



ECONOMIC BRIEF

U.S. Export Adaptability at the State Level

About the Author

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Introduction

The structure of demand for goods and services is rapidly changing in world markets. The products in demand by a trading partner a decade ago might not be the same as the products in demand today. This feature of international trade raises the issue of the need for firms in exporting countries to become more flexible in adapting their exports to the ever-changing pattern of international demand. Exporting potato chips or microchips is vastly different, so the capacity of exports to generate and sustain GDP growth is related not only to the volume but also to the structure of exports. The composition of exports will determine the long-term productivity growth potential of the export sector itself, the capacity of exports to induce productivity growth in the rest of economy, and the welfare gain from specialization (Palma 2009). It is in a region's best interest to see its firms shift resources toward more growth-enhancing export activities and adapt the country's export production capacity to changing international demand.

As the domestic economy emerges slowly from a recession, U.S. companies are recognizing that expansion lies in selling to foreign markets, and U.S. officials are counting on exports to accelerate the recovery. The Obama administration is pushing to achieve its goal of doubling U.S. exports by 2014 in order to generate stronger economic growth at home (Obama 2011).

The aim of this study is to examine the ability of the 50 U.S. states' exporters to adapt to the changing demand from OECD countries during the period of 1999 – 2009.¹ Although China's trade with the U.S. has grown rapidly in past decades,² this report focuses solely on the U.S. exports to the OECD market.³ The study excludes developing countries as export destinations in order to avoid including export products that are heavily demanded by them but in less demand by advanced countries,

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such as unprocessed primary commodities and food products (the potato chips versus microchips issue). Regions that rely on exports of these products could see their purchasing power decline over time because of the low income and price elasticity of demand of these products that can deteriorate the country's terms of trade. Essentially, this makes the country less able to import or consume more. The latest data confirms that the advanced economies that are members of OECD are still major destinations for U.S. exports as of 2010.⁴

In the remainder of this study, we review the demand for imported goods in OECD countries, analyze the U.S. trade status, and evaluate the adaptability of exports among OECD

1. OECD (Organisation for Economic Co-operation and Development) is an international economic organization of 34 countries founded in 1961 to stimulate economic progress and world trade. Most OECD members are high-income economies with a high Human Development Index and are regarded as developed countries. OECD countries are listed in Figure 7.
2. In 2010, China ranked third in terms of U.S. export destinations (up from 11th in 2000), and ranked first in terms of sources of U.S. imports (up from fourth in 2000) (ITC 2010).
3. The author is aware that emerging economies are becoming more significant for U.S. export destinations. Also, China's reliance on U.S. products has become more sophisticated over the last decade, i.e. it demands more complex industrial machinery, medical devices, and high quality equipment, rather than computers from the U.S. Increasingly, China is seen as an opportunity rather than a threat.
4. All of the top 15 destinations for U.S. exports in 2010, except China, Singapore, Hong Kong, Taiwan, and Brazil, are members of OECD (ITC 2010).

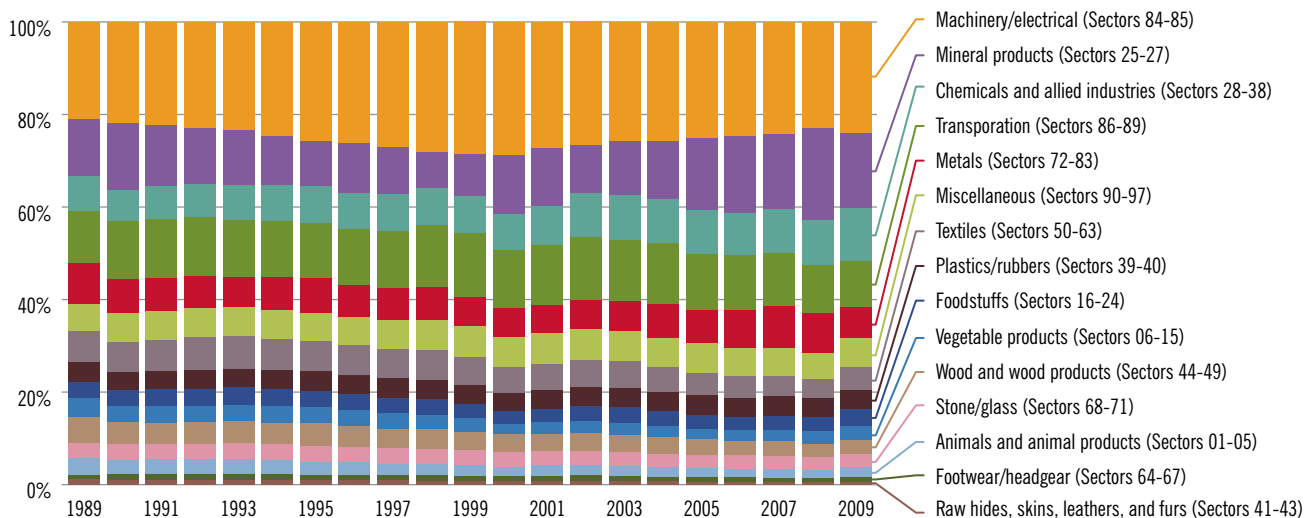
countries and U.S. states. We also profile states that lead in export adaptability and summarize our findings.

The OECD Import Demand

Figures 1 and 2 show significant changes in both the structure and volume of OECD demand for imports in selected sectors in the past 20 years. There has been a gradual decline in the share of demand for primary commodity imports, such as animal and vegetable products (Figure 1). Their import demand volumes remain relatively stable, with a slightly upward trend in the late 2000s (Figure 2). For reference, the total OECD import from the world peaked in 2008 at \$10.4 trillion and dropped to \$7.8 trillion in 2009 because of the world economic recession.

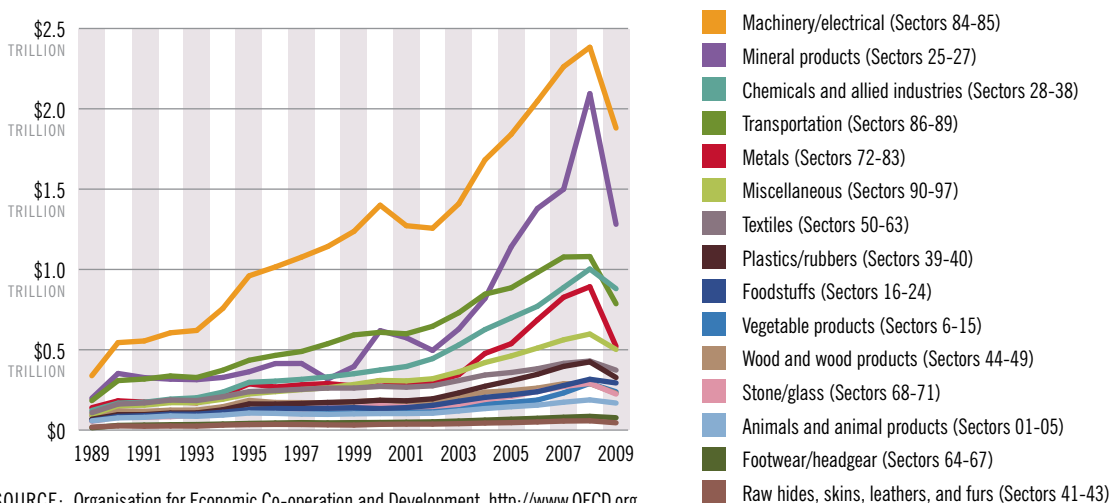
The share of mineral products (mostly influenced by oil and gas products) declined in the late 1990s, then experienced a significant upturn since 2005, but dropped sharply in 2009 along with every other sector. The share of the demand for chemical products has grown slowly but consistently over the years. Both the share and the volume of demand for machinery and electrical equipment are the highest among all sectors. The sector's share peaked in 2000, though its import volume continues to grow over the years (with a small drop in 2001 and 2002, again coinciding with a recession). It is apparent from Figure 1 that the three sectors that used to be important in the OECD import market—wood (including paper), textiles, and footwear/headgear sectors—have been losing market share over the years. The

Figure 1: World Share of OECD Imports of All Sectors Except Services (Harmonised System)



SOURCE: Organisation for Economic Co-operation and Development, <http://www.OECD.org>

Figure 2: World Volume of OECD Imports of All Sectors Except Services (Harmonised System)



SOURCE: Organisation for Economic Co-operation and Development, <http://www.OECD.org>

downturn in import of transportation equipment is evident in the late 2000s, mostly due to fewer orders for vehicles, aircraft, and their parts. Other manufacturing products have maintained their share in OECD import market at a relatively stable level.

