SAN DIEGO METROPOLITAN EXPORT INITIATIVE

MARKET ASSESSMENT

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PREPARED BY

School of International Relations and Pacific Studies
University of California, San Diego

San Diego Metropolitan Export Initiative: Market Assessment

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Special Acknowledgements

Numerous partners throughout the region have come together to develop this document outlining an assessment of San Diego's export capacity.

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Executive Summary

The Brookings Institution recently selected San Diego as one of eight cities to participate in the Brookings Metropolitan Export Exchange Program. Since then, partners throughout the San Diego region have been working together with the Brookings Institution to develop a regional export strategy to boost the local economy and create jobs. The Core Team has conducted research on San Diego's export economy to support the development of a strategy using three methods: the Market Scan, the Market Survey, and Local Intelligence Interviews. This research focused on uncovering the strengths and weaknesses of the San Diego export economy by combining macroeconomic research with extensive input from local business leaders, representing both exporting and non-exporting organizations. The results of this effort were compiled into this document, the Market Assessment. These findings represent a key first step towards the development of the regional export strategy.

Key Findings – Market Scan

Exporting activities support 113,400 jobs in the San Diego metro area – ranking San Diego 18th in this category relative to the other top 100 metro areas in the U.S. However, the San Diego export economy has struggled to grow over the last decade. While San Diego's GMP (Gross Metropolitan Product) has grown slowly, exports have not kept pace. This is contrary to national trends, which have seen an increase in export intensity (export share of GDP). With this relative drop in export intensity, San Diego's competitiveness among other metropolitan areas is suffering. Although San Diego ranks 17th in total export value, GMP, and population size, it is only 55th in terms of export intensity.

San Diego's top export markets are comparable to the top export markets for the U.S.. The top three export markets – Canada, Mexico, and Japan – receive almost 30 percent of San Diego's exports. Over the past decade, exports from the San Diego region have shifted from a focus on Atlantic-based trade to Pacific-based trade. Exports to European markets have slowed while exports to Southeast Asia, East Asia, and Latin America have grown. China and Brazil have emerged as growing markets for San Diego's exports. Exports to China were resilient during the recession despite losses in exports almost everywhere else. In 2010, Brazil replaced Ireland as the 8th largest recipient of San Diego exports, bumping Ireland from the top ten.

San Diego's exports are concentrated within its top export industries – the top five industries account for almost 65 percent of all exports and the top ten industries account for nearly 90 percent. The leading goods export industries – Computer and Electronics, Transportation Equipment, and Chemicals – send over $7 billion of goods abroad. The leading service exports – Business Service, Royalties, and Travel and Tourism – provide services valued at nearly $4.5 billion.

Key Findings – Market Survey

The Market Survey produced key findings in areas including export barriers, infrastructure, and export assistance. The survey generated valuable insights into the decision – making processes and impressions of the San Diego business environment, for exporters and non-exporters of all sizes.

When asked about difficulties regarding engagement in export behavior and the decision to export, non-exporters provided very interesting information. Notably, costs were not identified as one of the top barriers to exports (only 6 percent of respondents identified it as such). The second and third barriers were U.S. protection and policy, and lack of professional and social networks. However, the most important barrier was the "other" category, at 55 percent. In this field, survey respondents wrote in their own explanations and the vast majority centered on this simple fact: companies will not engage with foreign markets when they lack information, either about specific business opportunities or even the general business environment.

Regional infrastructure can serve as a severe bottleneck to exporting practices, and the survey found that the three most important infrastructure types that need improvement are the airport, port, and cyber infrastructure. While the first two are commonly discussed within the San Diego context, the latter is relatively new to infrastructure discourse and the "Infrastructure" section of this report strives to make a convincing case for cyber infrastructure's importance – particularly within the San Diego context.

Lastly, inquiries regarding companies' experience and perceived importance of export assistance revealed two important facts. First, only about half of the exporters in the survey pool have received export assistance. Seeing the survey's strong representation of SMEs, this is a particular concern – they can benefit the most from export assistance programs. Secondly, the three most important export assistance types for respondents overall are Intellectual Property Protection, the Streamlining of Paperwork and Procedures, and Government Export Strategies. These results are consistent with the results found in the Local Intelligence Interviews, and the intellectual property protection issue resonates particularly well in San Diego. Leaders of an innovation economy that thrives on new ideas and their commercialization will want to protect those ideas to the best of their ability.

Key Findings – Local Intelligence Interviews

San Diego firms that export improve their bottom line by exporting. Increased sales, growth, and profits were the most frequent benefits enjoyed by exporting organizations across all 22 interviews. As a result, almost every interviewee noted that their organization was preparing for expansion of production, sales, or operations within existing markets and new markets within the next ten years. The focus of their planned expansion, in terms of the targeted markets, generally paralleled the results of the Market Survey.

Initial entry into exporting was either the nature of a business model, the "born global" concept, or the result of strategic planning after experiencing limitations on business growth within domestic markets for some time. While some firms grow into foreign markets over time, others are viable for international business from the beginning as a characteristic of their initial business model. Acquiring the necessary knowledge, professional talent, and foreign partners required extensive networking or support from export assistance providers. Interviewees cited their professional networks and business associations as the key source for export market information, often noting how their networks were pivotal to their initial entry into exporting. Export assistance providers offer services targeted at reducing the risk, costs, and challenges of entering foreign markets. Interviewees praised the benefits of these services. However, many were unaware that such services exist – consistent with the results of the Market Survey.

Interviewees offered suggestions to local leaders about the priorities for developing a San Diego regional export development plan. As a result of the limited capacity of the Port of San Diego and San Diego International Airport, goods exporters utilize infrastructure in Los Angeles – the Port of Long Beach and Los Angeles International Airport (LAX) – to transport their products. In addition, what was perceived as a fragmented approach to regional economic development – handled by dozens of entities without common goals, metrics, or cooperation – left organizations without a clear concept of the resources available to them. Coupled with a regional image heavily focused on tourism rather than business development, interviewees recommended the creation of a one-stop, full-service office for international business development. Throughout the course of both the Local Intelligence Interviews and the Market Survey, conversations and feedback from San Diego companies and executives provided key insight for the formation of this market assessment. Selected quotes are listed below:

"*Connecting to…opportunities [in China, Europe, and Latin America] requires networks and interaction with all kinds of different groups that go on trade missions… are involved in trade policies, and involved in infrastructure and development*" – The ability to enter into emerging markets is heavily tied to professional and social networks that provides exporters with key information.

"*You can see the potential of growth for China…it creates opportunities for US to produce goods to be exported. We have the capacity and we have the potential demand so it's created opportunities for us for exportation to a much higher degree.*" – An interviewee identified the potential growth opportunities in China.

"It's typical, duties, freight, inspections, more of the logistics part are the challenges … and it's not [impossible to overcome], it's just this fact you've got to figure out" – A company executive describing his difficulties in engaging with export practices.

"*Doing business in foreign countries, markets, requires a great deal of intelligence. In order to create an effective business plan and development strategy, you have to understand the country, and that takes a lot of time*" – A company citing the necessity of export assistance.

"*We've grown up with a worldwide management team…we are a San Diego-based global company that manufactures around the world and sells around the world*" – A company emphasizing its "born global" nature.

"*…got to have educational institutions that promote invention and exploration…and other organizations that …keep [schools and businesses] connected…and enable them to grow*" – This emphasizes the importance of San Diego's unique synergy with research institutions that drives innovation.

"*Many of our products have come from foreign markets. We have a technology that came [from overseas]. We have several products that have come from [overseas]. The inventor was there…*" –

This quote illustrates another company's approach to the "born global" philosophy, taking advantage of their presence in foreign markets to source talent to fuel company growth.

Introduction

The Metropolitan Policy Program, led by The Brookings Institution, has identified the metropolitan area as the heart of the American economy - a heart that serves as a lynchpin for research, innovation, human capital, trade and immigration – driving U.S. competitiveness in the global economy. This standing program focuses on not only mitigating the effects of the recession but also facilitating the shift of the U.S. from a debt-financed consumption-oriented economy to a more sustainable economic growth model – a sustainable model that seeks to be "fueled by innovation, powered by low carbon, driven by exports, [and] rich with opportunity."[1]

The Metropolitan Export Initiative (MEI) aims to gather grassroots information about the strengths and weaknesses of the metropolitan area export economy. These insights inform the creation of a customized Metro Export Plan (MEP) which seeks to apply the gathered market intelligence to develop export-oriented services and strategies that help local firms engage with international markets (find customers, research and development partners, supply chain, etc.). The MEP will also delineate specific policy reforms/suggestions to support the effective implementation of the plan.

In order to help assure a successful MEI and MEP, San Diego formed a Core Team comprised of local public, private, and academic institutions to assist in the direction and execution of the MEI and MEP. Because of San Diego's close-knit community and collaborative nature, the Core Team has credibility and extensive social capital.

The MEI is comprised of four primary components:

Market Scan

Graduate student researchers were recruited from the School of International Relations and Pacific Studies (IR/PS) at the University of California, San Diego in order to conduct a broad analysis on historic and economic trends in the San Diego metro area. Data for the Market Scan was gathered from the Brookings Export Nation, Metro Monitor, and other databases. This data served as a key component in the construction and understanding of San Diego's economic narrative (key industries, export markets, and growth trends) in creating the Market Survey and Local Intelligence Interviews.

Market Survey

Graduate student researchers, known as the Market Assessment Team, created an in-depth survey tailored specifically toward the San Diego metro area. In crafting the questions,

[1] *"About the Brookings-Rockefeller Project on State and Metropolitan Innovation." Brookings. The Brookings Institution, n.d. Web. 25 Mar. 2013.*

input and feedback were obtained from regional organizations with expert knowledge: World Trade Center San Diego; Unified Port of San Diego; San Diego County Regional Airport Authority; City of San Diego; U.S. Department of Commerce; San Diego Regional Economic Development Corporation (EDC); CONNECT; and others, as well as IR/PS academics with professional survey design expertise, in order to assure that the right questions were being asked in the right ways. This comprehensive approach to survey design sought to ensure best-practices data collection and interpretation. Qualtrics, a powerful web-based survey design tool, was used to create and distribute the survey. In order to achieve as close to a representative sample as possible, targets for industry responses were matched to San Diego's industry composition. In order to obtain the highest response rate possible, the Core Team leveraged its social capital to recruit approximately 40 large industry organizations and associations which served a critical role in the distribution of the Market Survey. They facilitated access to 15 companies for the survey pre-test period and assisted in the distribution of the final survey, culminating in 327 unique firm survey responses over the course of the survey period.

Local Intelligence Interviews

The Market Assessment Team created an extensive interview guide addressing both exporters and non-exporters, seeking to ascertain (1) individual business experiences in the San Diego metro area and (2) specific strengths and weaknesses of the San Diego export economy. Questions were crafted, taking input and feedback from regional organizations and well-versed academics, in order to ensure quality research. To effectively implement the Local Intelligence Interviews, a team of 12 IR/PS graduate students were trained as interview enumerators: that is, they were trained to properly conduct a semi-structured interview using the interview guide created through the process above. Again, the Core Team utilized its social capital to increase the effectiveness of the Local Intelligence Interviews – to gain audiences with C-level executives. In these interviews, the Core Team member would introduce the trained IR/PS graduate researcher who would conduct the 30-60 minute interview. The interviews were conducted with a particular emphasis on data-collection. As such, responses were recorded and later transcribed for the purpose of content analysis (See "Local Intelligence Interviews" for more detail).

Market Assessment

This data-driven market assessment is the culmination of data gathered in the Market Scan, Market Survey, Local Intelligence Interviews, and additional research. This document will detail the strengths and weaknesses of the San Diego export economy as revealed through analysis on the gathered data (for information regarding the data, see the *Data* section below). Historical and current research will further highlight the region's export performance and potential. Export potential focuses on not only industry and sub-sectors, but also export markets (country destination), tracking recent growth and downturns. The information presented here will inform the Metropolitan Export Plan (MEP).

Data

Data for this Market Assessment was compiled from a wide variety of sources including, but not limited to, the Brookings Export Nation database, Bureau of Economic Analysis, Bureau of Labor Statistics, Census Bureau, and the San Diego Association of Governments (SANDAG). Other sources include various industry and regional reports. All data values used were measured in "real" terms – unless otherwise stated – in order to assure that any analytics are unbiased by general changes in prices over time (inflation).

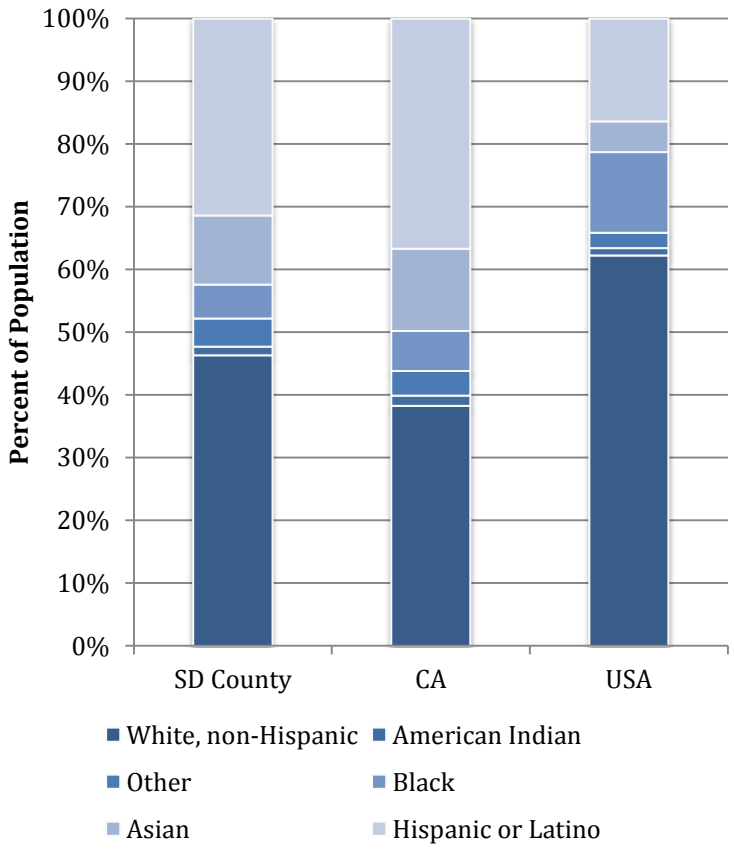
Rationale for Exports

Regional leaders have recently convened to develop a comprehensive economic development plan for the San Diego metropolitan area. Based on the three traded economies of the greater San Diego region – innovation, military and tourism – a coordinated effort to retain, expand and attract talent, financing, and companies has been developed to maximize the region's economic prosperity and global competitiveness. Regional leaders demonstrate a deep-rooted understanding of the necessity of a globally competitive economy to San Diego's economic prosperity – and the role exports play in the successful creation of such an economy. A region-wide export plan has been called for and prioritized by local elected officials, business leaders, innovators, residents, and leading academic research institutions.

Geography and Demographics

As a metropolitan region with a 2012 estimated population of 3.2 million[2], San Diego is ranked as the fourth largest metropolitan region in California, and 17th in the United States[3]. Visual observation of the racial diversity in San Diego County (metro region data is not available) demonstrates a population distribution similar to the state of California. Understanding the influence human capital can have on international trade, the racial diversity seen in San Diego makes a strong case in favor of San Diego's global market engagement potential. Looking further, San Diego's Hispanic/Latino, Asian, and multiracial populations are larger than national counts (1.9x, 2.3x, and 1.8x respectively) – demonstrating potential for even further growth by strategic engagement with these populations.

Figure 1: San Diego Demographic Composition by Race, 2011



2 "QuickFacts: San Diego (county)." State & County QuickFacts. US Census Bureau, n.d. Web. 26 Mar. 2013.
3 "State of Metropolitan America Indicator Map." Brookings. The Brookings Institution, n.d. Web. 26 Mar. 2013.

With respect to geography, San Diego's location on the West Coast and shared border with Baja California, Mexico, provides a unique geographic position to expand trade with the Pacific Rim. According to EDC, "these geographic and demographic advantages, when combined with the region's globally competitive economic drivers – innovation, tourism, education and military industries – provide a unique opportunity for a dedicated export plan."

Competitive Global-Orientation

Technology

Recognized as one of the leading technology hubs in the U.S., San Diego's innovation economy is anchored by established life science, communications, cleantech, software, and maritime industries. The businesses are fueled by a collaborative culture and sophisticated support systems focused on commercializing research and growing entrepreneurial, knowledge-based companies. The region's innovation economy continues to emphasize the importance of a "born global" philosophy to ensure globally connected and globally competitive products and services.

Military

San Diego is home to the largest concentration of military in the U.S. with more than 60 percent of the ships in the U.S. Navy and more than one-third of the combat power of the US Marine Corps.[4] The defense industry includes leaders in unmanned vehicles, robotics, cyber security, command and control systems, surveillance and sensors, and shipbuilding – synergizing well with the innovation economy in San Diego and ultimately representing one out of every four jobs in the region.[5] Given the importance of this sector, the recent sequestration presents a great threat to the San Diego metro area. Consequently, local firms are increasingly looking for new markets to sustain growth.

Tourism

The tourism (convention and visitor) industry is the largest employment industry cluster in San Diego. With more than 30 million people visiting San Diego each year, the region is one of the top 10 visitor and meeting destinations in the U.S., with a growing sub-sector focused on arts and culture. Many of San Diego's innovators, thought leaders, entrepreneurs, and current residents first visited the region as a tourist or convention delegate.

Education

San Diego's six universities and more than 80 research institutes conduct groundbreaking research, train the region's workforce, and provide the critical human capital and technology infrastructure that enables the region to compete for investment and jobs on a global level.

4 San Diego Military Economic Impact Study, April 2011 San Diego Military Advisory Council (http://www.public.navy.mil/spawar/Press/Documents/Publications/2011_SDMAC.pdf)
5 IDIB

Existing Initiatives

To leverage its unique border location, the San Diego region is championing a bi-national global competitiveness strategy in the Southern California-Baja (Mexico) border region. Driven by existing networks of business leaders, community leaders, and organizations that work together on a bi-national basis, the CaliBaja Bi-National Mega- Region initiative is a public-private partnership that is focused on attracting and expanding four targeted industry sectors: cleantech, applied biotechnology, specialized manufacturing, and logistics.

The Unified Port of San Diego focused their 2012 Strategic Plan on balancing their prominent import cargo with their export cargo. With increased infrastructure and strategic export planning, the Port is working to increase their volume and provide additional economic impact to the region.

The San Diego County Regional Airport Authority (SDCRAA) has proactively worked to increase global access to the San Diego market over the last several years. Most recently, SDCRAA has added direct service to London and Tokyo. Not only does this increase San Diego's opportunity to exchange passengers for business and tourism investments, but provides the region with increased cargo lift into and from the San Diego region.

Future growth of the region's innovation economy, the lifeblood of San Diego's economy, will be contingent upon access to new markets. Much of the region's international effort in recent years has been led by organizations such as BIOCOM, The Maritime Alliance, CONNECT and Global CONNECT. BIOCOM, for example, has led initiatives throughout the Pacific Rim to open new markets for the region's life science community. A new BIOCOM China Office is planned to support the opportunities available to San Diego and Orange County companies. Frequent travel by the BIOCOM leadership to the Asia-Pacific and beyond has established a strong foundation from which to build.

The San Diego Case

San Diego has never been in a more ideal situation to develop and implement a regional export strategy. Its Pacific location will allow the region to lead the country's interests in harnessing the Pacific Rim's growth and dynamism. What has been called "America's Pacific Century" provides San Diego with unprecedented opportunities for investment, trade, and scientific research and development. To do this, the region intends to build upon successful public – private partnerships to strengthen its global competitiveness. The City of San Diego, San Diego County Regional Airport Authority, Unified Port of San Diego, World Trade Center San Diego, BIOCOM, Tijuana Economic Development Corporation, University of California, San Diego, CONNECT, San Diego Regional Chamber of Commerce and EDC are currently working in concert, as the San Diego Core Team, which will develop an overall international business strategy for San Diego's growing industry clusters.

Market Scan

Metro Area Economy and Performance

Gross Metropolitan Product (GMP) and Population

San Diego's regional real GMP has grown steadily over the past decade at about 2.3 percent annual growth and rebounded in 2010 to levels above those in 2006. According to the most recent data available from the Bureau of Economic Analysis, GMP was $155 billion in 2010.[6]

Figure 2: San Diego GMP, 2001-2010

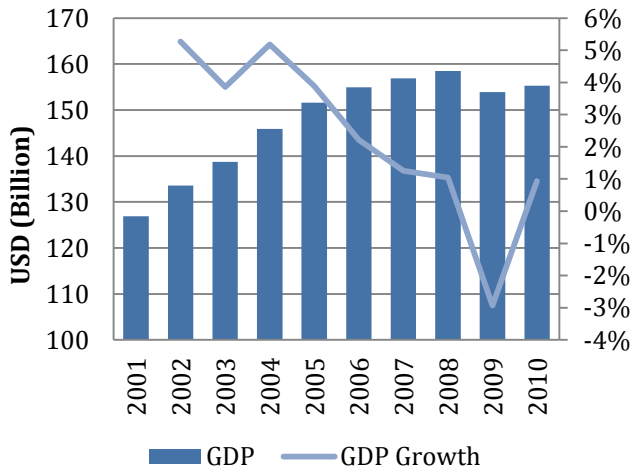
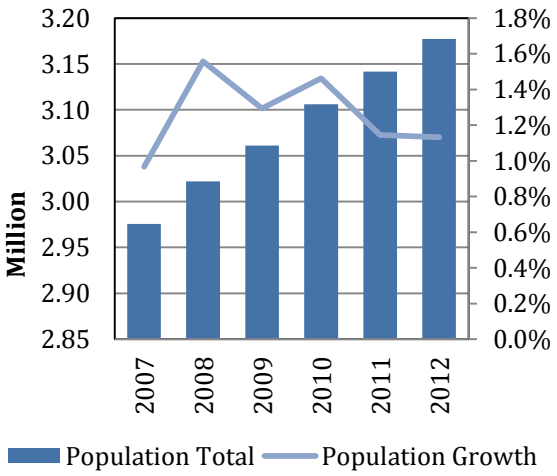


Figure 3: San Diego Population, 2007-2010



>> 2010 Rank
17th Largest Economy by GMP | 17th Largest Metro by Population[7]

Recent Changes in GMP by Industry

San Diego's most competitive industries, as indicated by their location quotients,[8] have been growing rapidly in the last year.[9] When compared to the national economy, San Diego's relatively high concentration of business activity in real estate, business services, tourism, information, and government activity offer the region a competitive advantage. These

6 www.bea.gov/newsreleases/regional/gdp_metro/2013/gdp_metro0213.htm
7 www.brookings.edu/research/interactives/state-of-metropolitan-america-indicator-map
8 "A location quotient is defined as the metro area share of total output (gross output) in a given industry divided by the comparable national share. Values greater than one demonstrate a greater than national average concentration, taken to indicate specialization. The location quotients presented here are for the first quarter of 2012." – See footnote 11
9 www.brookings.edu/research/interactives/metromonitor#M41740-recovery-overall-mv

industries have continued to grow since the recession and have maintained their competitiveness relative to the national economy.

