Woods Center for Economic Analysis and Forecasting

2023 INTERNATIONAL TRADE REPORT AND FORECASTS

AN OVERVIEW AND ANALYSIS OF ORANGE COUNTY, SOUTHERN CALIFORNIA, AND NATIONAL EXPORTS

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International Trade Forecasts

An Overview and Analysis of World, U.S., California, Orange County and Southern California Exports

By

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About Dr. Mira Farka and Dr. Adrian R. Fleissig

Dr. Mira Farka Ph.D., Mira Farka, Ph.D., is a Professor of Economics and Co-Director for the Woods Center for Economic Analysis and Forecasting at CSUF. She has published in leading academic journals in the fields of monetary policy and financial economics and is a nationally recognized economist in business and economic forecasting. Dr. Farka is the recipient of multiple awards for her academic research, teaching and the accuracy of her forecasts. She is also the recipient of the prestigious Outstanding Faculty for the College of Business and Economics, CSUF Faculty Recognition Award for Scholarly and Creative Activity, and the CSUF Service Award. Dr. Farka is a sough-after keynote speaker and is frequently invited to discuss economic and financial issues by various business, government, and educational organizations. Prior to joining Cal State Fullerton, she worked in Wall Street, as a senior economist for Deutsche Bank, New York. She was listed as one of OC's 500 most influential people in 2022.

Dr. Adrian R. Fleissig has a joint Ph.D. in Economics and Statistics and specializes in regional, macroeconomics and econometric analysis. He is a Professor of Economics at California State University Fullerton and is ranked in the top 1.4% (757 out of 55,000) of economists world-wide based on his academic research. He is well known for developing economic theory and econometric methodology to better understand monetary policy decisions of the Federal Reserve Bank, consumer choices and regional economics. At CSUF, he received the Outstanding University Researcher Award (2001, 2004, 2007 and 2010). Dr. Fleissig has worked on many projects, including the *County of Riverside Forecasts and Economic Outlook, OC Strategic Financial Plan, and Transportation Revenue Forecasts for Orange County* and developed the *Southern California Leading Economic Indicator*. As a former member of the Advisory Board for Monetary Services Index, Federal Reserve Bank of St. Louis, he provided input for the construction of one of the monetary aggregates produced by the Federal Reserve Bank.

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Woods Center for Economic Analysis and Forecasting

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EXECUTIVE SUMMARY

The past 15 years have dealt powerful back-to-black blows to globalization (the financial crisis, Brexit, U.S. trade wars, COVID-19 pandemic, Russia/Ukraine war). This has brought on concerns that globalization has topped out and that it is sliding down a path of irreversible retreat. Our view is that these concerns on globalization are significantly overblown.

- First, global trade has proven quite resilient with world merchandise trade rising to $22.4 trillion in 2022, a historical high, growing by a staggering 27% in 2021 as the pandemic receded, and a healthy 11% in 2022. Rather than going into reverse, international trade flows have simply not grown as fast as in the past. Since 2009, world merchandise trade has grown at the pace of world GDP, in contrast to the 2000-2007 when it grew at twice the pace of global GDP.
- Second, international trade is shifting and transforming, moving away from hyper-efficiency to more resiliency, greater diversification, a quest for security, and mitigating risks. Trade in services has been strong. U.S. trade in services has outpaced trade in goods every year since 2008 rising by 64% from 2008-2019 (before the onset of the pandemic) while U.S. exports of goods only increased by 26% over that period.
- Third, while tariffs are here to stay, they are no longer a primary concern. The battlefield has shifted towards broader policies that address national security concerns and are aimed at maintaining "as large of a lead as possible" over competitors in key sectors. This has revived a muscular industrial policy and a resurgence of protectionism which is being implemented on three fronts: a) lavish subsidies and state handouts for specific industries, b) investment screening, and c) export controls.

There are two important broad shifts underway which affect world trade. One important factor is the significant decoupling between U.S. and China. The share of U.S. imports from China (as a percentage of total imports) in 2022 is 16.4%, far below the 21.4% peak in 2017 before tariffs were levied. The share of U.S. exports to China in 2022 is 7.4%, down from peak of 8.7% in 2020. Decoupling has impacted products subject to the 25% tariff rate (roughly 50% of total imports from China), which are currently down by 25% below pre-tariff levels. In contrast, imports on non-tariffed goods are up 42% compared to 2018, before tariffs were levied. The biggest beneficiaries of the Sino-American war in terms how much U.S. imports have increased since 2018 are Vietnam (up 160%), Taiwan (up 100%), Thailand (up 84%), India (up 58%) and South Korea (up 55%).

Another broad trend is the additional fragmentation between the West and Russia due to the war in Ukraine. Overall imports from Russia have fallen dramatically relative to 2019: in the U.K. (down -98%), Germany (down -89%), and the Netherlands (down -27%). However, other countries have filled the void with Russian exports to India (up 12-fold over this period), Turkey (up 134%) and China (up 120%).

A third shift, which is largely a result of these two broad trends is the reshuffling of supply chains. Global supply chains are being reoriented and becoming less China-centric in a quest for more

resiliency and broader diversification. A full 81% of supply chain leaders are now sourcing raw materials from two suppliers instead of one, 80% of companies are increasing inventories, while 42% are regionalizing supply chains.

A CHALLENGING GLOBAL OUTLOOK

2022 was a challenging year for the global economy. The world economy was hit by high inflation, rapid rate hikes, the Russia/Ukraine war, commodity and energy shocks, stock market declines, and continued supply disruptions from China's zero-covid policy. Recession fears were sky-high. Nonetheless, the world economy, especially the U.S., has proven to be very resilient. Inflation has declined, the labor market continues to remain strong, the stock market has rebounded, consumers continue to spend, and the housing market has stabilized. This has brought on hopes of a soft landing.

Our outlook is less optimistic than the consensus. We expect the U.S. and the world economy experience a "normal recession" in 2024, which will be milder than the 2008-2009 and similar to the 1990s and 2000s. A recession will be hard to avoid for a number of reasons. Stubbornly high inflation will require central banks to keep rates higher for longer. The Eurozone economy is already in a recession and China's economy is slowing. Commercial real estate woes, a slowing economy and a frayed banking system, will also make it difficult for the U.S. to avoid a recession. We expect world GDP growth to come at 2.5% in 2023 and 2.0% in 2024. World merchandise export growth is expected to be 2.3% in 2023 and 1.9% in 2024. U.S. merchandise exports are forecasted to grow by 4.2% in 2023 and by 2.2% in 2024.

SOUTHERN CALIFORNIA MERCHANDISE EXPORTS

Merchandise exports from Southern California continued to recover in 2022, after declining during the pandemic, but at a much slower rate compared to 2021. The Los Angeles MSA (which comprises of both Los Angeles and Orange County) has slipped from the third largest metropolitan exporter in the U.S. in 2021 to the fourth largest in 2022, behind Houston-The Woodlands–Sugar Land MSA (with $191.8 billion), New York-Newark-Jersey City MSA (with $120.6 billion), and Chicago-Naperville-Elgin MSA (with $63.4 billion). The Houston MSA exports over three times as much as the Los Angeles MSA, while the New York MSA twice as much. Merchandise exports account for about 5.2% of the Los Angeles MSA Gross Metropolitan Product, and for 5.5% of Orange County's Gross County Product.

Merchandise exports from the Los Angeles MSA in 2022 grew by a modest 4.1% to $61.0 billion, after rising by 16.7% in 2021 (see Table 1). This is still a hair ($61 million) below pre-pandemic levels. Exports from Orange County are projected to have risen at a sturdier pace than the broader Los Angeles MSA in 2022, growing by 8.7% to $17.3 billion (see Table 1). Merchandise exports from the Riverside-San Bernardino-Ontario MSA (commonly referred to as the Inland Empire) also posted anemic growth in 2022, rising by 2.4% to reach $11.3 billion. However, this

followed a stellar 2021, when exports from the region rose by an astounding 30%. Merchandise exports from Orange County and the Inland Empire had fully recovered and exceeded their pre-pandemic values, by roughly $1.5 billion for the Inland Empire and by $1 billion for Orange County.

The outlook for Southern California merchandise exports demand is mixed over the three-year forecast horizon with relatively flat growth in 2024 sandwiched between two years of moderate growth. Merchandise exports for the Los Angeles MSA are projected to increase by 7.2% in 2023, decline by -0.2% in 2024, and grow by 7.3% in 2025. For Orange County, the projected growth rates are 8.3% in 2023, 0.6% in 2024, and 9.0% in 2025. Inland Empire merchandise exports are projected to grow by 8.3% to $12.3 billion in 2023, decrease by -0.4% in 2024, and grow again in 2025 (by 9.1%). It is important to note that, Los Angeles and Orange County exports are forecasted to be below record-high levels set in 2011/2012 at the end of the three-year forecast horizon, with Orange County exports falling short by 20% and the broader Los Angeles MSA by 8%. Only Inland Empire is projected to set fresh new records over the forecast horizon.

Table 1
Merchandise Exports
Orange County, Los Angeles-Long Beach-Anaheim MSA and the Inland Empire
(millions of dollars)

Year	OC Export Volume	OC Exports Growth Rate	LA-LB-SA Export Volume	LA-LB-SA Exports Growth Rate	Inland Empire Exports Volume	Inland Empire Exports Growth
2022	17,265	8.7%	60,980	4.1%	11,329	2.4%
Forecast						
2023	18,696	8.3%	65,347	7.2%	12,269	8.3%
2024	18,815	0.6%	65,247	-0.2%	12,215	-0.4%
2025	20,508	9.0%	70,022	7.3%	13,325	9.1%

Source: *Woods Center, California State University Fullerton & International Trade Administration*

A. A FRAGMENTED WORLD: GLOBALIZATION – TRANSFORMED AND REIMAGINED

The loudest concern across the world over the past few years is that the process of globalization, which began with the fall of the Soviet Union in 1991 and ramped up with the ascent of China in the WTO in 2001, has been in retreat at least since the Global Financial Crisis. Some fret that globalization has topped out; others that it is sliding down a path of irreversible retreat. For the truly alarmist, the world is in the edge of an autarkic abyss akin to the 1930s, when the Great Depression ushered in the era of trade protectionism, tariffs, and export controls, which caused a 30% collapse in global trade flow.