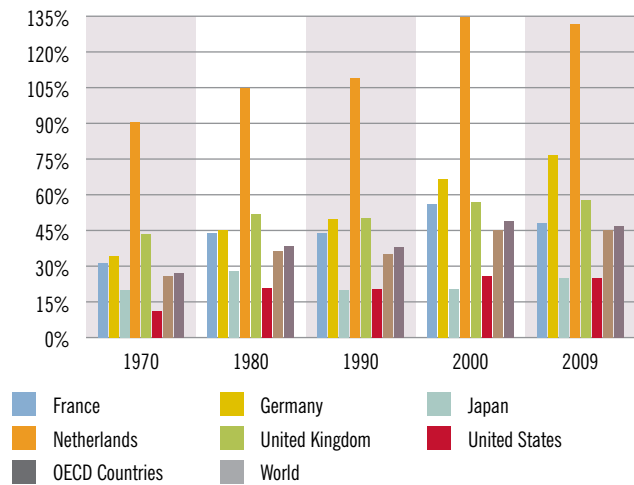
In theory, a decline in share or import volume demanded in primary commodities and some labor intensive manufacturing sectors tends to result in declining terms of trade and purchasing power of exporters of these sectors' products. Although these sectors may still be able to maintain their competitiveness in the world and have output growth, caution is required in order to protect the continuing value of these products. Thus, it may be in each region's interest so see firms shift production and exports away from the declining markets (wood, paper, textiles, and footwear/headgear) and into the growing ones (chemical, machinery, and electrical products) for the long-term welfare gain from international specialization.

Figures 1 and 2 also reveal the remarkable correlation between demand-dynamism and technology content of OECD imports. In other words, consumers tend to gradually change their consumption patterns when they have higher income to consume more of products with high technology content (chemical, machinery, and electrical products), except for the mineral products sector, which can be depressed by a spike in oil and gas prices.

The U.S. Trade Status

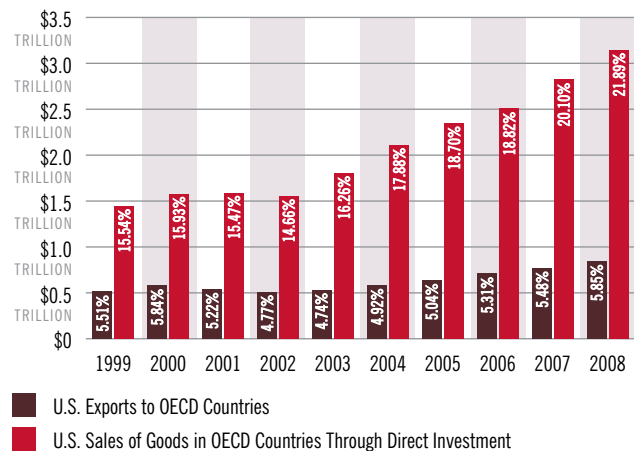
The large trade deficit of the U.S. and its decline in export competitiveness in international trade are well-known. This section provides an analysis of the situation. Figure 3 shows that compared with other developed countries, the U.S. usually trails in terms of ratio of international trade (exports and imports) over its gross domestic product (GDP). However, one might argue that part of this may be caused by the increased production activities of U.S. multinational companies outside the home country and the lower export volume is not a concern. Figure 4 compares the U.S. exports to OECD countries with the sales of goods in OECD countries by U.S. direct investment in OECD countries. U.S. sales of goods in OECD countries that are produced by U.S. companies established in those countries is about three to four times higher than the U.S. direct exports to OECD countries, both in share of GDP and volume. Figures 5 and 6 reveal the other side of the story—that is, when comparing the share of outflow of foreign direct investment (FDI) to GDP with other advanced countries, the U.S. basically invests less (as a share of its GDP) in the world than those countries, except

Figure 3: Selected Countries' Ratio of International Trade (Exports and Imports), as a Percentage of GDP (Current Prices)



SOURCES: *National Accounts*, World Bank Group, <http://www.WorldBank.org>; *National Accounts*, Organisation for Economic Co-operation and Development, <http://www.OECD.org>

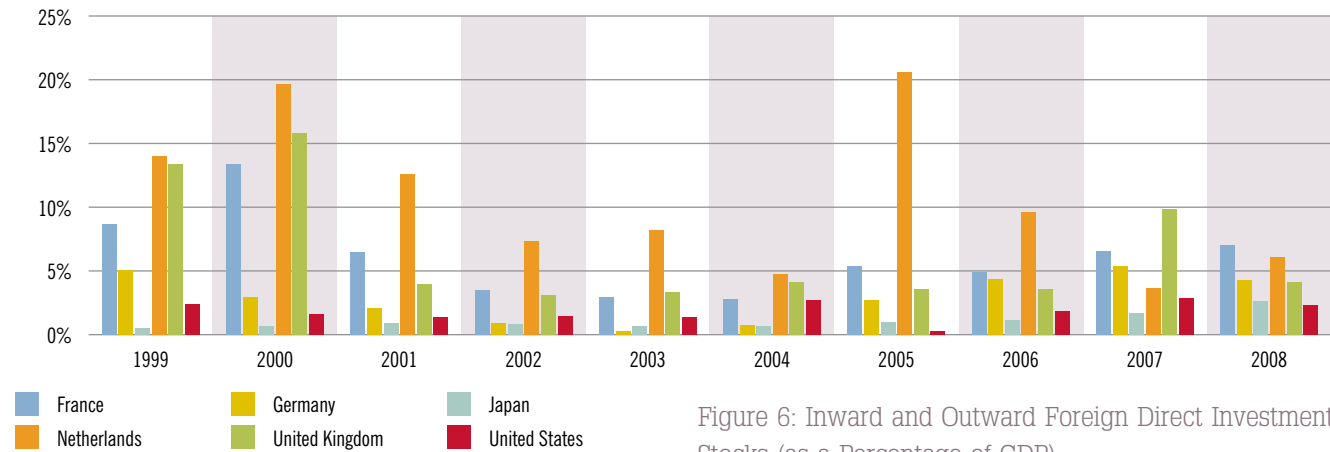
Figure 4: U.S. Exports to OECD Countries and U.S. Sales of Goods in OECD Countries Through Direct Investment



SOURCES: *U.S. Exports*, International Trade Administration, U.S. Department of Commerce; <http://trade.gov>; *U.S. Direct Investment Sales (Majority-Owned Foreign Affiliates)*, Bureau of Economic Analysis, U.S. Department of Commerce, <http://www.BEA.gov>; *U.S. GDP*, World Bank Group, <http://www.WorldBank.org>, and Organisation for Economic Co-operation and Development, <http://www.OECD.org>

Japan (although the U.S. usually has the highest volume of FDI in most years). Figure 6 shows that the U.S. not only invests less than other advanced countries (except Japan) in the world as a share of its GDP, it also received less FDI from the world as a share of its GDP. Thus, it is still important to the U.S. that its firms increase their export share in the international market.