Data on the San Diego metro region's industry categories reveal an underlying pattern of productivity that can provide insight for crafting the region's export growth strategy. The pattern lies within disproportionate industry shares of employment relative to industry share of output (measured as GMP). As an example, trade and tourism employs 25 percent of the

Table 1: San Diego Metro Output Changes by Industry, 2012

Industry	Location quotient	Change, last four qtrs.	Change, most recent qtr.
Manufacturing	0.74	5.10%	0.90%
Mining (including oil and gas)	0.06	3.30%	0.60%
Education	0.87	1.70%	0.50%
Health services	0.79	4.30%	0.50%
Construction	0.97	2.00%	0.30%
Professional and business services	1.38	0.00%	0.30%
Trade, transportation, and utilities	0.82	1.60%	0.00%
Leisure and hospitality	1.2	1.40%	0.00%
Other services	0.9	-0.30%	-0.10%
Information	1.17	3.90%	-0.20%
Government	1.1	2.10%	-0.20%
Agriculture, forestry, and hunting	0.49	-1.40%	-0.30%
Finance and insurance	0.66	0.90%	-0.30%
Real estate and rental and leasing	1.55	2.40%	-0.30%

Figure 4: GMP by Industry Category, 2012

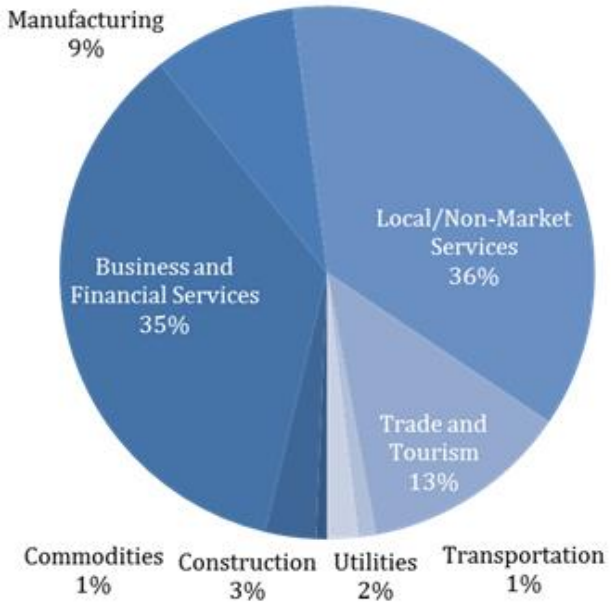
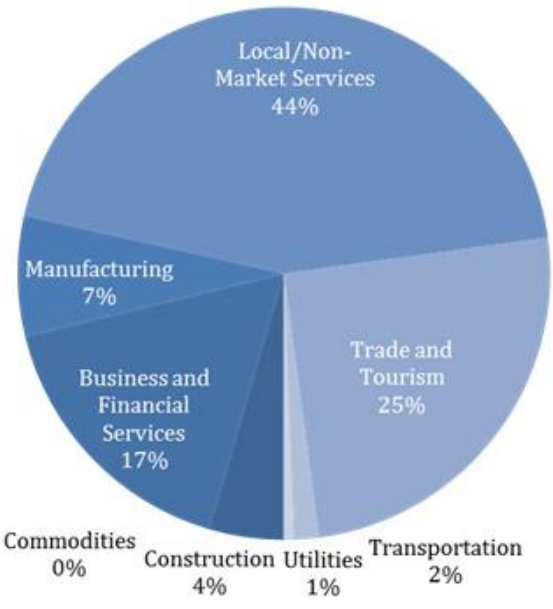


Figure 5: Employment by Industry Category, 2012



region's labor force but disproportionately produces only 13 percent of its output. (See Exhibit 2 for the industries within each industry category[10]). As a base measure of per capita productivity, the average value that each worker contributes to the local economy, workers in Trade and Tourism are less productive relative to other industry categories. Compare this to Business and Financial Services, whose share of employment is 17 percent. This industry category is responsible for 35 percent of San Diego's GMP. When simplified and rounded, the average employee in Business and Financial Services is four times more productive than the average employee in the Trade and Tourism industry category.

This productivity pattern implies that the greatest returns to jobs created will come from growth in industries with high productivity. High productivity jobs, in turn, are high-paying (See Figure 4). When crafting the region's export plan, the average productivity of targeted industries should be an important point of consideration.

The local/non-market services category requires special attention. Although the industries within this category can be found in Exhibit 2, comprehensive data at the industry level is not publicly available from an authoritative source within these industry categories. Instead, the Market Assessment team relied on various sources, piecing together data to assemble a more cohesive picture of the San Diego metro economy (visible here and throughout this paper).

Among these sources is the *San Diego Business Journal*. It publishes the annual "Book of Lists" which ranks, among other things, the top employers in San Diego County. The 2012 list placed government employers (U.S. Department of Defense, Federal, State, UC San Diego and County) among the top six largest employers with only Sharp HealthCare (7th), Scripps Health (8th), and Qualcomm (10th) breaking the top ten. The local/non-market services category includes the defense industry. Two of the region's top 20 employers (seven of the 20 are private firms) fall within this industry including General Atomics (13th) and Northrop Grumman (19th). It is apparent that this industry category is far-reaching and includes many of the anchor institutions viewed as pivotal to the San Diego metro economy.

Recession Performance and Recovery

As part of the Brookings Metro Monitor program, Brookings has tracked the recovery of the top 100 metros in the wake of the recession.[11] Using four key indicators (employment, unemployment, output, and housing prices) and national averages for these indicators, it is possible to track metro level recovery. The following figures, extracted from Metro Monitor 2013, demonstrate San Diego's recovery for each indicator from its trough, or lowest point, through the publication of the data. The data is collected quarterly and each metro region is subsequently ranked by each indicator. An overall ranking is also assigned. For San Diego, this overall rank can fluctuate considerably from quarter to quarter. In the most recent publication, San Diego ranked 27th overall versus 34th in the prior quarter.

10 http://www.brookings.edu/~/media/research/files/reports/2012/11/30%20global%20metro%20monitor/ 30% 20global%20monitor.pdf

11 www.brookings.edu/research/interactives/metromonitor#M41740-recovery-overall-nv

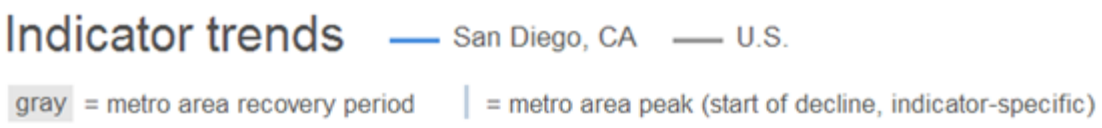
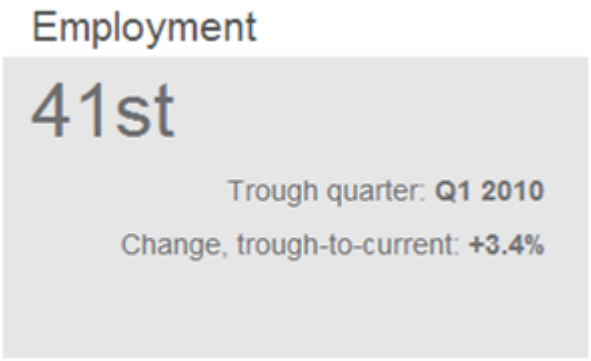


Figure 6: Total San Diego Metro Jobs, 2004-2012



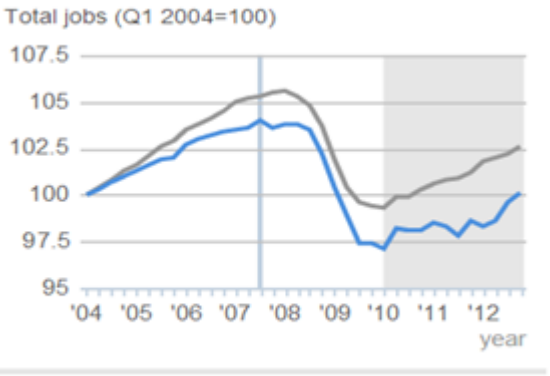
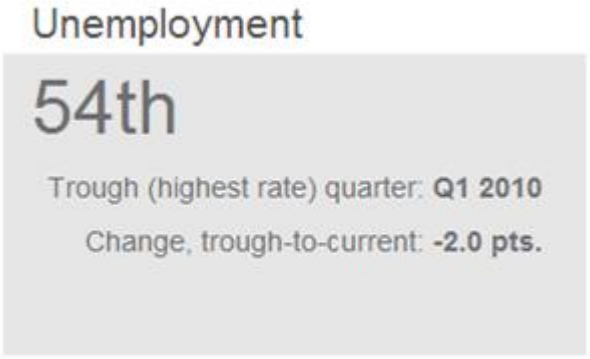
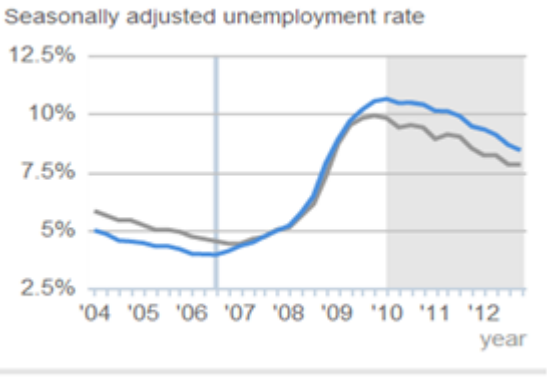


Figure 7: San Diego Metro Seasonally Adjusted Unemployment Rate, 2004-2012





Although San Diego's employment recovery has tracked national trends, it lags behind significantly. Both figures above reinforce this point; Figure 6 shows a metropolitan area systematically below national recovery levels and Figure 7 above average unemployment. Both indicators tell a simple story: San Diego is underperforming.

In the case of employment, San Diego has only just recovered to 2004 levels, a point that the national economy surpassed during San Diego's trough in early 2010. In other words, San Diego's economy has added zero net jobs since 2004. Neither San Diego nor the U.S. as a whole has fully recovered to pre-recession peak employment levels.

Unemployment rates have also exceeded the national average in the post-recession period after remaining lower than the national average from 2004-2007. Notably, the gap has been steadily closing since San Diego's peak unemployment rate at almost 11 percent in early 2010.

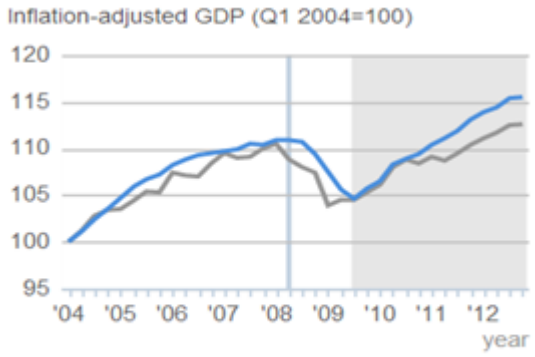
Output (GDP)

18th

Trough quarter: **Q3 2009**

Change, trough-to-current: **+10.4%**

Figure 8: San Diego Metro Real GDP



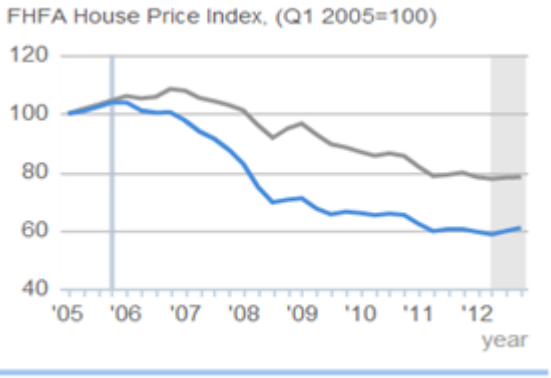
House prices

28th

Trough quarter: **Q2 2012**

Change, trough-to-current: **+1.8%**

Figure 9: San Diego Metro FHFA Index



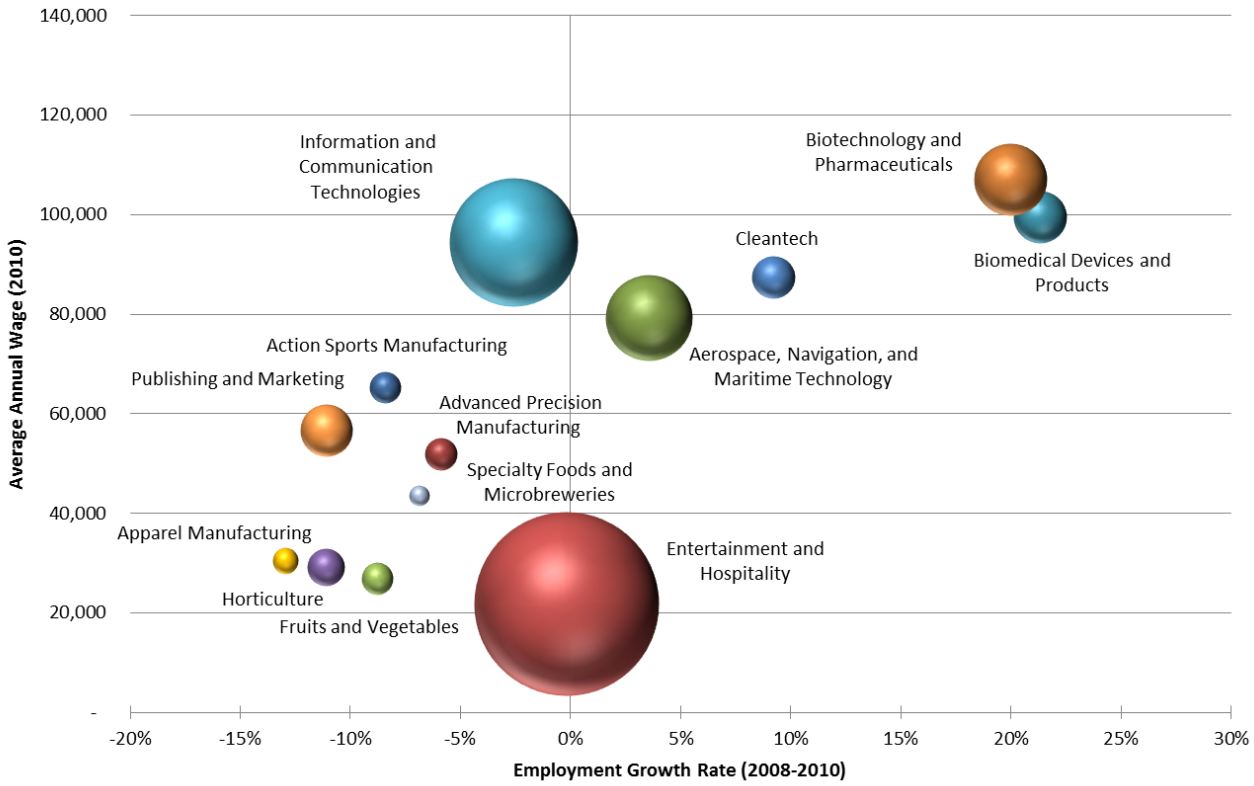
Among the four indicators, San Diego's output recovery is the only trend outpacing the national average. Since its lowest point at the end of 2009, San Diego's regional economy has recovered by 10.4 percent compared to approximately 6 percent national average recovery. This 4 percent difference may not appear significant, but it is, in fact, quite large. This 4 percent translates into approximately $8.8 billion above the national average and a total of $21 billion in total GDP recovered since the 2009 trough.

Housing prices, conversely, have not yet begun to recover. Small growth since the deepest trough in 2012 might not be a sure sign of recovery just yet. Even so, San Diego's housing prices have been shrinking since before the onset of the recession, peaking toward the end of 2005. Any positive growth, such as the small amount reported here, is more likely a result of a quarterly variation than a true sign of housing price recovery. This downward trend in housing prices reflects the national trend. In San Diego, however, housing prices have deflated more rapidly compared to the national average.

Metro Area Industry Clusters

As part of the business culture in San Diego, industry clusters rather than industry categories are the common unit of industry aggregation. Figure 10 was replicated from employment and wage information from SANDAG's "Current Employment Inventory" (2010) with the corresponding data in Exhibit 5. San Diego's top thirteen industry clusters are defined in the appendices of its "Traded Industry Clusters in the San Diego Region" report and account for 27 percent of total employment in the San Diego metro region.[12] The industry clusters were identified using a cluster analysis method resulting from the 1998 Regional Economic Prosperity Strategy (REPS)[13] and are updated regularly by SANDAG as new clusters are identified.

Figure 10: Trade Industry Cluster Employment and Wages, 2008-2010



Note: Bubble size represents total industry employment

Figure 10 above plots the x-axis with employment growth from 2008-2012, the y-axis with average annual wage (in 2010 dollars), and the size of the bubbles with overall employment. Advanced Precision and Manufacturing marks the average employment growth rate as well as the average annual wage, using it as a reference point, it is possible to divide the chart above into four quadrants.

12 www.sandag.org/uploads/publicationid/publicationid_1715_15318.pdf
13 http://www.sandag.org/uploads/publicationid/publicationid_604_1005.pdf

Numbering the quadrants by moving counter-clockwise from the top right: quadrant 1 contains the industry clusters with above average employment growth and above average annual wage, quadrant 2 contains the industry clusters with below average employment growth and above average annual wages, quadrant 3 contains the industry clusters with below average employment growth and average annual wage, and quadrant 4 contains the industry clusters with above average employment growth and below average annual wages. See Exhibit 4 for a quadrant by quadrant categorization of the 13 industry clusters identified above. The following analysis represents a summary and synthesis of SANDAG reports on these regional industry clusters.[14]

Using the metrics of cluster employment growth and average annual wages, it is easy to see the five leading clusters in San Diego: Biotechnology and Pharmaceuticals; Biomedical Devices and Products; Cleantech; Aerospace, Navigation, and Maritime Technology; and Information and Communication Technologies.

Biotechnology and Pharmaceuticals has an average wage of $107,000 (highest average wages in SD), and captures 50 percent of the venture capital invested in San Diego. This cluster demonstrated significant job growth (about 4,000 additional jobs or 20 percent growth) between 2008 and 2010. With an average annual wage of $99,500, Biomedical Devices and Products is the second highest paying industry cluster in the San Diego metro area. It also attracts a large amount of venture capital ($72 million) and garners $80 million in federal procurement contracts (2011). This cluster has the highest employment growth (21 percent) for the calculated time period.

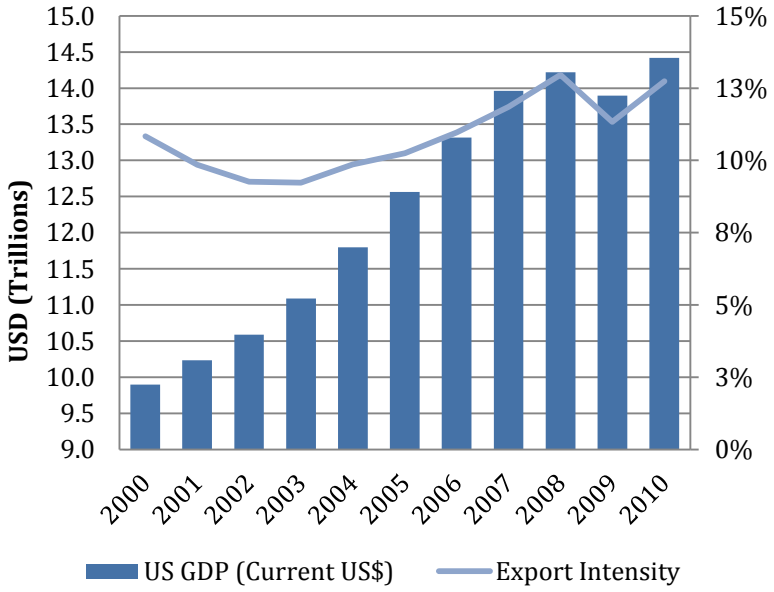
These two clusters are primarily comprised of SMEs that benefit from technology coming out of San Diego's large research institutions - a synergetic quality that is critical to San Diego's economic success. Of the top five employment clusters within SANDAG's industry clusters, the two most rapidly growing and highest paying clusters only make up 12 percent of employment. Other notable clusters include the Aerospace, Navigation, and Maritime Technology and the Entertainment and Hospitality cluster. The Aerospace, Navigation, and Maritime Technology cluster is primarily driven by the military presence in San Diego, with government contracts totally $3.4 billion, making it the largest recipient of government funds in the San Diego region. Entertainment and Hospitality is the largest employer by industry at approximately 150,000 jobs (2010) with 16 million visitors spending $6.7 billion in 2011. However, despite being the largest employer, Entertainment and Hospitality is also one of the lowest paying industry clusters in San Diego, at approximately $20,000 annually.

[14] *See http://www.sandag.org/?fuseaction=publications.alphalist*

U.S. and Global Export Trends

The national economy has been growing steadily at an average of 3.86 percent for the period from 2000 - 2010, despite the 2009 dip (GDP measured in current US$)[15]. In the 11-year period, this growth added a total of $4.5 trillion in value. Exports comprised an increasing portion of this growth. Export intensity, measured as total exports as a share of GDP, increased by 3.52 percent from its low point in 2003 at 9.23 percent through 2010 at 12.74 percent[16].

Figure 11: U.S. GDP and Export Intensity, 2000-2010



What is a U.S. Export?