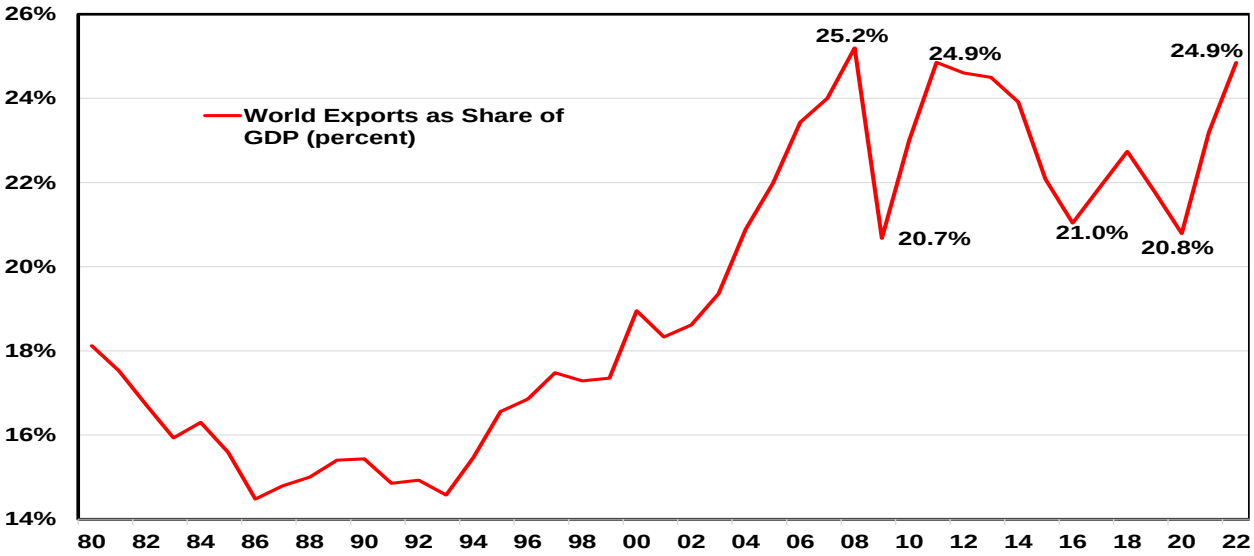
In our view, these concerns are significantly overblown. Our take on the future of globalization and international trade is decidedly less gloomy and more sanguine than the consensus. Yes, the process of globalization has slowed down from the breakneck pace recorded from the mid-1990s until 2007, with world merchandise exports growing by 171% from 1995 to 2007 and by a more meager 63% from 2010 to 2022. Indeed, global trade grew at twice the pace of world GDP between1997-2007 but at a similar clip to GDP growth over the past decade and the half. Nonetheless, our view is that this pullback from the hyper-globalization, does not spell outright doom for global connectedness, international trade, and, importantly, for the U.S. economy. As Dani Rodrik – the Ford Foundation Professor of International Political Economy at Harvard University – put it: "…what we are seeing is a natural and desirable retrenchment from hyper globalization that characterized the world over the past two decades as the world tries to find a happy medium between the excesses of hyper globalization and the dangers of autarky."

More than an outright demise, we see globalization and international trade shifting and transforming, moving away from the hyper-efficiency of the earlier period towards more resiliency, greater diversification, a quest for security, and a larger focus in mitigating risks. These adjustments, if carried out prudently and temperately may lead to enhancements and a further deepening of trade interconnectedness rather than an abrupt reversal of global trade. Moreover, a breather from the uber-globalization of the 2000s may be beneficial, as the system designed to foster trade liberalization appears to have failed in some instances, particularly when addressing unfair trade practices related to a few counties, chiefly among them China. A focus on greater resiliency and national security concerns is also important to address issues of far-flung and fragile supply chains and geopolitical concerns related to China, Russia, and other adversarial or unfriendly countries. In short, globalization is being reimagined and transformed rather than shunned and reversed. Importantly, the overall negative effects for the U.S, economy from these shifts are likely to be marginal, whereas the benefits may prove important in maintaining a leading role in sectors that are likely to shape the next decades: artificial intelligence, quantum computing, biotech, and clean energy.

A.1 Globalization: Not Reversed, but Stalled and Changing

Perhaps the most impressive and enduring trend in global trade in recent years is its resiliency. The past fifteen years have dealt powerful back-to-black blows to globalization, from the onset of the financial crisis to Brexit, trade wars, the pandemic, and the Russia-Ukraine war. Yet, world merchandise exports rose to $22.4 trillion in 2022, a historical high, growing by 27% in 2021 as the pandemic receded, and a more subdued but quite healthy 11% in 2022. However, when expressed as a share of global GDP, there is no denying that exports, which rose to historical high share of 25% of GDP in 2007, have stayed relatively flat since then, with the latest number coming a hair below the 2007 levels (Figure A1).

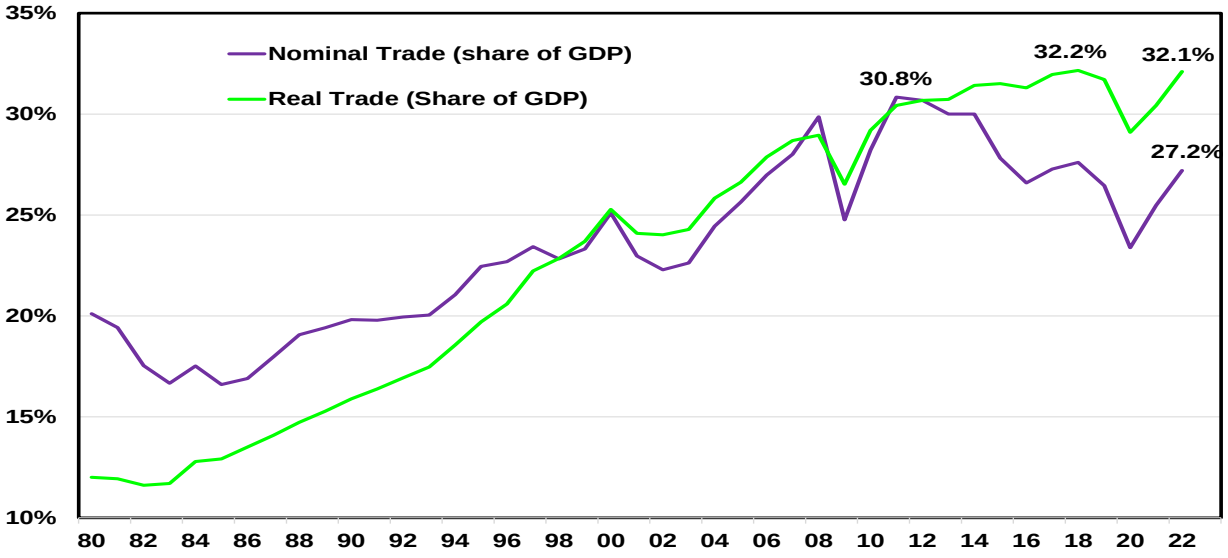
Figure A1
Slowbalization: Global Trade as Share of GDP Has Stalled
(merchanidse exports in USD, percent of GDP)



Source: WTO, IMF and Woods Center

A similar picture emerges when focusing on the U.S. as trade flows (the sum of exports and imports) as a share of GDP, in nominal terms, have fallen from a high of 31% in 2011 to 27.2% in 2022 (Figure A2). Trade flows are more encouraging in real terms, with the total trade volume reaching 32.1% of real GDP – a tad below the historic high rate of 32.2% in 2018, right before the onset of the U.S.-China trade war and the pandemic outbreak. Nonetheless, these figures appear brighter in part because of significant jump in imports over this period. Focusing solely on the share of real exports as percent of real GDP, the figures look more troubling: exports accounted for 14% of real GDP in 2014, but have been on a steady decline since then, reaching 12.6% in 2022.

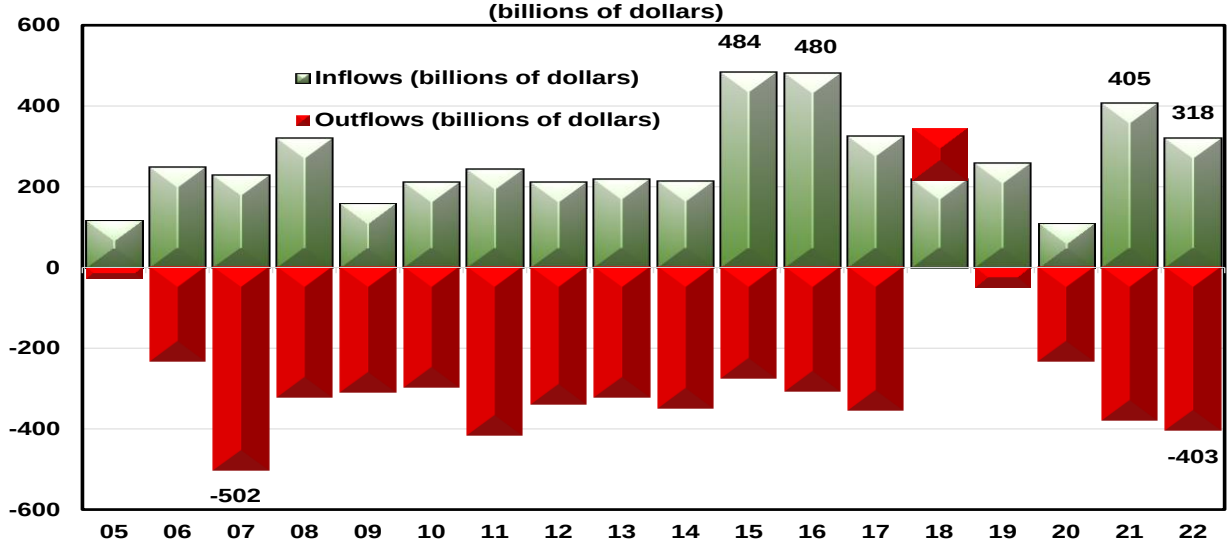
Figure A2
Growth in US Trade Has Also Stalled
(exports and imports, percent of GDP)



Source: BEA and Woods Center

Foreign Direct Investment (FDI) flows have also stalled. They rose steadily over the past two decades, reaching nearly $500 billion in 2015, but the pace has been slower since then (Figure A3). Last year, FDI inflows rose by a more meager $300 billon. U.S. direct investments abroad have also topped off: they rose to more than $500 billion in 2007, before the onset of the global financial crisis, but have since been more anemic. These figures appear more worrisome when expressed as share of GDP: U.S. FDI outflows as percent of GDP have been cut by more than half, from around 3.6% in 2007 to 1.6% in 2022.

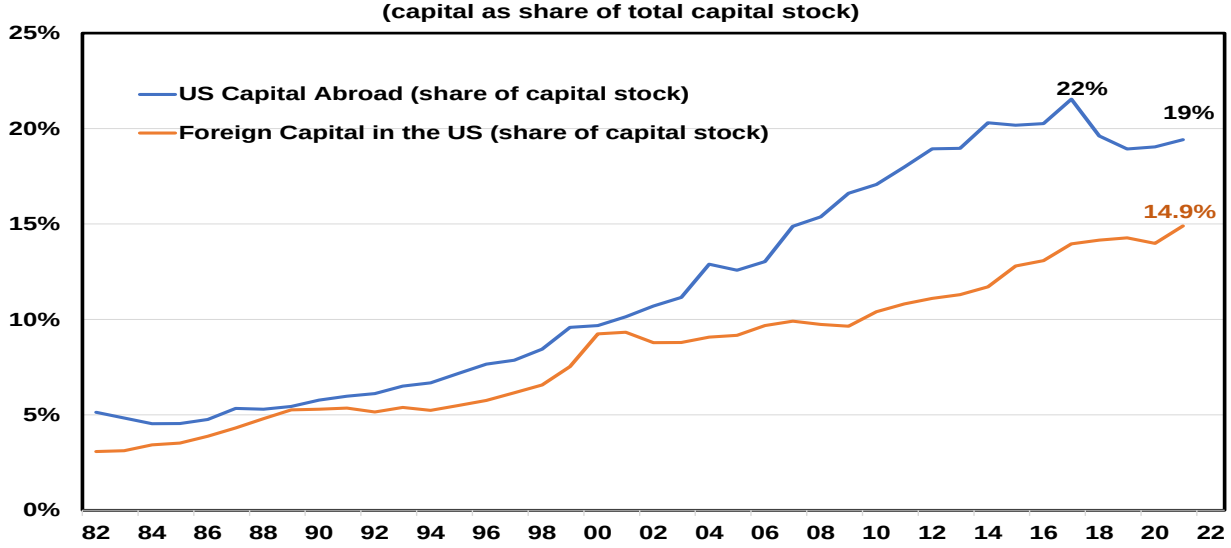
Figure A3
Stagnating: US FDI Inflows and Outflows
(billions of dollars)



Source: BEA and Woods Center

The stock of U.S. capital held abroad has risen steadily over the past few decades, from a mere $200 billion in 1982 to $6.5 trillion in 2022. As a share of total capital stock, U.S. FDIs abroad rose dramatically – from 5% in 1982 to 22% in 2017 (Figure A4). However, the ratio has receded in recent years, falling to 19% in 2021. In short, U.S. companies are electing to hold less capital abroad relative to a few years ago, which likely reflects broader trends related to onshoring efforts and a re-mapping of supply chains.