Figure 5: Outflow of Foreign Direct Investment (as a Percentage of GDP)

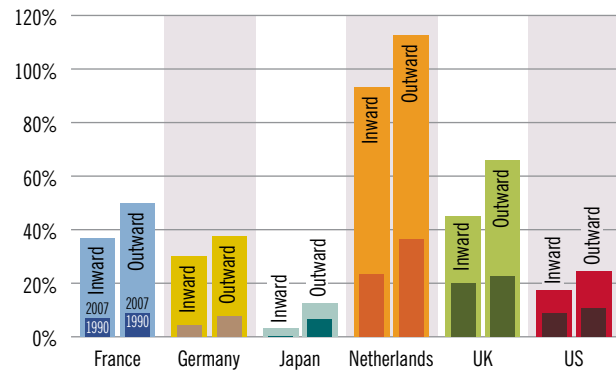


SOURCE: *Outflow of FDI*, Organisation for Economic Co-operation and Development, <http://www.OECD.org>; *U.S. GDP*, World Bank Group, <http://www.WorldBank.org>, and Organisation for Economic Co-operation and Development, <http://www.OECD.org>

In other studies, Bowen and Pelzman (1984) and Azam and Azam (1994), using a Constant Market Share model, found a continued decline in U.S. manufacturing export competitiveness in the world market during the period of 1962 – 1977 and 1979 – 1987, respectively. In addition, Azam and Azam (1994) found that the U.S. lost market share in the developed world in each year since 1981, while in the developing world the U.S. gained export share in each year except 1982, 1985, and 1987. This result underscores the growing importance of developing countries as trading partners, and may be a contributing factor in the decrease of U.S. exports to OECD as U.S. firms have shifted their attention to the developing country markets. In addition, Azam and Azam found that the losses in U.S. export share could be explained by the negative competitive residuals (i.e. the internal factors, such as the U.S. industrial structure and domestic macroeconomic conditions) rather than other external factors.

Unfortunately, lower export competitiveness is not restricted to the U.S., but is also evident in the entire North and Latin America region during the 1950s through the 1980s. East Asian countries have greater capability than Latin American countries to adapt and upgrade themselves to changing world import demand (Cimoli et al 2009, Castaldi et al 2009, Palma 2009). Contributing to this is the role of Japan as a strong leader compared with the U.S., which seems to try to hang on to its natural resource-based and standardized primary commodity exports (the same is true for Latin American countries) instead of moving to the high technology-based, high value-added exports. The problem with natural resource-based and primary

Figure 6: Inward and Outward Foreign Direct Investment Stocks (as a Percentage of GDP)



SOURCE: *Outflow of FDI*, Organisation for Economic Co-operation and Development, <http://www.OECD.org>; *U.S. GDP*, World Bank Group, <http://www.WorldBank.org>, and Organisation for Economic Co-operation and Development, <http://www.OECD.org>

commodity products is that they are highly capital-intensive industries with low domestic value-added. One can argue that a reason for the U.S. being a resource-intensive producer in some regions of the country is due to the comparative advantage and abundant resources that those regions have (for example, Louisiana, Texas, and Alaska for oil and gas, Alaska for fishery and timber, West Virginia for coal). It is true that even the OECD countries still import a high volume of oil, gas, and coal to grow their economy and this could bring the exporting regions substantial export income during an economic boom. However, the important point is that an abundance of natural resources should not be considered a sufficient condition for lack of investment efforts in product diversification and upgrading.

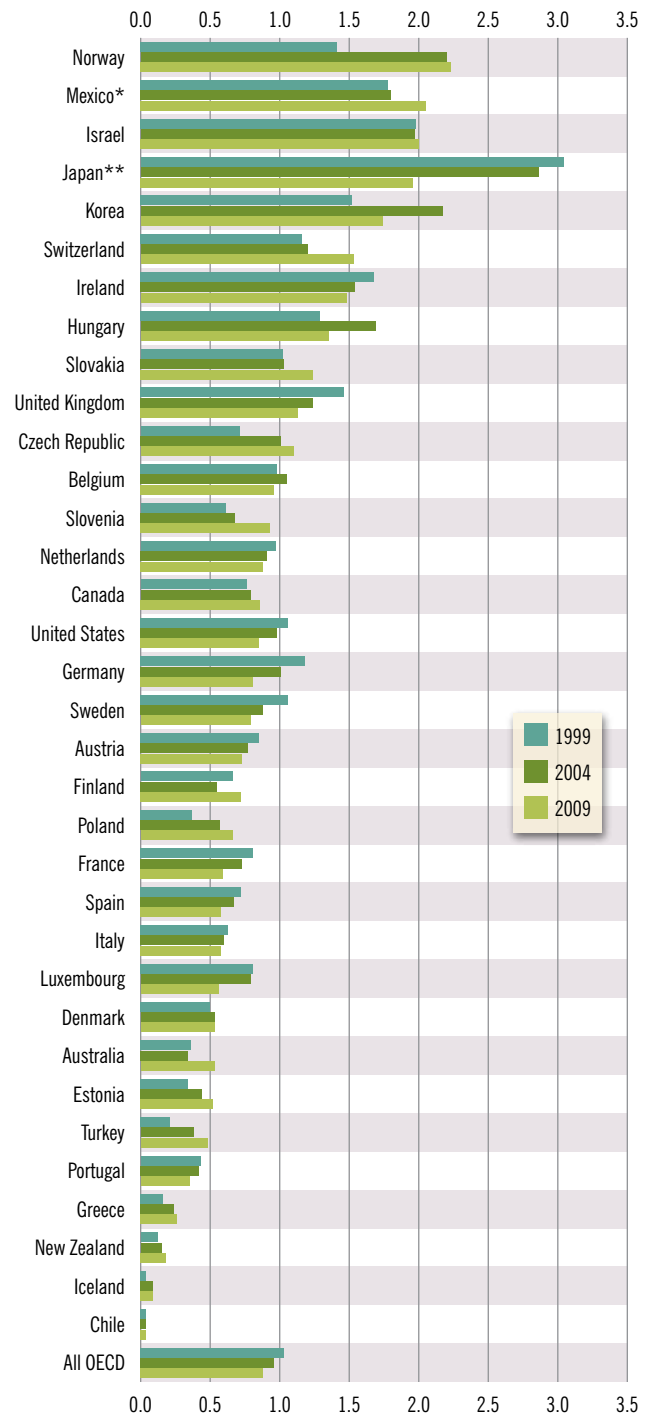
The Study

This study examines the ability of the fifty U.S. states to adapt to changing demand from OECD countries. The approach used here is adapted from Palma’s (2005a, 2009) “demand-adaptability index.” This study revises Palma’s methodology by using only the top ten sectors that have the highest share of OECD imports from the world during the whole period of study as the so-called “demand-dynamic” sectors. In other words, the demand-dynamic sectors defined by this study are those import products from sectors that can maintain their shares in the top ten positions in most years of study. In turn, non-demand-dynamic sectors are those that have smaller shares in total OECD imports during the same period. Palma defines demand-dynamic sectors as those import products from sectors that increase their shares in OECD imports between two points in time, and non-demand-dynamic sectors are those that decrease their shares in total OECD imports during the same period. This study uses the top ten positions instead of the two points in time because by choosing between two points in time, the results could be misleading if the end year selected happens to fall in a recession or irregular period as this would temporarily alter the world consumption pattern and its sector shares. This is the case in year 2009 (a recession year) when trade data reveal a sizeable shift from the general trend (see Figure 2). Also, the demand-dynamic sectors should not be determined by only two points in time, but should be observed and counted for frequency during the entire study period.