The definition of an export is important for understanding how exports are accounted for within national and/or metro region metrics. This parsimonious description, written by Emilia Istrate, Jonathan Rothwell, and Bruce Katz of Brookings, captures the three largest categories – goods, services, and royalties – and provides simple examples of each.[17]

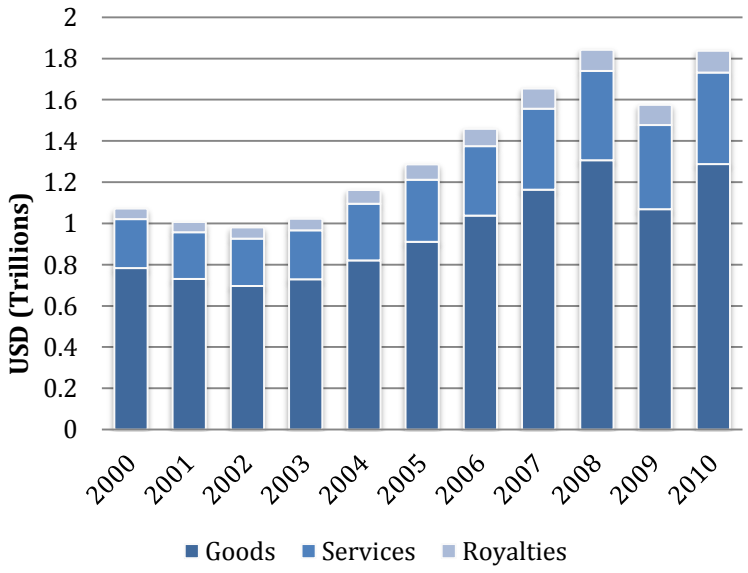
> "A U.S. export is the sale of a good or service made in the United States to a person or business residing in a foreign country. To provide a common example, in 2008, 376,780 automobiles made in the United States left the Port of New York-New Jersey destined for places like Germany, France, the United Kingdom, and China. Service exports are not always as obvious. If a

15 data.worldbank.org/indicator/NY.GDP.MKTP.CD/countries?page=2
16 www.census.gov/compendia/statab/cats/foreign_commerce_aid/exports_and_imports.html
17 www.brookings.edu/~/media/research/files/reports/2010/7/26%20mountain%20exports%20muro/0726_exports_istrate_rothwell_katz.pdf

Canadian residing in Canada takes a trip to Rochester, NY, she generates U.S. exports to Canada for each dollar she spends in Rochester—on things like taxis, restaurants, entertainment, clothing, and lodging. The expenditures of foreign students studying in the United States are education exports for the United States. The payments made by people and companies from outside of the United States to U.S. companies or individuals for the right to use their patents, trademarks, or copyrights are U.S. exports of royalties.
What makes something a U.S. export is not where the transaction takes place, but whether or not the buyer is outside the United States. For example, if a U.S. company sells goods or services to its subsidiary in India or to an Indian business in India, it sends U.S. exports to India in both cases. This notion of a U.S. export focuses on international trade, which is a subset to the broader definition of an export sector or traded sector in a metro area."

As exports have grown as a share of U.S. GDP, their composition has changed as well. U.S. exports of goods demonstrated the largest gains in both value added and average annual growth.[18] By these measures, growth in goods exports expanded by $5 billion or 27.3 percent. Export of services provided by U.S. businesses also grew. Services exports growth of 12.4 percent contributed $2 billion to the nation's economy during the 2000-2010 period. The third category, royalties, is not commonly thought of as an export. Royalty exports as described above are "the payments made by people and companies from outside of the United States to U.S. companies or individuals for the right to use their patents, trademarks, or copyrights." This category, sometimes lumped together with services, is a substantial portion of total U.S. exports (5.7 percent in 2010) and is becoming increasingly important. From 2000 to 2010, royalties grew by 13.1 percent, adding $537 million in value to the U.S. economy.

Figure 12: Composition of US Exports by Export Type, 2000-2010



[18] *www.census.gov/compendia/statab/cats/foreign_commerce_aid/exports_and_imports.html*

Top Ten Export Markets in 2011

Nationally, the United States' two closest neighbors are also our largest export markets.[19] Of the $2 trillion in exports in 2011, Canada and Mexico received a substantial percentage (23.6 percent) totaling $478.3 billion. The North American Free Trade Agreement (NAFTA) is considered the primary driver of this trend. According to the Office of the U.S. Trade Representative, exports to NAFTA partners increased by 190 percent from 1993 to 2010[20]. Another regional trade agreement, the Trans-Pacific Partnership (TPP) is expected to increase trade between the U.S. and member states in Southeast Asia, East Asia, and the Australian continent.[21] Despite the benefits of reduced barriers to trade, such regional trade agreements are criticized for diverting trade from one country to another, rather than effectively increasing the total trade between Free Trade Agreement (FTA) and non-FTA partners. [22]

Table 2: Top Ten U.S. Export Markets by Total Exports, 2011

	Country	Total Exports USD (Billion)	% Growth 2010-2011	Average Annual Growth 2000-2011
1	Canada	280.8	12.7%	4.2%
2	Mexico	197.5	20.8%	5.3%
3	China	103.9	13.1%	18.4%
4	Japan	66.2	9.4%	0.2%
5	United Kingdom	56	15.6%	2.7%
6	Germany	49.1	2.0%	4.8%
7	South Korea	43.5	12.0%	4.1%
8	Brazil	42.9	21.2%	9.8%
9	The Netherlands	42.8	22.6%	6.3%
10	Hong Kong	36.5	37.4%	8.7%

Identifying the key opportunities and challenges for SMEs is a core theme of this market assessment. At the national level, there is strong evidence to support that small and medium-sized enterprises are expanding their presence in foreign markets. From 2000 to 2010, SMEs have increased their share of U.S. exports from approximately 5 percent (from 29 percent to 34 percent), while U.S. exports grew by $5 billion.[23] This implies that SMEs added approximately $250 million in new export value during the same period.

During the January 2011 meeting of the NAFTA Commission, the chairs held a robust discussion on the experiences of small- and medium-sized enterprises (SMEs) in North America. The report concluded, "When such businesses begin to export, they are most likely to

19 www.uschina.org/public/exports/2000_2011/2011-us-exports-top-10-markets.pdf
20 http://www.ustr.gov/trade-agreements/free-trade-agreements/north-american-free-trade-agreement-nafta
21 http://www.ustr.gov/tpp
22 http://dspace.cigilibrary.org/jspui/bitstream/123456789/704/1/An%2520Econometric%2520Analysis%2520of %2520Trade%2520Diversion%2520under%2520NAFTA.pdf?1
23 www.trade.gov/publications/pdfs/nes2012.pdf

make their first exports to a NAFTA partner. We discussed ways to help SMEs take advantage of the export opportunities that the NAFTA provides."[24]

Figure 13: SME Share of Total U.S. Export, 2000-2010

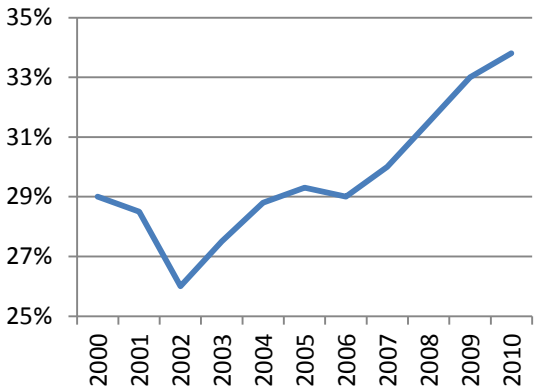
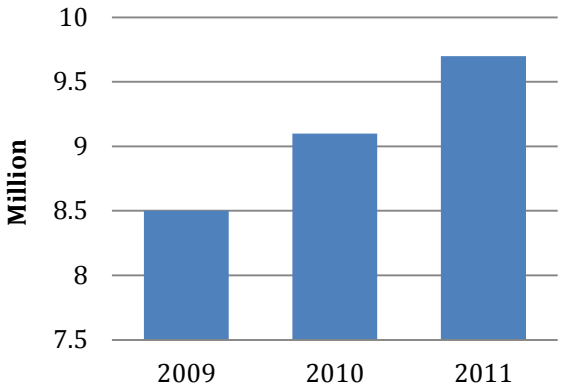


Figure 14: Total Jobs Supported by U.S. Exports, 2009-2011



The positive impacts of export growth are not limited to the revenues enjoyed by industries directly responsible for producing exported goods, service, and royalties, but also include the jobs that these and export-supporting industries create. At the national level, this translates into 9.7 million jobs in 2011.[25] From 2009 to 2011, export-supported jobs have grown by 14.1 percent adding 1.2 million jobs in just two years.

24 http://www.ustr.gov/about-us/press-office/press-releases/2011/january/joint-statement-january-10-2011 -meeting -nafta-free

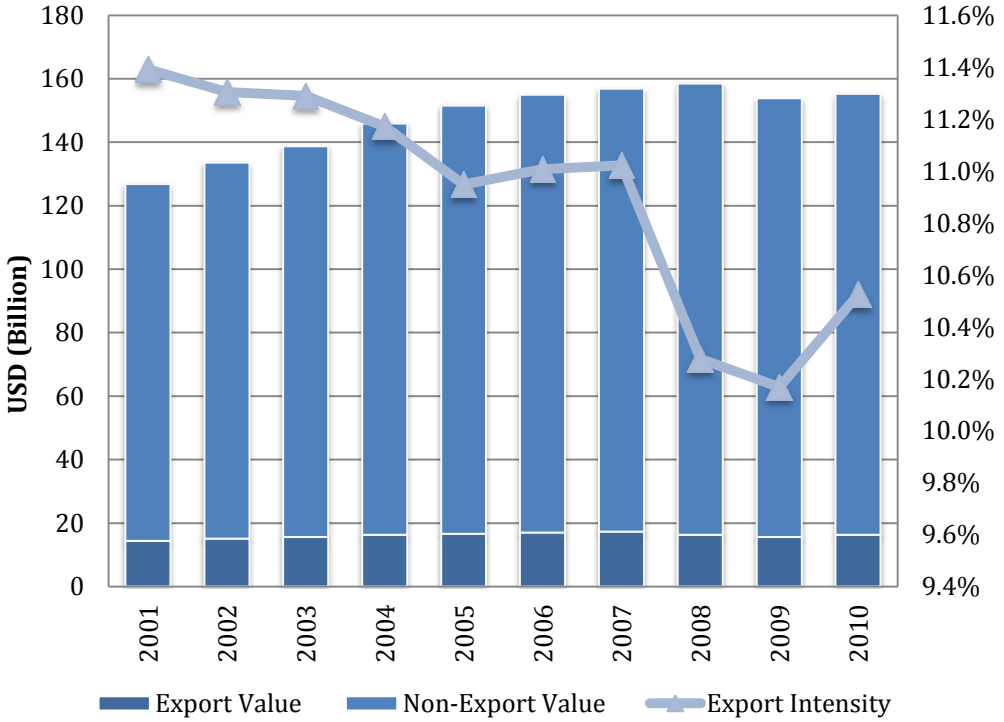
25 *www.trade.gov/publications/pdfs/nes2012.pdf*

Regional Export Economy

Overview

San Diego's export economy has struggled to achieve significant growth for almost a decade. Its regional GMP has grown faster than its exports, causing regional export intensity to drop, especially relative to the top 100 metros reviewed under Brookings' Export Nation. Export growth, measured by value added, is highly concentrated in a small number of industries and only a handful of foreign markets. Overall, the export economy has grown only 1.44 percent year over year on average from 2001-2010. Pre-recession (2001-2007) growth was more robust at an average of 3.04 percent but the sharp contraction in exports during 2008 (-5.78 percent) and 2009 (-3.97 percent) produced average growth of 1.44 percent over the decade. At the close of 2010, total exports were up only 13.0 percent from 2001, gaining a total of $1.8 billion.

Figure 15: San Diego GMP by Export Composition and Export Intensity, 2001-2010



The Brookings' Export Nation project assembled export metrics for metropolitan regions across the U.S. and subsequently ranked the top 100 U.S. metropolitan regions. This data serves as the basis for much of the information herein.

Overall Export Value, Intensity, and Growth

Although San Diego's export value rank is perfectly in line with its GMP and metro population (all ranked 17th - See Figure 2), its export share of GDP is considerably lower than comparable cities.[26] Similarly, its post-recession recovery was less robust than other cities with similar-sized export economies, as evidenced by its rank in export growth rate (46th). This relatively low export intensity implies that San Diego's economy is either disproportionately composed of non-tradable goods or services or brimming with latent export potential. Given the size of the regional economy, increased exports would greatly benefit both overall GMP as well as export intensity.

At first glance, one might attribute the low share of GDP to the large military presence in the region. San Diego metro's export intensity may improve in relative terms if we consider GMP outside the military sector. The San Diego region is the largest recipient of federal military funding in the country – direct contributions to local uniformed military installations totaled $10 billion, or 6.5 percent, of GMP in 2009. This figure is small in comparison to estimates by the San Diego Military Advisory Council that consider the overall economic impact of the military's presence in San Diego.[1] Their report considers defense contract spending and supplemental effects, placing total defense-related spending at $19 billion or 12.3 percent of GMP in 2010.

While this impact on the economy is quite large, it is unclear just how much these estimates contribute directly to exports. At least some, if not a significant portion, of defense-related spending could result in exported goods, services, or royalties. Without further details, one can only re-estimate San Diego's export intensity without the influence of the military. This exercise theoretically elevates San Diego's export intensity to 10.9 percent in 2009 and 12.0 percent in 2010 with direct defense and defense-related spending subtracted from GMP respectively. This would raise San Diego's rankings to 41st for 2009 and 21st in 2010. Without specific data on defense-related spending and its impact on San Diego's export economy, there is at least minimal evidence to suggest that the military's large presence in the San Diego economy deflates the measurement of its export intensity.

While San Diego's federal military funding receipts might constitute a large non-traded portion of the regional economy, many other U.S. metros have similar non-traded sectors. Consequently, the adjustments to export intensity rankings above are relevant to the respective yearly rankings as they stand without considering the non-traded sectors of other metro economies. In any case, San Diego's unfavorably low export intensity ratio is cause for concern. This weakness is particularly important because national export intensity is on the rise. Looking forward, the U.S. domestic economy will become increasing comprised of trade, both exports and imports.

26 www.brookings.edu/~/media/Research/Files/Reports/2012/3/08exports/profiles/metros/San_Diego.pdf

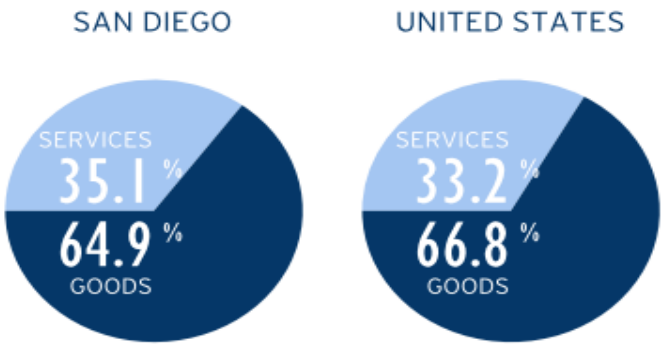
Export Supported Jobs

Similar to the national economy, San Diego's local economy also benefits from exports via job creation. Brookings divided such jobs into two categories: direct export-production (direct) and indirect export-supported (indirect). In the San Diego region, 65,500 jobs in the regional economy are direct, accounting for 4.7 percent of all regional jobs. Indirect export-supported jobs totaled about 47,900 jobs, or 3.4 percent of all regional jobs. In total, exporting activities support 113,400 jobs (8.1 percent) in the San Diego metro area. When compared to other metro areas, San Diego ranks 17th for direct and 18th for indirect export jobs, nearly identical to its rankings in GMP, population, and export value.

Goods and Services as a Share of Total Exports

The distribution of exports between goods and services in San Diego follows the national trend. There is only a minimal 2 percent discrepancy between San Diego and the U.S. average. Using the concept of location quotients, this suggests that San Diego has a relatively small specialization in services (shown below). When compared to the metro region of San Jose (not pictured), with exports comprised of 25.2 percent of services and 74.8 percent of goods, we find a considerable specialization in goods with an 8 percent deviation from the national average. San Diego and San Jose have seen double-digit growth from 2009-2010 in the Computer and Electronics industry, their respective top export industry.

Figure 16: San Diego Metro and U.S. Export Composition by Export Type



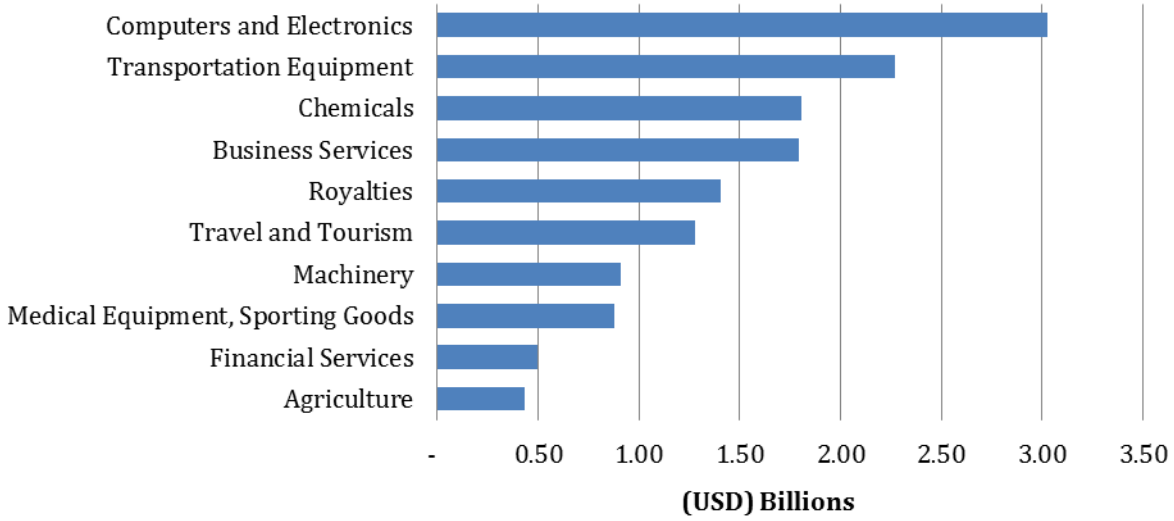
San Diego's exports by industry are considerably more diverse than San Jose's. San Jose's $22.8 billion in exports (11th largest) are overwhelmingly concentrated in Computers and Electronics and Royalties. These two industries account for 65 percent of San Jose's exports. By comparison, San Diego's top five industries account for roughly the same percentage of exports (See Figure 17).

Regional Exporting Industries

Top 10 Export Industries

When analyzing the most important industries for San Diego metro exports, there are several ways to consider industry impact. A baseline for comparison is the total value of exports of each industry. When limited to the top industries, this metric provides a compelling overview of the most important industries. (See Exhibit 2 for a list of all minor industries within each of these major industry categories.) For San Diego, the top 10 industries by export value comprise almost 90 percent ($14.3billion) of all exports while the top five comprise nearly 65 percent ($10.3billion).[27] This indicates that the region's exports are highly concentrated in these industries. While concentration might point to a regional specialization in these industries in the form of competitive advantage, we would need to consider this concentration relative to the U.S. average (See Table 1).

Figure 17: San Diego Metro Top Ten Export Industries by Export Value, 2010



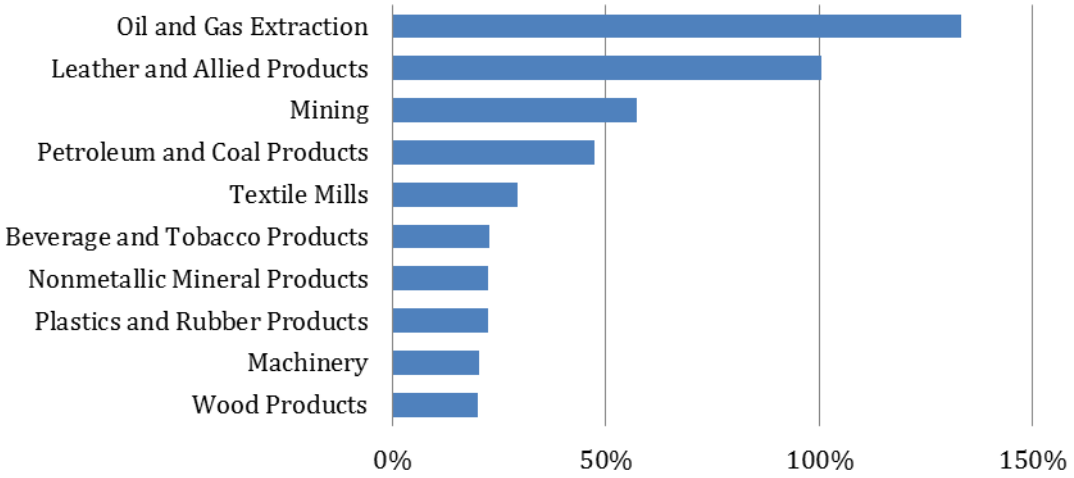
Another way to measure regional industry importance is to measure the most important export industries by percent growth. Using Brookings' Export Nation 2012 data measuring export growth from 2009-2010, Oil and Gas Extraction and Leather and Allied Products doubled in export value. This triple-digit growth in these two industries is unusual considering that these industries are not a significant portion of the export economy. Combined, the export value of these two industries totals less than 0.1 percent of total export value.

The only industry that appears in the top 10 when considering export value and percent growth is Machinery. This industry grew by 5.7 percent between 2009 and 2010, ranking ninth among the fastest growing export industries. Its presence in both top 10 lists

27 www.brookings.edu/research/interactives/export-nation

indicates that Machinery is an industry with a rapidly developing importance and presence in the San Diego metro area economy.

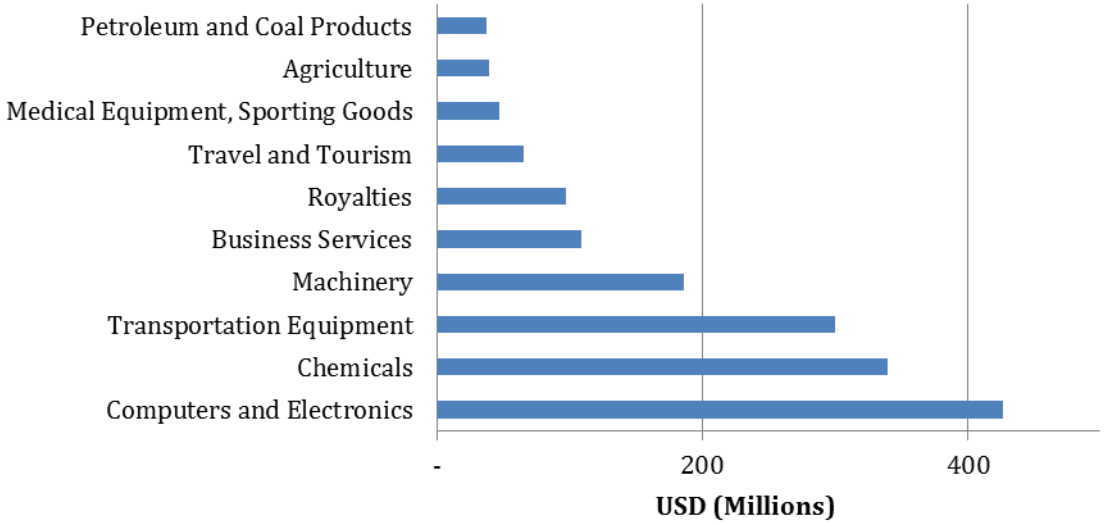
Figure 18: San Diego Metro Top Ten Export Industries by Percent Growth, 2010



Perhaps a more useful measurement of the importance of the growth of export industries is value added. Value added metrics consider the total dollar amount of change in a given period. For the computers and electronics industry, this measure revealed a value added of $426 million from 2009-2010. A value added approach highlights the top ten industries that contribute the most real value to the San Diego metro export economy.

