem is an open environment that enables the exchange of ideas and people across key elements including research universities, national and private labs and research centers, specialized technology companies, investors, and highly specialized business services. These

services include marketing and branding but also the specialized financial and legal services that facilitate technology commercialization through licensing, intellectual property management, venture investment and initial public offerings.

Europe is home to a vast pool of technical and creative talent as well as world-class companies and research centers. Although key elements of an innovation ecosystem are in place, open interaction between them is still developing—for example, between universities and industry. Risk capital and specialized business services are also less developed in Europe, making the transition from a new technology to a viable product more difficult.

As European start-ups and established companies come to the Bay Area to tap into the region's unique business environment, they also take business practices and expectations back home. Similarly, the Bay Area benefits from the technical and design know-how European partners bring to the region. This cross-pollination is supporting the continued development of innovation ecosystems in Europe and the Bay Area. In response, Bay Area companies are actively investing in Europe, in both traditional and emerging sectors. (See section on London and Berlin, next page)

Some European entrepreneurs have found success in emulating Bay Area startups in their own countries. For example, Rocket is a Berlin-based company that repeatedly copycats Bay Area start-ups and then sells them to the original company. In Spain, Italy, and France, there are numerous copycat mobile apps, which have subsequently been acquired by the original US company. This practice is controversial but sometimes offers

an easy path for the U.S. company to expand into European markets. More often, European start-ups develop ideas for European markets that may also have global applications, which eventually leads them to the Bay Area. And large European technology companies work the system in both Europe and the Bay Area to identify partners that can support their business models.

TECHNOLOGY WINDOWS

In recent years, the Bay Area has attracted a growing number of technology outposts, established by European companies and governments to engage with the region's innovation system. Some also provide landing pads for entrepreneurs from home needing an introduction to the region and its economy. A number of these are described here.

Siemens Technology-to-Business

Center (TTB), founded in 1999 in Berkeley, was the first of its kind for Siemens, a German engineering and technology company with 360,000 employees in more than 200 countries. TTB scouts emerging, disruptive technologies that could impact Siemens' position in the market, with university partnerships and start-ups as the medium. Eighty percent of its projects involve start-ups (roughly one-third located in the Bay Area and two-thirds elsewhere in the US), and 20 percent involve universities. Its technology focus includes industry automation drive technologies, energy (generation, renewable and efficiency), infrastructure, smart grid, building technology and healthcare.

Over the years, Siemens' model for working with start-ups has evolved. It began by incubating companies at its facility but is now oriented toward virtual incubation. TTB looks at roughly 500 companies each

year, 1 percent of which are chosen for incubation or acceleration. The companies selected receive non-dilutive seed funding investment but, equally important, are supported by “TTB venture technologists” who champion their case and help them grow. This engagement can lead to different outcomes: a commercial partnership with a Siemens business unit, an equity investment, or becoming Siemens customers. To date, more than 20 local and US companies have been engaged through the process.

With Silicon Valley’s strong record in commercializing technology, TTB Center General Manager Chenyang Xu sees unique synergies in the relationship. Still, the end-to-end process can be challenging, particularly when it comes to technology transfer and forming partnerships between the very different cultures of a Silicon Valley entity and a large European company (as Xu describes it, the “transfer beast”). This may call for new approaches, such as testing the new product more extensively in the US, or developing the local company to the point where it reaches a higher level of maturity before taking it to Europe. The need clearly outweighs the challenges, however: large companies (European and American) have big R&D budgets but often find it difficult to innovate internally. Finding and engaging smaller, more nimble companies can offer an alternative path to innovation.

L’Atelier, located in a former industrial space in Dogpatch, is one of three global technology outposts for France’s BNP Paribas Bank and focuses on how innovation coming from the region will impact the bank’s business model. (L’Atelier’s other two offices are in Spain and Shanghai). When disruptive technologies are identified, L’Atelier considers how to approach them—either they will be developed by BNP internally, or if the technology already seems to be developing well, BNP will collaborate.

LONDON AND BERLIN: EMERGING ENTREPRENEURIAL CENTERS



A number of European cities are developing as entrepreneurial centers with nascent start-up and venture capital activity.

London is ranked by Cushman & Wakefield as the top business city in Europe. Its IT sector, the largest in Europe, is concentrated in Tech City, a swath that spans from Shoreditch, near the historic City of London, to Olympic Park in East London. The core centers on the Old Street Roundabout, popularly known as “Silicon Roundabout.” The extended Tech City hosts a high concentration of the UK’s venture capital community as well as five incubators that offer facilities for start-ups similar to those in the Bay Area. It also has a significant angel investor community and benefits from access to London’s financial center, universities, and a diverse global workforce—a benefit for start-ups with global ambitions. A number of high-growth London startups were acquired in 2013, including Summy, which was purchased by Yahoo!. Together these factors make London Europe’s leading center for start-up activity.

Leading Bay Area technology companies with a presence in London include Cisco, Intel, Yammer, Facebook, LinkedIn, Airbnb and Google. Google’s facilities host extensive co-working space for start-ups and a range of entrepreneur-focused events. Research and technology development in greater London also benefit from proximity to Oxford and Cambridge, two university cities with a strong research base that also support entrepreneurial programs.

On the Continent, Berlin is emerging as the top entrepreneurial hub, though smaller in scale than London. Its venture investors, incubators (including Axel Springer’s Plug and Play—an extension of the Bay Area’s operation), low costs and dynamic urban environment are attracting both younger workers and larger tech companies. Following Plug and Play, 500 Startups plans to open in Berlin in 2014. Other European cities with active entrepreneurial communities include Paris, Amsterdam, Stockholm, Helsinki, and Barcelona.

L’Atelier CEO Sergi Herrero says “Our job is to scout, understand the trend, and explain to BNP how it will impact the group. Then, we decide whether to address it in-house (if the trend isn’t mature enough to have start-ups working on it). Or, if the trend is mature enough, we’ll look for start-ups or other partners, such as PayPal or Google, to go to market.”

L’Atelier first brought PayPal to Europe, by connecting it to the bank’s personal finance unit. It also works like a consulting group for approximately 40 key European clients, serving as their eyes and ears in the Bay Area. The unit broadcasts a weekly radio program to France, Spain and South America (major BNP markets) from its Dogpatch studio, with information and perspectives on Bay Area/Silicon Valley trends (such as developments at Apple or Google,

or new developments like Bitcoin). The program reaches an audience of 3.5 million listeners. L’Atelier also organizes monthly events and presentations by start-ups.

Orange Silicon Valley offers a different example of a technology outpost sponsored by a major European company. Launched in 1997 as an office for Global One, a joint venture of AT&T, Deutsche Telecom and Orange, it evolved to become France Telecom R&D in 1998, and was rebranded as Orange Silicon Valley in 2010. Like L’Atelier, its mission is to identify and work with disruptive Silicon Valley companies and technologies. Forty-five Orange business developers and analysts meet with approximately 300

early-stage companies each year in an effort to understand their technologies and business models and how they might relate to France Telecom's business. Structured groups focus on network, mobile, enterprise and consumer technologies.

In 2013 Orange Silicon Valley launched an accelerator, Orange Fab, for post-seed stage, US-based companies that have already-developed products. Six are supported at any one time with office space for three months and the opportunity to access and leverage Orange resources and networks, including those in Europe. Recent participants include Phone Halo, whose technology helps users keep track of commonly misplaced items such as keys and wallets, and Fenix, which produces solar batteries for mobile phones, tablets and WiFi routers. Orange Silicon Valley also partners with large companies and open source communities on initiatives relating to open computing. Orange Fab is establishing presences in France, Japan, Korea, and soon, Israel and Poland.

Another innovation outpost run from San Francisco is Orange Institute, the company's technology think tank. Started as an effort by France Telecom to source intellectual property originating in Silicon Valley, and structured to bring people to the Bay Area for immersive programs, the concept has expanded globally (with 11 programs completed in three years, including three locally). Senior innovation executives are recruited from multiple industries, for sessions focused on the digital economy. The Institute's head, George Nahon, describes the program as "an opportunity for visitors to gain mindshare and interact with the smartest people in the world." The Institute has two other global sites, in Tokyo and Beijing, and a presence in Israel. As Nahon describes it, "We go to creative cities, where important activity is happening and you find significant innovation."

Plans for new programs include Orange Insight Onsite—a program that brings resident executives from companies in the Orange ecosystem, who otherwise lack a presence here, to the Bay Area for six months of deep immersion in how the region's innovation economy works. An additional program, Orange Campus West, is an internally-facing enrichment program structured as a one-week boot camp for rising stars within the company. Most recently, Orange Campus West has established an office in Santa Monica to engage with companies reinventing the entertainment industry, in an initiative it calls Siliwood.

Deutsche Telecom (DT) realized several years ago that its massive investment in R&D was not paying off relative to the start-ups that were outsmarting majors in the telecom and IT sector around the world. With in-house innovation flagging, a decision was made to reduce internal research and instead partner more with the startup community. The company's Bay Area office opened soon after.

One strategy is to reach out to venture capitalists and their portfolio investments to identify companies with consumer applications (apps) that can ride on its service base. While most of those apps are free, premium versions require more download capacity, providing business opportunities for partners. The strategy is that while US brands may be well-known in the US, many may be less well known in Europe, and DT has a well-known brand and service base they can plug into—saving time and resources when entering European markets. With majority ownership of global carrier T-Mobile, the company sees ample opportunity for leverage, connecting sales at the front end with shared revenue at the back.