With the above methodology, the demand-dynamic sectors are identified using the data (under the Harmonised System) of the OECD’s imports from the world during the period of 1999-2009. The top ten position sectors that have the highest frequency during the period are selected as demand-dynamic sectors. Next, the U.S. states’ exports to OECD under the North American Industry Classification System (NAICS) are matched with the OECD imports from the world during the same period. Discrepancy may exist due to the imperfect matching of the Harmonised system with the NAICS. These demand-dynamic sectors are matched by systems and are shown in Appendix B1. Note that although the 2-digit classification for the Harmonised System and the 3-digit classification for the NAICS are imperfect, they are the most detailed level of information available.

The demand-adaptability index is constructed using the ratio of a country’s or region’s (in this case, each U.S. state’s) market share in demand-dynamic sectors (adjusted by the weight

Figure 7: Demand Adaptability Index—OECD Countries

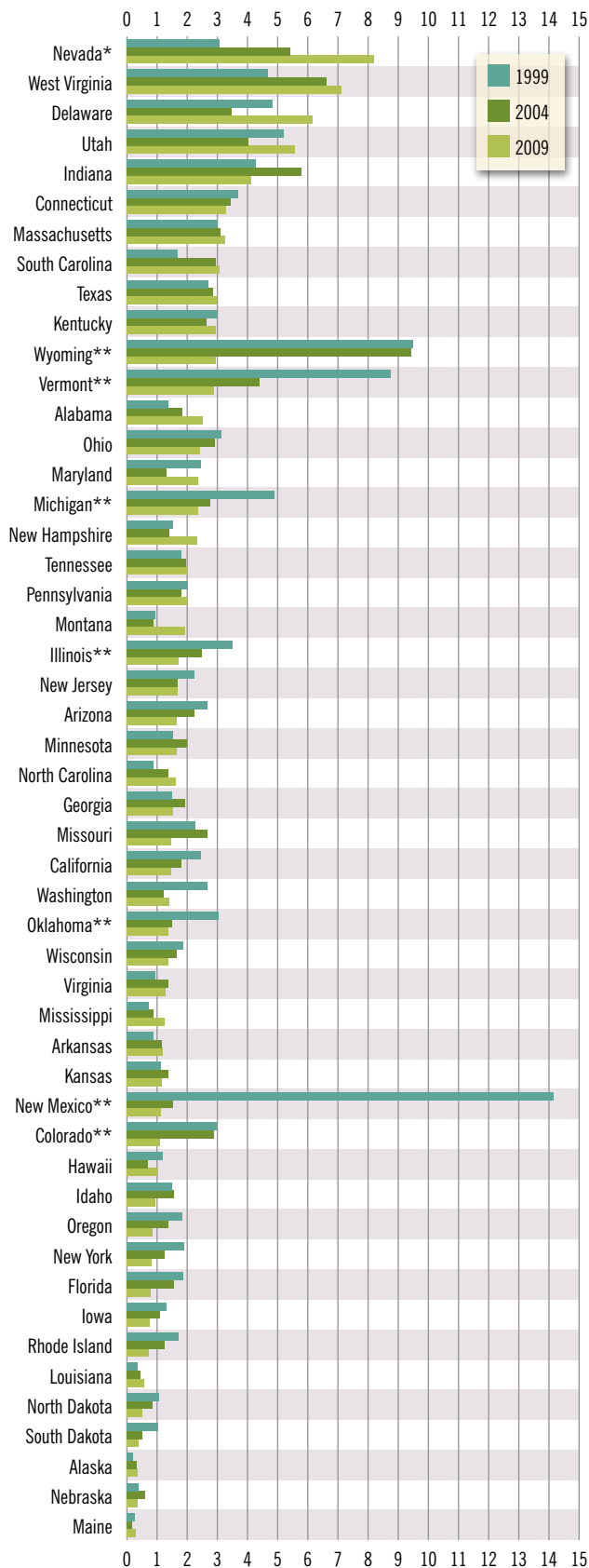


NOTE: * Mexico is an exception. Its indices were high because of the “maquila” effect, i.e. around 80 percent of Mexico’s manufacturing exports was made from imported inputs (Palma 2005b).

** Over-reliance on any sector can result in huge swing in the Demand Adaptability Index, such as in the case of Japan in 2009.

SOURCE: The author, using data from the Organisation for Economic Co-operation and Development, <http://www.OECD.org>

Figure 8: Demand Adaptability Index—U.S. States



of demand-dynamic sectors in all sectors of OECD imports) to that of its market share in non-demand-dynamic sectors (adjusted by these sectors' share in OECD imports). A value of 1.0 for this index at the specific year during the study period indicates that the state was able to follow demand in OECD markets or adapt its exports to the changing structure of OECD imports determined for the study period. For example, if 65 percent of OECD imports in 2004 were in sectors that had been demand-dynamic between 1999 – 2009, an index of 1.0 for a U.S. state in 2004 means that 65 percent of its exports to OECD markets then were of demand-dynamic products. See Appendix B2 for detail methodology.

The index for the U.S. as a whole was at 1.06 in 1999, 0.98 in 2004, and 0.85 in 2009 (Figure 7). This shows a declining U.S. export adaptability in the past decade. When compared with the index of other countries, the U.S. lagged behind Norway, Japan, Korea, the United Kingdom, and the Netherlands in 2009, but led France, Germany, and the total OECD group during the same period. These results are consistent with the previous study by Palma (2005a) for the period of 1963-1985 and 1985 – 2000.⁵

Figure 8 presents the calculation results of the demand-adaptability index for each U.S. state in 1999, 2004 and 2009 and the ranking of the index in 2009 for fifty U.S. states. It shows that the top five states which had the highest index in 2009 are Nevada, West Virginia, Delaware, Utah, and Indiana. These states export substantial amounts of demand-dynamic products, such as pharmaceuticals, chemicals, machinery, electrical, and

5. The index for the U.S. was 1.0 during the period of 1963 – 1985, but was much lower than that of Japan and the first-tier Newly Industrializing Countries (NIC), which are Korea, Singapore, and Taiwan (around 2.0 and 2.4, respectively). The index for the twelve countries in the European Union group was around 0.9, lower than that of the U.S. during the same period. The results from Palma (2005a) also show an improvement in the U.S. and the E.U. indices during the period of 1985 – 2000 as they jumped to around 1.75 and 1.15, respectively.

« FIGURE 8

NOTE: * Nevada's high index in 2009 was prompted by the large exports of primary metal manufacturing and mining.

** These states' exports of some demand-dynamic products declined substantially in 2009. These exports were high in 1999 or 2004. Wyoming's high indices in 1999 and 2004 were due to the large exports of chemicals and mining, respectively. Vermont, New Mexico, and Colorado's high indices in 1999 were due to the large exports of computer and electronic products. Colorado's high index in 2004 was also due to the large exports of computer and electronic products. Michigan's high index in 1999 was due to the large exports of machinery and transportation equipment. Illinois's high index in 1999 was due to computer and electronic products and transportation equipment. Oklahoma's high index in 1999 was due to the large exports of transportation equipment.

SOURCE: The author, using data from the International Trade Administration, U.S. Department of Commerce, <http://www.trade.gov>

medical products. In the case of West Virginia, the high index is dominated by the export of coal products, which surprisingly was still included in the demand-dynamic sectors of OECD during the study period. A total of 12 states had an index less than 1.0, which means they were less able to adapt their exports to the changing structure of OECD imports during the study period. Abundance of other non-oil and gas, non-coal natural resources and expansive farmland might be the contributing factors for the lower index in states such as Alaska, Louisiana, Nebraska, Idaho, etc. as these states may focus their production and exports on products that are available and put less investment efforts in those that require significant development.