The Machinery industry appears on this top 10 list again, reinforcing our earlier classification of it as an industry with great current and potential growth. The total value added during the 2009-2010 period was $186 million, the fourth largest. Note that it also surfaces as a top industry among the fastest growing foreign markets (See Figure 26)

Figure 19: San Diego Metro Top Ten Export Industries by Value Added, 2009-2010



The top five industries by export value contributed a considerable share of overall export value growth. These industries alone added $1.36 billion to San Diego's export value from 2009-2010. All other growing industries combined generated only about one-third the same value, accounting for $490 million. This implies that the top five industries comprised 74 percent of all value added. When expanded to the top 10, 91 percent of all export value growth, totaling $1.6 billion, was generated by these industries.

Table 3: San Diego Metro Top 5 and Top 10 Export Industries by Value and Growth

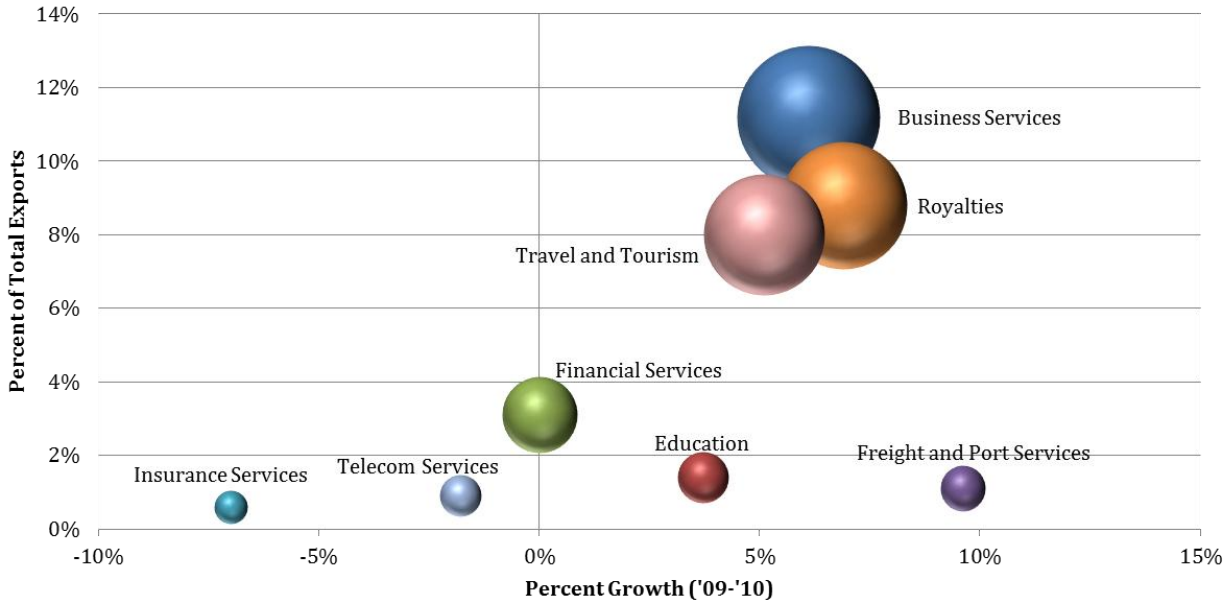
Top Export Industries	Top 5	Top 10
Export Value	10.3B	14.3B
% of Total	64%	89%
Value of Growth ('09-'10)	1.4B	1.6B
% of Total Growth ('09-'10)	74%	91%

Service Industries Breakdown

Attention to service exports is generally lacking in economic analysis of exports due to the difficulties in assembling reliable data. Brookings' Export Nation initiative is considered by many to be the first reliable data source on service exports at the metro level and serves as the source of data for this analysis.[28] As a result, the next several sections of this assessment are dedicated to better understanding the nuances of services exports in the San Diego economy.

[28] http://www.brookings.edu/research/reports/2012/03/08-exports

Figure 20: San Diego Metro Service Exports by Industry



Note: Bubble size indicates total export value in 2010.

Service exports as a share of San Diego's regional export economy are growing. Perhaps surprisingly, Business Services and Royalties exports are larger than Travel and Tourism exports by value (see more in "International Tourism"). All three of these industries occupy positions within the top 10 largest export industries which accounts for $4.5 billion in export value (28 percent). Although a few paces behind the growth of goods exporters, these three industries have also added $272 million in export value from 2009-2010.

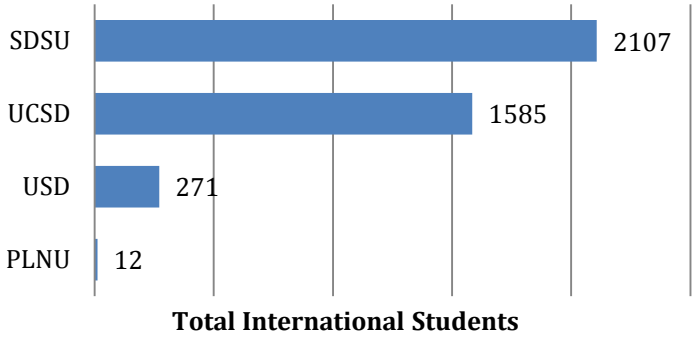
The fastest growing service export (Freight and Port Services) is likely benefitting from the growth of goods exports during the same time period. This secondary effect demonstrates the importance of exports for the metro economy as growth in one industry can be tied to growth in another. In the case of Freight and Port Services, goods exporters are supported by firms and organizations responsible for goods transportation. This implies that employment growth supported by goods exports, direct or indirect (see "Export-Supported Jobs" above), can spillover into growth in the service industry.

International Students

Although only a small fraction of total exports, the education of international students within San Diego's universities constitutes a service export. As a source of revenue for these institutions, international students are particularly valuable because they pay non-resident tuition rates. Within the context of recent state budget cuts, universities have sought to increase their international student acceptance rates as a revenue generating mechanism.[29]

29 www.ucsdguardian.org/news-and-features/california/item/25786-senator-proposes-cap-on-nonresident-students #.UV4MA5OG3zw

Figure 21: San Diego Metro International Student Body by Major University, 2011[30]



At UC San Diego, the international student population has been rapidly growing as a percentage of the total student body. In the 2009-2010 school year, international students comprised 4 percent (974 students) of the undergraduate student body.[31] Compare this to 6.6 percent (1,511 students) for the 2011-2012 academic year – a nearly 55 percent increase over the two-year period. This growth in the enrollment of international students translates into an increase in service exports for the San Diego metro region. According to the School of International Relations and Pacific Studies, international students attending UC San Diego generate more than $50 million in annual revenue for the school. At Cal State San Marcos, international students generate approximately $13 million in annual revenue.[32]

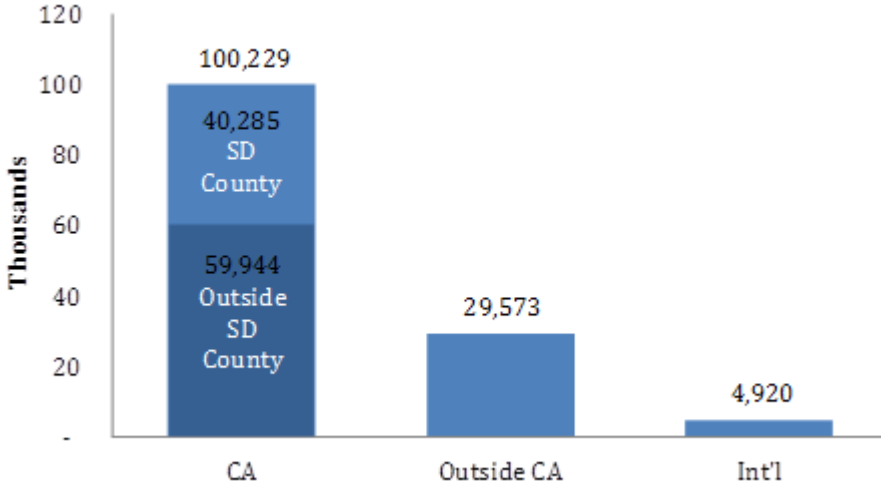
Domestic Students

Although the attraction of international students to San Diego universities improves the metro area economy, the retention of domestic talent educated in these institutions is equally, if not more, important. The Local Intelligence Interviews revealed a lack of supply in high-skilled labor in the area, forcing local firms to look elsewhere for talent. This finding was surprising considering the considerable concentration of universities such as UC San Diego, San Diego State University, University of San Diego, and others.

The lack of local high-skilled labor supply is not surprising when considering the local retention rate of UC San Diego graduates. The UCSD Alumni Association publishes an annual report on the status of its alumni network and provides, among other things, figures on the location where alumni live. In the 2010-2011 report[33], only 40,285 of the 134,722 alumni of UC San Diego (30 percent) remain in San Diego County. The rest (70 percent) choose to live elsewhere. Among all alumni, 14 percent have earned degrees from Jacobs School of Engineering, leaving only 5,600 total Jacobs-educated alumni to satisfy the demand for related jobs in the area.

30 www.internationalstudent.com/school-search/usa/california
31 studentresearch.ucsd.edu/sriweb/Profile2009.pdf
32 Local Intelligence Interview
33 alumni.ucsd.edu/s/1170/im*ages/editor_documents/Annual%20Report/final_annual_report_web.pdf*

Figure 22: Total UCSD Alumni by Location of Residence, 2011

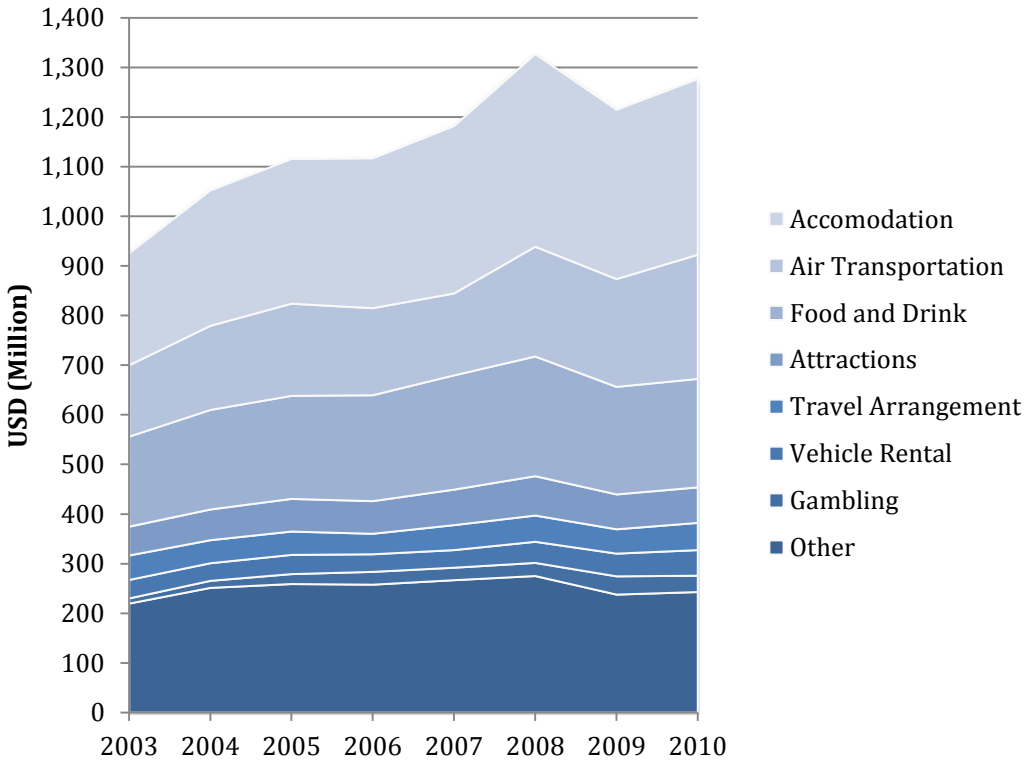


International Tourism

While tourism is not generally thought of as an export, international tourism constitutes a service export. In 2010, international tourism comprised $1.28 billion and 8 percent of San Diego's exports.[34] Below, the tourism industry is broken down by sub-sector. The accommodation sub-sector is among the fastest growing (57 percent growth rate from 2003-2010), but more importantly, has added $128 million in value to the region's economy. This growth implies that San Diego's hotels and other forms of lodging are becoming even more popular among international tourists. Even greater growth occurred in air transportation. Here, the sub-sector grew by $106 million (74 percent) during the same period. San Diego International Airport is attracting more and more international travelers through the region's primary airport. The largest growth (214 percent) in the gambling sub-sector added $22.4 million to the region's economy, demonstrating the burgeoning growth of San Diego's local casinos. As a whole, the international tourism industry has grown considerably from 2003-2010 (38percent) with tourism exports growing by a total of $351 million.

34 Brookings' Export Nation 2010

Figure 23: San Diego Metro International Tourism (Exports) by Detailed Industry



Top Export Markets

Despite San Diego's proximity to Mexico, Canada is our largest trade partner (accounting for almost 13 percent of San Diego's exports).[35] This comes as a surprise to many San Diegans who would otherwise expect Mexico-destined exports to outpace any other country. Exports to Mexico recovered quickly after the recession, growing 31 percent from 2008-2010. Even greater growth occurred with our fourth largest trading partner, China (See "Fastest Growing Global Markets"). Notably, Ireland dropped out of the top 10 in 2010, replaced by Brazil. The change reflects a sharp decline in exports to Ireland by 2.7 percent (minus$11.1 million) falling to 12th, while exports to Brazil increased by 19.8 percent ($79.1 million). Brazil, like China, was among the fastest growing global markets.

Figure 24: San Diego Metro Top Export Markets by Country and Export Value

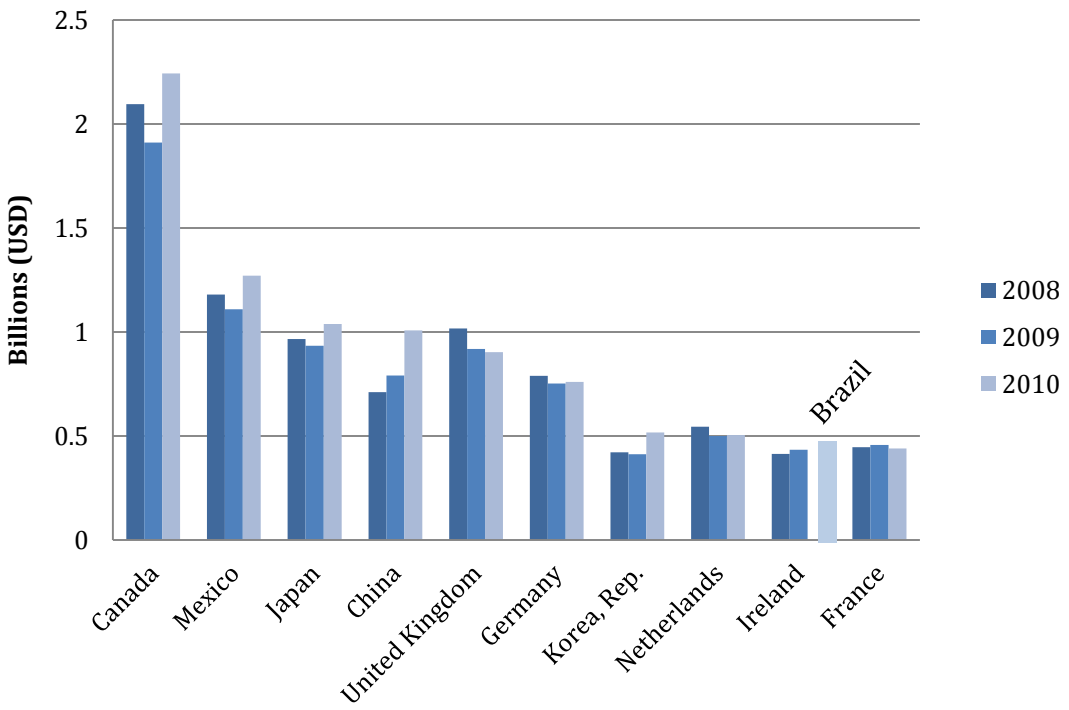


Table 4: San Diego Metro Top 5 and Top Export Markets by Value and Percent of Total

Top Export Markets	Top 5	Top 10
Export Value	6.5B	9.2B
% of Total Exports	40%	57%

35 Brookings' Export Nation 2012 Database: METROPOLITAN AND MICROPOLITAN EXPORT MARKETS

Fastest Growing Global Markets

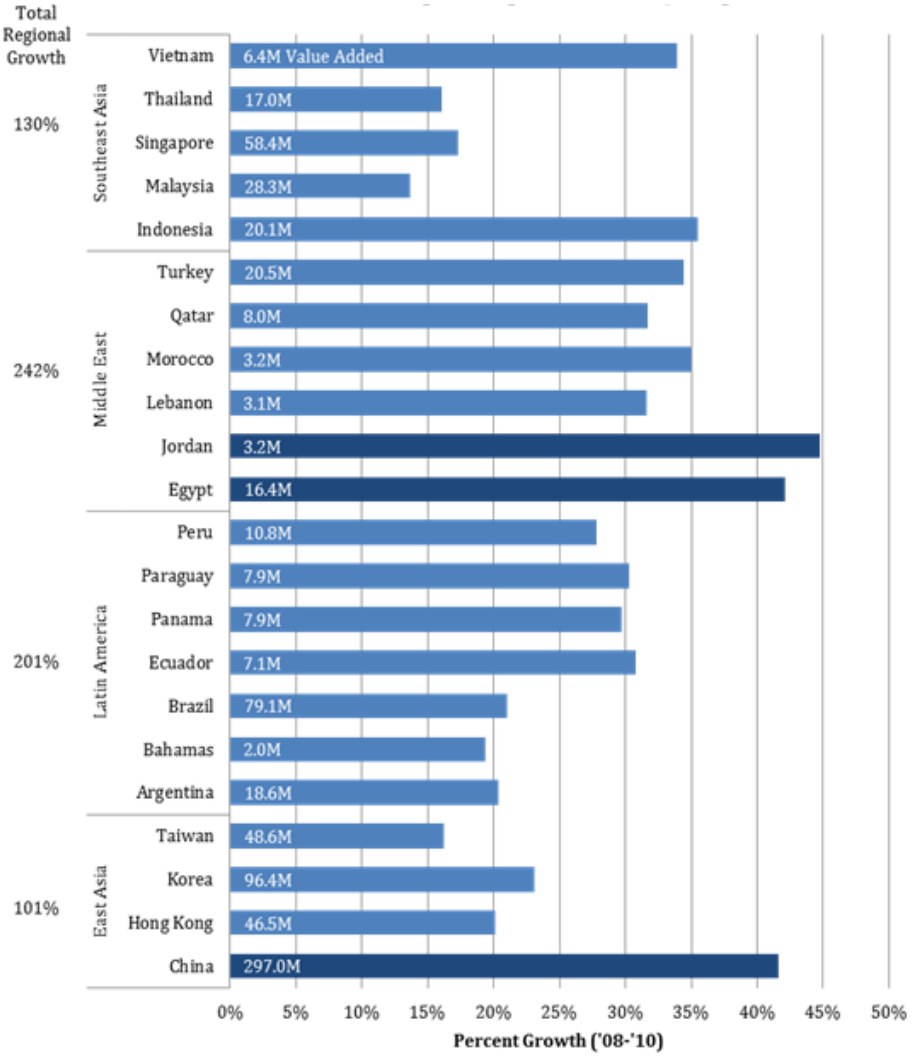
Between 2008 and 2010, export growth was overwhelmingly concentrated in four regions - Southeast Asia, the Middle East, Latin America, and East Asia.[36] Jordan, Egypt, China, and Afghanistan's exports grew by more than 40 percent during the same period with exports to Afghanistan growing 414percent[37] and adding value of $20 million. China, San Diego's fourth largest export market, added $297million in exports, an increase of 41.6 percent.

Other exports have grown considerably when considering total value added (See "Regional Exporting Industries" for an explanation of this measurement). By this metric, China, Korea, Brazil, Singapore, and Taiwan have added a total of $579.5 million (3.6 percent of the 2010 total) to regional exports. Conversely, exports declined with trade partners in Europe, a loss of $154 million between Ireland (minus $11.1 million), Greece (minus $4.1 million), France (minus $5.9 million), Portugal (minus $21.3 millions) and the United Kingdom (minus $111.7 million).

When compared to the findings of the Local Intelligence Interviews, there is apparent support to focus on Pacific-centered trade versus Atlantic-centered trade. Content analysis of the interview transcripts revealed a consistent discussion of a shift away from European markets toward Asia and Latin America. Interviewees emphasized China, Brazil, Korea, and Southeast Asian countries as the top emerging markets on their radar.

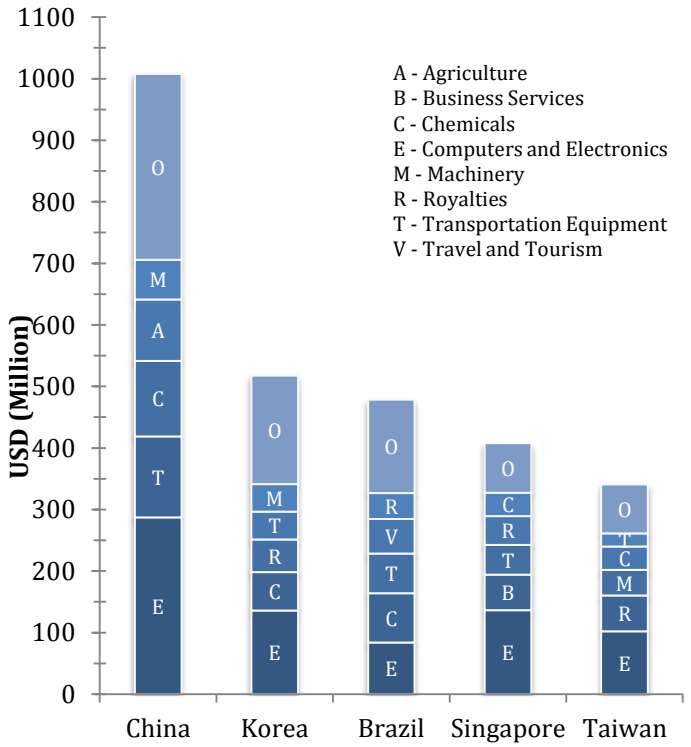
36 Brookings' Export Nation 2012
37 Driven by the U.S. military presence in the region

Figure 25: San Diego Metro Fastest Growing Export Markets by Region and Country



Consequently, the Market Assessment Team analyzed the differences in regional growth, limiting the analysis to only the fastest growing markets in Figure 25. This figure captures a number of measurements of export growth, including both percent growth along the horizontal axis and value added on each country bar, and sums regional growth adjacent to the regional categories. The dark blue bars represent countries with percent growth exceeding 40 percent from 2008-2010. Compare this to the countries with the highest value added (all of East Asia, Brazil, and Singapore), each with approximately $50 million added or more. Although the Middle East region demonstrated the highest percentage growth, East Asia's growth by value added is vastly greater. The sum of all value added in the Middle East ($51 million) is only slightly larger than export value added to Hong Kong during the same period.