In addition to this collaborative model, Deutsche Telekom's Bay Area office focuses on partnerships at several levels: 1) revenue-driven

partnerships; 2) technology-driven partnerships, to help the company integrate the most advanced technology coming from Silicon Valley to enhance network performance and reduce costs; 3) interaction with early-stage companies they might invest in; and 4) partnerships with larger Bay Area companies such as Google, Samsung, Oracle, Symantec, Cisco, Facebook, Yahoo! and Twitter. Many are already channel partners. With a small team of seven (which is likely to double in size this year), Deutsche Telekom's Bay Area office has signed 36 deals in its first two years. It is matched by a counterpart at the company's headquarters in Bonn, which translates, onboards and implements the relationships.

BT (British Telecom), a major global telecommunications and value-added service provider, has had an "innovation scouting" office in the Bay Area since 2000. The BT team looks for new technologies and innovative business models coming primarily from the region, but from the US, Japan and Israel as well. The Bay Area is seen as offering an advantage for the company's global operation because of the number of younger companies starting here as well as the number of innovative global companies passing through the region. The primary focus is not acquisition but instead onboarding of new suppliers to the BT business platform. About 70 percent of the team's time is spent talking with startups, 15 percent with other service providers (such as AT&T, Comcast or Netflix), and 15 percent with vendors (such as Cisco or Intel). Once qualified in the Bay Area, two sister teams in the UK further analyze the potential partnership and do the early-stage prototyping and proof of concept. Onboarding can take one of three forms: BT may act as a channel for sales of the partner's goods or services to customers, it may distribute and "white label" the technology or service as a BT product, or it may acquire a license to the technology.

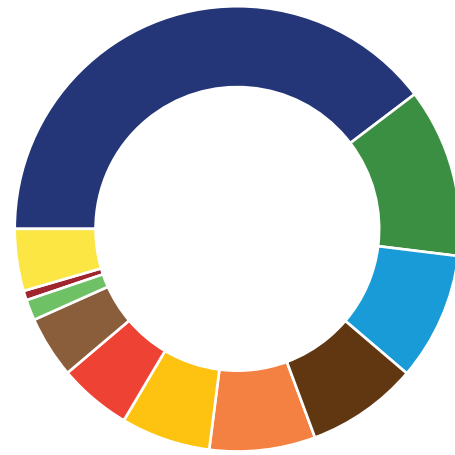
SOURCES OF US VENTURE CAPITAL (2012)



90.8% ■ PRIVATE INDEPENDENT
 4.9% ■ FINANCIAL INSTITUTIONS
 2.3% ■ CORPORATIONS
 2.1% ■ OTHER

Data Source: National Venture Capital Association "Yearbook 2013"

SOURCES OF EUROPEAN VENTURE CAPITAL (2012)



40% ■ GOVERNMENT AGENCIES
 12% ■ CORPORATE INVESTORS
 9% ■ FUND OF FUNDS
 8% ■ PRIVATE INDIVIDUALS
 8% ■ INSURANCE COMPANIES
 6% ■ FAMILY OFFICES
 5% ■ PENSION FUNDS
 5% ■ BANKS
 2% ■ CAPITAL MARKETS
 1% ■ ENDOWMENTS AND FOUNDATIONS

Data Source: The European Private Equity and Venture and Venture Capital Association "2012 Pan-European Private Equity and Venture Capital Activity"

AN ENTREPRENEURIAL NEXUS

The entrepreneurial connection provides a unique bridge between the Bay Area and Europe. For decades the region has attracted large numbers of young companies from around the world that want to participate in its innovation-led economy. Most, though not all, are technology-focused and arrive with any of several objectives: to tap into the region's pool of venture capital (which is unique in its depth and scale); to locate at the cutting edge where technology is being developed; to test the US market; or to access other talented individuals whose skills can help them grow. Because the skills pool and business network in the region is global, a Bay Area presence also enables young companies from overseas to connect to global markets and partners.

European connections are particularly strong, as Europe's advanced economies generate large numbers of highly skilled graduates. Europe claims a large pool of tech talent and developers, with growing numbers in Eastern Europe. According to the *Global Competitiveness Report 2013–2014*,²³ five of the world's 10 most innovative economies—Finland, Switzerland, Germany, Sweden and the

Netherlands—are European. Particularly in Nordic countries, however, the relatively small size of domestic markets requires many aspiring companies to think globally. These companies are attracting renewed interest by Bay Area venture capital firms such as Benchmark, Sequoia Capital and Accel Partners, as well as Bay Area technology companies hunting for acquisitions (e.g., eBay's acquisition of Sweden and Estonia's Skype, Autodesk's acquisition of Dutch 3D design firm Alice Labs, and more recently, Google's acquisition of UK artificial intelligence company Deep Mind Technologies).

Entrepreneurs in Europe also face significant—though not insurmountable—challenges, which push many toward the Bay Area:

Risk capital, both venture and angel, can be difficult to find. Access to angel funding is improving, but Series A and Series B funding is a particular challenge. To build a \$100 million business, it is often necessary to be in the US.

Despite Europe's single market for trade, its business environments remain largely national. This can inhibit the ability of start-ups to grow or to attract investment on a pan-European scale.

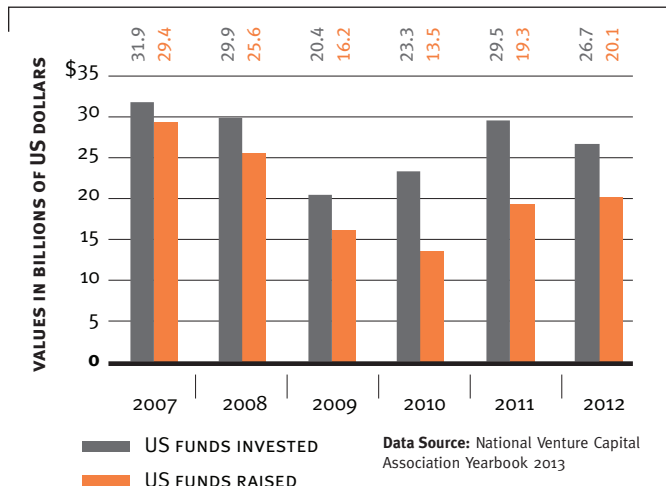
Due to high tax rates, their treatment as ordinary income as opposed to capital gains, and their taxation when rights accrue as opposed to when they are exercised, stock options are not useful to early stage companies in much of continental Europe.

Rigid labor laws in some countries make it difficult for start-ups to flexibly manage their workforce needs through the ups and downs of an early-stage business (a factor that can also impact their appeal to US venture investors).

European regulations governing privacy and data protection can pose regulatory risks for both IT start-ups and investors.

Where the US has a well-developed process for insourcing technology through acquisition, European companies generally lack such an

VENTURE CAPITAL FUNDS RAISED AND INVESTED IN THE US



acquisition culture, preferring instead to develop technology through in-house R&D. This reduces opportunity for start-ups looking for an exit strategy, again pushing them toward the US.

Europe generally lacks iconic technology companies with entrepreneurial roots and successful entrepreneurs who can serve as role models or investors in the next generation of start-ups.

Collaboration and communication between actors in the innovation system is comparatively low, and the web of professional services that startups in the US rely on is comparatively weak.

Finally, and while there are exceptions, European public universities typically maintain higher barriers between academia and industry, do not focus extensively on technology transfer and, compared to their counterparts in the US, are late to the game of supporting entrepreneurship.

The World Economic Forum has further documented the barriers that entrepreneurs face when starting and scaling a business. These include;

- geographical fragmentation (despite the EU's Single Market, national rules and barriers limit pan-European opportunities and inhibit the ability to scale);

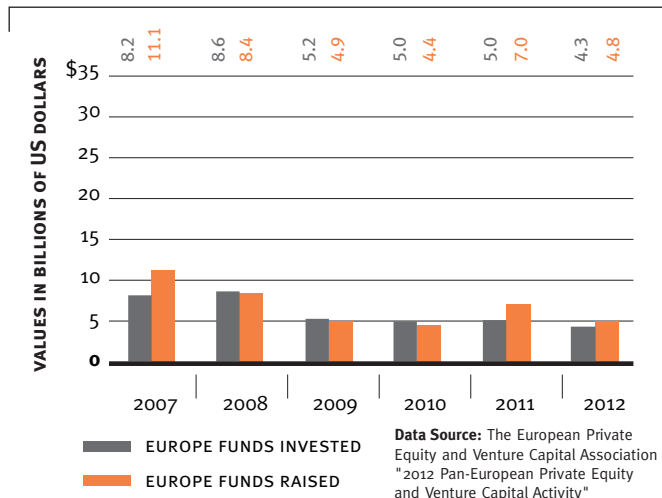
- culture (risk aversion and fear of failure are higher in Europe than in the US and other global regions, particularly in the wake of the recent global downturn);

- popular attitudes (relatively few Europeans have thought about starting a company; most have a more favorable view of traditional professions and prefer working as employees);

- investment capital (limited access to and a dropping supply of risk capital).

Despite growing activity in major innovation hubs, the supply of early-stage venture capital, which was never large, dropped by 56 percent between 2007 and 2012 and currently stands at only 3.6 billion euros. This is less a problem of capital per se, which Europe has in abundance, than of risk capital available for entrepreneurial ventures.

VENTURE CAPITAL FUNDS RAISED AND INVESTED IN EUROPE



As private venture funding has declined, the role of government finance has grown from 12 percent in 2007 to more than 40 percent in 2012. The “Valley of Death”—the gap between early-stage and growth funding when companies need to scale—is also wider in Europe than in the United States.

For these reasons, while Europe ranks highly for innovation broadly, it has underperformed in its ability to support entrepreneur-led start-ups. A recent analysis in Italy's financial journal *Il Sole 24*, found that measured against eight benchmarks—maturity of start-ups, financing, business performance, talent, infrastructure, entrepreneurship, speed in adopting new technologies, and differentiation from Silicon Valley—Europe's top innovation ecosystem, London, ranked only 7th out of 20 global centers evaluated, after Silicon Valley, Tel Aviv, Los Angeles, Seattle, New York and Boston. Paris ranked 14th and Berlin 15th.²⁵ This innovation challenge is increasingly recognized by European governments and by many in Europe's private sector.