Figure A4
Some Levelling Off: US Capital at Home and Abroad
(capital as share of total capital stock)



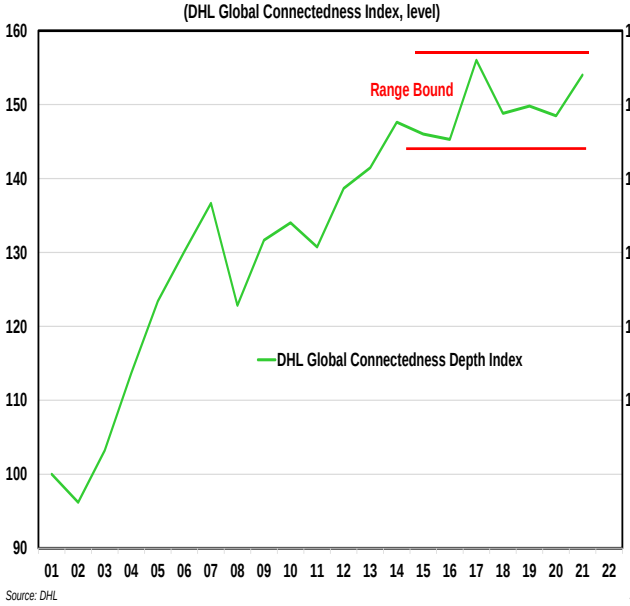
Source: BEA and Woods Center

These trends have raised fears that globalization is in a steep decline, an irreversible retreat that will end in a 1930s style autarky. But these worries seem a bit overly alarmist. First, rather than going into reverse, international trade flows have simply not grown as fast over the past decade and a half as they did in the previous decade, from mid-1990s to 2007. This is not a calamity: indeed, it may be the case that the pace of globalization set during the boom period may prove to be more of an aberration rather than the norm. The quest for efficiency drove globalization in its golden period, but much of these benefits — the low hanging fruit, so to speak — have already accrued. Foreign labor no longer has the same cost benefits it did a quarter of a century ago: Chinese factory wages rose by 400% from 2009-2020, far outpacing the 30% increase in the U.S. manufacturing sector. Moreover, as China gets richer, it has turned away from its outsized dependence on trade: its trade share of GDP has fallen sharply since 2006, from more than 60% of GDP to a current 35%. This is expected: as incomes rise, demand tends to move away from goods towards services which are usually produced and consumed domestically.

The DHL Global Connectivity Index offers a deeper understanding of international trade patterns, as it helpfully separates international flows into depth and breadth. The depth index captures the degree of international flow connectivity relative to domestic activity, with the index rising when international flows outpace domestic growth and falling otherwise. The depth index,

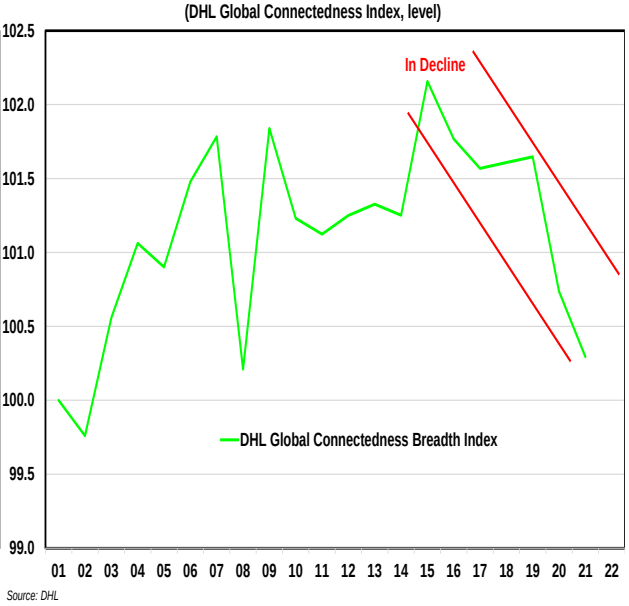
captures the degree of global fractionalization, addressing the question as to whether the world has fragmented and descended into rival blocs. As seen from Figure A5, the Global Connectedness Depth index, while relatively flat since 2014 (with a blip in 2017), has not fallen into reverse. The depth index has also not reached a new peak since 2017, consistent with the pullback in trade due to the Sino-American trade war, Covid-19 pandemic, reshuffling of supply chains and the Russia-Ukraine war. In other words, while global flows relative to domestic economic activity are not growing as robustly as in early 2000s, they are also not reversing.

Figure A5
Range Bound: The Depth of International Flows Has Not Reversed but Stalled
(DHL Global Connectedness Index, level)



Source: DHL

Figure A6
Breadth of International Flows Has Reversed Somewhat
(DHL Global Connectedness Index, level)



Source: DHL

The breadth index tells a different story, with the breadth of the global flows rising steadily from 2002-2007, stalling, falling during the financial crisis, rising again until 2014 and reversing since then (Figure A6). When the breadth index increases, countries spread their global flows more broadly, whereas when it falls, global flows are focused more narrowly on specific regions or country sets. It is important to note that these changes are rather marginal and are dwarfed by changes in the depth index. The breadth index is now just a tad above 2001 levels, the year when China joined the WTO, indicating that while trade flows grown in line with domestic activity, the breadth of interactions has become slightly more narrow and less dispersed. Taken together, the DHL global indices seem to indicate that while global flows have grown less robustly than in early 2000s, they have kept pace with domestic activity, becoming at the same time a bit more concentrated over regions and countries than was the case prior to the global financial crisis.

Importantly, what the doomsday scenarios about globalization seem to miss is that trade patterns are shifting. Trade in goods has grown at a more subdued clip than the heyday of 2000s, but other flows – capital, people, and most predominantly, information – has shot up at a staggering pace. U.S. trade in services has outpaced trade in goods every year since 2008, and even the collapse in service exports during the pandemic (due entirely to a near shutdown in travel and transportation)

has not wiped out this differential. U.S. exports of services rose by an eye-watering 64% from 2008-2019, right before the pandemic, while exports of goods rose by less than half that amount, at 26% (Figure A7). The pandemic took a sizable bite off U.S. service exports, falling by 18% in 2020, a much sharper drop than the 13% decline in goods exports. But the rebound has been quite strong, at 9.4% in 2021 and a heftier 16.2% in 2022. This is still below the rebound in goods exports, but healthy, nonetheless. All told, the intervening years since the Great Recession has seen U.S. service exports grow by 72% from 2008-2022 and goods exports by a less buoyant 60%. Service exports are expected to outpace goods exports over the forecast horizon as the pandemic recedes and travel continues to pick up.

Figure A7
Service Exports Have Outpaced Goods Exports
(US exports, goods and services, index, 2008 = 100)

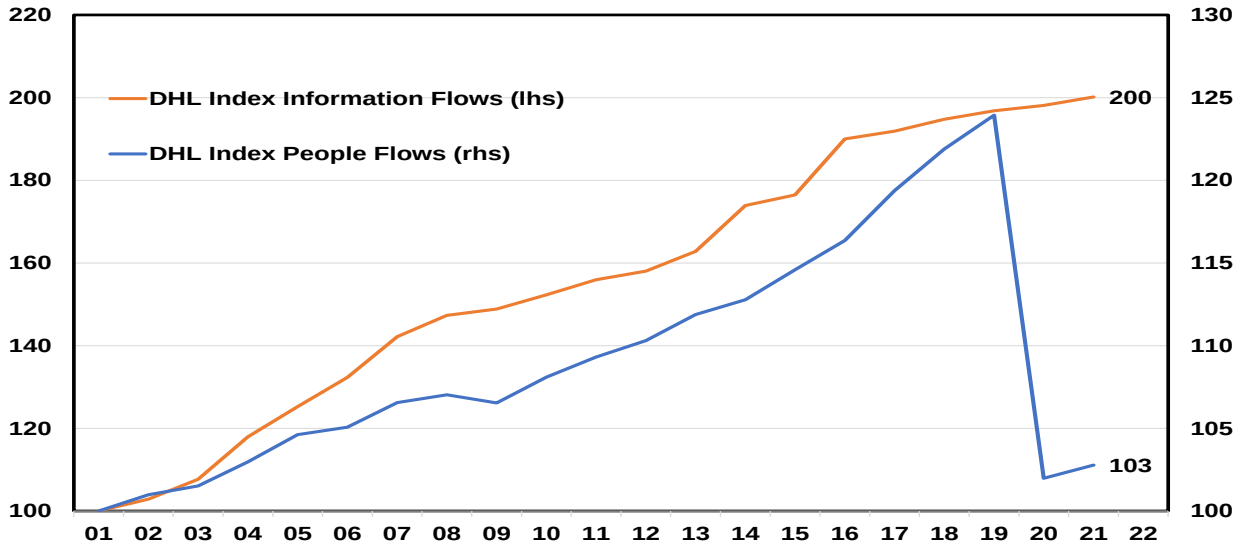
Source: Census Bureau and Woods Center

The DHL Global Connectedness Index offers additional insights in the shifting patters of trade, providing sub-indices for goods, capital, people, and information flows. According to the data, the global connectedness index on goods has risen by 12 points since 2001, indicating that trade in goods has surpassed domestic economic activity by 12% during this period. However, capital flows have grown 20% faster than domestic growth, while information flows have risen at double the rate of domestic activity. Capital flows grew sharply in 2021, as delayed projects resumed, M&A activity picked up and investments in international projects ramped up spurred by a low interest rate environment and oodles of stimulus cash. However, the environment turned more sour since the second quarter of 2022 as a series of shocks – a relentless rise in global interest rates, the Russia-Ukraine war, a more challenging macroeconomic global environment, and stricter rules on FDI flows — have combined for a more daunting outlook and will continue to restrain capital flows this year and the next.