Figure 9 shows that although Texas and California are not ranked in the top five (9th and 28th, respectively in Figure 8) for their demand adaptability index in 2009, their export share in the total U.S. export of top 10 demand-dynamic sectors to OECD ranked first and second (see data marked by circles in Figure 9). However, what is important is not the export volume, but whether a state can export more of demand-dynamic products than the non-demand dynamic products. The index becomes higher when the former is higher than the latter, and vice versa. Moreover, although California had the index much higher than 1.0 in 2009 (1.46), and its share of the top 10 demand-dynamic exports to OECD to total export to OECD at 73 percent in 2009 is already high, they are still lower than the share of many other states, giving California a lower index ranking.

Figure 9: State Shares of Top 10 Demand-Dynamic Exports to OECD Countries

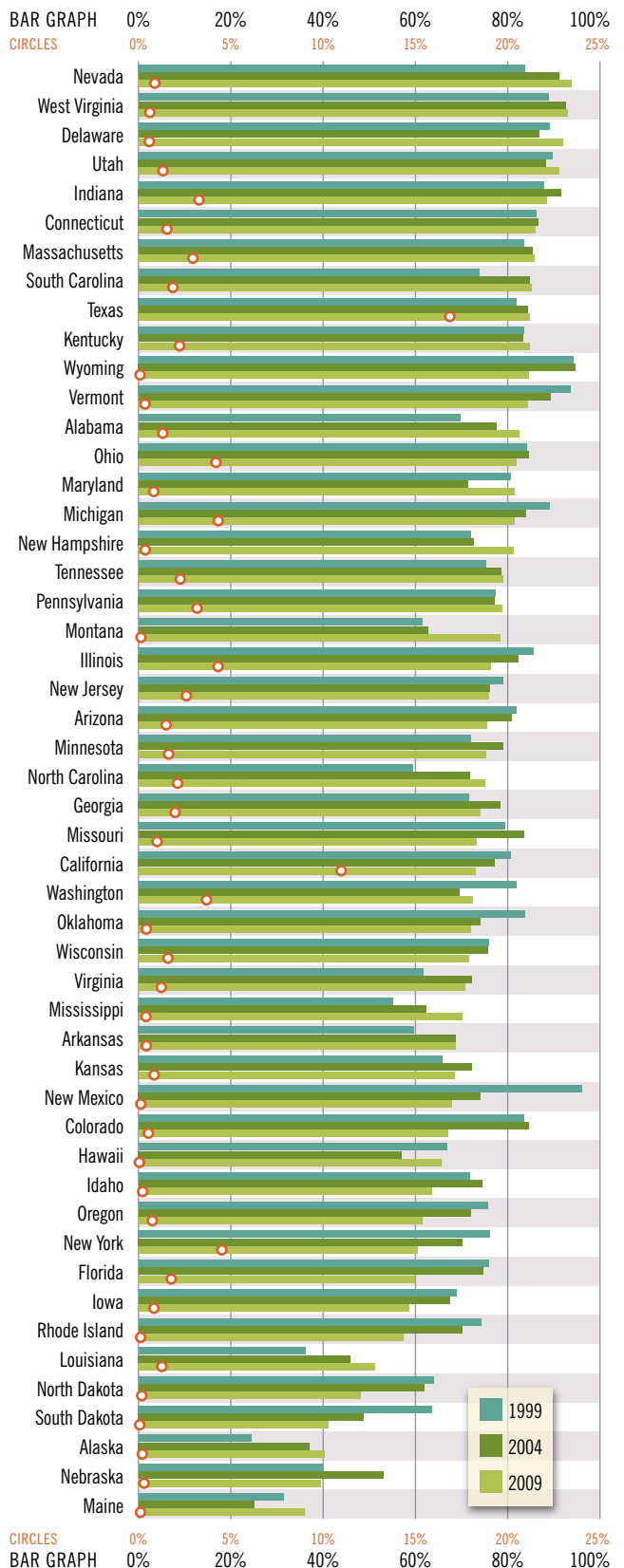


FIGURE 9 »

NOTE: *Bar Graph*—State Shares of Top 10 Demand-Dynamic Sectors as a Percentage of State's Own Exports; 1999, 2004, and 2009

Circles—State Shares of Top 10 Demand-Dynamic Sectors as a Percentage of U.S. Exports, 2009

SOURCE: The author, using data from the International Trade Administration, U.S. Department of Commerce, <http://www.trade.gov>

Selected State Profiles

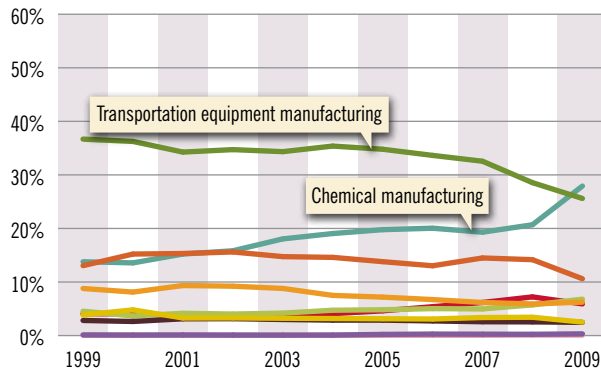
State export adaptability is undoubtedly of interest to state policy makers and economic developers. Exporting contributes heavily to the economy of the author's home state of Indiana and prompted this study.

While data were gathered on each state's adaptability, we have displayed the results for six states—Indiana, Texas, California, Alaska, and New York—to provide a sample comparison of the wide diversity of state export adaptability.

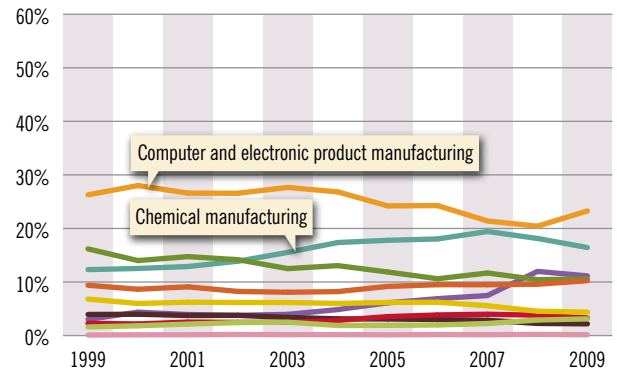
Results for all 50 states are available from the author.