Figure 26: San Diego Metro Top Export Industries by Top 5 Fastest Growing Foreign Markets, 2009-2010



Among the top five fastest growing foreign markets measured by export value added, export industries are concentrated within eight distinct groups. Figure 26 above captures this concentration for China, Korea, Brazil, Singapore, and Taiwan. The pattern mirrors the top 10 export industries with a few notable exceptions.

Agricultural exports to China totaled almost $100 million in export value from 2008-2010. The total San Diego agricultural export industry was valued at $432 million in 2010. This implies that China alone receives nearly 25 percent of San Diego's agricultural exports. China is followed by Japan, Mexico, and Canada, each receiving just under 10 percent.

Market Survey

The Market Assessment Team created and assisted in the implementation of two survey instruments designed to gather insight on the San Diego export economy. The first, the Market Survey, was distributed to thousands of San Diego-based firms via the Core Team's network of clients and business partners. The survey inquired about baseline metrics of firms' revenue, employment, and product types; the challenges that various types of firms encounter when expanding into foreign markets; and the types of export assistance, if any, they found useful to expand or begin exporting.

Working with the understanding that a larger sample creates a more informative and statistically powerful survey, the San Diego Core Team sought to maximize its sample size through the use of its network of clients and partners. By recruiting over 40 various organizations, the survey was highly distributed throughout the San Diego region. Before looking at the analytics, however, it is important to understand the demographics of the survey response pool.

Figure 27: Market Survey Responses by Firm Size

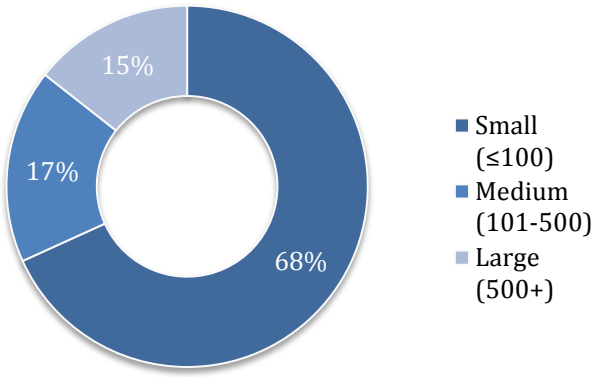
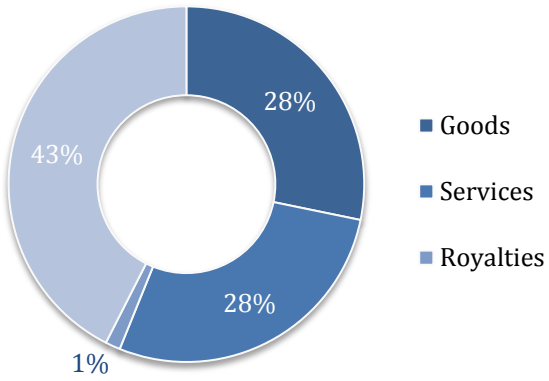


Figure 28: Market Survey Responses by Firm Exporter Type



Responses for the survey totaled 324. It is important to note that the survey, although heavily distributed, was taken on a voluntary basis and no questions were required. Respondents were characterized primarily by their size and exporter type (for tables on industry representation in the survey sample, see Exhibit 6 through Exhibit 8). Company sizes were identified in the following manner: small companies had 100 or fewer employees, medium companies had 101 - 500 employees, and large had 500 or more employees. Based on these categories, 85 percent of survey respondents were small or medium sized enterprises with the remaining 15 percent being large companies. A strong representation of SMEs was beneficial in the limited data collection capacity in which the survey was operating. It provides crucial information regarding the untapped growth potential of SMEs within the San Diego context. Individual company "export-types" were self-selected by the companies themselves as either exporters of goods (28 percent), services (28 percent), royalties (1 percent), or non-exporters (43 percent). Royalties were severely underreported (identified by only 1 percent of total respondents, whereas Brookings Data indicates that royalties

comprise upwards of 8 percent of San Diego's total exports).[38] This underreporting is probably due to the fact that companies don't classify royalties as exports. This is a chronic problem in international trade – both in company reporting practices as well as measurement at the macroeconomic level.[39]

> *"Firms neglect to report royalties for several reasons: They may have a lack of knowledge about customs duty assessment or there may be insufficient internal communication. Royalty payment amounts are generally not shown on invoices for goods, so internal staff or external customs brokers tasked with reporting...may be unaware of the transaction details. Royalty payments are usually handled by business and accounting departments, which are often unfamiliar with...reporting rules."* - Lin, Yishian[40]

Moving beyond the issue with royalties, it is important to look at the overall composition of exporters vs. non-exporters. The split between these two groups provides a balanced look at both sides of San Diego's export market. Checking for potential bias in the size composition of these exporters and non-exporters, it was discovered that the relative size composition was similar (majority being small companies, with a near even split between medium and large). See Exhibit 9 for a graphical illustration of this point.

Barriers to Engaging with Foreign Markets

Non-exporters were asked to "Please select the reason(s) that best describe(s) why your organization does not currently export." Possible responses were U.S. protection and policy, professional and social networks, production capacity, foreign market information, and costs. An "other" option was also included. While 45 percent of responses populated the provided list of possible responses, 55 percent chose "other" (depicted below in Figure 29). In choosing "other, respondents had the option to provide a short explanation.

The pie chart on the left contains the explicit response options, and based on these options, the two biggest reasons for not exporting were "U.S. Protection and Policy" and "Professional and Social Networks". How are these to be interpreted exactly? Looking at the survey itself it is difficult to say; however, by comparing these responses with what was seen in the Local Intelligence Interviews, it is possible to garner some information. "U.S. Protection and Policy" chiefly refers to the hindrance caused by not only protectionist policies (tariffs and quotas) but also the general bureaucracy of paperwork and regulations that make it logistically time-consuming and difficult to engage in exporting behavior. Professional and social networks were identified in the Local Intelligence Interviews as the most common solution for overcoming market-specific challenges because they provide key information about foreign markets – information required to make strategic business decisions. A lack of

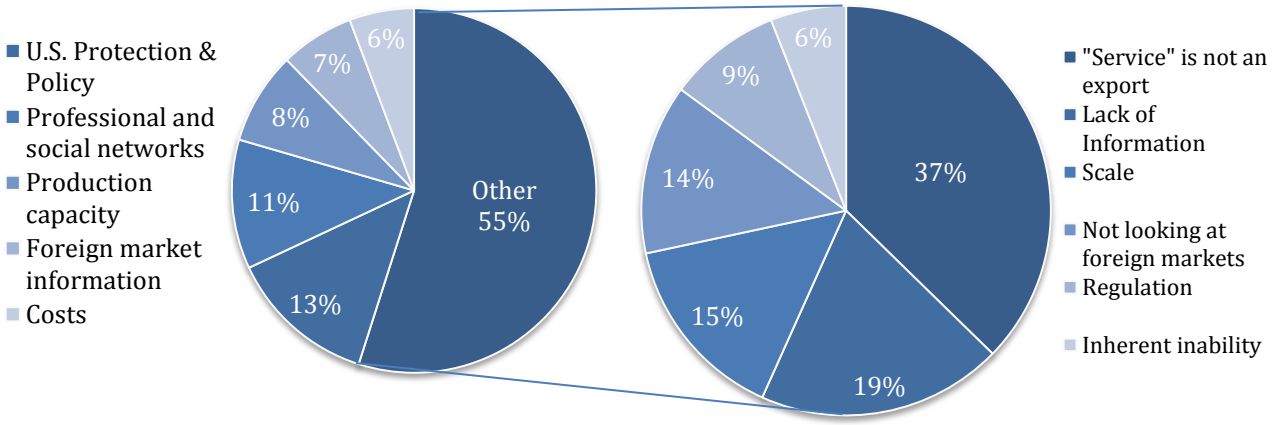
[38] http://www.brookings.edu/research/reports/2012/03/08-exports
[39] Lipsey, Robert E. "Measuring International Trade in Services." International Trade in Services and Intangibles in the Era of Globalization (2009): n. pag. National Bureau of Economic Research. PDF.
[40] Lin, Yishian. "Royalties: A Common Source of Problems in Customs Valuation." PwC. PricewaterhouseCoopers, n.d. Web. 06 Apr. 2013.

these networks is symptomatic of a lack of knowledge for domestic firms regarding market access and business potential abroad.

The right side of the pie chart in Figure 29 is derived from the "other" responses in the first pie. A prevalent theme in this second pie chart is that the lack of information is perhaps the strongest barrier to companies engaging directly with the global trade market. The categories presented herein were created as a means to aggregate the myriad responses collected from the data field attached to the "other" option.

"Service" is not an export (37 percent) contains responses which identified the respondent's company as a service provider, and as a result, did not engage in export behavior. These types of responses are symptomatic of an inherent misunderstanding of the three types of exports – goods, royalties, and services -– that are traded in the global market. There is a lack of information regarding the nature of export activities. *Lack of information* (19 percent) was characterized by companies who declared that they were unaware of either export assistance mechanisms or the opportunities present for their specific company in foreign markets. *Scale* (15 percent) was created by aggregating responses in which businesses voiced an inability to export due to lack of financing or capacity. *Not looking at foreign markets* (14 percent) was created by combining the very similar statements that declared that the respondent company was satisfied with domestic markets for business. *Regulation* (9 percent) was formed due to the identification of several domestic and international regulations that impede business development in foreign markets. *Inherent ability* (6 percent) contained the few military contractors and other organizations that are contractually obligated to NOT engage with foreign markets.

Figure 29: Market Survey, Barriers to Engaging with Foreign Markets

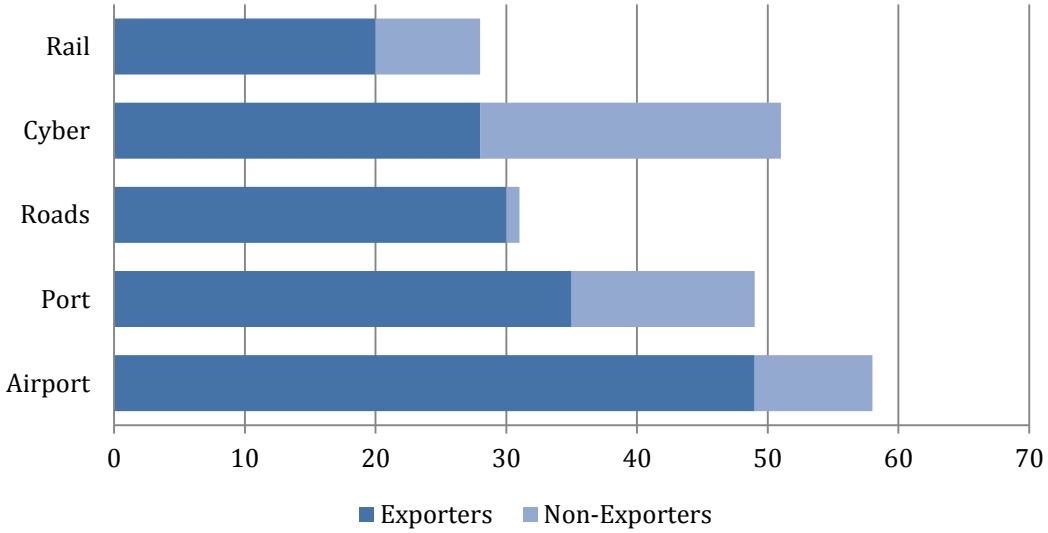


Infrastructure

The survey was used to collect data on a key aspect of exporting in the San Diego metro area: San Diego's infrastructure capacity. The survey responses were reinforced by responses provided in the Local Intelligence Interviews - and are consistent with current literature

regarding the weaknesses, strengths, and potential for growth of San Diego's infrastructure.[41] To begin, the question asked exporters, *"Which of the following infrastructure types could be improved to increase your organization's exports?"* and asked non-exporters *"Which of the following infrastructure types could be improved to increase your likelihood of engaging in exporting activities?"* Hence, the questions were created with the goal of measuring the need for improvement in each of the key infrastructure areas: airport, cyber, port, rail, roads, as well as an "other" category. The precise meaning of these infrastructure types was left up to the discretion of the respondents. In order to gather more information from exporters, an optional comment box inquired about the various specific aspects of the above selected infrastructure types. In order to gather more information from non-exporters, an optional comment box inquired about the role of San Diego's infrastructure in the company's decision to potentially export.

Figure 30: Market Survey, Infrastructural Improvement Needs



The figure above illustrates respondents' identification of infrastructure improvement needs by count of responses. The three leading forms of infrastructure perceived as needing improvement are the airport, cyber infrastructure, and port. The needs for airport and port improvement are well known in the discourse of San Diego infrastructure, and will be elaborated upon in the analysis of the Local Intelligence Interviews. Of the top three, there then remains one: cyber infrastructure. What exactly is cyber infrastructure? A recent article (2010) published by the ACM Special Interest Group on University and College Computing Services (SIGUCCS) provides two primary definitions in response to this exact question.

> *"…cyber infrastructure consists of computing systems, data storage systems, advanced instruments and data repositories, visualization environments, and*

[41] Erie, Steven P., Vladimir Kogan, and Scott A. MacKenzie. Paradise Plundered: Fiscal Crisis and Governance Failures in San Diego. Stanford, CA: Stanford UP, 2011. Print.

people…linked together by software and high performance networks to improve research productivity and enable breakthroughs not otherwise possible." - Stewart et al.[42]

In short, cyber infrastructure is the network of high quality/capacity computing systems and data storage/management that greatly increases productivity and thereby produces "breakthroughs not otherwise possible."[43] In a metro region characterized by innovation, such as San Diego, cyber infrastructure plays a particularly important role in not only supporting research but also providing support for its applications.[44] Other benefits from a well-developed cyber infrastructure may include:[45]

1 reduced costs (in a wide range of areas that vary on a case by case basis),
2 the creation of high-skilled, high-paying jobs,
3 improved business climate (ex: streamlined processes), and
4 drive innovation (by facilitating collaboration through improved data-sharing and communication abilities).

Having evaluated the importance of the various infrastructure types by overall response, a comparison between exporter and non-exporter perceptions is in order. About 75 percent of respondents were exporters and the remaining 25 percent were non-exporters. This indicates that there is a potential bias in favor of exporters' reported perceptions. In order to evaluate this bias, the table below illustrates the relative importance of each infrastructure type to all exporter (162) or non-exporter (55) respondents.

Table 5: Market Survey, Infrastructure Improvement Needs by Exporter Type

Infra. Type	Exporters	Non-Exporters
Airport	30.2%	16.4%
Port	21.6%	25.5%
Roads	18.5%	1.8%
Cyber	17.3%	41.8%
Rail	12.3%	14.5%

Using this method, the distinction between exporters' and non-exporters' preferences becomes more apparent. Exporters identified the airport, port, and roads as their top three infrastructure types most in need of improvement (with the first two making up approximately 50 percent of all responses). Non-exporters identified cyber infrastructure,

42 Stewart, Craig A., Stephen Simms, Beth Plale, Matthew Link, David Y. Hancock, and Geoffrey C. Fox. "What Is Cyberinfrastructure?" SIGUCCS (2010): 37-44.Association for Computing Machinery. Web.
43 Ibid
44 "Cyberinfrastructure, Innovation and University Policy." Science Commons RSS. Ewing Marion Kauffman Foundation, National Science Foundation, Science Commons, University of Michigan, 2008. Web. 07 Apr. 2013.
45 Dodd, Earl. "The Economics Behind Cyberinfrastructure (CI)." Cybera Summit 2010. 2010. Speech.

port, and airport as their three most important infrastructure types in lowering barriers to international market engagement (with cyber infrastructure alone making up approximately 42 percent of all responses).

This information provides three particular insights. The first of which is that the struggles of exporters – with regards to infrastructure – are well known in the San Diego metro area and the discourse reflects the reality (according to the sample). To further this point, airport and port infrastructure are in need of improvement from the perspective of both exporters and non-exporters. This perspective shown by the survey data is confirmed by the ASCE San Diego County Infrastructure Report Card.[46]

Their report card methodology measures both existing and future adequacy through five metrics: capacity, condition, operations and maintenance, public safety, and funding. Each individual metric is rated on a three point scale (poor, fair, or good) and then aggregated to form a letter grade – following the report card motif. San Diego's "aviation" infrastructure received a C+ while "land and sea ports of entry" earned a C-. While the ASCE report does not focus specifically on export capacity, favoring a holistic approach instead, its metrics are relevant for the purposes of this Market Assessment. For more information regarding the methodology employed in the ASCE report, see "Grading Criteria and Methodology" in their report. Please see Exhibit 10 for the San Diego Report Card (2012).

The second insight that the table above provides is that the preference for cyber infrastructure was primarily lead by non-exporters, who placed a very high value on cyber infrastructure. With just over 41 percent of total respondents identifying this specific form of infrastructure, this point is very clear. While the case for cyber infrastructure overall is made above, specific reasons for selection are not a part of the survey data. Given more time and resources, it would be prudent to follow up with respondents and gather more information. The Local Intelligence Interviews sought to serve exactly this purpose. Ideally they would help explain the favor placed on cyber infrastructure by non-exporters, however, due to timing and logistical constraints, only one non-exporter was interviewed out of the 22 total – not providing enough data to effectively explain the importance of cyber infrastructure for the larger population of non-exporters.

Based on the benefits of cyber infrastructure delineated earlier in this paper, it can be concluded that the benefits of a well-developed cyber infrastructure would afford companies the ability to overcome barriers to entry in global markets and eventually achieve economies of scale. Improvement in cyber infrastructure is particularly salient for both exporting and non-exporting SMEs – large companies tend to have the scale needed to compete successfully in international business. For the quantifiable importance of cyber infrastructure to SMEs see below. SMEs made up the clear majority of respondents (96 percent) in favor of cyber infrastructure improvement.

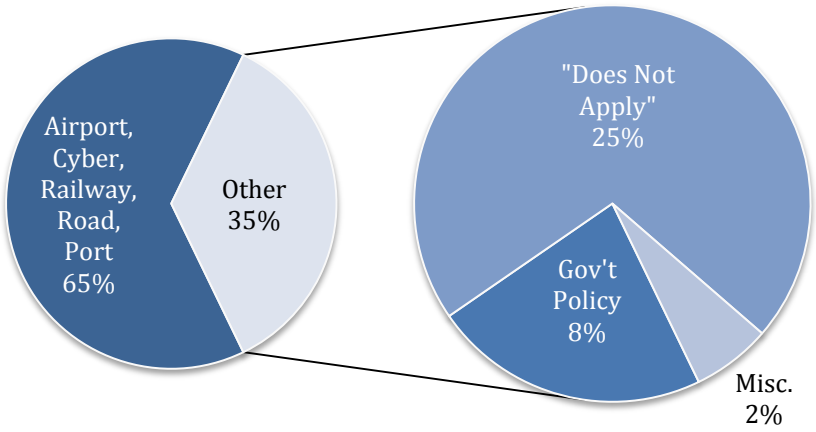
46 "2012 San Diego County Infrastructure Report Card."

Table 6: Market Survey, Cyber infrastructure Improvement Needs			
	Exporters	**Non-Exporters**	**Total**
Small	85%	83%	84%
Medium	7%	17%	12%
Large	7%	0%	4%

The last insight gained from the table is the composition of responses based on export type. Exporters clearly had a much higher response share (75 percent) than non-exporters (25 percent). In order to investigate this response rate discrepancy based on export type, the composition of the survey question must be evaluated. Having already covered the questions themselves, we then move to look at answer choices. In both questions (the export and non-exporter variants) the five infrastructure types that have been discussed were provided as answer options. There was also a sixth response option, "other" in which the respondent was allowed to specify what (s) he meant by "other." This option was treated very differently in the two variants, which helps to explain the discrepancy in response rates.

First, only 13 percent of exporters selected the "other" category. Responses were largely varied with the only persistent theme being border-crossing facilitation (30 percent of the respondents for the category; 4 percent for all exporters overall). The representation of this theme, however, was much stronger in the Local Intelligence Interviews. Second, 37.5 percent of non-exporters selected the "other" category, explaining the extremely low response rate in the five top infrastructure responses relative to exporters. Such a large share of responses begs an explanation. Performing quick content analysis on the filled-in responses provided the results displayed in Figure 31 below.

Figure 31: Market Survey, Infrastructure Improvement Needs for Non-exporters



Clearly, the favored response was "Does Not Apply." It is possible to reach two conclusions based on this information. First, despite the wording of the infrastructure question for non-exporters[47] – that purposely attempted to put respondents in the mindset of thinking about potentially exporting – a reasonable amount did not see infrastructure as being an important part of their exporting decision. Second, to build upon the first point, when this question is compared within the context of other questions in the survey,[48] it becomes clear that few non-exporter respondents have any intention or perceived interest in exporting in the future (see

Exhibit 11 for the response breakdown of the question cited above).

After the initial question asking for selection of the various infrastructure types, a follow up comment section was provided in order to allow for elaboration. Non-exporters provided extremely limited responses in this section; however, exporter responses generated strong content-analysis-driven insight. Themes included (1) airport, (2) port, (3) streamline, (4) cross-border, (5) cyber, (6) rail, (7) roads, (8) language, and (9) other. Comments surrounding the airport largely reflected the desire for more direct international flights. Comments surrounding cross-border issues largely demanded improved ease of access in transportation to and from Mexico. Comments surrounding cyber infrastructure bemoaned the slow connection speeds and emphasized the need for faster internet speeds for more efficient information sharing/access regarding international business opportunities as well as general facilitation of business management and logistics. Comments surrounding the port centered on the need for increased freight capacity and direct access to railway transportation. Comments surrounding "streamline" were chiefly focused on the mitigation, consolidation, or at least effective communication of regulations and procedures that complicate the process of engaging with foreign markets. Table 7 illustrates the basic statistics for this question.