In sharp contrast with global trade, information flows have risen dramatically over the past two decades, with "digitalization" going truly global (Figure A8). Digital information flows have

surged both within and between countries, with the growth in international data traffic soaring during the pandemic as in-person interactions came to a halt. Likewise, the flow of people, captured primarily by international travel was on a strong upward path right before the pandemic with the flow of international visitors increasing fivefold in 2019 compared to the 1980s levels. This came to a screeching halt during the pandemic: international tourist arrivals worldwide collapsed by 72% in 2020 and remained 68% below pre-pandemic levels in 2021. The trend has reversed in 2022, but the flow of people continues to remain below 2019 levels.

Figure A8
Information Flows Have Grown Dramatically
(information and people flows, index)



Source: DHL

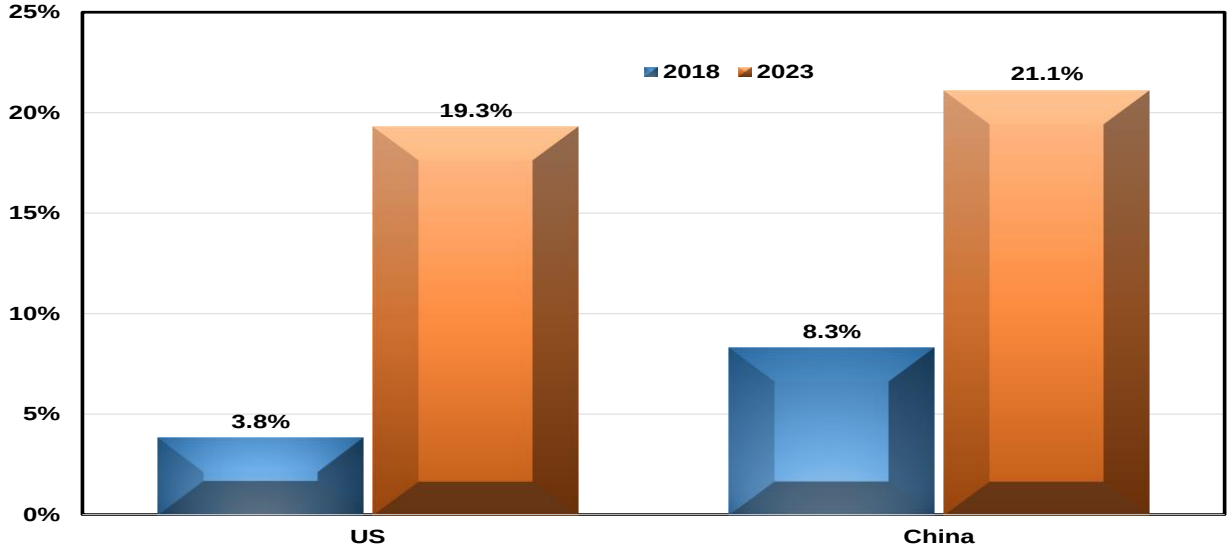
These international flow patterns indicate a shift in global trade, rather than an outright collapse. Trade and globalization are being reimagined and transformed: trade in goods has grown less buoyantly than the dramatic pace of 2000s, but it has not reversed, at least not yet. More encouragingly, trade in services, digital flows, and people flows has ramped up dramatically over the past decade. The upward trend in people flows was abruptly disrupted by the pandemic, but we fully expect pre-pandemic trends to prevail as the distance from the pandemic grows. Indeed, a strong rebound is already happening. International tourism in the U.S. fell by 90% at the height of the pandemic and hovered in the 70%-85% range below normal levels throughout 2021. However, tourism rebounded in 2022 (down only 30% relative to normal levels) with 2023 expected to fare better.

A.2. New Battlegrounds: From Tariffs to Industrial Policy and Export Controls

A strategic rethink in globalization has been underway for the better part of the past decade. There are good reasons for this. When China joined the WTO, the great hope was that as it became more deeply integrated in the world economy, it would also simultaneously become more liberal and democratic. As the next two decades showed, those hopes were ruthlessly quashed. This, combined with the loss of millions of manufacturing jobs in the U.S. displaced by trade (3.7 million by some estimates) and concerns about maintaining a global leadership in key sectors vital to national security, caused America to rethink its approach to trade. Other countries have followed suit, with a rise in protectionism taking hold across the globe. The number of trade restrictions imposed by countries rose from 2,300 in 2019 to 2,600 in 2022, peaking at 4,500 in 2020.

The initial concerns were primarily of an economic nature. The Trump Administration's tariffs on imported Chinese goods were levied on economic grounds, primarily focusing on narrowing the trade deficit with China. U.S. tariffs for Chinese goods rose from a 3.8% average in 2018 to a current 19.3%, while at the same time Chinese tariffs on American exports rose from 8.3% to 21.1% (Figure A9). A full 58.3% of U.S. exports are subject to Chinese tariffs, while 66.4% of Chinese exports are subject to U.S. tariffs. Tariffs did help marginally in narrowing the trade deficit which fell from $418 billion in 2017 to $382 billion in 2022, dipping as low as $310 billion in 2020, at the height of the pandemic. What is perhaps more striking is the attitude towards tariffs: While widely criticized upon their initial implementation, they have remained firmly in place and defended forcefully by the Biden administration. More importantly, tariffs have become so non-controversial that no one expects a broad reversal as keeping them in place entails less political risk than removing them.

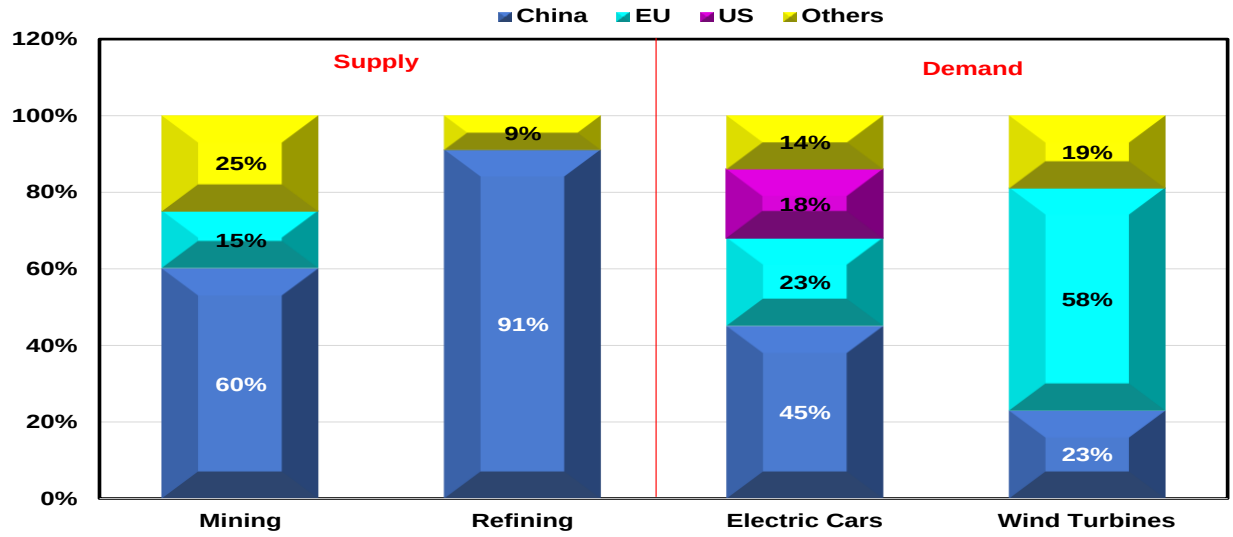
Figure A9
Tariffs Are Here to Stay
(tariff rates)



Source: BEA and Woods Center

The focus has now shifted away from economic concerns towards broader policies with strategic interest that address national security concerns and are aimed at maintaining "as large of a lead as possible" rather than a "relative advantage" in key technologies over competitors. The sectors deemed as "key technologies" span a wide range from artificial intelligence to quantum computing, chipmaking, biotech and clean energy. Technology is purposefully being targeted to ensure national security or strategic autonomy. China currently dominates most of upstream activities in rare earth elements (essential components for wind turbines, EV components, and defense equipment), accounting for 60% of mining and 91% of refining of rare earth minerals (Figure A10). This poses a challenge for America, which has come to view its reliance on China for critical components much like Europe came to view its overreliance on Russia for energy exports: as a strategic mistake that it needs to rectify.

Figure A10
China Dominates Rare Earth Materials
(percent of world production and demand)



Source: IMF and Wodds Center

This strategic rethink of overdependence on China for critical inputs has led to the emergence of a muscular industrial policy. And the phenomenon is not simply American-centric (though the U.S. is the main driver), but it has now become standard fare on a global scale.

The resurgence of protectionism and industrial policy is seen on three fronts: a) lavish subsidies and state handouts for specific industries, b) investment screening, and c) export controls. Take subsidies first. In 2022, the U.S. passed two gargantuan pieces of legislation aimed at reviving manufacturing in critical industries. The CHIPS and Science Act includes $53 billion to spur production of semiconductors, attempting to reverse a four-decade slide in America's share of chip manufacturing. The Inflation Reduction Act (IRA) earmarks $390 billion in support (grants, loans, tax credits) to boost clean energy investments and reduce reliance on China of critical supply chains such as batteries for electric vehicles (China comprises 70% of the world's production of electric vehicle

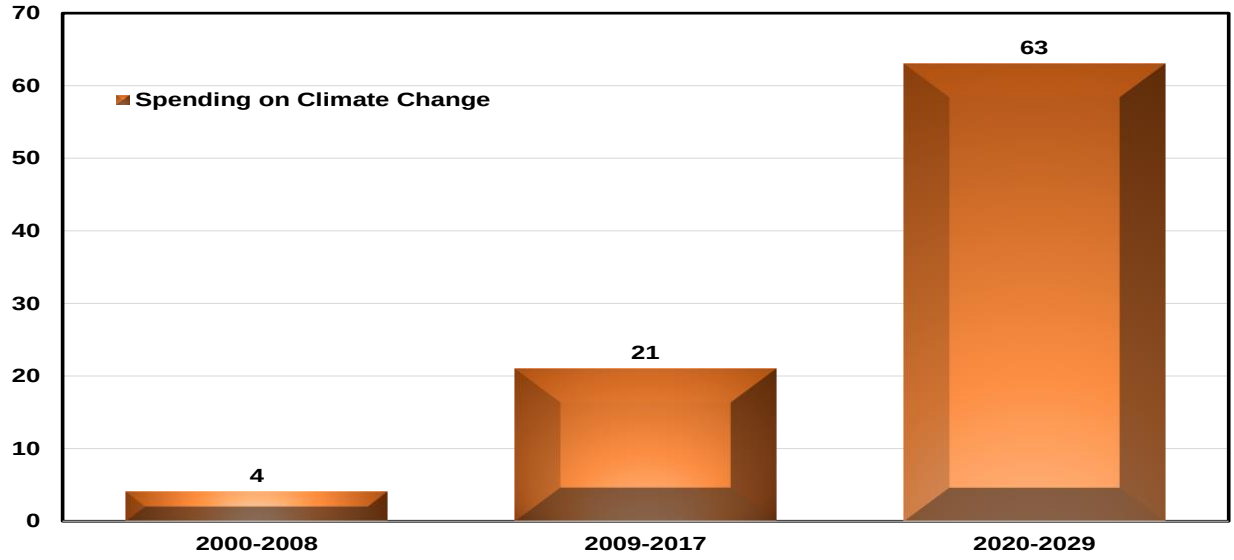
batteries). The IRA offers consumers a $7,500 tax credit for electric vehicles, but half the credit is available if a car's battery components are manufactured or assembled in the U.S. The other half is based on the origin of batteries minerals and is available only if the car's battery minerals are extracted or processed within the U.S. or within a country with whom the U.S. has a free-trade agreement. Final vehicle assembly must also be carried out in the U.S.