Given these factors, the Bay Area is an important destination for European entrepreneurs who lack comparable access to investment capital at home, or who need a larger US or global platform from which to scale their companies.

A recent survey conducted by San Jose State University²⁶ confirms that European entrepreneurs see venture capital as less prevalent and less accessible in Europe, with funding often achieved less through competition than through social ties. The same survey confirms that commercial bank lending and government grants are more important sources of funding for entrepreneurs in Europe as compared to venture or angel capital, which is more accessible in the Bay Area. A related inducement is the information exchange and social networking effect associated with angel and venture funding, compared to more traditional (bank and government) funding models that do not offer those benefits.

While start-ups come to the Bay Area independently, the region benefits from a rich network of incubators, accelerators and soft-landing services designed to help companies connect to Silicon Valley and the region. Some are government sponsored and others are private. Most, however, are partnerships between national governments and supportive private companies. While their format varies, typically these centers provide inexpensive office space, mentoring, and services and events that introduce

INCUBATORS AND ACCELERATORS

500 Startups

BootstrapLabs (Sweden)

French Tech Hub (France)

German Silicon Valley Accelerator (Germany)

Innovation Norway/Innovation House Silicon Valley (Norway)

Mind the Bridge (Italy)

Plug and Play Tech Center

RocketSpace

Runway

Spain Tech Center (Spain)

Y Combinator

residents to venture capitalists or other investment partners. Accelerators may also invest in the companies they house, usually in exchange for a share of equity.

The business strategies followed by these incubators and accelerators varies. Most bring start-ups to the region for 3–6 month stays, introducing them to US laws, Silicon Valley business practices and potential investors, customers and partners. Those that succeed become bi-national, with development teams at home and US affiliates that tap into flows of technology and investment to develop markets. Some, but not all, move their headquarters to the Bay Area.

BootstrapLabs, a Nordic accelerator located in San Francisco, follows a different model, requiring at least one founder to relocate to the Bay Area permanently. According to BootstrapLabs CEO Nicolai Wadstrom, that hasn't been a problem, as at least half a dozen start-ups have moved their headquarters from Sweden, Finland, Denmark and other Northern European countries: "Companies used to come but there were less of them and they came at a later stage when it was about selling a product that's ready to go. It used to be about export, and now it's about building companies. This is unique to the Bay Area."²⁷ Teemu Yli-Hollo, co-founder of **Audiograf**, a Finnish startup that opened its US headquarters in San Francisco's South of Market in 2012 with help from BootstrapLabs, notes: "The knowledge and ecosystem are here. People come here for the opportunity, whether it's raising funding or getting access to markets in the US. Silicon Valley is the perfect place to start penetrating the market. People here are open for new technologies."²⁸

The **German-Silicon Valley Accelerator** (GSVA) provides another example for how country-focused accelerators work. A private organization supported by Germany's Federal Ministry for Economics and Technology and private sponsors and partners such as Deloitte and Deutsche Telekom, its mission is to establish a bridge between Germany and Silicon Valley that facilitates trans-Atlantic start-ups.

The Accelerator started in 2011 at Plug and Play with two resident companies per quarter, and subsequently grew to four and now six companies (plus three with an extended presence) who participate in a three to six month acceleration program. The selection process is rigorous: applicants in Germany go through an initial screening, are scored and ranked, and the top 30 companies are interviewed by phone. The top 20 are then invited to present in person at a two-day workshop. On the night of the second day, the top 12 successful companies are selected: six for the upcoming quarter and six for the next.

TECHNOLOGY CONNECTORS

BMW Technology Office (Germany)

Bosch Research & Technology Center North America (Germany)

Danish Innovation Center (Denmark)

L'Atelier (France)

Medicon Valley Alliance (Sweden/Denmark)

Mercedes-Benz Research & Development North America

Orange (France)

Renault-Nissan Research Center (France)

SAP Labs (Germany)

Sennheiser Technology & Innovation Center (Germany)

Siemens Technology-to-Business Center (Germany)

swissnex (Switzerland)

SwissCom (Switzerland)

Renault (France)

Spain Technology Center (Spain)

Telekom Innovation Laboratories, Deutsche Telekom (Germany)

Vinnova (Sweden)

Vodafone Xone (UK)

Volkswagen Electronics Research Laboratory (Germany)

“The knowledge and ecosystem are here. People come here for the opportunity, whether it’s raising funding or getting access to markets in the US. Silicon Valley is the perfect place to start penetrating the market. People here are open for new technologies.”

[Teemu Yli-Hollo, co-founder of Audiodraft]

There is no standard profile for the companies that come to GSVA. The original concept was to focus on companies that had established themselves in Germany, but it became clear later that early-stage companies also needed to come to the US to be successful, so it is currently a mix. GSVA works with a broad range of companies in the IT and communications space at all stages of development. Vice President Oliver Hansich points to successes, including an alumnus that recently closed Series A and B funding rounds, and another that found its largest customer here. GSVA picks start-ups that have demonstrated success in Germany and provides a platform for them to explore US market opportunities. If all goes well here, their US market success is also likely to translate into jobs and benefits at home.

GSVA originally focused on communications and information technology companies, but recently extended its scope to include cleantech and related IT. In May 2013, then-German Vice Chancellor Philipp Rosler announced that GSVA would expand to include a second site in San Francisco—at Runway, a co-working space located in the same building as Twitter—to focus primarily on consumer Internet, gaming and mobile markets. Resident companies have the option to work out of either site or both. In the fall of 2013, GSVA moved its Silicon Valley offices to expanded quarters in Palo Alto.

RocketSpace, an incubator in San Francisco, houses approximately 140 start-ups, of which half are international and 25 percent are European. Some

come for just a month, but most of those return, realizing that more time is needed to develop useful connections. The typical stay is three months. Those who succeed in attracting funding typically set down roots. The next move for RocketSpace is to expand to Europe through a London presence.

The innovation and entrepreneurial links of Nordic countries to the Bay Area are particularly strong. This is partly explained by the fact that three of the top 10 countries ranked in the 2013 *Global Innovation Index* produced by Cornell University, INSEAD and the World Intellectual Property Organization (WIPO)—Sweden, Finland and Denmark—are Nordic.²⁹ According to Burton Lee of Stanford University and Innovarium Ventures, the Nordic countries have deepened their ties to the region more consistently and more sustainably in recent years. “Finland has been most seriously engaged in retooling their economy toward a focus on innovation; and of all Nordic groups, the Finns and Danes have most consistently targeted Silicon Valley as a strategic location for the entire country,” Lee says.

Vinnova, the Swedish government’s innovation agency, established an office in Silicon Valley in 2012, with the goals of facilitating access to the region’s technology ecosystem for Swedish start-ups and adding value to companies it has funded in Sweden. Its dual role of benchmarking and trend spotting also enables it to determine the potential policy implications of developments here for Sweden. Like other government-

sponsored technology outposts, it sees natural synergies where R&D remains primarily in Sweden with plentiful skilled developers and engineers, and Silicon Valley provides global market access and access to finance. Vinnova’s office is located at Stanford, next to the Wallenberg Research Link (WRL).

Following a different model, the **Medicon Valley Alliance** is a Danish-Swedish collaboration representing one of Europe’s densest life sciences clusters. The Alliance partners with the regional life sciences association, BayBio, that aims to strengthen business-to-business, university-to-university, and hospital-to-hospital collaboration in order to stimulate and support complementary research programs. Based in California, Thomas Mortensen serves as the group’s official “Ambassador,” acting as a bridge in both directions.

Innovation House Silicon Valley is a virtual office for Norwegian technology companies, investors, and **Innovation Norway**. With offices in Silicon Valley and San Francisco, Innovation Norway organizes programs, hosts students of entrepreneurship visiting from Norway, and will hold three technology start-up (Tech INCubator, or TINC) programs in the region in 2014. As an outcome of TINC’s Fall 2013 program, Norwegian startup Zwipe signed a global OEM distribution agreement for the US market and has opened an office in Palo Alto. In September 2013, Innovation House teamed with other Nordic country representatives to organize a Nordic Pavilion for 10 start-ups at Tech Crunch’s annual Disrupt conference in San Francisco.

“There is a center of gravity for every industry- a nucleus of talent and expertise. For software it’s in the Valley. You can start a great company anywhere in the world, but it’s like running uphill or downhill – you can expend the same amount of energy but get farther. We want to reduce friction, and Silicon Valley is a very low friction place to get a commercial venture off the ground.”

[Emil Eifrem, Swedish entrepreneur]



THE MOTHERSHIP - PLUG AND PLAY

Mountain View accelerator Plug and Play Tech Center is a pioneer in the world of international accelerators. Launched in 2006 in a building once occupied by Logitech and Google, Plug and Play began its International Pavilion and Acceleration programs in 2008, with expansions into Asia, Europe and the Middle East starting in 2010. It has met with extraordinary success, having accelerated over 1,500 start-ups and facilitated over \$1.4 billion in venture funding.