Figure 10: Selected States' Share* of OECD's Top 10 Demand-Dynamic Exports

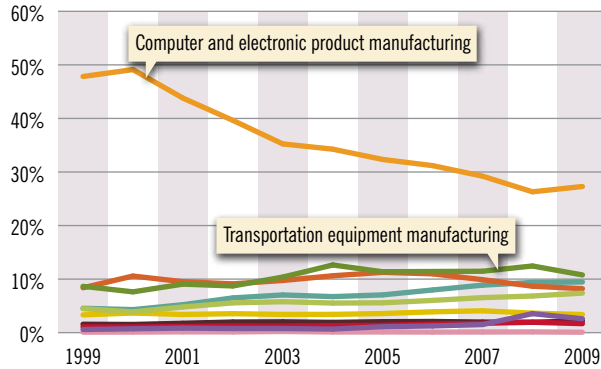
A: INDIANA



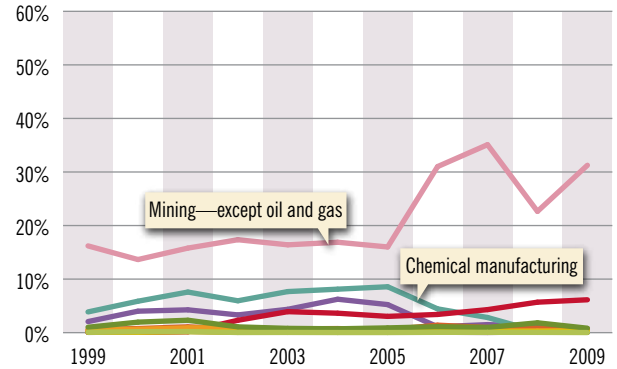
B: TEXAS



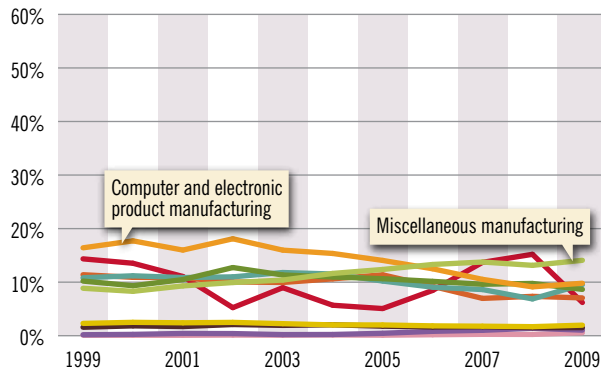
C: CALIFORNIA



D: ALASKA



E: NEW YORK



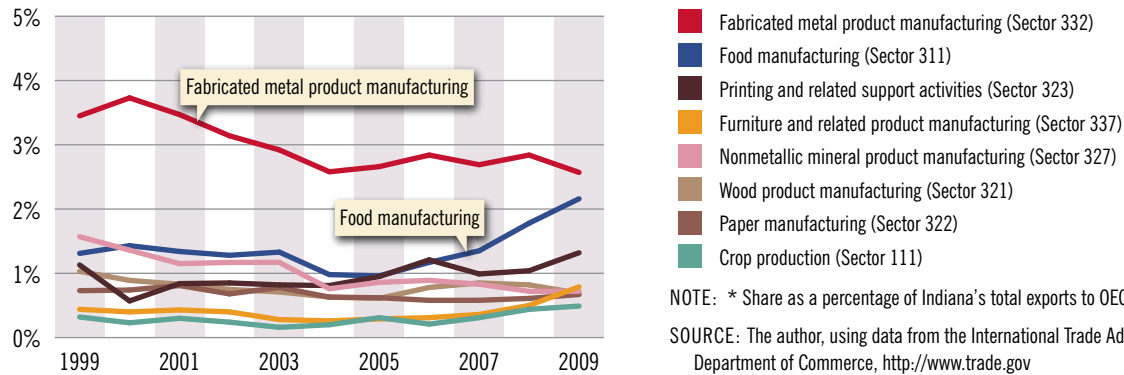
- Mining—except oil and gas (Sector 212)
- Petroleum and coal products (Sector 324)
- Chemical manufacturing (Sector 325)
- Plastics and rubber products manufacturing (Sector 326)
- Primary metal manufacturing (Sector 331)
- Machinery manufacturing (Sector 333)
- Computer and electronic product manufacturing (Sector 334)
- Electrical equipment, appliance and component manufacturing (Sector 335)
- Transportation equipment manufacturing (Sector 336)
- Miscellaneous manufacturing (Sector 339)

NOTE: * Share as a percentage of each state's own total exports to OECD countries

SOURCE: The author, using data from the International Trade Administration, U.S. Department of Commerce, <http://www.trade.gov>

Indiana

Figure 11: Indiana's Share* of Its Own Top 8 Non-Demand-Dynamic Exports

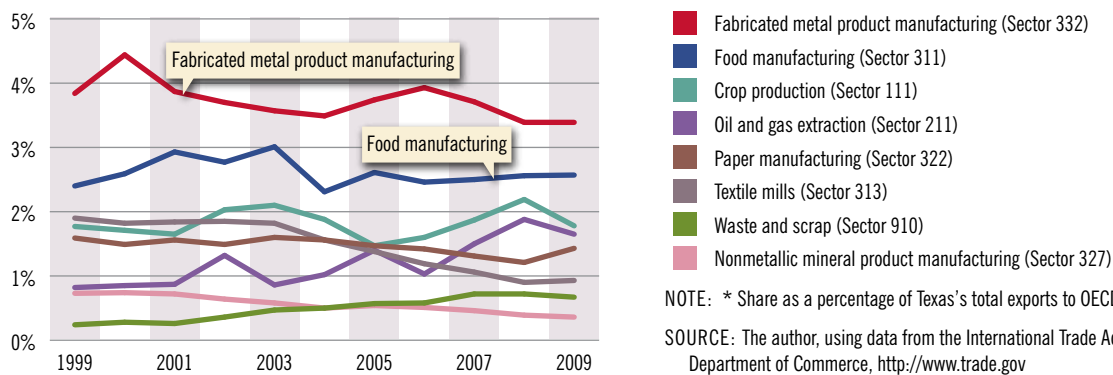


Indiana ranked fifth in the demand adaptability index for 2009 (Figure 8), in part due to the growth in its chemical sector's share of its total exports over the past 10 years. It also ranked eighth for its export share of total U.S. exports of top 10 demand-dynamic sectors to OECD in 2009 (Figure 9).

Food manufacturing in Indiana has grown its share of Indiana's total exports, but this sector is not considered demand-dynamic to the OECD market.

Texas

Figure 12: Texas's Share* of Its Own Top 8 Non-Demand-Dynamic Exports

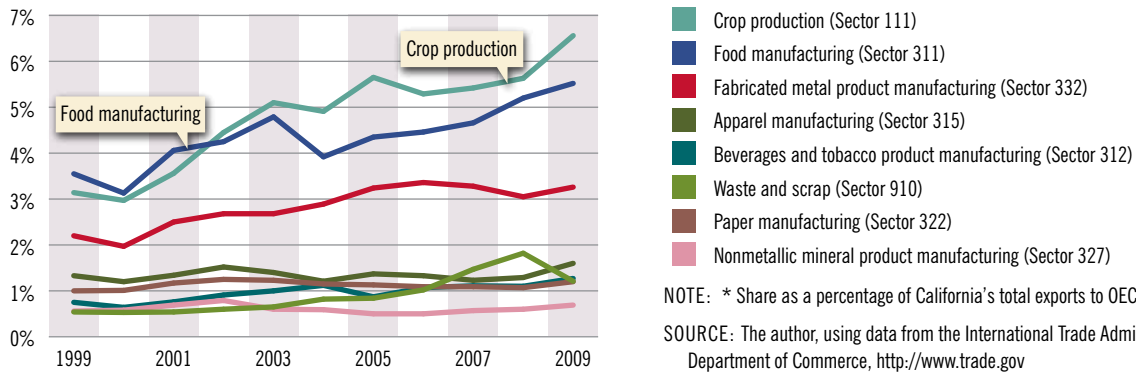


Texas ranked first for its export share of total US exports of top 10 demand-dynamic sectors to OECD in 2009 (Figure 9), and ranked ninth for the demand adaptability index (Figure 8) in the same year. Its computer and electronics and chemical sectors have gained the highest share in its total exports.

Texas exports substantial amounts of fabricated metal products and manufactured food, but they are not considered demand-dynamic to the OECD market.