Other countries have followed suit. The European Union is considering its own version of IRA. Japan's new budget includes incentives for firms to relocate in the country. It also increased its budget for science and technology (by a whopping $10 billion) in an attempt to incentivize domestic manufacturing, especially for production of semiconductors for which it is shelling out $4.6 billion. India is offering $26 billion in incentives to lure back firms into the country. All told, subsidies for industrial policy among G7 members have risen from 0.6% of GDP in 2016 to a staggering 2% of GDP in 2022.

No other industry is seeing more benefits than the chipmaking business: According to the French Institute of International Relations, global support for the semiconductor industry can easily reach $721 billion in 2024. As things stand, subsidies amount to more than 60% of annual revenues of the semiconductor industry. The $53 billion earmarked by Congress in America may sound impressive, but it is dwarfed by the $370 billion in subsidies for the chip industry in the seven most generous countries (the EU, China, India, Japan, South Korea and Taiwan). The Indian government is footing half the bill for a chipmaking plant; South Korea is offering generous tax breaks for new semiconductor factories. In the U.S. alone, more than 40 new semiconductor projects have been announced since 2021, including a new plant in Arizona by Intel and TSMC at an estimated cost of $60 billion. All told, investment on semiconductor production in the U.S. may exceed $200 billion if all announced projects come to fruition. Concerns abound that the period of lean chip inventories, which characterized the post-covid world, will be supplanted by a period of excessive glut, placing further strains on an industry notorious for its boom/bust cycles.

Green energy subsidies have also seen an outsized boost. The U.S. government investments on climate change projects averaged around $20 billion per year from 2009-2017, but the amount projected from 2020-2029 will be at least three times as high, coming at around $62 billion annually (Figure A11). Even this may be an understatement: if for example, the figures include infrastructure spending, the tally may be as high as $100 billion per year. Onshoring of production is highly encouraged: Hyundai, whose electric vehicles are excluded from the generous tax credits of the IRA, is planning to build a $5.5 billion electric vehicle plant in the U.S. Some estimates show that onshoring of production of electric vehicle batteries will require spending in excess of $160 billion over the next decade by U.S. and European firms. More handouts will likely be in the offing to incentivize these supply chain reallocations. According to Credit Suisse, American solar panels may end up being the cheapest in the world by the end of the decade, thanks to lavish government subsidies for green tech.

Figure A11
Through the Roof: Spending for Climate Change Has Tripled
(billions of dollars)



Source: BEA and Woods Center

The second front on the quest to preserve technological advantage and competitive edge on critical industries is investment screening. UNCTAD, a UN agency charged with tracking investment policies across the world, recorded a historical high number of new measures restricting foreign investments in the last three years. The number of capital controls jumped from 10 in 2021 to 208 in 2022, while the number of restrictions for Foreign Direct Investments rose from 20 to 26. A full 63% of global FDI flows were subject to a screening regime in 2022, up from 52% in 2020. The Committee on Foreign Investments in the U.S. has seen its jurisdiction expanded over the past few years over transactions involving "critical" sectors such as data, technology, and infrastructure. Between 2017-2021, the committee scrutinized over 660 transactions, twice as many as during the previous five years. The EU has called for all its member states to adopt stricter investment rules, especially as it relates to Russia and Belarus. Canada has also taken steps to strengthen its investment review process, after it ordered three Chinese companies to divest from its lithium mining industries.

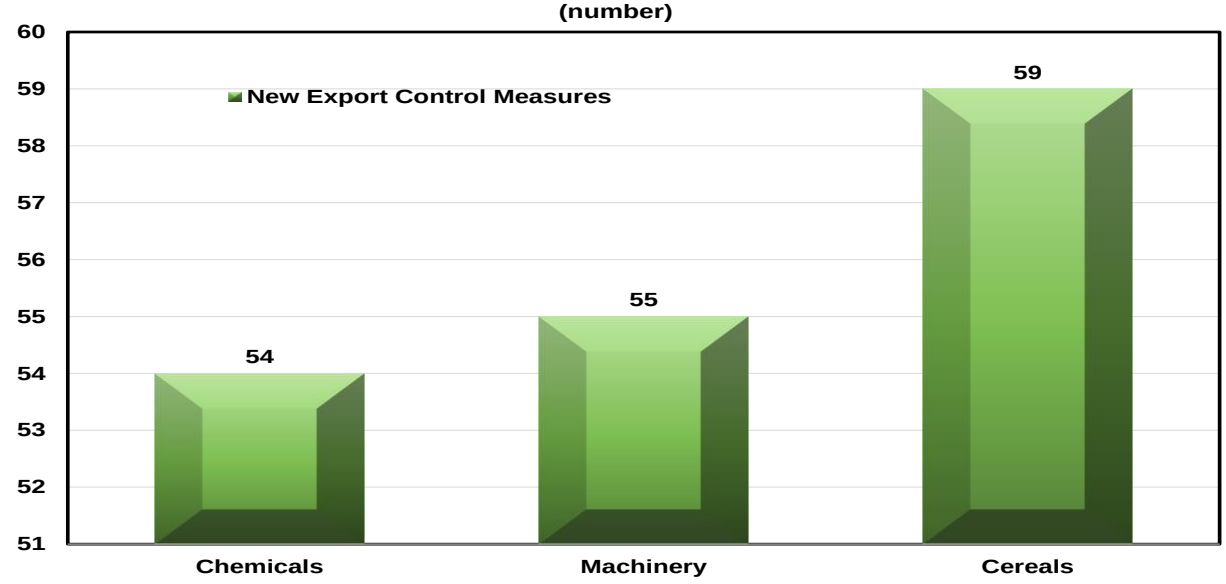
The U.S. has long maintained an Entity List, a list of companies which must apply permission to purchase various goods with potential military or national security uses. The number of unique China-based companies on the list has exploded from 130 in 2018 to 532 in 2022. In fact, China accounts for more than a quarter of the 2000+ firms on the Entity List. In an effort to restrict investments in semiconductor production in China, the CHIPS Act bars companies that receive subsidies from investing in chip manufacturing in China.

The third approach the U.S. is undertaking to maintaining its competitive advantage are export controls, which restrict the transfer of goods and services to certain countries. The U.S. has adopted the foreign direct product rule, which restricts sales of items based on U.S. technology, even if they are designed and manufactured abroad. The broadest application of this rule includes an outright ban of advanced chips — used for artificial intelligence tasks — to Chinese firms. The U.S.

was successful in persuading the Netherlands and Japan — two other advanced chip-producing countries — to adopt similar export bans for Chinese firms.

Other export controls abound. At the onset of the war in Ukraine, countries across the world implemented bans or limited exports of food and fertilizers. The number of countries implementing food export restrictions jumped from four to 25 in the first half of 2022. Export bans covered up to 34% of traded wheat and 6% of traded corn. There is currently a complete ban of Russian oil in the EU. According to Global Trade Alert, Western countries have tightened export controls in 2022 for other critical items: 55 new export control measures were put in place for machinery, 54 for chemical products and 59 for cereals (Figure A12). Indonesia has banned nickel exports — a critical ingredient for EV batteries. Argentina, Bolivia, and Chile are considering export controls on lithium, another critical material in electric vehicle battery production.

Figure A12
On the Rise: New Export Control Measures
(number)

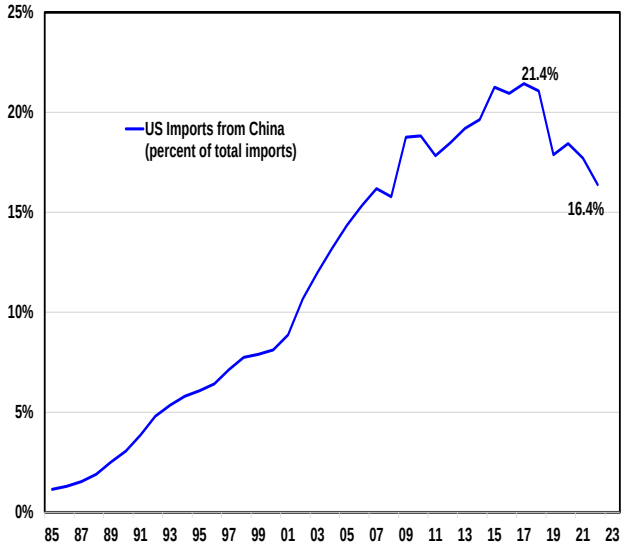


Source: Global Trade Alert and Woods Center

A.3. The Great Decoupling: U.S. and China

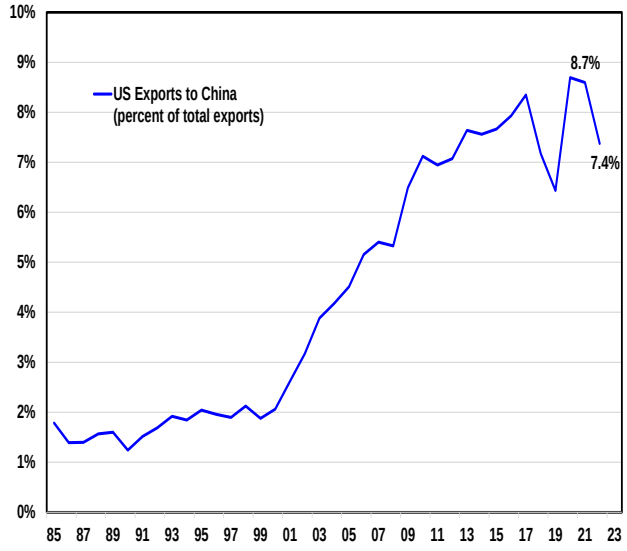
As argued above, global trade while undergoing dramatic changes has remained quite resilient in the face of trade wars, once in a century pandemic, and significant reshuffling of supply chains. Nonetheless, significant changes are underfoot with perhaps the biggest shift appearing in the China-U.S. trade patterns. While two-way trade between the two countries rose to $690 billion in 2022 — the largest ever — there is no denying that the general trend has been one of decoupling: both countries have significantly reduced the share of imports from each other. The share of U.S. imports from China (as percent of total imports) currently stands at 16.4%, far below the 21.4% peak reached in 2017 before tariffs were levied (Figure A13). Likewise, the share of U.S. exports to China has fallen from a peak of 8.7% in 2020 to a current 7.4% (Figure A14).