The Plug and Play model is designed, like a number of other accelerators, to provide an international bridge to Silicon Valley. What is different is its scale, which boasts more than 20 international partnerships—in which Europe is prominently represented. Partners include Flanders Investment & Trade (Belgium), Innovation Center Denmark, Leadership Business Consulting (Portugal), SARIO (Ministry of the Economy, Slovakia), TUBITAK (Ministry of Science & Technology, Turkey), Enterprise Incubator Foundation (Armenia), Enterprise Estonia, Tekes, FinNode (Finland), GVA Capital, InnovaChile CORFO (Chile), int@j (Jordan), Interdisciplinary Institute for Broadband Technology (Flanders), Kickstart Ventures (Philippines), National Center for Research and Development (Poland), New Zealand Trade and Enterprise, the Barcelona Chamber of Commerce, BarcelonaActive, Czechinvest, Innovation Norway, and Advantage Austria. International partners sponsor start-ups from their country or region, that participate in three-month acceleration programs held every quarter and which include a bootcamp, coaching on fundraising and business development, and an expo with investor pitches and networking. Since 2009 over 250 international start-ups have been accelerated through the center

WeVideo, a Norwegian start-up sponsored by Innovation Norway, shows how the process works at the company level. Founded with the name Creaza in Oslo in April 2011, the company’s focus is on video editing tools for the education market. It entered the Plug and Play Accelerator in June 2011, and in September, at the end of its acceleration program, became a Plug and Play EXPO winner. Creaza decided to remain at the center, changed its name to WeVideo, and partnered with YouTube in the fall of 2011. The following spring it partnered with Disney to promote The Avengers movie. In May 2012, WeVideo raised \$19.1 million in Series A funding.

Now Plug and Play is building a larger bridge to Europe through Plug & Play Accelerator Spain, launched in Valencia in 2012, and the Axel Springer Plug & Play Accelerator, launched in Berlin in 2013. In addition to office space, support services in Berlin include coaching, and seed investment of 10,000 to 50,000 euros in exchange for a 5 percent equity share in the company.

The next expansion could be in Italy through a presence in Milan and Naples, mirrored by an Italian pavilion at Plug and Play Tech Center in Silicon Valley. Supported by both public and private sector partners, the Italian initiative is expected to launch in 2014.

The **Enterprise Estonia** office in Silicon Valley, established in 2007, is one of 10 worldwide outposts sponsored by the Estonian government to support trade, investment, innovation and tourism. It focuses primarily on connecting Estonian start-ups and universities with Silicon Valley resources, and on promoting Estonia as a place to do business. In addition to arranging study tours to meet with Estonian companies, start-ups and government officials, it plays virtual host to **Tallinn University of Technology**, which through Enterprise Estonia has developed connections with Stanford, UC Berkeley and San Jose State University. Among other programs, Tallinn Tech sponsors two training programs for Estonian start-ups in Silicon Valley each year, which include meetings at universities and with companies, such as Facebook and Google, and the opportunity to make investor pitches. Through Enterprise Estonia or incubators and accelerators such as 500 Start-ups and AngelPad, numerous Estonian start-ups (ERPLY, Zerpily, Import2, Pipedrive, Fortumo, Marinexplore, Click & Grow, Guardtime) have successfully taken root in the region.

Holland in the Valley, supported by the Consulate General of the Netherlands and a network of Dutch professionals and business leaders, organizes networking events, live and online forums, and an annual four day bootcamp for Dutch entrepreneurs.

Support for startups and early-stage companies also comes from investor groups with a targeted focus on Europe. **SVG Partners**, with links to Silicon Valley's Irish Technology Leadership Group, supports Irish startups seeking to scale up. The **Silicon Valley Greek Seed Funding Group**, supported by a network of Greek CEOs, executives, engineers and scientists and Greek Angel Investors, provides mentoring and seed funding to Greek and Greek-American entrepreneurs.

StartupLatvia, an independent organization, supports the development of technology and capital connections between Latvia and Silicon Valley, including an annual study tour to Silicon Valley by tech and IT startups.

ENTREPRENEUR PROFILES

Whether through accelerators or independently, European entrepreneurs and start-ups are connecting to the region in large numbers. Though too numerous (and fluid) to list, some examples are indicative of their range and business models.

ProxToMe, based in San Francisco but financed from Italy, allows file and document sharing between mobile devices in close proximity. **Zendesk**, a cloud-based customer service software company moved to San Francisco from Denmark in 2009 and was one of the first companies to move into the city's tech-oriented Mid-Market area.

Podio, a Copenhagen-based online project management platform opened an office in San Francisco in 2011 and

was subsequently sold to Citrix in 2012. **FROONT**, a web design site with roots in Latvia, has a team of six distributed across San Francisco, Finland and Latvia. Mobile payments firm **Fortumo** has roots in Estonia, with teams in San Francisco, China and India. **Prezi**, an Internet collaboration and presentation company founded in Hungary, is now based in San Francisco and was named one of *PC Magazine's* Top 100 Websites for 2012 and *Time Magazine's* 50 Best Websites for 2012, and received the Deloitte 50 Rising Star Award in 2011 and the European Seal of e-Excellence Platinum Award in 2010. **Vivino**, a Nordic startup that allows access to a database of information on 500,000 wines by photographing labels, is one of four portfolio companies in the region supported by Swedish venture firm Creandum. Popular music sharing site **Spotify**, which is based in Sweden, opened a five-person office in San Francisco in 2011 and is continuing to expand. Other noteworthy European startups include **UStream** (Hungarian), **UXPin** (Poland), and **SoundCloud** (Germany).



SILICON VIKINGS

THE NORDIC CONNECTION

Silicon Vikings began sixteen years ago as a group of Swedish technology workers who met to share experiences. Speakers were invited and eventually colleagues from other Nordic countries joined. In 2011 they decided to take the relationship to the next level by focusing not just on Nordic-to-Nordic connections within Silicon Valley, but on Silicon Valley's connection to Nordic and Baltic countries (Sweden, Norway, Denmark, Iceland, Finland and most recently Estonia).

The group has several focal points: 1) working groups in life sciences, mobile, social media, and cleantech; 2) communication of developments in Nordic and Baltic countries to Silicon Valley, and of developments in the Valley to Scandinavian and Nordic countries; and 3) collaborative projects. Silicon Vikings organizes events (more than 80 in 2013) and hosts visiting Nordic start-ups, working with partners such as Innovation Denmark and Innovation Norway.

A growing franchise, Silicon Vikings now has chapters on Oslo, Stockholm and Copenhagen, with 5,000 members divided equally between the Bay Area and Northern Europe. Seventy volunteers support its activities, including an annual Nordic Entrepreneur of the Year Award (in 2013 the award went to Peter Vesterbacka, creator of Angry Birds, the world's number one paid app) and a "Nordic pitch night" held every 4-5 weeks to present visiting Nordic start-ups.

The following case studies provide a deeper look at European start-ups and their Bay Area connections.

IN3DGALLERY

Francesco Marcantoni, CEO of in3Dgallery, Inc., began his entrepreneurial career in Arrezzo, Italy as a co-founder of Esimple, which in 2008 became the first company to conduct e-commerce in 3D. The system allows customers to virtually see how furniture would look in their homes or apartments, creates an estimate, and places orders directly with the factory. As the company grew, it started producing custom products for clients, including Italian furniture maker Natuzzi, a world leader in leather furniture. In stores where the system was rolled out, revenues spiked 20 percent. Rollout in the US began in January 2013.

In the summer of 2012, Marcantoni launched in3Dgallery, winning a competition in Italy to come to the Bay Area. In3Dgallery's goal is to expand on the model developed for Natuzzi, to build a scalable 3D application for commercial presentations. More than 250 companies competed, of which five were selected. The winners came to Mind the Bridge, a San Francisco incubator formed in 2009 to introduce young Italian companies to the Bay Area. In 2013 Mind the Bridge's scope of support for its companies expanded, with awards of \$35,000 in return for a 5 percent share of equity. Marcantoni came to San Francisco for a three-month residence, during which he and the other awardees were familiarized with issues such as incorporation, immigration, intellectual property, accounting requirements, and fundraising.

Out of the incubator now, he is back in Italy, but traveling frequently to the Bay Area. Investors, he notes, say that if a company wants to raise funds here, it needs to be here. That is not so easy, however, considering the difficulty entrepreneurs have obtaining visas. With the company incorporated in the US, his plan is to develop partnerships in the Bay Area and raise money both here and in Italy, noting that the experience of having been in the Bay Area provides validation that helps with fundraising at home.

Reflecting on the reasons he came to San Francisco, Marcantoni points to fundraising but thinks more broadly. Starting a company is much easier in the US than in Italy, he says, requiring less time and money, and the market has scale that is difficult to replicate elsewhere. Also in Europe, investment tends to be nationally focused, not pan-European, which further limits opportunities. For the future, he hopes to have both a Bay Area company that focuses on marketing and business development, and a company in Italy (where talented workers are plentiful and costs are lower) to focus on product development.

NEO TECHNOLOGY

Following a different path from European start-ups that remain based in Europe, Swedish entrepreneur Emil Eifrem moved the headquarters of Neo Technology to the Bay Area in 2011 in the belief that his company would have a greater chance of success here. In the process, Neo Technology switched from being a Swedish company with a US subsidiary to a US company with a Swedish subsidiary. Explaining his strategy, Eifrem observes, "There is a center of gravity for every industry—a nucleus of talent and expertise. For software it's in the Valley. You can start a great company anywhere in the world, but it's like running uphill or downhill—you can expend the same amount of energy but get farther. We want to reduce friction, and Silicon Valley is a very low friction place to get a commercial venture off the ground."