Table 7: Market Survey, Infrastructural Improvement Needs, Comments

Theme	Frequency	% Responses
Airport	18	26%
Port	11	16%
Streamline	9	13%
Cross-Border	8	12%
Cyber	6	9%
Rail	3	4%
Roads	3	4%
Language	1	1%
Other	9	13%

[47] *Which of the following infrastructure types could be improved to increase your likelihood of engaging in exporting activities?*

[48] *Specifically: "Does your organization have plans to export to new foreign markets within the next 10 years?"*

Future Markets

When asked whether they had plans to export to new foreign markets within the next 10 years, survey respondents answered either yes (39 percent), no (28 percent), do not know (24 percent), or decline to respond (9 percent). Of these responses, the future markets are illustrated below in Figure 32. The expected years in which these new markets would be engaged is also shown in Figure 33: Market Survey: New Export Market by Planned Year of EntryFigure 33. The industry sub-sectors were self-identified and by aggregating the sub-sectors, the targeted industries are displayed in Exhibit 12. While it would be ideal to look at the data in this section based on company size and export type (80 percent of respondents were exporters) the fact that question fields were not required to be completed provides incomplete information when trying to look at the data in such a granular fashion. Aggregating and looking at the big picture is much more efficient and communicates the story better. The largest future markets are Asia (41 percent), Latin America (22 percent), and Europe (20 percent). These markets are going to be engaged sooner rather than later (85 percent of respondents selected 2013 and 2014 as the years in which engagement with their identified new export markets would begin), and the key industries of this new export market engagement are Computers and Electronics (20 percent), Business Services (16 percent), and Machinery (11 percent) - which collectively make up 47 percent of all responses.

Figure 32: Market Survey, New Export Markets by Region

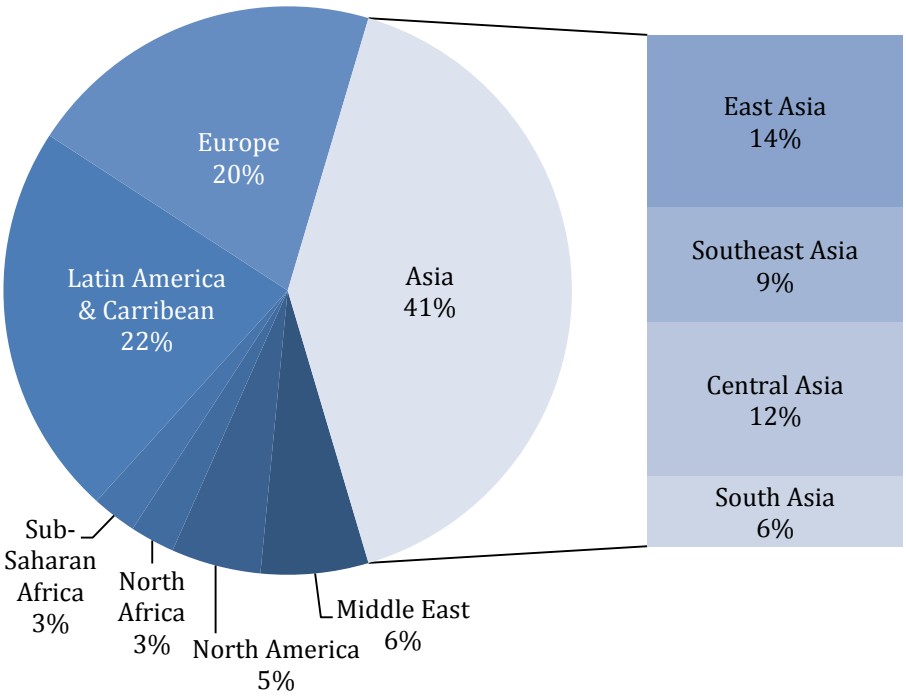
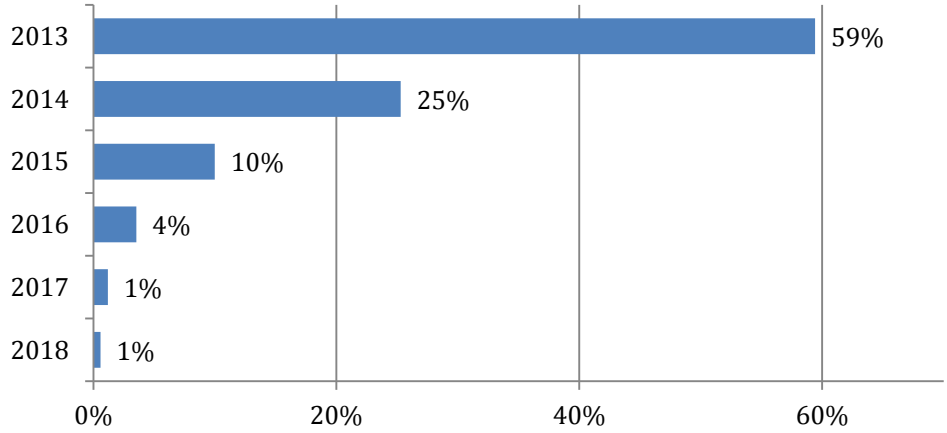


Figure 33: Market Survey: New Export Market by Planned Year of Entry



Export Assistance

Export assistance is one of the most important methods through which the federal, state, and metropolitan region can provide support to its domestic economy in bolstering their foreign market engagement profile. Based on pilot reports from the MEI so far:

> *"…export services play a major role in diminishing the cost and uncertainty around exporting for small- and medium-sized businesses (SMEs)...the main reason why local SMEs do not export is fear of the unknown, in the form of regulations, currency risks, taxes, language, and cultural differences. Services provided [by]...the International Trade Administration...help U.S. companies gain information, meet clients, market their products, and create an export plan."* - Brookings Institution[49]

Based on the understanding of the importance of export assistance, the market survey targeted both exporters and non-exporters, with the following two questions:

(1) *"Have you received any export-related assistance from government, private entities and/or nonprofit/non-governmental, in the last five years?"* and

(2) *"Federal, state, and local government offer a variety of assistance types (programs, events, and other projects not directly related to exports) that can help your organization begin exporting and/or increase existing export volume and diversity. Please rate the importance of the following types of assistance as it is relevant to your organization."*

49 Istrate, Emilia, and Nicholas Marchio. "Export Nation 2012: How U.S. Metropolitan Areas Are Driving National Growth." Metropolitan Policy Program (March 2012): n. pag. Web.

Question 1

Table 8: Market Survey: Export Assistance Recipient Type		
Row Labels	Frequency	% Responses
Yes	39	17%
No	151	65%
Do Not Know	35	15%
Decline to Respond	7	3%

In response to the first question, respondents selected either yes (16 percent), no (65 percent), do not know (16 percent), or decline to respond (3 percent). There were a total of 231 respondents to this particular question. What demands notice here is that the 65 percent "no" response was split 45-55 between exporters and non-exporters, respectively. Knowing from the Brookings report that SMEs are the most in need of export assistance, and knowing that the Market Survey sample is primarily comprised of SMEs (both exporter and non-exporter categories, See Exhibit 9), the fact that 45 percent of the "no" respondents were "exporter" SMEs is concerning. Roughly half of those most in need, exporting SMEs, of exporting assistance have not received it. This speaks to both a knowledge (of export access opportunities) and access (to the export assistance organizations) problem.

Moving into the follow-up questions, data was gathered on the source types of export assistance utilized. There was a 60-40 split between government and non-government aid, respectively. See Table 9 below.

Table 9: Market Survey, Export Assistance Received by Organization Type		
Organization Type	Frequency	% Responses
Government	39	60%
Nonprofit	15	23%
Private	11	17%

Data was also gathered regarding the satisfaction levels of various export assistance (see Table 10 below). About 50 percent responded that they were "Very Satisfied" with the export assistance that they received. Looking at both "Very Satisfied" and "Satisfied" together, more than 90 of respondents fall into either of these two categories. For those that have received export assistance in San Diego, they appear to have had very good experiences. In any question, however, that asks for a voluntary rating, responses tend to be hyperbolic – resulting in high amounts of "satisfaction" and high amounts of "dissatisfaction" with few responses in the middle-ground. This effect is not necessarily seen in the survey data that was collected.

Table 10: Market Survey, Export Assistance Ratings		
Rating	Frequency	% Responses
Very Satisfied	30	51%
Satisfied	23	39%
No opinion	3	5%
Unsatisfied	2	3%
Very Unsatisfied	1	2%

After understanding the types of organizations that were providing the assistance, and the overall satisfaction with these services, it begs the question, what services were being provided? This data is shown in the table below. The top three ranked assistance types (Business Partner Pairing, Training Workshops, and Trade Show Invitations) comprise more than 50 percent of the total responses accounting for 23 percent, 20 percent, and 12 percent respectively.

Table 11: Market Survey, Export Assistance by Type		
Assistance Type	Frequency	% Responses
Business Partner Pairing	19	23%
Training Workshops	16	20%
Trade Show Invitations	10	12%
Export Financing	9	11%
Other	28	34%

Of all the organizations that were named – respondents were allowed to write in the name of up to five organizations – the Department of Commerce, World Trade Center San Diego, and EX-IM Bank were most frequent mentions at 22 percent, 19 percent, and 10 percent, collectively making up more than 50 percent of total responses, respectively.

Table 12: Market Survey, Export Assistance by Organization		
Organization (Respondent Identified)	Frequency	% Responses
Department of Commerce	14	22%
World Trade Center San Diego	12	19%
EX-IM BANK	6	10%
Others	31	49%

Question 2

The second question asked respondents to rate various forms of export assistance. The rating levels were: very important; important; no opinion; unimportant; and very unimportant. The purpose of this ranking was aimed at discerning the most important forms of export assistance *relative* to other options.

Methodology

In order to calculate this relative importance, six average scores were calculated for each assistance type: one for each permutation of the distinguishing size and exporter-type

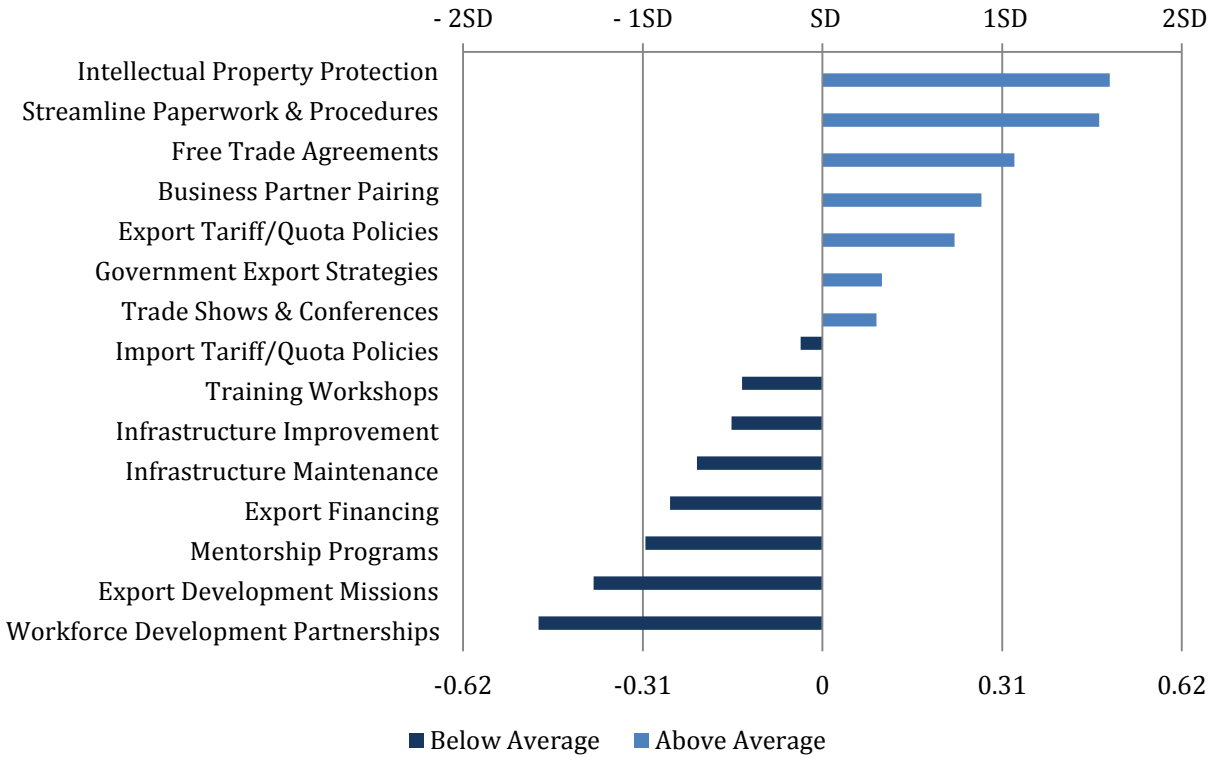
characteristics. Then, calculations were performed within the realm of each of these permutations (small exporters, medium exporters, large exporters, small non-exporters, medium non-exporters, and large non-exporters).

Within each "realm" the average of all export assistance type scores was calculated (A). In order to facilitate the explanation of these calculations, the rest of this calculation discussion will take place in the realm of small exporters. Thus, after each individual mean was calculated for all the export assistance types, an average was then taken from all those means. Effectively, the mean of means, or, the average small exporters' rating of all export assistance types (B). The standard deviation of the individual averages (A) was then calculated (C). To calculate each export assistance type's respective distance from the mean of means (B), the average rating for that export assistance type (A) was subtracted from the mean of means (B). Positive numbers represent ratings that are higher than average, and negative numbers represent ratings that are lower than average. Again, calculations up to this step provided the distance from the mean of means for each individual export assistance type (D). This distance (D) was then compared to the overall standard deviation (C) to determine whether it fell within or outside of one or two standard deviations. The results for small exporters were displayed in Figure 34 in the 'Results' section. All other figures, the other permutations of size and exporter-type, can be found in Exhibit 13 through Exhibit 18.

Results

Figure 34 measures relative importance of the listed export assistance types by displaying that particular export assistance type's distance from the mean of all export assistance types. This distance is measured on the lower x-axis. However, by itself, this doesn't mean much. On the upper x-axis, a range of standard deviations is displayed (most often -2 to +2). Export assistance types that go beyond the "1 SD" mark or below the "-1 SD" mark are uniquely important to that particular size and exporter-type permutation. This method of relative importance measurement was performed due to the fact that a five-point scale was not large enough to measure meaningful differences between export assistance types by using a simple rating response count. In the figure below, Intellectual Property Protection, Streamline Paperwork and Procedures, and Free Trade Agreements were identified as being the most important forms of export assistance for small exporters (with all three above one standard deviation of the mean of means for small exporters' export assistance type ratings). Export Development Missions and Workforce Development Partnerships were perceived as being the least important forms of export assistance for small exporters (with both below one standard deviation of the mean of means for all small exporters' export assistance type ratings).

Figure 34: Export Assistance Types: Relative Importance by Small Exporter



This type of interpretation applies to all six graphs with the remaining five figures shown in Exhibit 13 through Exhibit 18. To condense and facilitate the understanding of this information, the table below was prepared. Figure 35 conveys the same information as described in Figure 34 above. The first column lists the export assistance types in alphabetical order. The second and third columns contain the six permutations for exporter-type and size, first categorized by exporter-type then size. A red "X" in a given square indicates that, for the size and corresponding exporter-type (shown by the column) the particular export assistance type was relatively unimportant. A green check mark in a given square indicates the opposite for its corresponding size and exporter-type. The horizontal blue and red rows highlight either the top three most important (blue) or the least important export assistance types overall (red).

Figure 35: Export Assistance Types, Relative Importance Summary

Export Assistance Type	Exporters			Non-Exporters		
	Small	Medium	Large	Small	Medium	Large
Business Partner Pairing		✗	✗	✓	✗	✓
Export Development Missions	✗	✗				
Export Financing						
Export Tariff/Quota Policies				✗		✗
Free Trade Agreements	✓	✓				✗
Government Export Strategies			✓		✓	✓
Import Tariff/Quota Policies				✗		
Infrastructure Improvement				✗		
Infrastructure Maintenance				✗		
Intellectual Property Protection	✓	✓	✓		✗	✓
Mentorship Programs		✗	✗	✓	✗	
Streamline Paperwork & Procedures	✓	✓	✓		✓	✓
Trade Shows & Conferences						
Training Workshops						
Workforce Development Partnerships	✗				✗	

Legend			
Most Relatively Important Assistance Overall		Relatively Important Assistance	✓
Least Relatively Important Assistance Overall		Relatively Unimportant Assistance	✗

As is easily visible, the top three most important export assistance types for respondents overall are Intellectual Property Protection, the Streamlining of Paperwork and Procedures, and Government Export Strategies. These results are cohesive with the results found in the Local Intelligence Interviews, and the intellectual property protection issue resonates particularly well in San Diego. Leaders of an innovation economy that thrives on new ideas and their commercialization will want to protect those ideas to the best of their ability. The least relatively important export assistance types were Mentorship Programs, Export Tariff/Quota Policies, and Business Partner Pairing. The fact that formal mentorship programs are seen as one of the most important forms of export assistance reinforces the discourse that San Diego is a highly collaborative business environment – companies overall do not feel the need for formalized mentorship programs due to the presence of informal networks that provide the same services.

Local Intelligence Interviews

Overview

As part of the Brookings Metropolitan Export Initiative, the San Diego Core Team conducted 22 one-on-one interviews with local business leaders. These leaders represented firms from multiple industries and included exporters of goods, services, royalties and non-exporters. Interviews were enumerated by a team of trained graduate students from UC San Diego's School of International Relations and Pacific Studies (IR/PS). This IR/PS enumerator team paired with members of the San Diego Core Team for each interview and followed a semi-structured interview guide. The interview guide was written by the Market Assessment team specifically for this initiative, combining questions from the Brooking's suggested interview guide, other resources, and original content. Each interview was recorded by the IR/PS enumerators and transcribed by a third-party transcription service. Using these transcripts, the Market Assessment Team conducted content analysis – coding conceptual similarities across each transcript. These codes were then tallied, reviewed within context, and assembled into the key findings summary below.

Methodology

Preparing and Conducting Interviews

The Market Assessment Team paid special attention to composing an interview guide with questions that would introduce as little response bias as possible. Questions were structured to be open-ended, allowing interviewees to respond without a rigid format. Questions were carefully crafted to ensure that all types of companies could respond and did not include industry-specific jargon. Although mostly geared toward exports, each question was worded in order to gather as much information about firms' engagement with foreign markets as possible. Where Brookings' suggested questions specifically asked about "strategy to grow exports," the interview guide asked about "strategy to engage with foreign markets." This simple change in wording allowed educational institutions and other non-traditional exporters to discuss how their organization interacts with the international business community.

IR/PS enumerators were also given extensive instructions within both the interview guide and the required enumerator training sessions conducted by the Market Assessment Team. At training, the enumerators learned various interviewing techniques, including but not limited to how to ask and repeat questions without leading, how to properly use the audio equipment, and other key skills to ensure the quality and credibility of the interviews. The interview guide provided enumerators step-by-step, color-coded instructions and guidelines. Each question was accompanied by a set of cues that signaled the enumerator to probe the interviewee for additional information when necessary. Overall the IR/PS enumerator team was well-equipped to conduct professional interviews.

Interviews were conducted in a meeting space chosen by the interviewee with an IR/PS enumerator and a member from the Core Team. This system allowed us to leverage the

networks of the Core Team members to schedule time with otherwise busy C-level executives while ensuring the proper implementation of the interview guide from the enumerator. The Core Team member ensured that the enumerator was able to develop rapport with the interviewee prior to initiating each interview. This helped the interviewee to feel more comfortable, allowing for the free flow of thoughts. Since each interview was recorded and some of the topics were sensitive, enumerators assured confidentiality of individual responses.

Analysis

After the interview implementation process was complete, the interview audio files were sent for transcription in preparation for content analysis. Content analysis is a method of analyzing text that cannot be easily quantified and processed quantitatively. It aims to systematically review text in order to find conceptual similarities among sets of responses. The Market Assessment Team began the initial phase of content analysis by developing a codebook. A codebook consists of short phrases or codes that represent themes and concepts found throughout the text. In our case, the codebook consisted of 60 unique codes. Following the organization of the semi-structured interview guide, the codes fell within 12 categories covering all aspects of firm-level international business development.

After establishing a code book, the Market Assessment Team reviewed each transcript meticulously, assigning each interviewee response a code. Code assignment was based specifically on the context in which the concept appeared in the transcript and considered the type of firm and other relevant information. This process produced about 30 codes per interview with considerable variation ranging between 15-50 codes. In total 405 codes were assigned to the transcribed interviews. The findings stem from the frequency of these codes and the patterns that occurred between them.

The interview guide included questions in three overarching genres: San Diego regional economic development, the experience of engaging foreign markets, and plans for future engagement with foreign markets. Within each genre, a series of questions highlighted the challenges, opportunities, and unique properties of doing business beyond domestic borders. The following findings represent a synthesized analysis based on the content analysis results.

Findings

Sales and Growth

San Diego firms that export unanimously agreed that their engagement with foreign markets has increased sales and been pivotal to their firms' growth. When asked what benefits they had received from engaging with foreign markets, interviewees explained how domestic markets had become satiated and highly competitive. Expanding business to markets where their products face less competition allowed them to take advantage of economies of scale, reducing their per unit cost of production by spreading their overhead costs across more units. Interviewees noted that since their initial entry into foreign markets, the portion of their business outside of the U.S. continues to grow while their domestic market share remains strong. This has translated into higher total sales and larger profits for San Diego firms.