Figure A13
Imports from China Have Declined as Share of Total Imports
(percent of total imports)



Source: US Department of Commervce andf Woods Center

Figure A14
US Exports to China Have Declined as Share of Total Exports
(percent of total exports)



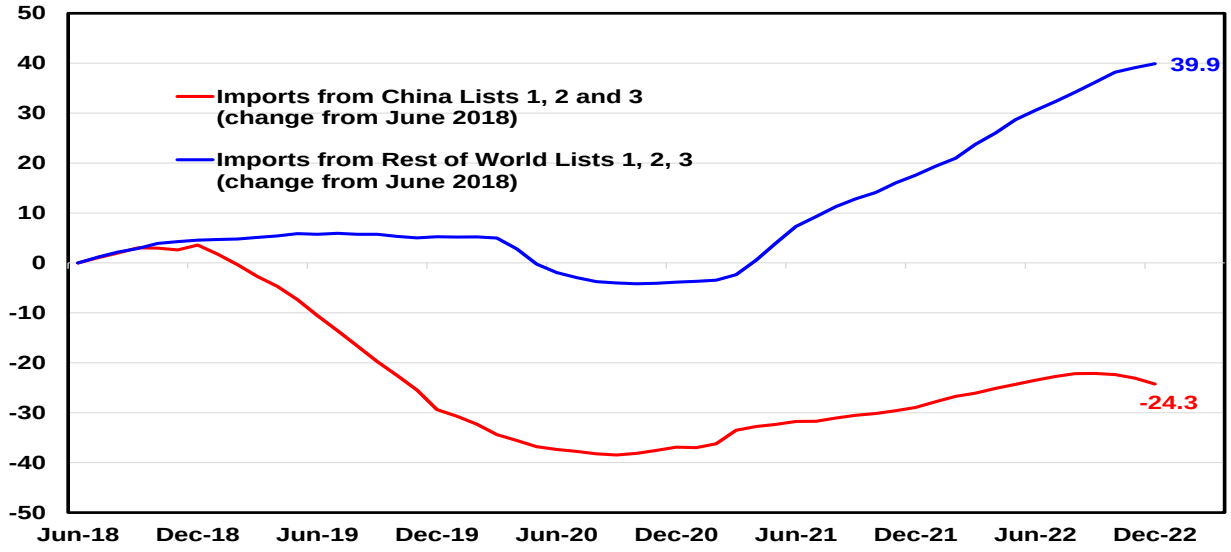
Source: US Department of Commervce andf Woods Center

At first blush, the data appears to spew a confusing picture. U.S. imports from China rose by a healthy 16.7% in 2021 and by 6.3% in 2022, reaching $536 billion by the end of last year, the second highest on record. U.S. exports to China have also grown over the past three years: by a healthy 17% in 2020 (due in large part to the Phase I deal between the Chinese government and the Trump administration), by 21.6% in 2021 (as the pandemic receded) and by a more subdued 1.6% in 2022 (largely due to China's anemic growth last year). In terms of sheer volume, U.S. exports to China reached $153 billion in 2022, the highest in history. Yet, as a share of total imports or exports, the trend points unmistakably towards decoupling and fragmentation.

A closer look at the data reveals a more nuanced picture. U.S. tariffs on Chinese goods continue to remain in place, but not all imports are subject to tariffs and tariff rates vary. Roughly two thirds of the goods from China — over $300 billion — are subject to tariffs, which means that around one third continues to remain free of tariffs. Of the tariffed goods, those on Lists 1, 2, and 3 are subject to a 25 percent tariff rate. Other goods, those on Lists 4A, are subject to a much smaller 7.5% tariff rate.

Predictably, U.S. trade with China has evolved as one would expect given the tariffs in place. Imports with highest tariffs on Lists 1, 2 and 3 (comprised mostly of consumer electronics, IT hardware, furniture, semiconductors and some capital goods) are below their 2018 levels by 24%. As expected, the U.S. is merely importing these goods from the rest of the world instead of China: imports from the rest of the world for items on Lists 1, 2 and 3 rose by 40% compared to 2018 levels (Figure A15). In this sense, for these items, the U.S. has begun to decouple in earnest from China.

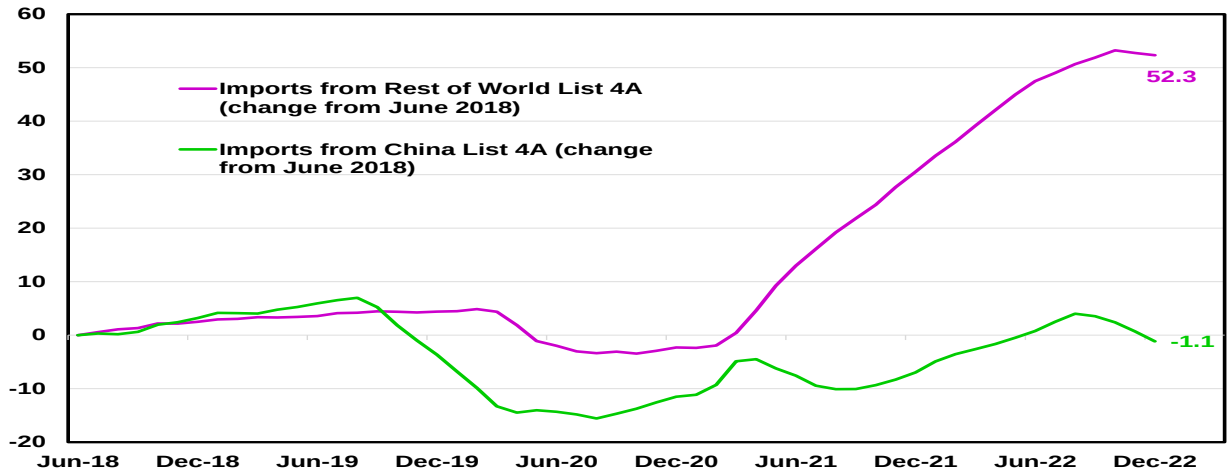
Figure A15
For Imports With Highest Tariffs A Decoupling Is Happening
(cumulative percent change since June 2018)



Source: Peterson Institute andf Woods Center

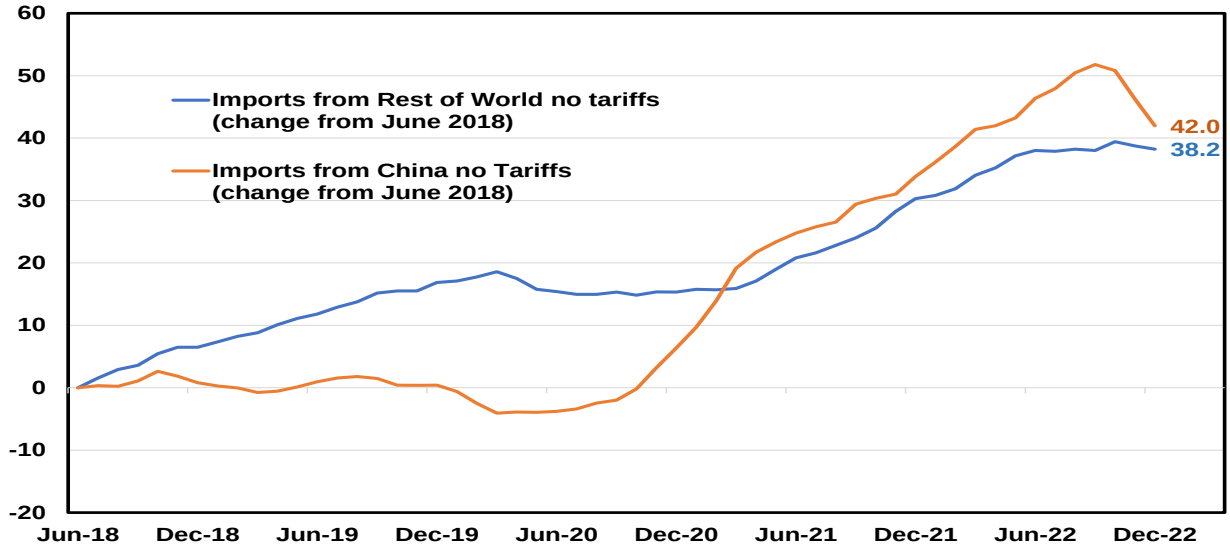
Nonetheless, the evidence of decoupling is weaker for other goods. Imports on List 4A, subject to 7.5% tariff rate, fell by as much as 15% compared to their 2018 levels in mid-2020, but have recovered and are currently standing only 1.1% below 2018 peaks, prior to the imposition of tariffs (Figure A16). In the meantime, U.S. imports from the rest of the world for items in List 4A have risen by a staggering 52%, indicating that some readjustment has occurred, and the U.S. has begun to shift sourcing of some of the products — such as clothing and footwear — to third countries. In contrast, U.S. imports of Chinese goods that were not subject to tariffs have grown by a jaw-dropping 42% since 2018, higher than the 38% growth recorded from the rest of the world (Figure A17). This explains why U.S. imports from China have increased overall. Clearly, in terms of these products, there is no decoupling between the two countries.

Figure A16
For Imports With Lowest Tariffs Less Decoupling
(cumulative percent change since June 2018)



Source: Peterson Institute andf Woods Center

Figure A17
No Decoupling for Goods with No Tariffs
(cumulative percent change since June 2018)

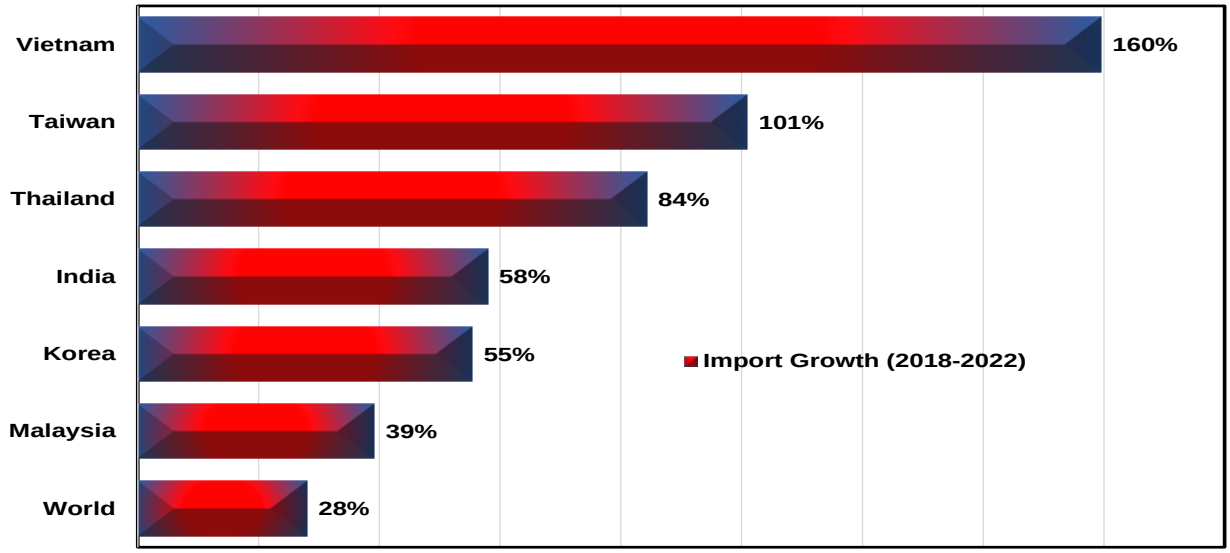


Source: Peterson Institute andf Woods Center

The original hope of the trade war with China was to reduce the trade deficit and encourage domestic production. There has been marginal progress on both fronts: The U.S. trade deficit with China narrowed slightly from a peak of -$408 billion in 2018 to -$380 billion in 2022. U.S. manufacturing employment rose by 2.3% since 2018 and by a total of 13% since the depth of the financial crisis (an increase of around 1.5 million manufacturing jobs). Part of the onshoring of jobs is related to the fact that manufacturing in China is no longer as cheap as it once was. Factory wages have risen by fourfold from 2009-2020, far outpacing the 30% of wage increases in the manufacturing sector in the U.S. over this period. Part of the shift has to do with an increased focus towards resiliency and robustness of global supply chains. According to the U.S.-China Business Council survey conducted in 2022, while 78% of companies had not made changes to any segment of their supply chain, 8% responded that they had reoriented some portion towards the U.S., and 16% towards other countries.