The company works in the big data space, using a graph database based on how the human brain works to rapidly structure information. It currently has 60 employees around the world, including 25 in San Mateo. Product development and engineering are done in Europe, with commercial functions (customer-centric engineering, management, business development and marketing) handled in the US, unlike many European start-ups, Eifrem was not involved with a Bay Area incubator—he just came. He notes that it is easy to start a company in both the Bay Area and Sweden, and that there are some good Swedish venture capital firms that can write checks for 2–5 million euros. What is different about the Bay Area is its center of gravity and access to capital, which is hard to find in Europe. While high-quality engineers in Europe are plentiful, according to Eifrem, "Silicon Valley is also mind-blowing for non-engineering roles. It's almost impossible to find world-class heads of marketing or business development in Sweden, while there is a much higher density here in the Valley. The region has at least an order of magnitude advantage in access to world-class talent and has a willingness to share. When you add those factors together it's an explosive combination. You can't find it anywhere else on this planet."

bSAFE (BIPPER INC.)

bSafe started in Norway in 2006 as the brainchild of Silje Vallestad, a mother who wanted a better mobile safety device for her children. The result was a cell phone-based application, which turns a smartphone into a safety device by allowing a designated personal network to trace the user's movement and respond to emergencies. After launching in Norway, it was clear to Vallestad that it would be difficult to build a global service from a small country. Looking to scale up, she moved to the Bay Area in 2012, landing initially at the Norwegian

incubator Norway House in Palo Alto, which has also provided two start-up grants. Since then bSafe has grown, moving out of Norway House to a new office with nine employees. Most of the company's operations are in the process of being moved from Norway to the Bay Area, but its workforce remains global. Most key personnel (management, technology and product development, data analysis and marketing) are now in the region, while most of the company's developers are largely in the Ukraine (Kiev). The company has raised capital in Norway, but has yet to approach funders in the US.

The company remains headquartered in Norway with a US subsidiary. Asked about factors influencing bSafe's success, Vallestad credits the support provided by Innovation Norway. Turning to the Bay Area, she notes the challenges: employee loyalty is not high and competition for talent is fierce, so it is hard to keep developers. Also, as in Norway, costs in the Bay Area are high. On the up-side, when it comes to raising capital, being in the Bay Area can be critical: "Not many VCs here invest in companies outside the US, at least not until you reach a certain size." And the playing field is large: "Norway is tech-oriented and a great place to try an idea, but is too small a place to scale internationally. At some point you need to be in a big market."

TAULIA

German entrepreneur Marcus Ament came to San Francisco in 1998 from Frankfurt, with the plan of returning in several years. Instead he chose to stay. In 2009 he founded Taulia, his second start-up, a software company that helps large buying

organizations take better advantage of their scale by paying their suppliers earlier in exchange for discounts, enabling small company suppliers to benefit through improved liquidity. Since then, Taulia has received three rounds of funding from Matrix Partners, a venture firm with offices in Boston and the Bay Area.

Of the company's 100 employees, 70 are in the Bay Area, 20 in Park City (Utah), five in Austin, and five in Frankfurt, Germany. Three of its founders now live in the Bay Area, and approximately half its workforce comes from Europe. Unlike most other European start-ups in the region, Taulia decided to concentrate its engineering in the US, though it expects to outsource more to Europe in the future.

The company's 40 customers include a range of Fortune 500 companies: PG&E, Agilent, John Deere, Coca Cola, Tyson Foods, Zappos, Warner Brothers and Pfizer. With its initial focus on North American markets, most customers are in the US, but Taulia is starting to gain European customers as well. Asked why the company is in the Bay Area, Ament says, "Finding co-founders, first employees, and engineering talent is unparalleled here," adding that angel and venture capital is scarce in Europe, making it difficult for start-ups to find investment. The Bay Area's downside, he says, is cost and competition: "It's an expensive place, and competition for talent is high." Federal caps on H-1B visas is also a problem, as start-ups have to compete with much larger companies that take the lion's share of the talent inventory. It is also more difficult to start a company than it should be—but much easier than in Europe. In the end, the big difference is culture: "People in the Bay Area are more into technology, into software, into start-ups. This is a good environment for people to thrive. It inspires people."

HUDDLE

Huddle, which produces business collaboration software, launched in London in 2007, with initial funding from London venture capital firm Eden Ventures. This was followed by a second round of funding from Matrix Partners, a US venture firm based in Boston and the Bay Area. With encouragement from its investors, who believed that Huddle had global potential, the company set up operations in the Bay Area in 2010. It remains headquartered in the UK, with a US subsidiary. Founder Andy McLoughlin notes that not every start-up business needs to come to the Bay Area: "If you are building software for a particular industry it may not be necessary, but if you are building broader platforms, you should be here." Huddle's operations are based near San Francisco's Moscone Center.

With this strong base of collaboration and cross-investment, several policy options present themselves for building deeper connections between the Bay Area and Europe.

THE TRANS-ATLANTIC TRADE AND INVESTMENT PARTNERSHIP

Negotiations were launched in the summer of 2013 on the Trans-Atlantic Trade and Investment Partnership (TTIP), which if successful will create the world's largest free trade zone by reducing trade and investment barriers between its two largest economies—the United States and the European Union, which together account 45 percent of world GDP. The talks are seen in Europe as a way to jump-start a slow economy through wealth creation and regulatory streamlining.

The negotiations will be complex, as a successful result will require agreement not just between the US and the EU, but within the EU's membership. In the process, a range of difficult issues will have to be addressed, including agricultural markets and protection (European barriers are high); intellectual property (e.g., pharmaceuticals and music); banking rules; culture (France subsidizes its film industry and requires that 40 percent of television programming be produced in France; online film distribution is an emerging issue); government procurement (European companies would like full access to procurement by state and local governments in the US, which currently lie outside federal jurisdiction); and the Jones Act (a US law that permits only US vessels to carry cargo between US ports.)

As tariffs with the EU are already low (around 4 percent), the biggest opportunity presented by TTIP lies in the area of regulatory standards. Both the US and Europe have well-developed regulatory systems, that in various cases may differ in their approach. The harmonization of standards, with mutual recognition of regulatory inspections and approvals (eliminating the need for duplicative product inspections in Europe and the US) would reduce friction in the trading system and significantly lower costs for producers and consumers on both sides of the Atlantic.

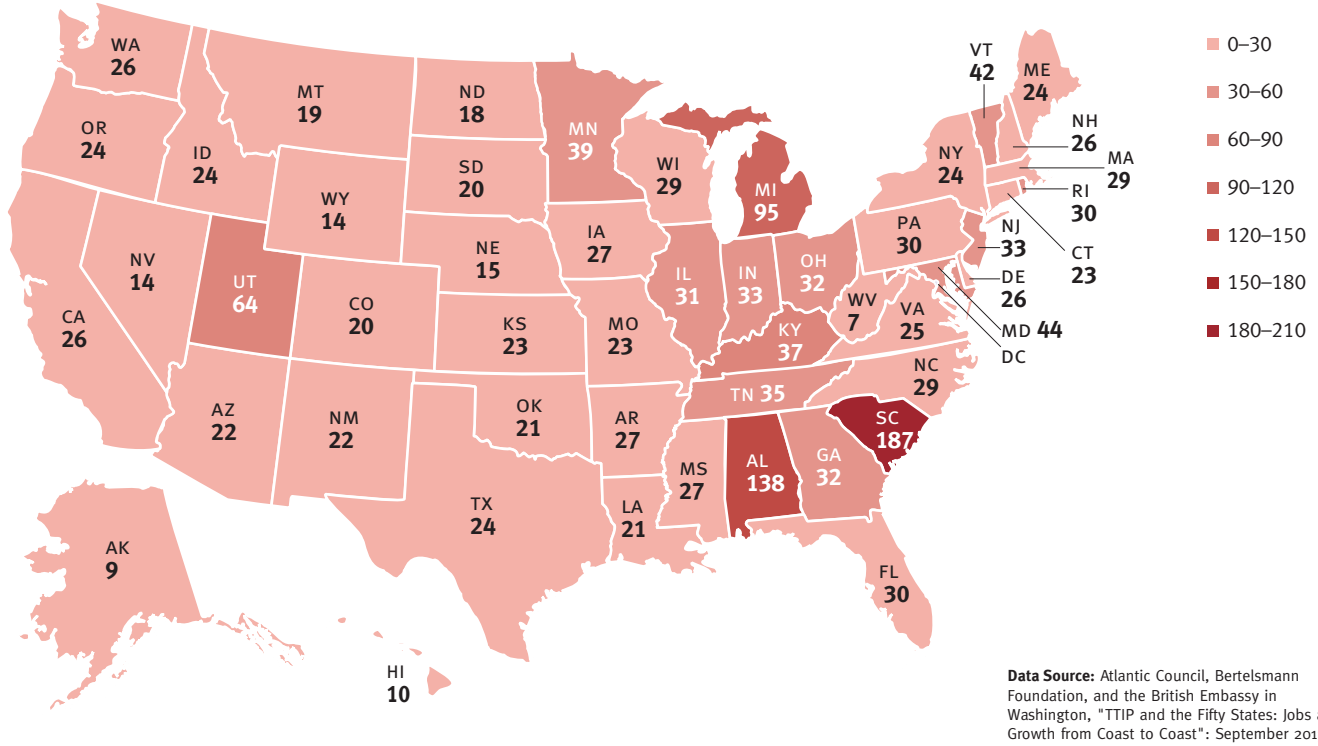
Another trade-related issue, that may or may not be addressed through TTIP, concerns content restrictions and data privacy concerns impacting US tech companies and online service providers such as Google (which currently handles 90 percent of European Internet searches). Privacy, particularly of personally-identifiable data, is a rapidly growing practice area for law firms that support tech companies. In 2013 the EU adopted a data-privacy directive modeled on Germany's privacy law, which is to be applied by EU members. In response, the US government has negotiated a framework that will help large US companies comply. Some in Europe have proposed that Internet companies be required to locate data centers handling domestic data within national borders where data would be more subject to national government control. Recent disclosures of NSA data gathering have added fuel to the debate. US companies, primarily from the Bay Area, harbor strong concerns that such moves could restrict the free flow of information, balkanize the Internet by reducing net neutrality, and undermine its potential as an open global platform for innovation and commerce. This is also seen as a potential trade barrier.