California

Figure 13: California's Share* of Its Own Top 8 Non-Demand-Dynamic Exports

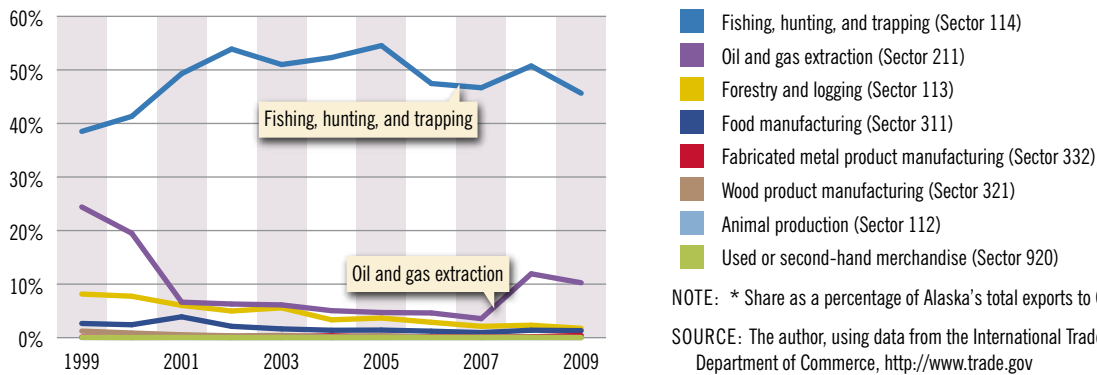


California ranked second for its export share of total U.S. exports of top 10 demand-dynamic sectors to OECD in 2009 (Figure 9), however it is ranked 28th for the demand adaptability index in the same year (Figure 8). Part of this is due to the decline in its computer and electronics exports in the past decade.

California's exports of agricultural products and manufactured food have been on the rise in the past decade, however these exports are not considered demand-dynamic to the OECD market.

Alaska

Figure 14: Alaska's Share* of Its Own Top 8 Non-Demand-Dynamic Exports

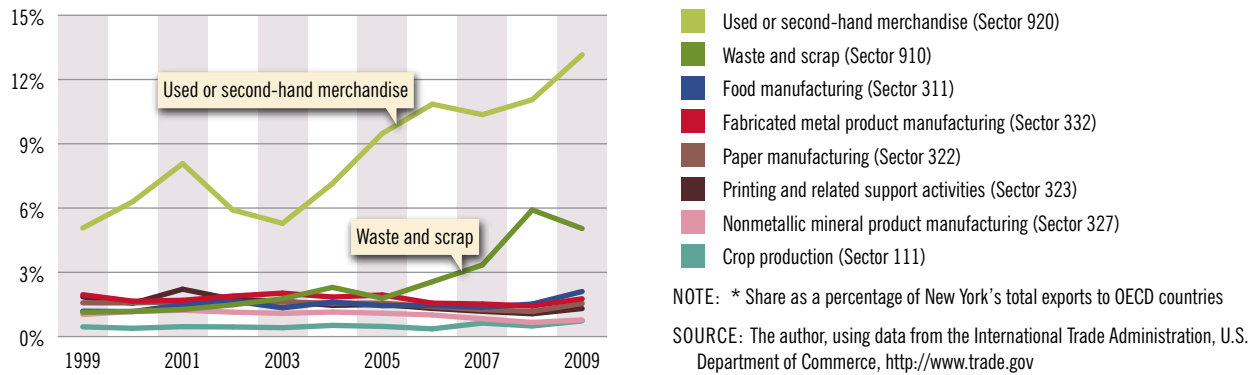


Alaska ranked 48th for the demand adaptability index in 2009 (Figure 8), and ranked 42nd for its export share in total U.S. exports of top 10 demand-dynamic sectors to OECD in 2009 (Figure 9). Part of this is due to the decline of Alaska's share of chemical product and petroleum and coal product exports to OECD in recent years, though its mining—except oil and gas exports and primary metal manufacturing exports have gained momentum.

Alaska's fishery exports have maintained a very high share in its total export to OECD, though these exports are not demand-dynamic to the OECD market.

New York

Figure 15: New York's Share* of Its Own Top 8 Non-Demand-Dynamic Exports



Surprisingly, New York ranked 41st for the demand adaptability index in 2009 (Figure 8), although it was ranked 3rd for its export share in total U.S. export of top 10 demand-dynamic sectors to OECD in 2009 (Figure 9). New York exports fewer demand-dynamic products than the steadily increasing non-demand-dynamic products. Thus the index becomes lower than 1.0 even though the demand-dynamic export volume was high compared to other states.

New York's exports of used or second-hand merchandise and scrap products have grown rapidly over the years. Unfortunately, these products are not demand-dynamic exports.





Conclusion

This study examines the adaptability of the 50 U.S. states' exports to the changing demand from OECD countries during the period of 1999 – 2009. The study finds that the OECD market import share of primary commodity products, such as animal and vegetable products, has continually declined. In addition, three manufacturing sectors which had been important in the OECD import market—wood (including paper), textiles, and footwear/headgear sectors—also have been losing their share in the market. In contrast, the demand for chemical products has grown, though slowly, over the years. Both the share and the volume of demand for machinery and electrical equipment are the highest among all sectors. Other manufacturing products have maintained their share in OECD import market at a relatively stable level.

Compared with other developed countries, the U.S. usually trails behind in terms of ratio of international trade (export and import) over its GDP. Although the U.S. sales of goods in OECD countries (which are produced by U.S. companies established in those countries) is about three to four times higher than the U.S. direct exports to these countries, the U.S. still invests less and receives less (as a share of its GDP) from the world than many other OECD countries, except Japan. Thus, it is still important to the U.S. that its firms increase their export share in the international market. The demand adaptability index for the U.S. as a whole was at 1.06 in 1999, 0.98 in 2004, and 0.85 in 2009, which means the U.S. has experienced a decline in its export adaptability in the past decade, and it was less able to follow demand in the OECD market or adapt its exports to the changing structure of OECD imports during the study period.

In comparison, the 2009 index of the U.S. is lower than that of Norway, Japan, Korea, the United Kingdom, and the Netherlands, but was higher than that of France, Germany, and the total OECD group during the same period.

The calculation results of the demand-adaptability index for each U.S. state show that the top five states with the highest index in 2009 are Nevada, West Virginia, Delaware, Utah, and Indiana. These states export substantial amounts of demand-dynamic products, such as machinery, pharmaceutical, chemical, electrical, and medical products (except West Virginia, which exports mainly coal products). There are twelve states which had an index less than 1.0 in 2009, meaning these states were less able to adapt their exports to the changing structure of OECD imports during the study period. Abundance of other non-oil and gas, non-coal natural resources and expansive farmland might contribute to the lower indices of states such as Alaska, Louisiana, Nebraska, Idaho, etc. that may focus their production and exports on these

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products and put less investment efforts in other product diversification and upgrading. These non-dynamic sectors should only be cautiously promoted or subsidized under U.S. trade or export policies. Advanced manufacturing, high technology-based, and other demand-dynamic sectors provide better opportunities to generate and sustain GDP growth.

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Appendix A

Demand Adaptability Index Calculation

The Demand Adaptability Index, A_j , of a state j to the structure of OECD imports is defined here as

$$A_j = \frac{\sum_{i^d} a_{ij}^d}{\sum_{i^{nd}} a_{ij}^{nd}}$$

where a_{ij} is the share of state j in sector i . The d represents demand-dynamic sectors, while nd represents non-dynamic sectors.

Thus, the numerator

$$\sum_{i^d} a_{ij}^d$$

is the state's market share in demand-dynamic sectors, adjusted by the weight of demand-dynamic sectors in OECD imports; and the denominator

$$\sum_{i^{nd}} a_{ij}^{nd}$$

is the state's market share in non-dynamic sectors, also adjusted by the weight of these sectors in OECD imports.