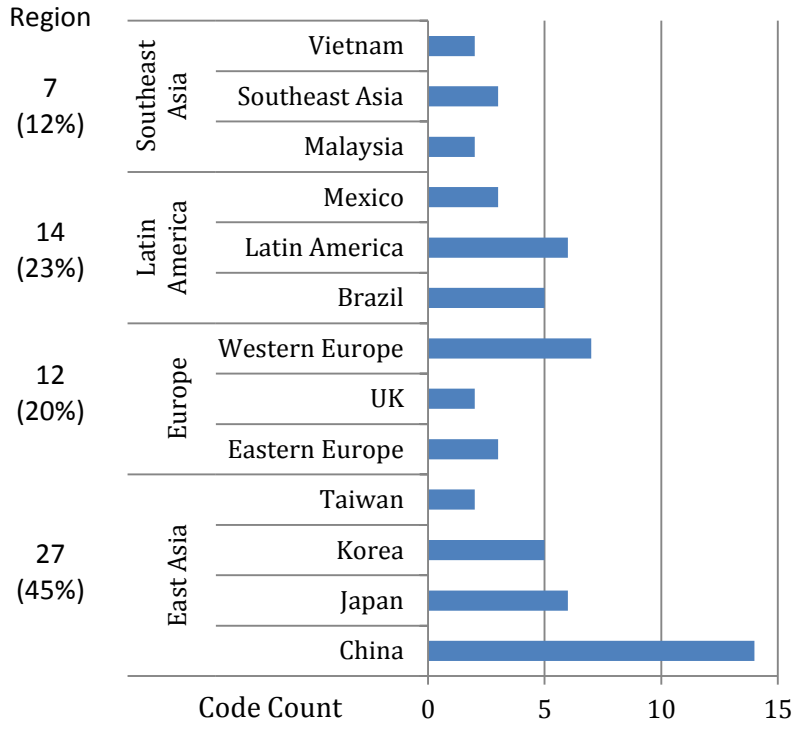
Regulations and Other Barriers

Dealing with multiple foreign governments is a particular challenge for exporting firms due to extensive foreign regulations. Such regulations can include quality control requirements, product certifications, and approval from organizations such as the foreign equivalent of the FDA. Interviewees noted that special expertise in unique market regulations is required to maneuver through the rules and restrictions. These regulations do not include foreign protection policy in the form of quotas and tariffs. Surprisingly, San Diego firms noted foreign protection only one-third as frequently as other "red-tape" style regulations – separate from hindrances associated with customs. Firms noted the snail-paced processing of exports passing through foreign customs check-points as a significant problem. In some rare instances, notoriously associated with Brazil, customs held shipments for six months, making product almost obsolete when released. Despite these obstacles, firms continue to expand exports to existing markets and into new markets.

New Foreign Markets

Interviewees identified 25 unique countries or regions where they plan to expand their foreign business within the next 10 years. This produced a total of 80 "new market" codes. The most frequent codes, collapsed into four distinct regions, are summarized in Figure 36. The patterns of responses in this figure are nearly identical (in terms of percentage of total responses) as the Market Survey responses (See Figure 32). We found that planned expansion to Latin America, Southeast Asia, and Europe is consistent. There is surprising variation within the "East Asia" category between these two figures. This is either a result of sampling bias from the interview sample, a discrepancy in coding countries into specific regions, or the result of confusion on the behalf of survey-takers. Both actual export growth (See Figure 15) and expected growth projections from the Market Assessment and Local Intelligence Interviews point to a strong shift toward Asian markets. Across the board, China is identified as a key emerging market.

Figure 36: Local Intelligence Interviews, New Foreign Markets by Region



Opportunities and Barriers for Export Expansion

Asking about opportunities and barriers for export expansion/engagement questions again, within the context of the Local Intelligence Interviews, allowed enumerators to inquire about why these markets were so attractive and discover market-specific barriers that exporters face. Interviewees noted they looked for opportunities in foreign markets that emulated the opportunities in the U.S. markets, that is, exporters favored business conditions and competition parallel to domestic environments. This allows firms to not only export their goods, services, and royalties, but maintain their industry-specific and operational expertise.

Information about the unique characteristics of foreign markets is difficult to find. Interviewees repeatedly expressed that variation in business practices, political risk, and cultural differences creates challenging environments for business. There were a number of interesting ways that firms overcame these differences. The most frequent solutions included a decentralized approach to operations, handling exports through a central distributor, and utilizing professional business networks. The decentralized model, a model where firms establish entities within the foreign markets where they export, provided companies in-market contacts and localized information key to overcoming market-specific challenges. For SME firms without the capacity or financing to establish foreign offices, a centralized distributor was helpful. Distributors, or in some cases a government agency, had extensive experience dealing with foreign business people and leveraged their existing knowledge to the benefit of San Diego firms.

Professional Networks

Above all, firms utilize the vast resources of professional networks as the most common solution for overcoming market-specific challenges. When asked how "networks play a role" in firms' ability to "participate in foreign markets," interviewees overwhelming responded that networks provide knowledge about specific markets that is unavailable elsewhere. In terms of coding, the benefit of networks as a source of market information was almost as frequent as for regulations. The type of information that firms acquire from networks varies, however, just as the type of network varies as well. In some cases, industry associations, organizations that assemble businesses involved in similar products, such as San Diego's CONNECT, provided the network where firms gathered market-specific information. In other cases, trade shows and/or business conventions where specific products and services are on display offered businesses an opportunity to share insights and knowledge.

The type of information that firms gleaned from networks varied as well. Firms made the most successful network connections when they engaged with their professional networks for the purpose of export expansion. The people they found included experts in logistics (to help move products), talent (in the form of individuals with market-specific expertise), and information about export assistance programs. Many public and nonprofit entities offer export assistance programs in an attempt to provide the same type of market-specific information that networks provide.

Throughout both the Market Survey and Local Intelligence Interviews, firms reported that they were mostly unaware that such programs even exist (about 15 percent of respondents for both the surveys and interviews). Among those that did utilize export assistance programs, all reviews were overwhelmingly positive. Interviewees noted that trade missions, especially, improved their export business by providing a sort of "one-stop shop" for information about a specific country. Without awareness of these programs, however, it was not surprising that firms would turn to their professional networks first for any advice or assistance with international market engagement.

"Born Global"

While some firms grow into foreign markets over time, others are viable for international business from the beginning as a characteristic of their initial business model. One interviewee described this concept as being "born global." The idea that some firms are innately global is both intriguing and concerning. For firms that integrate international expansion into their growth model from the beginning, we would expect a diversity of revenue streams from many markets coupled with a decentralized organizational structure (common among large multinational firms). This bodes well for the longevity and profitability of these enterprises. Interviewees classified in the SME categories noted that they were more concerned with supplying domestic demand than expanding to foreign markets. In some instances, SMEs did not even consider global expansion until approached by a foreign business that requested their products. This lack of global focus among SMEs suggests that there exists enormous untapped growth potential in international business opportunities.

There is much to be learned from the "born global" firms who have already profitably accessed foreign markets and scaled their production to cost competitive levels.

San Diego Regional Development

Overview

Interviewees were also asked about their perceptions and suggestions for regional economic development. This line of questioning helped to reveal their awareness of local efforts, the perceived effectiveness of such efforts, and identify the gaps in local development efforts. The final interview question offered interviewees the opportunity to make suggestions for local leaders as if they were advising leaders about how to craft a regional export development plan.

In general, interviewees were almost completely unaware of regional development efforts. When probed by enumerators to give examples of efforts that they thought could be improved, most respondents could not identify any specific programs or initiatives. And despite a neutral framing of the question, responses tended to be very critical of the region's development efforts despite limited awareness of them. Consequently, there was limited insight to glean from the coding of interviewee's responses in relation to the region's overall development efforts. It is apparent that the City of San Diego, County, and other organizations that actively promote regional development have limited visibility in the eyes of the interviewed businesses.

By comparison, interviewees were more eager to discuss strategies and suggestions for improving San Diego's export economy. Although these questions differed substantially from those about engaging with foreign markets, they provided insight into the opportunities for San Diego export assistance organizations and regional governments to help improve regional export growth. Their responses centered around three themes: infrastructure, branding, and streamlining.

Infrastructure

Consistent with the findings of the Market Survey, interviewees were particularly critical of the Unified Port of San Diego and the San Diego County Regional Airport Authority because of insufficient capacity to support their export needs. They pointed to a host of alternative logistical transportation arrangements that stem from this problem. The most frequent alternatives involved the use of Los Angeles-based shipment and distribution infrastructure. Both Long Beach and LAX were repeatedly cited as the point of departure or arrival for products that firms export or import. Interviewees also pointed to the San Ysidro Port of Entry as an infrastructural bottleneck. Even with recent expansion of this port of entry, transportation of products cross-border remains time-consuming.

While there is much criticism of San Diego's infrastructure in terms of export capacity, it is worth noting that interviewees do not claim that increased capacity would reduce their cost of doing business. Instead, discussion of infrastructure seems to be part of the traditional view of exports, whether or not it is less relevant for actual export growth in San Diego. It is expected that such a massive transportation hub just 100 miles from San Diego would service at least some portion of our region's transportation needs. In terms of economic theory, the Los Angeles area has grown into a hub for the movement of goods by specialization and has

developed highly efficient operations compared to San Diego. The United Port of San Diego has its own specialization in handling automobiles, refrigerated goods and other "break bulk" type shipments. Moving forward, San Diego leadership must decide if investment in the expansion of its infrastructure will be cost effective considering that Los Angeles' existing infrastructure is a reasonable and low cost alternative, essentially, a well-established competitor.

Global Branding

San Diego benefits greatly from its image as a sunny and free-spirited place to live and visit. Its robust tourism industry is evidence of San Diego's strong global brand. What this image lacks, however, is a focus on its local businesses not in the tourism and tourism-related industries. Interviewees frequently suggested that branding San Diego as both a place with warm beaches and a hot economy would benefit their businesses. One interviewee noted that when foreigners think of business in California, they think of San Francisco, Los Angeles, and even Las Vegas, omitting San Diego from the picture. Others emphasized that a global brand for San Diego will help to attract foreign investment (FDI) and foreign talent. In line with data collected in the Market Scan, San Diego's locally educated talent leaves the area after graduation (only about 30 percent remain). A global brand would help to fill this gap by retaining San Diego-educated talent, and attracting foreign talent (talent with expertise in foreign markets), and therefore helping exports grow.

Streamlining

Although sometimes outside of the reach of local policy-makers, a large portion of interviewees noted that streamlining of paperwork and services is needed. When exporting goods, services, and/or royalties to foreign markets, businesses encounter additional red-tape procedures uncommon when operating within domestic markets. Whether it's navigating the export licensing process, completing customs paperwork, securing insurance, or other procedures, each of these requirements adds additional costs to exporting by extending time-to-market.

Services available to exporters provided by business development organizations, such as the World Trade Center San Diego, should be simultaneously expanded and consolidated. Interviewees praised the World Trade Center San Diego for its work. On the other hand, interviewees noted that there is a piecemeal approach to export assistance, making it challenging for firms to fully utilize the various resources available.

Some interviewees provided a simple solution to both of these problems: create a one-stop, full-service office that simplifies the export process for businesses. Such an operation could serve to aid firms looking to export with handling paperwork, match firms with potential business partners, and consolidate various regional efforts. SMEs could especially benefit from access to streamlined information. Among the interviewees, SME respondents were the most likely to dismiss exporting as an opportunity for growth because the additional paperwork and perceived costs (associated with additional hiring and other expenses) were too intimidating.

Conclusion

After an extensive review of the San Diego export economy, the Market Assessment Team identified the overarching trends, strengths, weaknesses, and competitive advantages in San Diego's regional economy. Briefly put, while tracking the national recovery in the wake of the recession, San Diego is lagging behind. In order to catch up and even surpass national growth in the past few years, the region should focus on leveraging its competitive advantage (seen in the leading innovation, high-tech, and information intensive industries of San Diego).

Improved engagement with the global trade market will provide companies with much needed access to significant growth opportunities. In order to make this possible for the vast number of SMEs in San Diego, the region should focus on providing information to firms and companies about the opportunities and business practices of the world's leading and emerging trade markets (as evidenced by the Market Survey and Local Intelligence Interviews).

With research informed by data from the Brookings Institution, the Bureau of Economic Analysis, and many other sources, this Market Assessment combines the quantitative power of data-driven analysis with the qualitative nuance of the strategies, concerns, and suggestions of San Diego business leaders. Together, these sources create a compelling case for the development of a focused export development plan. Combined with the unparalleled cooperation of key regional organizations driving economic growth,– including representation from private, public, and non-profit organizations – the prospect of real export growth for the San Diego export economy is becoming a reality. The continued cooperation of the San Diego Core Team provides the environment for measurable impact.

This Market Assessment will serve to inform the development of a regional export development plan, its mission, vision, and implementation strategy. With extensive regional data and insight from regional business leaders, the San Diego Metropolitan Export Initiative is poised to make a measurable impact on San Diego's metropolitan export economy.

Appendix

Local Export Players

San Diego has a well-developed infrastructure to support local export business. Within the region there are a number of federal, state, and local (city, academic, and non-profit) organizations that provide the above mentioned support to local businesses. The key organizations are shown and described below.

Table 13: Federal, State, and Local Export Assistance Providers

Federal
Export.gov
Export-Import (Ex-Im) Bank
National District Export Council
Service Core of Retired Executives (SCORE)
U.S. Department of Commerce
State
California Governor's Office of Business and Economic Development
Local (city, academic, and non-profits)
BIOCOM
Center for International Business Education and Research at SDSU
CONNECT
Global CONNECT
Institute of the Americas
San Diego Regional Economic Development Corporation
San Diego Unified Port District
School of International Relations and Pacific Studies at UCSD
Small Business Development International Trade Center (SBDITC)
World Trade Center San Diego

Export Service Providers: Federal

Export.gov (The U.S. Government's Export Portal)

Export.gov brings together resources from across the U.S. Government to assist businesses in planning their international sales strategies and succeed in today's global marketplace.

Export-Import (Ex-Im) Bank

The Export-Import Bank of the United States (Ex-Im Bank) is the official export credit agency of the United States. Ex-Im Bank's mission is to assist in financing the export of U.S. goods and services to international markets. Ex-Im Bank enables U.S. companies of all sizes to

turn export opportunities into real sales that help to maintain and create U.S. jobs and contribute to a stronger national economy.

National District Export Council (DEC)

District Export Councils (DECs) are organizations of leaders from the local business community, appointed by successive Secretaries of Commerce, whose knowledge of international business provides a source of professional advice for local firms. The purpose of the National DEC is to facilitate dialogue and communication between all the regional DECs around the U.S. and the U.S. Department of Commerce.

Service Core of Retired Executives (SCORE)

SCORE "Counselors to America's Small Business" is a nonprofit association dedicated to not only educating entrepreneurs but also the formation, growth and success of small business nationwide. SCORE is a resource partner with the U.S. Small Business Administration (SBA). SCORE has 370 chapters throughout the United States and its territories, with 11,200 volunteers nationwide. Working and retired executives and business owners donate time and expertise as business counselors.

U.S Department of Commerce, U.S. Commercial Service, San Diego Export Assistance Center

The U S. Department of Commerce's local office has a staff of international trade specialists with industry specific knowledge to help San Diego area companies export their product or service abroad through counseling and promotional services.

Export Service Providers: State

California Governor's Office of Business and Economic Development

The California State Trade and Export Promotion (California STEP) program leverages a statewide network of state, federal, private and non-profit trade promotion organizations to facilitate export promotion and activities in targeted industries and to drive exports for small businesses.

Export Service Providers: Local

BIOCOM

BIOCOM, the largest regional life science association in the world, focuses on initiatives that positively influence the region's life science community in the development and delivery of innovative products that improve health and quality of life. Initiatives include: international market access, capital formation, public policy, workforce development, group purchasing and member services.

Center for International Business Education and Research at SDSU

SDSU's Center for International Business Education and Research (CIBER) has served as a catalyst to advance programs in international business education and research, language training, student and faculty international exchanges, and executive education outreach programs for our various constituents.

CONNECT

CONNECT is a regional program that catalyzes the creation of innovative technology and life sciences products in San Diego County by linking inventors and entrepreneurs with the resources they need for success, with a particular focus on the commercialization of new technology and life sciences products.

Global CONNECT

Global CONNECT provides highly relevant and application-oriented research and educational services on the topics of entrepreneurship, technology commercialization, and innovation. Global CONNECT utilizes San Diego economic resources to assist clients in building the capacity necessary to compete in a global, knowledge-based economy.

Institute of the Americas

The Institute of the Americas is a leader in U.S.-Canada-Latin America cooperation. Best known for its energy and technology programs, the Institute brings together business leaders, government leaders, and representatives of civil society by organizing executive roundtables, professional workshops, and community outreach programs.

San Diego Regional Economic Development Corporation

San Diego Regional EDC offers many resources for companies located inside and outside the San Diego region. The San Diego Regional EDC leverages its position in the community to help companies address their unique business needs (talent, financial and capital acquisition, or even regional cooperation). It also serves as an intermediary agent between public and private sectors.

Unified Port of San Diego

The Unified Port of San Diego manages the San Diego Bay and surrounding waterfront land. It oversees the protection and development of the Bay, through services including but not limited to cargo, maritime, real estate, environmental, business, recreation and safety.

School of International Relations and Pacific Studies at UC San Diego

The School of International Relations and Pacific Studies (IR/PS), at the University of California, San Diego, is devoted to the study of international affairs, economics, and policy education. Its research and education stands out as the only professional school of international affairs that is exclusively focused on the Pacific Rim. The curriculum blends a mix of three professional school traditions-schools of international relations, public policy, and management. Interdisciplinary yet integrated curricula prepare students to perform with

distinction in senior policy positions in the public and nonprofit sectors, as well as in the top management of multinational firms and financial institutions.

Small Business Development International Trade Center (SBDITC)

The Small Business Development Center and the Center for International Trade Development (SBDC and CITD) provide a unique suite of resources to assist potential and existing export businesses achieve success. Trade specialists guide potential export-businesses through the complexities of global market orientation through seminars and one-on-one counseling. For currently exporting businesses, the CITD provides in-depth business counseling, strategic training, and other services.

World Trade Center San Diego (WTCSD)

World Trade Center San Diego is licensed by the World Trade Centers Association (WTCA) in New York City and is affiliated with an international network of over 750,000 international trading corporations with over 309 members in 90 countries. The WTCSD seeks to leverage its extensive network to provide members with comprehensive international trade services and strategic global contacts in order to both facilitate and expand their international trade.

Exhibit 1: Brookings' Global Metro Monitor Industry Category Breakdown

Industry Category	Corresponding Industry for U.S. Metro Areas	Approx. NAICS Code '07
Commodities*	Agriculture, Forestry, Fishing and Hunting	11
	Mining, Quarrying, and Oil and Gas Extraction	21
Manufacturing	Manufacturing	31-33
Utilities	Utilities	22
Construction	Construction	23
Trade and tourism	Wholesale Trade	42
	Retail Trade	44-45
	Accommodation and Food Services	72
Transportation	Transportation and Warehousing	48-49
Business Services*	Finance and Insurance	52
(financial, insurance,	Real Estate and Rental and Leasing	53
and real estate services)	Professional, Scientific, and Technical Services	54
	Management of Companies and Enterprises	55
Local/non-market services	Administrative, Support, and Waste Management*	56
	Educational Services	61
	Health Care and Social Assistance	62
	Arts, Entertainment, and Recreation	71
	Other Services (except Public Administration)	81
	Government	
	Information	51

**See original report for further detail*

Exhibit 2: Major Industry and Minor Industry Categories, Brookings Export Nation 2012

- Agriculture
  - Agricultural Products
- Business Services
  - Accounting, auditing, bookkeeping Services
  - Advertising Services
  - Architectural and engineering Services
  - Computer and Information Services
  - Construction Services
  - Equipment Installation Services
  - Industrial Engineering Services
  - Legal Services
  - Management and Consulting
  - Medical Services
  - Mining Services
  - Operational Leasing Services
  - Other Services
  - R & D Services
  - Sports and performing arts
  - Trade-related Services
  - Training Services
- Chemicals
  - Basic Chemicals
  - Cleaning Products
  - Misc. Chemicals
  - Paint Products
  - Pesticides and Fertilizers
  - Pharmaceuticals
  - Resins and Synthetic Rubbers
- Computers and Electronics
  - Audio and Video Equipment
  - Communications Equipment
  - Computer Equipment
  - Magnetic and Optical Media
  - Precision Instruments
  - Semiconductors
- Financial Services
  - Financial Services
- Machinery
  - Agri., Constr., Mining Machinery
  - Commercial and Service Machinery
  - Engine and Power Equipment
  - HVAC Equipment
  - Industrial Machinery
  - Metalworking Machinery
  - Misc. General Purpose Machinery
- Medical Equipment, Sporting Goods
  - Jewelry, Sporting Goods
  - Medical Equipment and Supplies
- Transportation Equipment
  - Aircraft Products and Parts
  - Misc. Transportation Equipment
  - Motor Vehicle Body and Trailers
  - Motor Vehicle Parts
  - Motor Vehicles
  - Railroad Rolling Stock
  - Ships and Boats
- Travel and Tourism
  - Tourism Accommodation
  - Tourism Air Transportation
  - Tourism Amusement and Recreation
  - Tourism Auto Repair
  - Tourism Bus Transportation
  - Tourism Charter Bus Industry
  - Tourism Film and Performing Arts
  - Tourism Food and Drink
  - Tourism Gambling Industries
  - Tourism Gas Consumption
  - Tourism Other
  - Tourism Other Personal Services
  - Tourism Rail Transportation
  - Tourism Scenic and Sightseeing Transportation
  - Tourism Sports, Museums, Historical Sites, Amusement Parks
  - Tourism Sports, Performing Arts, Agents for Artists, etc.
  - Tourism Support Activities for Road Transportation
  - Tourism Taxi and Limousine Service
  - Tourism Travel Arrangement Services
  - Tourism Urban Transit, Ground Passenger Transportation
  - Tourism Vehicle Rental
  - Tourism Water Transportation
- Royalties
  - Royalties

Exhibit 3: San Diego Metro Employment Changes by Industry, 2012

Employment changes by industry

Industry	Location quotient	Change, last four qtrs.	Change, most recent qtr.
Information	0.9	1.90%	2.80%
Mining (including oil and gas)	0.05	0.00%	2.50%
Professional and business services	1.24	3.60%	1.70%
Government	1.39	0.00%	1.00%
Construction	1.05	4.30%	0.80%
Trade, transportation, and utilities	0.8	2.10%	0.70%
Education	0.81	2.30%	0.50%
Agriculture, forestry, and hunting	0.4	-13.30%	0.40%
Leisure and hospitality	1.19	2.80%	0.00%
Health services	0.74	2.10%	-0.20%
Other services	1.04	1.20%	-0.50%
Real estate and rental and leasing	1.3	2.30%	-1.00%
Manufacturing	0.76	-2.10%	-1.30%
Finance and insurance	0.74	1.80%	-2.30%

Exhibit 4: Traded Industry Employment and Wages (2008-2010): Clusters by Quadrant

Traded Industry Cluster Employment and Wages2008 - 2010
Quadrant I
Aerospace, Navigation, and Maritime Technology
Biomedical Devices and Products
Biotechnology and Pharmaceuticals
Cleantech
Information and Communication Technologies
Quandrant II
Action Sports Manufacturing
Publishing and Marketing
Quandrant III
Apparel Manufacturing
Fruits and Vegetables
Horticulture
Specialty Foods and Microbreweries
Quandrant IV
Entertainment and Hospitality