The goal of the US and the EU is to complete the negotiations by 2015. The Obama Administration has also proposed legislation granting the executive branch Trade Promotion Authority (TPA) to enable it to negotiate trade agreements with foreign counterparts and submit them to Congress for approval through an up-or-down vote (i.e., without amendment). TPA, which has been available to US administrations in the past but has since expired, is seen by trade advocates in Europe as critical to the successful conclusion of such agreements, as it would preclude re-negotiation of carefully balanced agreements through the legislative process after they are submitted to Congress for approval.

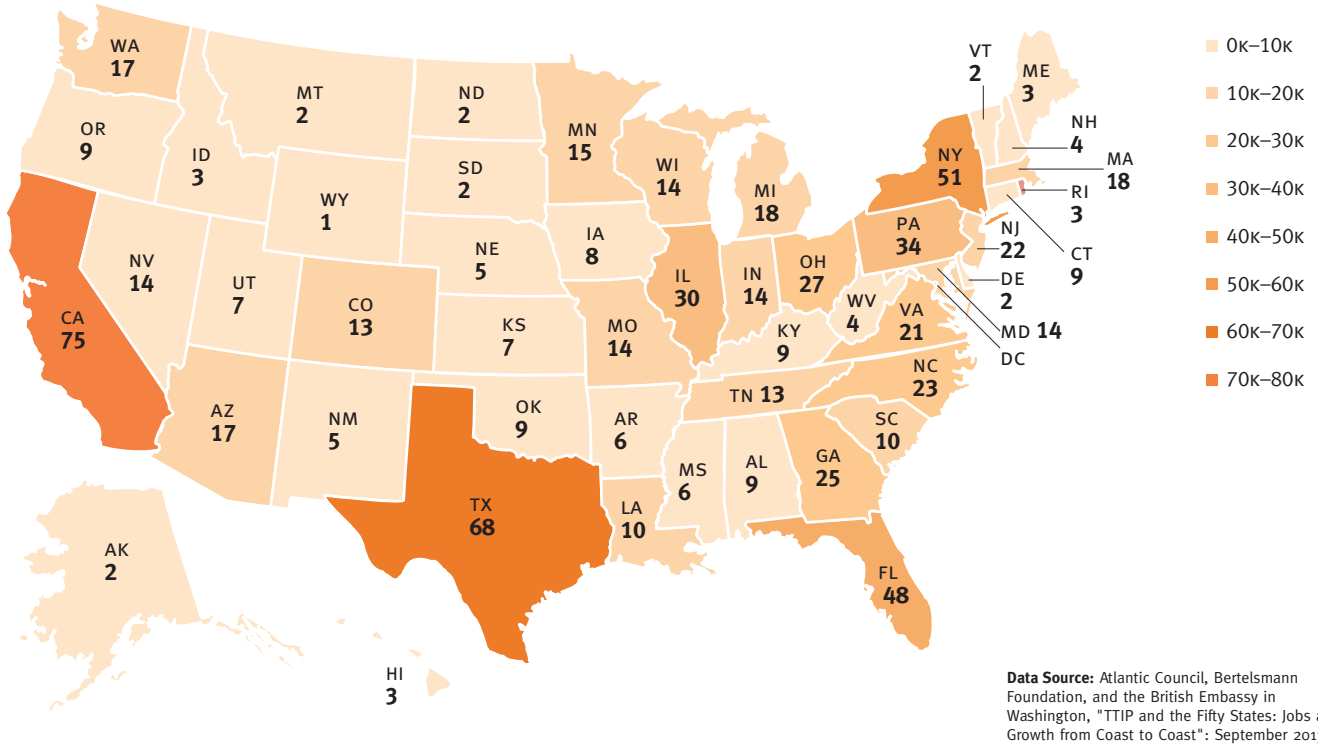
A study by the Atlantic Council, the Bertelsmann Foundation and the British Embassy in Washington finds that a successful TTIP will support more than 740,000 new US jobs. This estimate is based on a 100 percent reduction in trans-Atlantic tariffs, a 35 percent reduction in costs resulting from non-tariff regulatory barriers, and a 50 percent reduction in procurement barriers.

According to the same study, California would lead the nation in the number of new TTIP-related jobs, adding an estimated 75,000. Successful implementation of TTIP would increase California exports to the EU by 26 percent. The top sectors by export increase would be motor vehicles (\$3.3 billion), chemicals (\$3.2 billion), electrical machinery (\$2.2 billion) and metals and metal products (\$1.3 billion). The leading sectors for job growth would be business services (15,752), financial services (1,543), non-electrical machinery manufacturing (1,395) and metals and metals products manufacturing (1,187).³⁰

ESTIMATED PERCENTAGE INCREASE IN INDIVIDUAL STATE EXPORTS TO THE EU POSTIMPLEMENTATION OF AN AMBITIOUS TTIP



ESTIMATED INCREASE IN TTIP-RELIANT JOBS BY STATE (NUMBER)



US IMMIGRATION POLICY

Current visa and immigration policy unnecessarily restricts business development and the creation of economic value between the United States and Europe. Two areas of particular concern are 1) caps on visas for high-skilled workers, and 2) the lack of a visa category geared specifically to start-ups.

The founder of the the Bay Area incubator RocketSpace sees many companies from overseas leaving because of visa issues: “Most entrepreneurs in the world know this is the best place to start a business, and many more would come if it weren’t for the visa barriers. But 90 percent know it’s not worth trying.”

The Visa Waiver Program (VWP) used by many businesses, allows for a maximum entry of 90 days at a time. Since it is not extendable inside the US, it requires frequent return trips to Europe to renew the status.

The B-1 Business Visitor Visa is broadly available worldwide and can support admissions for more than the 90 days permitted under the Visa Waiver Program. However, like the VWP, no productive US employment is permitted.

The L-1 Multinational Manager, Executive, or Specialized Knowledge Worker Visa can be used by entrepreneurs, small businesses or large companies with foreign affiliates. The new Office L-1 can be used when opening a business in the US that shares majority ownership with a foreign entity. But its one-year duration is often insufficient to get US operations off the ground, and extensions can be difficult. The E-2 Treaty Investor Visa can be used by investors. The minimum \$100,000–200,000 required to qualify, however, may be more than entrepreneurs from overseas have available to invest or is in some cases more than they need to start the business. The time required to apply for and process the visa can also extend to several months or more, complicating business planning and potentially discouraging the investment.

The better-known H-1B visa for skilled and professional workers is limited by a quota, which opens for applications on April 1 of each year for a start date the following October 1 and is normally filled within days. With demand far exceeding supply, many applicants are shut out. Within the available pool of H-1Bs, entrepreneurs and small businesses have to compete with large multinational corporations that absorb the lion’s share of visas available. Recent proposals to increase the number of H-1B visas come with more onerous procedural requirements, further limiting the viability of H-1Bs for entrepreneurs and small investors. Attorney fees, necessitated by the complexity of the application process, can be large and when added to the cost of the visa itself can push smaller companies away to more welcoming jurisdictions such as Canada.

In addition to more H-1Bs, the US needs a visa category specifically tailored for entrepreneurs from overseas that would allow for more extended stays and increase the likelihood of their attracting capital investment and establishing permanent roots in the US.

As suggested in recent testimony before the California State Legislature, state government could also help entrepreneurs from Europe and elsewhere who need visas, by providing letters of support to the examining officer reviewing the application—a service that could potentially be provided by the Governor’s Office of Business and Economic Development (GoBiz).³¹

CALIFORNIA REGULATORY ISSUES

Regulatory cost and inefficiency burdens companies from overseas as well as local ones. Complexity caused by the volume as well as the overlapping and uncoordinated nature of California (as well as federal and local) regulations poses particular challenges for companies from abroad. A range of labor, commercial, environmental and other regulations come into play, as well as Worker’s Compensation. Complexity at the state level can be further compounded by regulations authored by the region’s patchwork of local jurisdictions. In addition to issues of transparency, the absence of a single point of entry or a one-stop process for regulatory review and approval can inhibit new investment and business creation, with negative implications for jobs and growth. State government, through the Governor’s Office of Business and Economic Development (GoBiz), could potentially address this situation. City governments can provide similar support at the local level.

Taxation is another issue. The average effective rate of taxation is higher in California than in many European countries. While the average tax burden in Germany, for example, is 29.8 percent, in the US the federal average is 39.6 percent. California tax comes on top of that, and is not covered by a double taxation treaty. Federal treaty law prevents income from being taxed twice, but it does not cover states. So companies operating in California and Germany can be taxed in both places. With that and comparatively high personal tax rates, the inducement grows for companies that do not strictly need to be in Silicon Valley or California to locate in lower-tax states.

ENTREPRENEURIAL LINKS: AN EMERGING BI-NATIONAL MODEL

European start-ups, like others from around the world, do not necessarily come to the Bay Area to relocate, but instead come to access capital, develop partnerships, identify customers, and scale their companies in the US market. Many in the end become bi-national, with management in the region and engineering teams at home that are connected in their national markets.

The landing platforms developed in the Bay Area by a range of European entities play an important role in introducing the companies they host to potential US partners. Sometimes the mentors and connections they provide are drawn primarily from fellow nationals, which can be a limiting factor. Broader connections to the business and investor community are important.

Bay Area incubators and accelerators can also play an expanded role through European extensions. This is happening with RocketSpace, which plans to open in London in 2014, and Plug and Play Tech Center, which is operating in Valencia and Berlin and is also considering a presence in Milan and in Naples.

That road can lead back to the Bay Area. Arguably, if more initial entrepreneurial training and support can be done in Europe, European start-ups coming to the Bay Area will be better prepared to put their new skills to work in the region's richly networked environment. More mature, better-prepared start-ups coming to the Bay Area are more likely to succeed.