To adjust for the weight, a_{ij} is derived from

$$a_{ij} = \frac{s_{ij}}{S_j} \quad \text{where} \quad s_{ij} = \frac{M_{ij}}{M_i}$$

is the state j share s in OECD imports M of product i for either d or nd products, and

$$S_j = M_j = \sum_i s_{ij}$$

is the states total share S in OECD imports M . This, in turn, is the sum of the market shares for different products i of state j .

Finally, demand-dynamic products d_i are those import products that increase their shares in OECD imports between two points in time. In turn, non-dynamic products are those that decrease their shares in total imports during this period.

Figure A1: Step-by-Step Calculation Process

EQUATION	
Step 1	$s_{ij} = \frac{M_{ij}}{M_i}$
Step 2	$S_j = M_j = \sum_i s_{ij}$
Step 3	$a_{ij} = \frac{s_{ij}}{S_j}$
Step 4	$A_j = \frac{\sum_{i^d} a_{ij}^d}{\sum_{i^{nd}} a_{ij}^{nd}}$

SOURCES: *State-Level U.S. Trade Data*, International Trade Administration, U.S. Department of Commerce, <http://www.trade.gov>; *OECD Members' Trade Data*, Organisation for Economic Co-operation and Development, <http://www.OECD.org>

Appendix B

Supplementary Data

Figure B1: Comparison of Harmonised System and NAICS, 1999 – 2009

OECD'S TOP 10 IMPORTED DEMAND-DYNAMIC SECTORS*				
FREQUENCY APPEARING IN TOP 10 (1999-2009)	HARMONISED SYSTEM SECTORS	HARMONISED SYSTEM CODES	NAICS CORRESPONDING CODES	NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM CORRESPONDING SECTORS
11	Mineral fuels, oils, waxes; coal	Sector 27	Sector 324 Sector 212	Petroleum and coal products Mining—except oil and gas
11	Organic chemicals	Sector 29	Sector 325	Chemical manufacturing
9	Pharmaceutical products	Sector 30	Sector 325	Chemical manufacturing
11	Plastics and articles thereof	Sector 39	Sector 326	Plastics and rubber products manufacturing
8	Pearls, stones, precious metals, imitation jewelry, coins	Sector 71	Sector 212 Sector 331	Mining—except oil and gas Primary metal manufacturing
9	Iron and steel	Sector 72	Sector 331	Primary metal manufacturing
11	Nuclear reactors, boilers, machinery; appliances, computers	Sector 84	Sector 333	Machinery manufacturing
11	Electrical machinery, equipment, parts; electronics	Sector 85	Sector 334 Sector 335	Computer and electronic product manufacturing Electrical equipment, appliance and component manufacturing
11	Vehicles other than railway or tramway rolling stock	Sector 87	Sector 336	Transportation equipment manufacturing
11	Optical, photo, technical, medical, etc. apparatus	Sector 90	Sector 339	Miscellaneous manufacturing

NOTE: * Discrepancies may exist due to the imperfect matching of both sectoral classification systems.

SOURCES: *Harmonised System*, Organisation for Economic Co-operation and Development, <http://www.OECD.org>; *North American Industry Classification System*, International Trade Administration, U.S. Department of Commerce, <http://www.trade.gov>

Figure B2: OECD's Top 10 Imported Demand-Dynamic Sectors (Harmonized System), 1989 – 2009

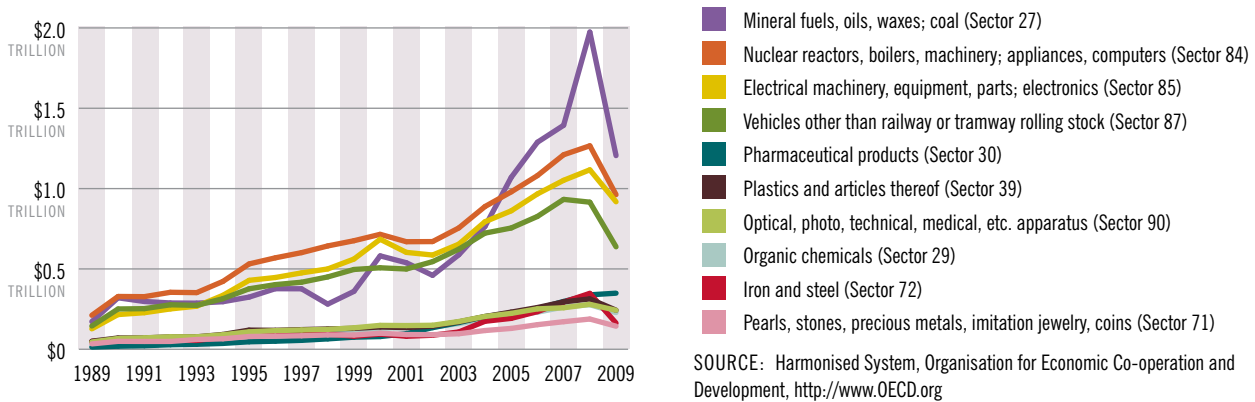
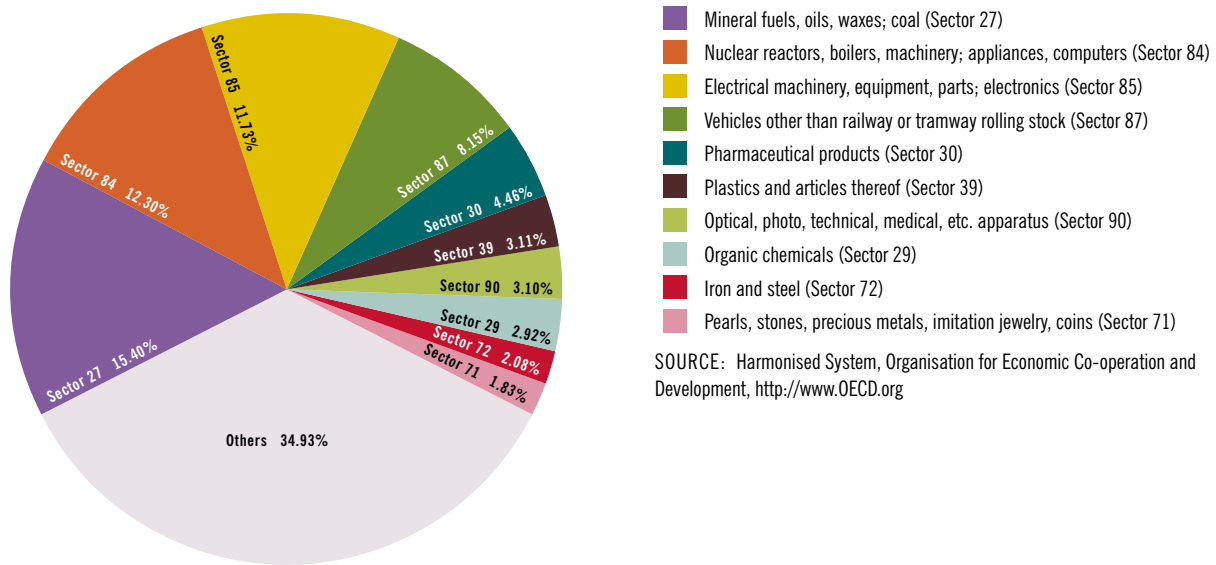


Figure B3: Share of OECD's Top 10 Imported Demand-Dynamic Sectors (Harmonized System), 2009



SOURCE: Harmonised System, Organisation for Economic Co-operation and Development, <http://www.OECD.org>



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