This means some important changes are underfoot. What has truly changed in the aftermath of the pandemic and the Sino-American trade war, is not so much onshoring rather than a reshuffling of supply chains, away from China and towards other countries. Indeed, the biggest beneficiary of the trade war with China has been Vietnam: U.S. imports from Vietnam rose by 160% between 2018 and 2022. Other countries have also benefited: imports from Taiwan have more than doubled during this period, while those from Thailand, India and South Korea have risen by 84%, 58% and 55%, respectively. For comparison, overall U.S. imports rose by a more meager 28% from 2018 to 2022, which means that these countries have made up for the bulk of reorientation away from China. Employment is mimicking similar trends: U.S. companies are hiring fewer workers in China while boosting employment elsewhere: In India, nearly 1.4 million people work for U.S. subsidiaries, an increase of 14% since 2016.

Figure A18
Supply Chains Have Moved Away from China Towards Other Countries
(US Import Growth, 2018 to 2022)

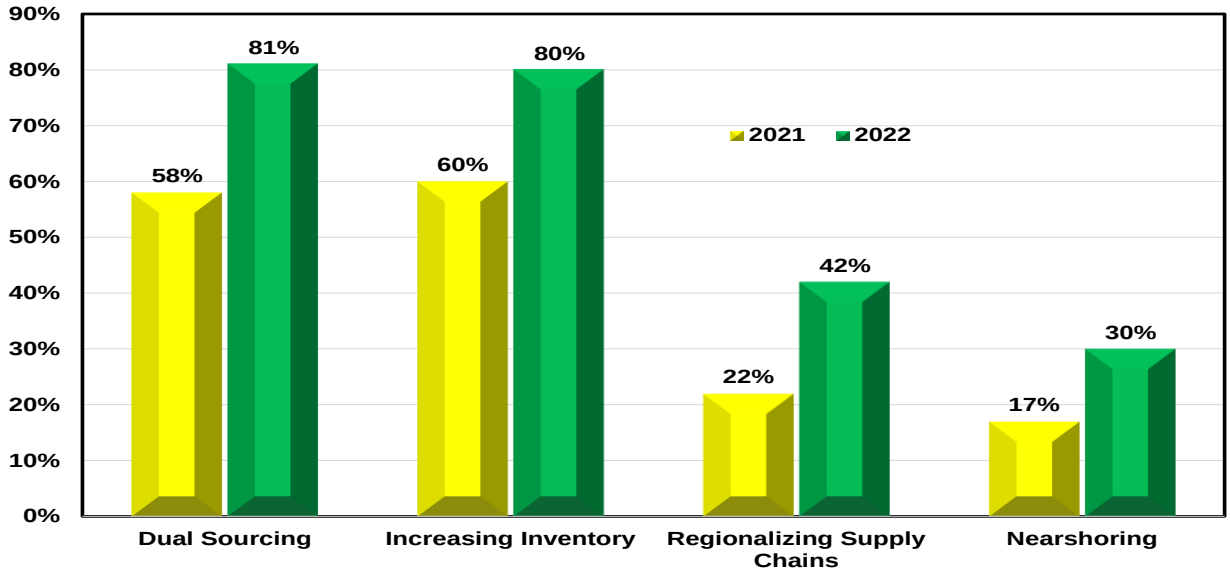


Source: US Department of Commerce and Woods Center

Trade wars are not the only reason for such reshuffling of supply chains. The pandemic was a stark reminder that supply chains were more fragile than originally thought, which led many companies to consider resiliency in addition to efficiency. The war in Ukraine provided further profound shocks, disrupting energy and food markets, and highlighting the need for more robust and a more broadly diversified supply base. Perhaps most importantly, the trend has been towards more security and a closer reliance on friendlier countries with governments and systems that share broader characteristics with your own, rather than depending on autocratic regimes.

One simple way to boost resiliency and robustness of global supply chains is to build more inventory. Since the pandemic, companies have done exactly that, increasing their share of precautionary inventories from 6% of world GDP in 2019, to 9% by 2022. Vertical integration is another way to cope with unwanted supply chain disruptions: Car companies are reshaping their business plans to mimic more closely the Tesla model where the company controls everything from nickel mining to design. The U.S. computer sector is now 50% more vertically integrated than in the mid-2000s. A third way is to simply diversify supply sources: A full 81% of supply chain leaders are now sourcing raw materials from two suppliers rather than depending on one, an increase from the 58% that did so the previous year (Figure A19). 80% of companies are increasing inventories, while 42% are regionalizing supply chains.

Figure A19
Global Supply Chains Are Shifting
(survey, percent of respondends)



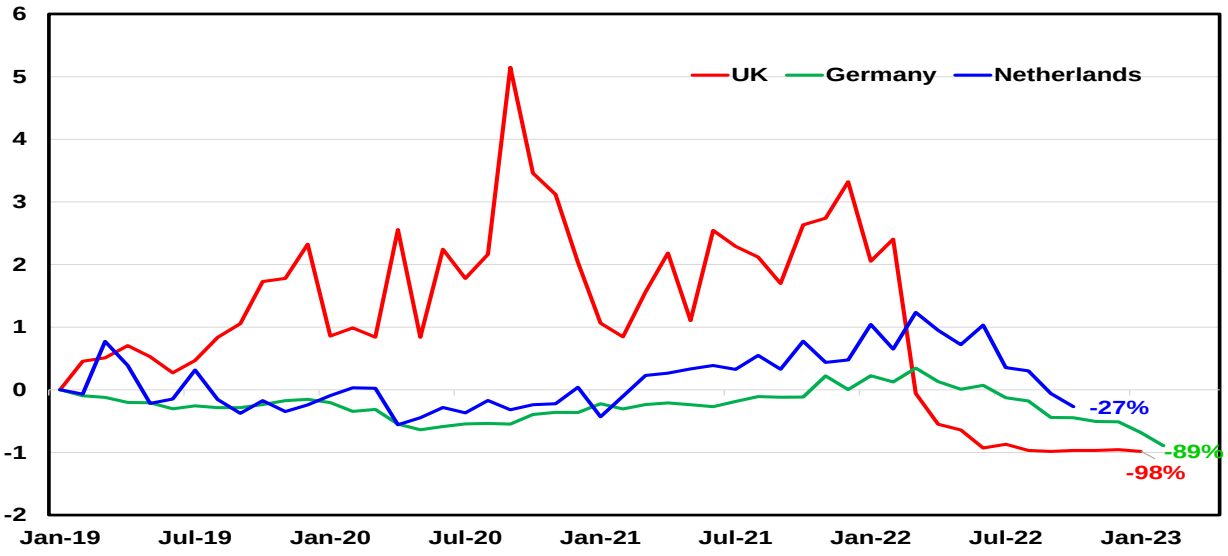
Source: McKinsey Survey and Woods Center

A.4. The Russia-Ukraine War: More Trade Fragmentation

The Russia-Ukraine war has been ongoing for over 16 months. As the war rages on, another battle continues, one that intents isolate Russia from the world and cripple its economy. Understandably unwilling to confront a nuclear adversary on the battlefield, Western allies have instead wielded a barrage of crippling economic sanctions on Russia. It is now the most heavily sanctioned country in the world, outranking North Korea and Iran. The most headline-grabbing was the banning on Russian oil by the U.S. and the EU, and the expulsion of most Russian banks from SWIFT — an international payment system facilitating financial transactions. But perhaps the most surprising, is the freezing of more than half of Russia's $630 billion foreign exchange reserves, an unprecedented step that sent alarming signals to other regimes across the world. Russian airlines are banned from airspace across the West; Russian companies have been expelled from the U.S. credit markets, and Russian vessels cannot enter British waters. Export controls will deny Russia access to high-tech gadgets used in military and high-tech sectors ranging from microchips to cutting-edge machinery. A growing number of companies have fled the country — from McDonald's to Nike, Apple, Visa and Mastercard — though perhaps the most significant is the exit of BP, Shell, and Equinor from their Russian oil ventures.

America is no longer importing oil from Russia and a full embargo on Russian oil from the EU came in effect in February of this year. The European Union is doing all it can to wean itself off Russian energy imports, decoupling from Russia with impressive speed. As of March of this year, imports from Russia have fallen compared to their 2019 levels by an eye-watering -98% in the UK, by -89% in Germany, and by -27% in the Netherlands (Figure A20). As of the end of 2022, EU imports from Russia of other energy products have also decreased substantially: from 45% to 22% for coal and from 36% to 21% for gas.

Figure A20
Exports from Russia to the EU Have Cratered
(change from 2019 levels)



Source: OECD and Woods Center

The sanctions have not been as successful as advertised and the Russian economy has managed to weather them quite successfully. Russia's economy shrunk by an estimated 3% in 2022, a far cry from the 15% collapse anticipated earlier when sanctions were first imposed. Russia's financial system has stabilized: The ruble lost 40% of its value in the aftermath of sanctions, but it has fully recovered and then some, currently standing above its pre-war value. A run in the banks resulting in the withdrawal of $31 billion in March of last year has been stemmed, and customers have returned much of their cash back into their accounts. The stock market initially lost half its value, but it has recovered a chunk since. Some of the tools used to dull the pain of the sanctions have been conventional: The Central Bank of Russia (CBR) raised interest rates from 9.5% to 20% to stem the ruble's collapse (it has since brought the rate down to pre-war values now that the ruble has stabilized). This year, the IMF expects the Russian economy to grow by 0.7%, on par with France, even as Germany and the UK fall into a recession.