On the investment side, young companies in Europe and the US could be partnered at an early stage, enabling European startups to move to more efficiently tap into US investment, and at the same time, help US startups establish an early foothold in Europe.

APPENDIX A: INTERVIEWS AND INFORMATIONAL SUPPORT

Bernhard Abels, Deputy Consul General, Consulate General of Germany

Julius Anderegg, Consul General, Consulate General of Switzerland

Julius Anderegg, Consul General, Consulate General of Switzerland

Paolo Barlera, Acting Director, Italian Cultural Institute

Mauro Battocchi, Consul General, Consulate General of Italy

Grazia Bennett, Board of Directors, Bay Area Italy Association (BAIA)

Arthur Bienenstock, Wallenberg Research Link, Stanford University

Tom Bishop, Executive Chairman of U.K., Europe & India, URS Corporation

Colin Brown, Chairman, British-American Business Council

James Briski, SVP-Regional Commercial Executive, HSBC Bank USA

Elizabeth Cho, Siemens

Phil Cox, President of UK Branch, Silicon Valley Bank

Adiba Cremonini, Executive Director, Silicon Vikings

Emil Eifrem, CEO, Neo Technology

Mohannad El-Khairy, Operations Manager, Plug and Play Tech Center

Rocio Esteve, President, California-Spain Chamber of Commerce

Iben Falconer, Business Development Manager, Bjarke Ingels Group

Kristina Garcia, Managing Director, German State of Hessen (United States)

Angelika Geiger, Director, Germany Trade and Invest

Corey Goodman, CEO, VenBio

Stephen Goodman, Senior Vice President, Continuum Innovation LLC

Olaf Groth, CEO, Emergent Frontiers Group LLC

Priya Guha, Consul General, Consulate General of the United Kingdom

Oliver Hanisch, Vice President & Co-Founder, German Silicon Valley Accelerator

John Hartnett, President, Irish Technology Leadership Group

Paraic Hayes, Vice President, IDA Ireland

Conor Healy, CEO, Cork Chamber (Ireland)

Joerg Heidrich, Global Head Product Supply Biotech & Berkeley Site Head, Bayer Health Care

John Heinlein, Vice President Corporate Marketing, ARM

James Herlihy, Chairman, San Francisco-Cork Sister City Committee

Sergio Herrero, CEO, L'Atelier and Senior Vice President BNP Paribas

Jeff Hoglind, Manager International Airport Development, SFO

Roman Horacek, Head of Mission – West Coast, CzechInvest

Sanita Laivina, Latvian Economic Development Agency/Startup Latvia

Domenico Laudonia, Italian Angels for Growth (Milan)

Burton Lee, Lecturer, Stanford Engineering School and Managing Director, Innovarium Ventures

Karsten Lemm, Business & Technology Correspondent, Stern Magazine

Pierre-Yves Lesaichere, CEO, Philips Lumileds

Anne Lidgard, Silicon Valley Director, Swedish Government Agency for Innovation Systems (VINNOVA)

Duncan Logan, Founder & CEO, RocketSpace

Chantel Mandel, Director Public Policy & Communications, Bayer Health Care

Francesco Marcatoni, CEO, in3Dgallery

Adriano Marconetto, ProxToMe, Inc.

Betsy Masiello, Global Public Policy, Google

Jaclyn Mason, Trade & Investment Consul, British Consulate General, San Francisco

Andy McLoughlin, Cofounder and EVP Strategy, Huddle

Lucie Merkle, Executive Director, Invest in Bavaria

Jorge Montealegre, Consul General, Consulate General of Spain

Thomas Mortensen, MVA Ambassador – West Coast North America, Medicon Valley Alliance (Denmark/Sweden)

Nikolaus Mueller, Vice President, Pipeline & Portfolio Management, Bayer Health Care

George Nahon, CEO, Orange Silicon Valley

Fernando Napolitano, President & CEO, Italian Business & Investment Initiative

Thomas Neubert, Vice President Business Development and Training, Deutsche Telekom

Robin Newman, Consulate General of the United Kingdom

Barbro Osher, Honorary Consul, Sweden

Jeffrey Pennington, Co-Director, European Center of Excellence, UC Berkeley

Corrine Pereira, Consulate General of France

Barbara Pivnicka, Honorary Consul, Slovakia

Richard Pivnicka, Honorary Consul, Czech Republic

Mark Plakias, Vice President Knowledge Transfer, Orange

Caroline Raynaud, Executive Director, German-American Business Association (GABA)

Katharina Rock, SVP Solution Validation, SAP Labs

Sten Rosnes, Consul General, Consulate General of Norway

Peter Rothen, Consul General, Consulate General of Germany

Camilla Rygaard-Hjalsted, Executive Director, Danish Innovation Center

Georges Schmidt, Consul General, Consulate General of Luxembourg

Michal Sedlacek, Consul General, Consulate General of the Czech Republic (LA)

Simon Segars, CEO, ARM

Romain Serman, Consul General, Consulate General of France

Michael Shepherd, Chairman & CEO, Bank of the West

Christian Simm, CEO, Swissnex

Alex Simonini, Vice President, Scottish Development International

Conrad Smith, Vice President Sales – Western Zone, Philips Lumileds

Annika Steiber, Vice-Chair, Silicon Vikings

Corrado Tirassa, Italian Angels for Growth (Milan)

Andy Tsao, Managing Director, Silicon Valley Bank

Silje Vallestad, Founder and Chief Safety Officer, Bipper Communication AS

Bart Van Bolhuis, Consul General, Consulate General of Netherlands

Rene van den Hoevel, Executive Director, German-American Chamber of Commerce

Andrus Viirg, Director, Enterprise Estonia Silicon Valley

Uwe Wagner, Principal, Tiburon Consulting

Nils Welin, President, Swedish-American Chamber

Sophie Woodville, Executive Director, French-American Chamber of San Francisco

Chenyang Xu, Executive Director, Siemens Technology-to-Business Center

Daniel Zimmerman, Partner, Transactional Department and Corporate, Emerging Company and Venture Capital Practice Groups, WilmerHale

John Zysman, Co-Director, Berkeley Roundtable on the International Economy, University of California Berkeley

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APPENDIX C: BUSINESS DEVELOPMENT AND SUPPORT ORGANIZATIONS

Accio - Silicon Valley: <http://accio.gencat.cat/offices/siliconvalley/en/index.jsp>

Bavarian U.S. Offices for Economic Development, LLC (West Coast Division): <http://www.bavaria-westcoast.com/>

BelCham Bay Area: <http://www.belcham.org/bay-area>

Belgian Trade Commission-Wallonia Investment and Trade Office in San Francisco: <http://www.belgiantrade.org/sanfrancisco>

BootstrapLabs: <http://bootstraplabs.com/>

British-American Business Council: <http://www.babc.org/>

Brussels Invest & Export: <http://www.invest-export.irisnet.be>

Business Association Italy America: <http://www.baia-network.org/>

California-Spain Chamber of Commerce: <http://www.californiaspainchamber.org/>

CzechInvest, www.czechinvest.org
<http://www.czechinvest.org>

Enterprise Estonia, Silicon Valley: <http://www.investinestonia.com/en/estonian-investment-agency/contact-by-office-locations#california>

Enterprise Lithuania: <http://www.enterpriselithuania.com>

European Entrepreneurship and Innovation Thought Leader Program
<http://www.stanfordentrepreneurs.org>

Europort: <http://www.europort.org>

French American Chamber of Commerce: <http://www.faccsf.com/>

German American Chamber of Commerce: <http://www.gaccwest.com/en/about-us/contact-us/>

German Silicon Valley Accelerator: <http://germanaccelerator.com/>

German-American Business Association (GABA): http://www.gaba-network.org/index.php?option=com_content&task=view&id=27&Itemid=53

Germany Trade & Invest: <http://www.gtai.de/GTAI/Navigation/EN/Invest/Investment-consulting/Teams-and-offices/international-offices,did=277474.html>

Holland in the Valley, www.hollaninthevalley.org
<http://www.hollaninthevalley.org>

Innovation Centre Denmark <http://icdk.um.dk/en/about-us/innovationcentres/siliconvalley/>

Innovation Norway & Innovation House Silicon Valley: <http://innovasjon norge.no/no/Kontorer-i-utlandet/usa-sanfrancisco/>, <http://innovationhousesf.wordpress.com/about/>

Invest Northern Ireland: <http://www.investni.com/>

Irish Technology Leadership Group (ITLG): <http://itlg.org>

L'Atelier: <http://www.atelier.net/en/about/latelier-san-francisco>

Latvian American Business Association in California (LABACA): <http://labaca.org/index.php?lang=en-US>

London & Partners: <http://www.londonandpartners.com>

Medicon Valley Alliance: <http://www.mva.org/>

Mind the Bridge: <http://mindthebridge.org/>

Orange Silicon Valley: <http://orangefab.com/about-orange/>

Paris Region International Mission Enterprise <http://www.innovation-prime.com/>

Plug and Play Tech Center: <http://plugandplaytechcenter.com/>

RocketSpace: <http://rocket-space.com/>

Runway: <http://runway.is/>

Scottish Development International: <http://sdi.co.uk/about-sdi/office-locations/usa-san-jose>

Spain Tech Center—San Francisco: <http://www.spaintechcenter.com/>

Startup Latvia: <http://startuplatvia.eu/>

Swiss-American Chamber of Commerce http://www.amcham.ch/chapters/p_chapter.asp?chapter=San%20Francisco

SwissCom: <http://www.swisscom.ch/en/ventures/contact.html>

swissnex San Francisco: <http://swissnexsanfrancisco.org/>

The Swedish American Chamber of Commerce—San Francisco/Silicon Valley (SACC-SF/SV): <http://sacc-sf.org/>

Vinnova: <http://www.vinnova.se/en/EU-and-international-co-operation/International-co-operation/>

Wales Cymru: <http://www.walesworldwide.org/2013/07/new-san-francisco-official-outlines-plans-to-promote-wales-in-one-of-the-worlds-most-influential-markets/>

APPENDIX D: METHODOLOGY

GEOGRAPHICAL DEFINITIONS

Europe: This region is defined as all European Union member countries as of 2013 and the member countries of the European Free Trade Agreement. Specifically, this includes: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom. In some cases, due to limitations of the data source, the analysis is limited to the European Union.