Exhibit 5: Traded Industry Cluster Employment and Wages, 2008-2010

	Employment					Wages
	2008	2009	2010	2010-2008	% Change	2010
Action Sports Manufacturing	4,561	4,378	4,177	-384	-8%	$ 65,300
Advanced Precision Manufacturing	4,692	4,544	4,416	-276	-6%	$ 51,800
Aerospace, Navigation, and Maritime Technology	30,998	30,794	32,099	1101	4%	$ 79,300
Apparel Manufacturing	3,297	2,909	2,870	-427	-13%	$ 30,400
Biomedical Devices and Products	9,901	9,886	12,012	2111	21%	$ 99,500
Biotechnology and Pharmaceuticals	18,868	19,598	22,636	3768	20%	$ 107,000
Cleantech	7,314	7,570	7,986	672	9%	$ 87,400
Entertainment and Hospitality	149,654	148,839	149,352	-302	0%	$ 21,800
Fruits and Vegetables	4,649	4,031	4,241	-408	-9%	$ 26,900
Horticulture	6,765	5,961	6,013	-752	-11%	$ 29,100
Information and Communication Technologies	73,976	72,750	72,043	-1933	-3%	$ 94,400
Publishing and Marketing	13,328	12,216	11,848	-1480	-11%	$ 56,600
Specialty Foods and Microbreweries	1,844	1,695	1,717	-127	-7%	$ 43,500

Source: Data from SANDAG Info, December 2012

Exhibit 6: Market Survey, Responses by Industry

Industries		
Industry	Frequency	% Total
Action Sports Manufacturing	2	1%
Advanced Precision Manufacturing	12	5%
Aerospace, Navigation, and Maritime Tech.	36	14%
Apparel Manufacturing	3	1%
Biomedical Devices and Products	8	3%
Biotechnology and Pharmaceuticals	11	4%
Cleantech	20	8%
Entertainment and Hospitality	24	10%
Fruits and Vegetables	6	2%
Horticulture	3	1%
Information and Comm. Technologies	55	22%
Publishing and Marketing*	63	25%
Specialty Foods and Microbreweries	3	1%
Uniformed Military	5	2%

Exhibit 7: Market Survey, Responses by Exporter Industry

Exporters' Industries		
Industry	Frequency	% Total
Action Sports Manufacturing	2	2%
Advanced Precision Manufacturing	8	6%
Aerospace, Navigation, and Maritime Tech.	23	18%
Apparel Manufacturing	2	2%
Biomedical Devices and Products	6	5%
Biotechnology and Pharmaceuticals	7	5%
Cleantech	14	11%
Entertainment and Hospitality	9	7%
Fruits and Vegetables	3	2%
Horticulture	2	2%
Information and Comm. Technologies	31	24%
Publishing and Marketing*	21	16%
Specialty Foods and Microbreweries	1	1%
Uniformed Military	2	2%

Exhibit 8: Market Survey, Responses by Non-exporter Industry

Non-Exporters' Industries		
Industry	Frequency	% Total
Action Sports Manufacturing	0	0%
Advanced Precision Manufacturing	4	3%
Aerospace, Navigation, and Maritime Tech.	13	11%
Apparel Manufacturing	1	1%
Biomedical Devices and Products	2	2%
Biotechnology and Pharmaceuticals	4	3%
Cleantech	6	5%
Entertainment and Hospitality	15	13%
Fruits and Vegetables	3	3%
Horticulture	1	1%
Information and Comm. Technologies	24	20%
Publishing and Marketing*	42	35%
Specialty Foods and Microbreweries	2	2%
Uniformed Military	3	3%

Exhibit 9: Market Survey, Total Responses by Firm Exporter Type and Size

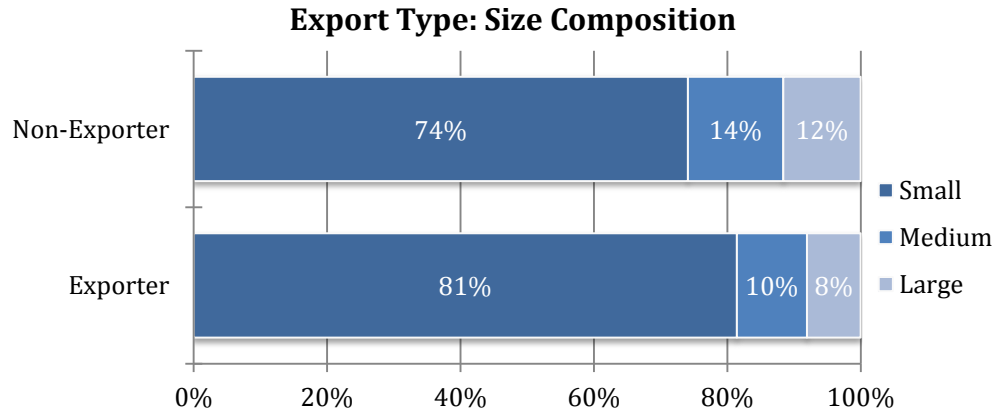


Exhibit 10: American Society of Civil Engineers (ASCE) Infrastructure Report Card, 2012

2012 San Diego County Report Card		
Public Infrastructure Type	2005	2012
Aviation	-	C+
Bridges	-	C+
Land and Sea Ports of Entry	C	C-
Levees/Flood Control/Urban Drainage	C -	C-
Parks/Recreation/Environment	B-	C
School Facilities	C+	C
Solid Waste	-	B
Surface Transportation	C	D+
Wastewater/Collection Systems	C+	B
Wastewater/Treatment	B	B+
Water	B	B

Exhibit 11: Market Survey, New Export Markets

New Export Markets Within the Next 10 Years?				
	Exporters		Non-Exporters	
Response	Frequency	% Responses	Frequency	% Responses
Yes	72	57%	17	16%
No	13	10%	53	50%
Do Not Know	28	22%	28	27%
Decline to Respond	13	10%	7	7%

Exhibit 12: Market Survey, New Export Market by Industry

New Export Market: Industries	
Industry	% Responses
Computers and Electronics	20%
Business Services	16%
Machinery	11%
Travel and Tourism	9%
Government	7%
Transportation Equipment	6%
Chemicals	5%
Royalties	2%
Medical Equipment, Sporting Goods	1%
Other	23%

Exhibit 13: Export Assistance Types: Relative Importance, Small Exporters

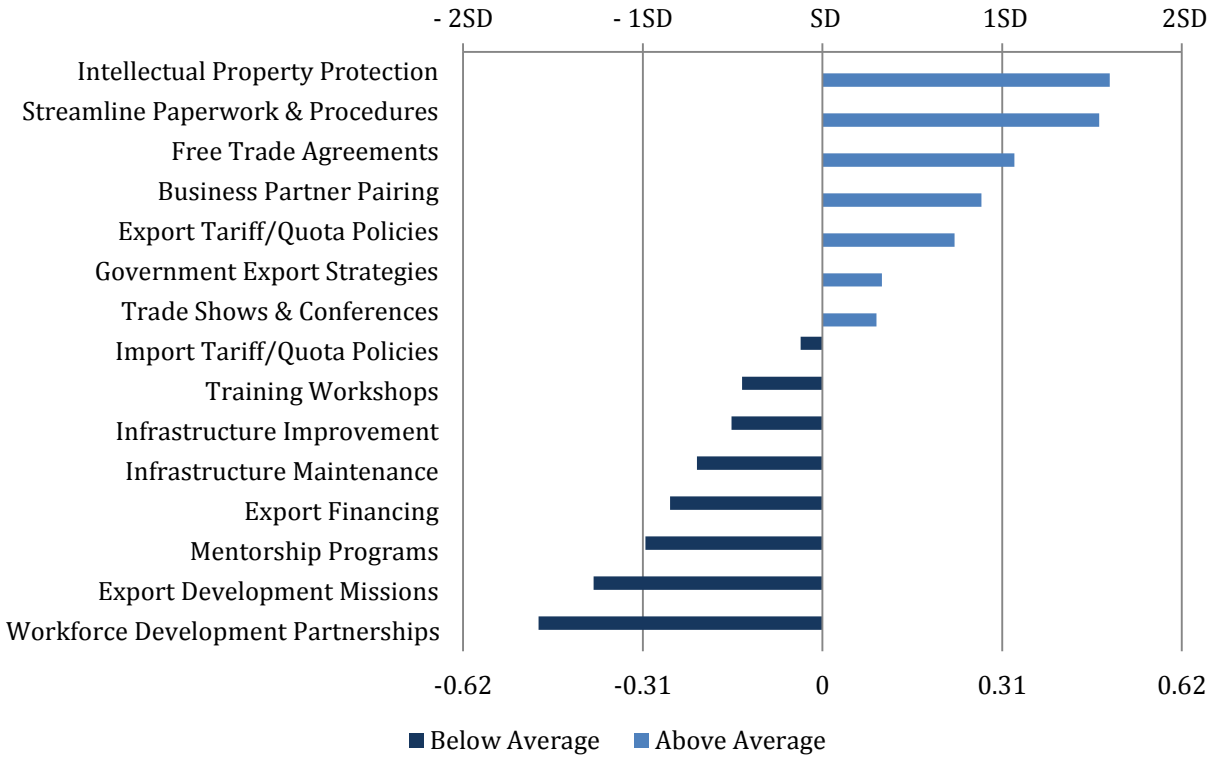


Exhibit 14: Export Assistance Types: Relative Importance, Medium Exporters

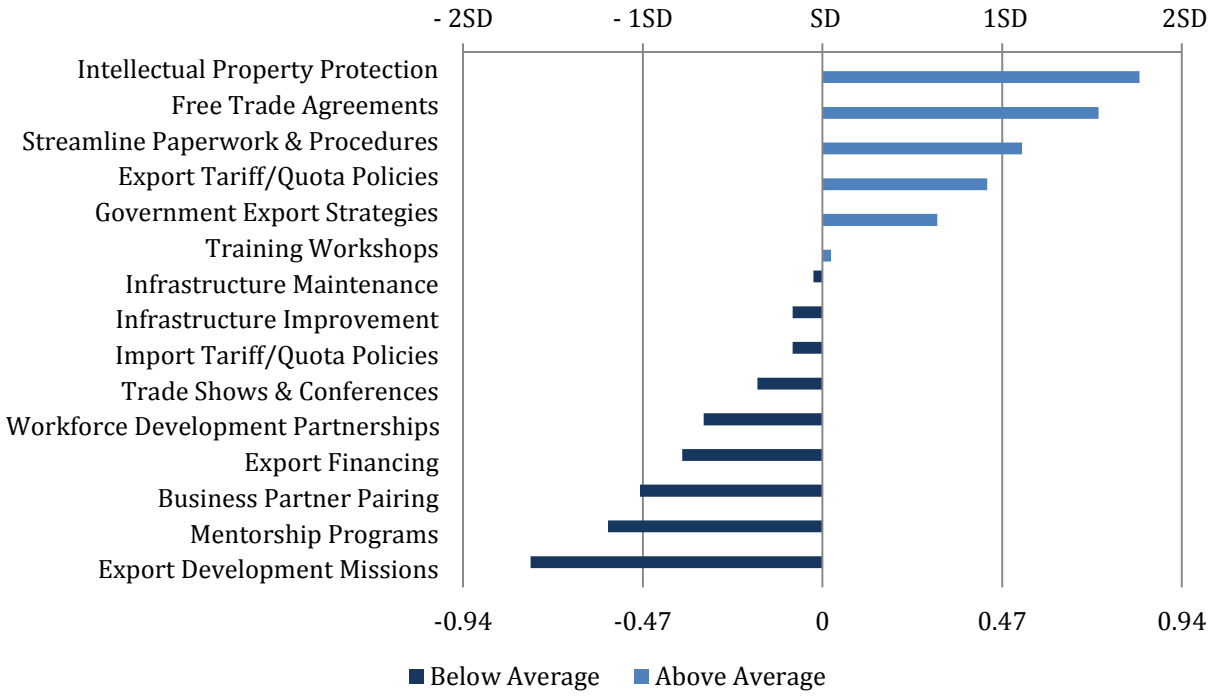


Exhibit 15: Export Assistance Types: Relative Importance, Large Exporters

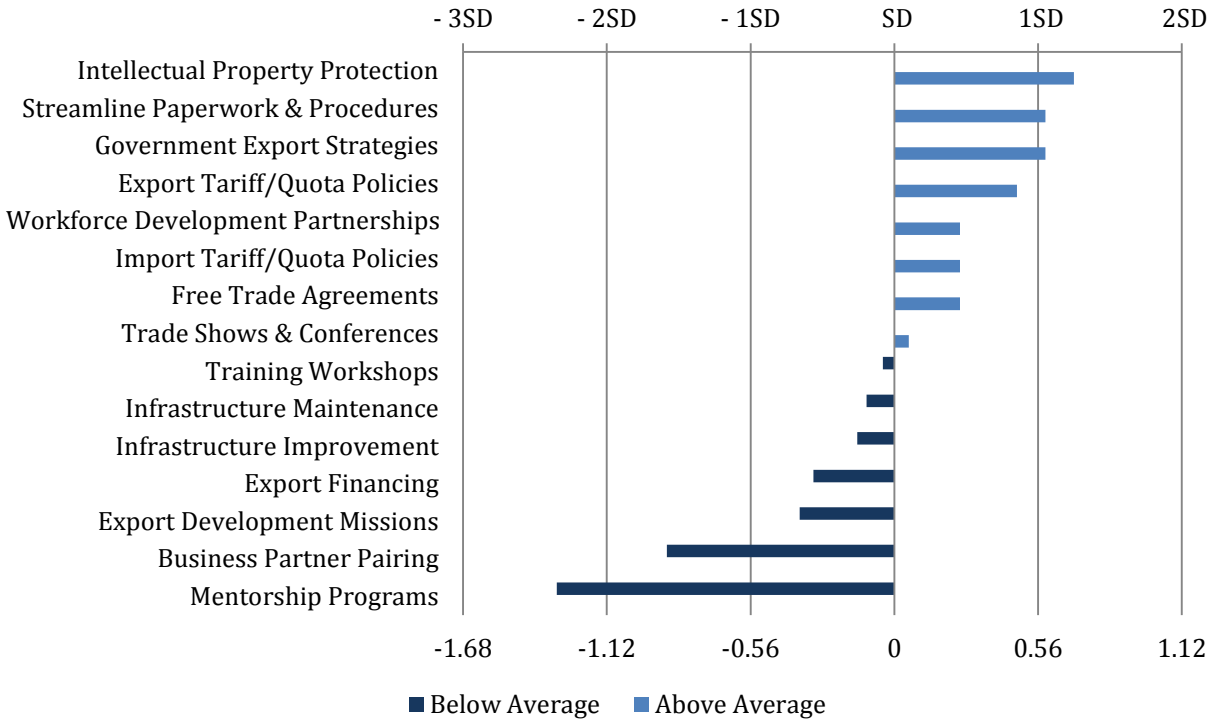


Exhibit 16: Export Assistance Types: Relative Importance, Small Non-exporters

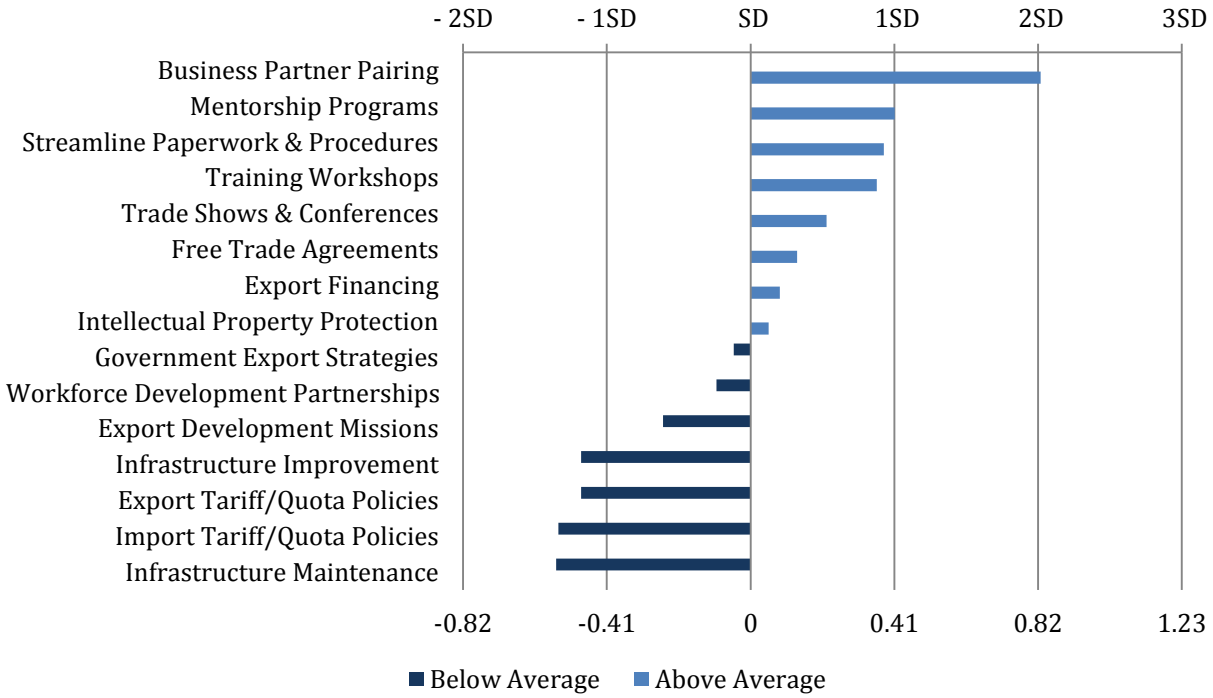


Exhibit 17: Export Assistance Types: Relative Importance, Medium Non-Exporters

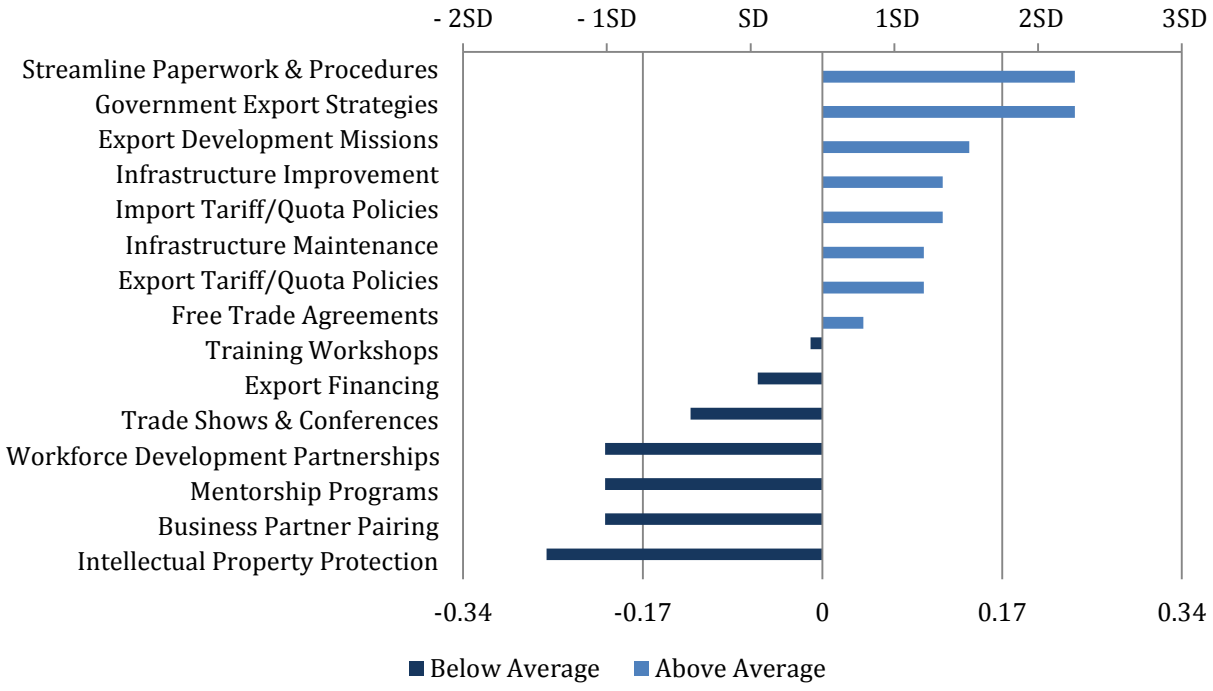
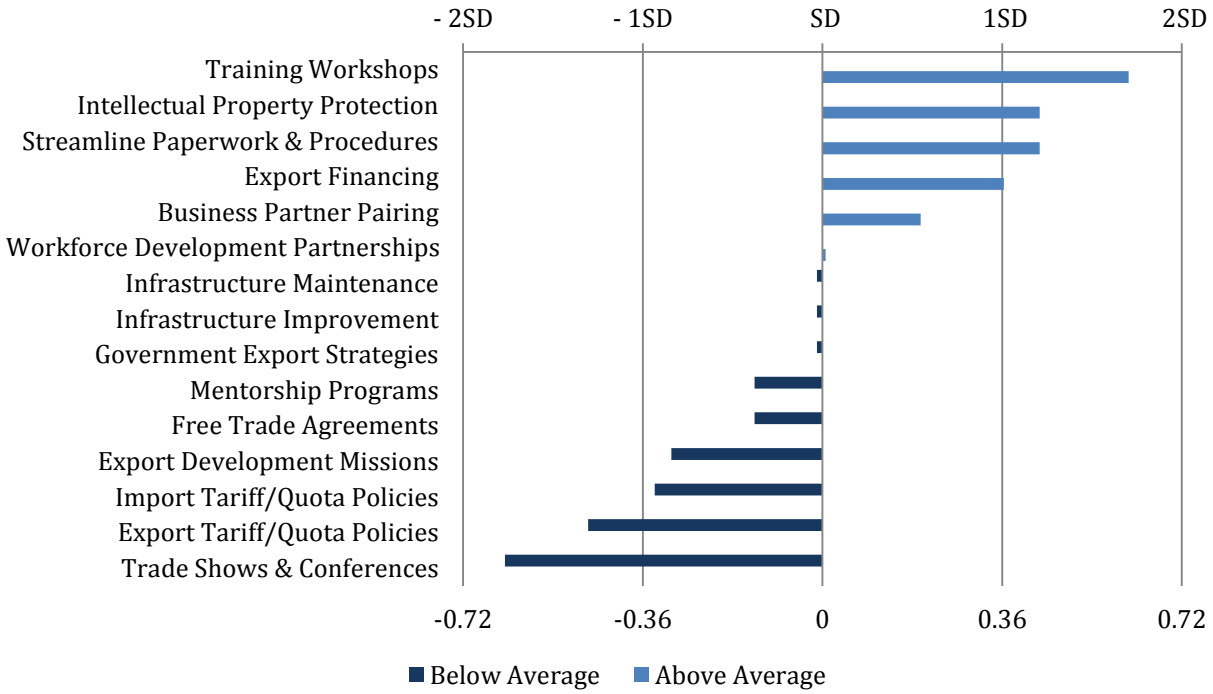


Exhibit 18: Export Assistance Types: Relative Importance, Large Non-exporters



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