Bay Area: The definition of the Bay Area can vary based on the data source. In most cases, the region is defined as the nine counties of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Sonoma, and Solano. This definition is utilized with following data sources: US Census, US Patent and Trademark Office, IPEDS, and Uniworld. Trade data from Thomson Reuters defines the Bay Area as US Area Codes 408, 925, 707, 415, 510, and 650. US Trade Online defines the Bay Area by the metropolitan statistical areas of San Francisco-Oakland-Fremont, San Jose-Sunnyvale-Santa Clara, and Napa.

Foreign: all countries and territories outside of the 50 United States.

Rest of Foreign: foreign countries excluding those in the definition of Europe.

SECTION 1

Gross Domestic Product (GDP) Annual Growth

Rate: Data covering annual GDP values is reported by the OECD's StatExtracts tool. Values are adjusted for inflation. The term, "European Union," as defined in this analysis includes 27 countries: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, Netherlands, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden and the United Kingdom.

Unemployment: Data covering unemployment in the "euro area" (or "eurozone") was provided by the International Monetary Fund's "World Economic Outlook Database." The International Monetary Fund staff estimated data for 2013. The term, "euro area", is defined as the 17 countries of Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, Netherlands, Portugal, Slovak Republic, Slovenia, and Spain.

Government Debt: Data covering government debt in the "euro area" (or "eurozone") was provided by the International Monetary Fund's "World Economic Outlook Database." The International Monetary Fund staff estimated data for 2013. The term "euro Area" is defined as the 17 countries Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, Netherlands, Portugal, Slovak Republic, Slovenia, and Spain.

SECTION 2

European-Born Bay Area Residents: Data covering current location of residence and place of birth is from the American Community Survey three-year estimates and the 2000 U.S. Decennial Census. Six European nations included in this report's definition of "Europe" were not reported in the data and were thus excluded. The combined reporting of the Czech Republic and Slovakia also includes survey respondents who claimed Czechoslovakia as their place of birth.

Educational Attainment Age 25 and Older: Data covering current location of residence, place of birth, and educational attainment is from the American Community Survey three-year estimates and the 2000 US Decennial Census. Data includes all residents of the "Bay Area" over the age of 25. The category "Some College" is a combination of the educational designations: "some college, but less than one year," "1 or more years of college credit, no degree," and "associate's degree."

SECTION 4

Occupational Share of Foreign-Born Talent: Data covering current location of residence, employment status, occupation, and place of birth is from the American Community Survey three-year estimates and the 2000 US Decennial Census. "All occupations" excludes unemployed respondents and any respondents under 14 years old.

Foreign-Born Talent in the Bay Area: Data covering current location of residence, occupation, and place of birth is from the American Community Survey three-year estimates and the 2000 U.S. Decennial Census. Six European nations included in this report's definition of "Europe" were not reported in the data and were thus excluded.

European-Born STEM Talent in the Bay Area: Science, Technology, Engineering, and Mathematics (STEM) professions are defined in terms of Census occupation codes (OCCP). These include all occupations with the three-letter prefixes CMM, ENG, SCI, and MED as well as four managerial professions: Computer & Information Systems Managers, Architectural & Engineering Managers (Engineering Managers before 2010), Medical & Health Services Managers, and Natural Science Managers.

Data covering current location of residence, occupation, and place of birth is from the American Community Survey three-year estimates and the 2000 US Decennial Census. The combined reporting of the Czech Republic and Slovakia also includes survey respondents who claimed Czechoslovakia as their place of birth.

Academic Achievement of STEM Workers:

Data covering current location of residence, occupation, educational achievement, and place of birth is from the American Community Survey three-year estimates and the 2000 US Decennial Census. The category "Some College" is a combination of the educational designations: "some college, but less than one year," "1 or more years of college credit, no degree," and "associate's degree."

Top Fifteen STEM Occupations: Data covering current location of residence, occupation, and place of birth is from the American Community Survey three-year estimates. Occupations that did not exist and had no comparable designation in both years were eliminated from the analysis.

SECTION 5

Bay Area Exports by World Region: The International Trade Association provides export data for predefined world regions based on the port region of origin. The port region for this analysis was the "San Francisco Bay Area," defined in the geographic definitions section of this appendix. "European Union – 27" excludes the Croatia, which joined in 2013. Dollar values were adjusted for inflation to the first half of 2013.

Individual US state goods and services exports to the EU as a percent of total services exports (2011, 2012): The Atlantic Council, the Bertelsmann Foundation, and the British Embassy in Washington provided these maps.

SECTION 6

Global Business Presence: Affiliate location data is provided by the Uniworld database. Business presence is measured as the number of regional affiliates by HQ country of origin. One European nation included in this report's definition of "Europe" was not reported in the data and was thus excluded.

European Business Presence: Affiliate location data is provided by the Uniworld database. Business presence is measured as the number of regional affiliates by HQ country of origin.

Global Firms with Affiliates in the Bay Area by Country and Industry: Affiliate location and primary industry data was provided by the Uniworld database. Industries were combined along broad NAICS category definitions. One European nation included in this report's definition of "Europe" was not reported in the data and was thus excluded. Undisclosed firms did not report an industry code in the Uniworld database.

SECTION 7

Patent Registrations: The US Patent and Trademark Office provided data covering patent registration, location, and category. Registration counts include utility patents whose first named inventor is from the Bay Area. The category Other includes patents categorized as Construction & Building Materials, Ammunition & Weapons, Nuclear, Apparel, Textiles & Body Adornment, Dispensing & Material Handling, Transportation/Vehicles, and Furniture & Receptacles.

Global Collaboration: Patent data was provided by the US Patent and Trademark Office, and consists of only utility patents. Analysis includes all patents with an inventor from the Bay Area, regardless of inventor number, and at least one from a foreign country.

European Collaboration: Patent data was provided by the US Patent and Trademark Office, and consists of only utility patents. Analysis includes all patents with an inventor from the Bay Area, regardless of inventor number, and at least one from a European country.

Patent Registrations by Technology Area (patents with Bay Area and European Co-Inventors):

The US Patent and Trademark Office provided data covering patent registration, location, and category. Registration counts include utility patents whose first named inventor is from the Bay Area. The Category "Other" includes patents categorized as "Construction & Building Materials," "Ammunition & Weapons," "Nuclear," "Apparel, Textiles & Body Adornment," "Dispensing & Material Handling," "Transportation/Vehicles," and "Furniture & Receptacles"

Patterns of Global Collaboration (2 graphs):

Patent data was provided by the US Patent and Trademark Office, and consists of only utility patents. Analysis includes all patents with an inventor from the Bay Area, regardless of inventor number, and at least one from a European country. Only the top 14 countries are reported in this analysis, ranked by total patent count.

SECTION 8

Private Equity and Venture Capital Investment Flows: Investment data from Thomson Reuters includes annual private equity and venture capital totals originating in the Bay Area and invested abroad as well as the totals invested in the Bay Area originating in Europe. Values have been adjusted for inflation to 2012 values using the Bureau of Labor Statistics Consumer Price Index.

SECTION 9

Sources of European Venture Capital and Venture Capital Funds Raised and Invested in Europe: The European Private Equity and Venture Capital Association provided data on capital raised and invested in Europe. Data on capital raised and invested in the Bay Area came from the National Venture Capital Association's 2013 Yearbook. Values are expressed in US dollars, converted from euros. The exchange rate as of February 18th, 2014 (1 euro = 1.38 US dollars) was applied for the calculation.

SECTION 10

Estimated Percentage increase in individual state exports to the EU post implementation of an ambitious TTIP: The Atlantic Council, the Bertelsmann Foundation, and the British Embassy in Washington provided this map.

Estimated increase in TTIP-reliant jobs by state (number): The Atlantic Council, the Bertelsmann Foundation, and the British Embassy in Washington provided this map.

FOOTNOTES

1. Shuman Declaration. European Union website. <http://europa.eu/about-eu/basic-information/symbols/europe-day/schuman-declaration/>
2. ECSC Treaty. European Union website. http://europa.eu/legislation_summaries/institutional_affairs/treaties/treaties_ecsc_en.htm
3. For greater detail, see the *History of the European Union*: http://europa.eu/about-eu/eu-history/index_en.htm
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32. In one example cited in recent testimony before the state legislature, a Dutch consortium exploring with the city and Port of San Francisco the introduction of electric water taxis and charging stations, when proposing to build a test platform for grid connection was required to seek approval from 10 federal agencies, 13 state agencies, in addition to the city and the Port, and to address issues raised by the Jones Act (cited above.) The process, if pursued to its conclusion, will require an estimated 5-8 years. In other examples, major European companies – notably BP, BT (formerly British Telecom), and Fresh & Easy have either divested much of their assets or pulled their operations out of state due to tax and regulatory concerns. See testimony of Consul General Bart van Bolhuis, Consulate General of the Netherlands in San Francisco, before the Senate Select Committee on California-European Trade, California State Legislature, July 2, 2013, pp. 17-18, and testimony of U.K. Consul General Priya Guha, pp. 43-44.)



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