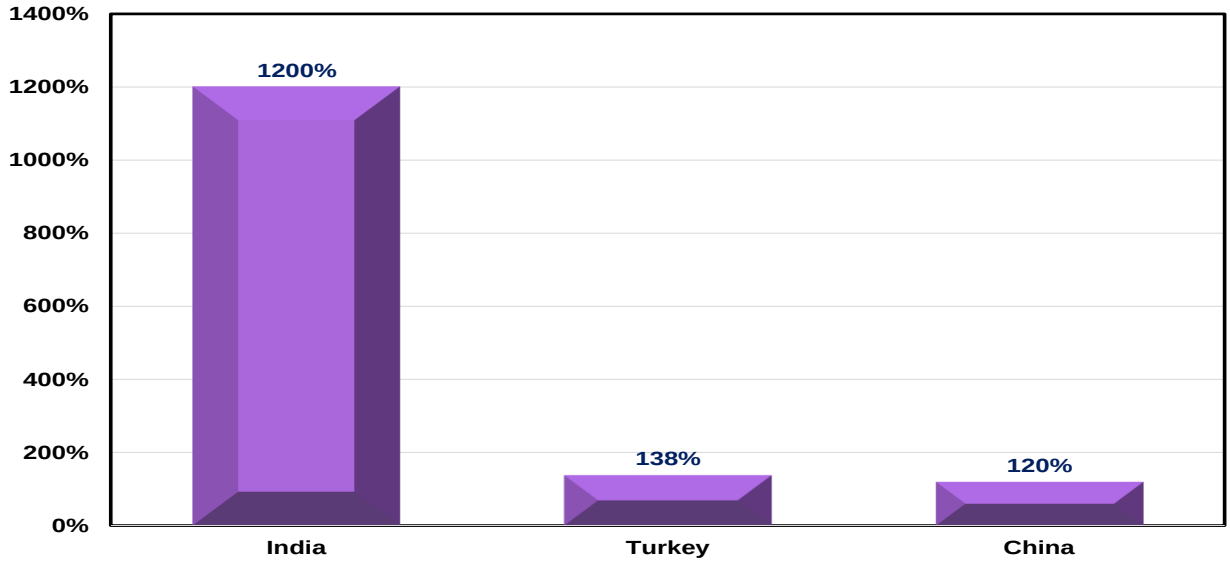
There are a number of reasons why Russia's economy has proven to be so resilient. First, the West did not entirely cut off Russian energy exports since doing so would have been deeply destructive to the world economy. While it banned Russian imports of oil and forbade its shipping firms, insurers, and financiers from facilitating the sale of Russian crude to buyers, the sanctions carved out an important exception. Western shipping firms, insurers and financiers could continue to facilitate Russian oil exports, as long as the price of oil per barrel was below $60. In February of this year, a similar package of sanctions came into force on Russia's refined oil, a smaller but profitable export, much of which also went to Europe before the war. The spirit of the price caps was to limit oil revenues to the Russian regime, while keeping the world economy afloat.

The second reason is that the West has been unable to secure the cooperation of all countries. Russia no longer exports oil to the EU and the U.S., but other countries have stepped in to fill the void,

more than happy to receive Russian oil at likely below market prices. In March of this year, Russia's oil exports to China and India made up 90% of total crude oil exports. Recently, Russia has shipped around 3.7 million barrels of oil per day, more than it did in 2021. Energy exports are reputed to have accounted for a $270 billion current account surplus, 11% of GDP, the second highest in the world after China.

But it is not just energy: other countries have also purchased Russia's exports of other raw materials while providing Russia with much needed imports of certain goods. The U.S. and its allies have banned sales to Russia of a myriad of high-tech items, from semiconductors to cars to washing machines. Car manufacturing in Russia is down 70% as the industry struggled with a shortage of semiconductors, but Russian vehicle imports from China have risen by 330% compared to the previous year. Russia is currently importing as much as it did before the invasion. Russia's imports from China have nearly doubled. Overall, Russian exports to India are 12 times higher than in 2019, those to China are up by 120% and to Turkey by 134% (Figure A21).

Figure A21
Russian Exports to India, Turkey and China Have Skyrocketed
(percent change since 2019)



Source: OECD and Woods Center

The third reason for Russia's success has been its ability to effectively circumvent sanctions through legal and illegal ways. An entire constellation of shadow traders and shippers has sprung up since the invasion, most based in Hong Kong and Dubai rather than in Brussels and London. Some of the cargo is carried out via black trade — a system of sanction-dodging long tested by Venezuela and Iran, where ships are renamed and repainted (sometimes a few times during a journey) and operate with their transponders turned off. But unlike Iran and Venezuela, Russia can still export oil to the world, so such drastic underworld of trading is unnecessarily cumbersome.

What has happened is the emergence of "grey trade," one that is not entirely illegal but is likely to circumvent the limits and price caps put in place by the West. New shippers have taken over

the delivery of Russian crude to places like Sri Lanka, Turkey, and India. Last year a total of 200 ships changed ownership, a rise of 55% compared to 2021. Demand was particularly high for smaller tankers with a maximum capacity of 1 million barrels, the only ones capable at docking at smaller Russian ports. All told, the fleet of ships transporting Russian oil in this type of grey trade can be as high as 360 ships, an impressive armada, sufficient to keep the Russian crude flowing at current levels virtually indefinitely.

More worrying is the fact that the price cap may not be as effective as the West claims: customs data from China and India shows they are paying a higher price for crude oil from Russia than originally thought, though the data is murky as all sides benefit by claiming a lower price. Some Russian crude has also found its way back to European markets, once refined abroad.

The hope is that Russia's resiliency may be tested this year as a European ban on refined oil takes effect. The EU accounts for 55% of Russian refined oil, which can be hard to replace given that demand from China and India is primarily for crude rather than refined oil as these countries can refine oil themselves. Weaker global growth may also put downward pressure on oil prices, which will translate in further pain for Russian government coffers. Even so, the Russian government has plenty of options to fund itself. The Russian Sovereign Fund has oodles of reserves — $150 billion (10% of GDP) — even though one fifth of the fund was depleted last year. Russian energy exporters, which are largely state owned, could be hit with another windfall profit tax in order to fund the government and war efforts. The government can also issue more debt.

All this points towards a decoupling of the West, chiefly the EU, from Russia and an intensification of trade ties between Russia and other countries, most prominently China and India. The worry is that this decoupling may lead to a broader and more permanent rupture of the post-Cold War world. The rapprochement between China and Russia is a prime example. The trade between the two countries is already insulated from Western sanctions with only 33% of payments taking place in dollars, down from 97% in 2014. At the end of 2022, 16% of Russia's exports were paid for in yuan, up from zero before the invasion. Some international transactions are being settled in Indian rupees and Emirati dirhams.

While far from dethroning the dollar as the world's reserve currency — only 3% of international payments are in yuan compared to 40% in dollars — these trends accelerate a push to develop alternative financial and technological infrastructures. China has developed a parallel system to SWIFT (called CIPS) in yuan and is working towards developing a digital currency. Average daily transactions in CIPS, though accounting for only 1% of volume of SWIFT, has risen by 50% since the war in Ukraine. In 2022, CIPS processed transactions amounting to $14 trillion from nearly 1300 financial institutions in 105 countries. The dollar's share of global foreign exchange fell to 58% in 2022 from 72% in 2000. This financial fragmentation may not spell doom for the dollar, at least not in the near term, but it may "undermine its hegemony" as Janet Yellen, America's treasury secretary, admitted a few months ago.

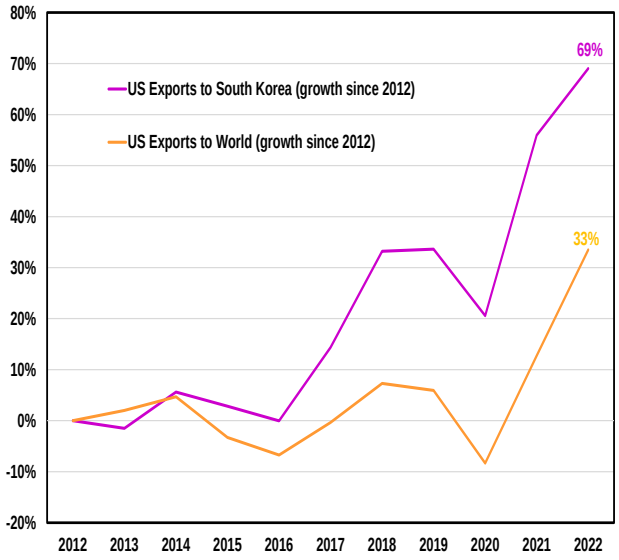
B. SPECIAL FOCUS: THE STATE OF THE US/KOREA TRADE

The Korea-U.S. Free Trade agreement (KORUS) reached a milestone this March: it celebrated its 10th anniversary. It is America's second largest free trade agreement (after NAFTA), covering nearly $190 billion in bilateral trade in 2022. South Korea is America's sixth largest trading partner (after Canada, Mexico, China, Japan, and Germany), while the U.S. is South Korea's second largest trading partner (after China). In 2022, U.S. merchandise exports to South Korea reached an all-time high of $74.5 billion; imports from South Korea also reached a historical record of $115 billion. With the benefit of a decade, it is worth taking a look at the bilateral trade between the two counties, focusing primarily on U.S. exports to South Korea.

First, it is perhaps important to note that, similar to many other trade negotiations, the final ratification of the Korea-U.S. Free Trade Agreement took a number of years and many negotiating rounds. Initial discussions began in 2004, but the final ratification did not happen until 2010, after both countries agreed to make minor changes to the initial proposal. The agreement entered into force on March 15, 2012. Since then, the Trump administration sought to renegotiate some sticking points, dealing primarily with a few sectors such as automotive trade and the further opening of Korea's agricultural market. For its part, Korea suggested some reforms for the investor-state dispute settlement (ISDS) mechanism and raised concerns about tariffs on washing machines and solar panels. These negotiations resulted in some relatively minor changes to the original agreement: the U.S. demanded (and the new amendments granted) some export restrictions on Korean steel, a larger quota for U.S. cars exported to Korea that meet U.S. emissions and safety standards, and an extension of the duration of the 25 percent tariffs imposed by the U.S. on imported pickup trucks. To satisfy Korean demands, a few changes were also implemented to the investor-state dispute settlement and trade defense mechanism procedures, as well as rules of origin requirements for certain textile products.

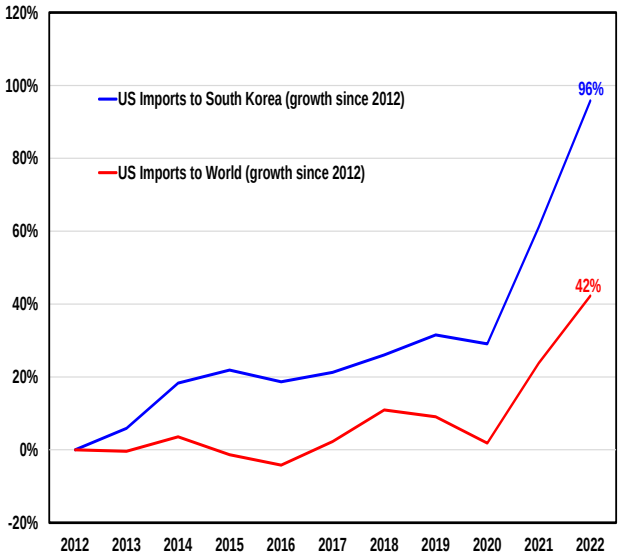
After ten years, the KORUS Free Trade Agreement has had mixed results. In the early years, it fell far short of expectation, with U.S. exports growing by a mere $4 billion at the end of 2017, instead of the projected $10 billion originally anticipated. However, exports have picked up over the past few years, growing by nearly 70% between 2012 and 2022, faster than the 33% growth of overall U.S. merchandise exports during this period (Figure B1). However, imports have grown even faster, nearly doubling over this period, far outpacing the overall growth of imports (42%) (Figure B2). The U.S. trade deficit to Korea narrowed between 2015-2020, but has widened dramatically since the pandemic, reaching an all-time high of $44 billion in 2022 (Figure B3).

Figure B1
Exports to South Korea Have Surpassed the Overall Export Pace
(percent change since 2012)



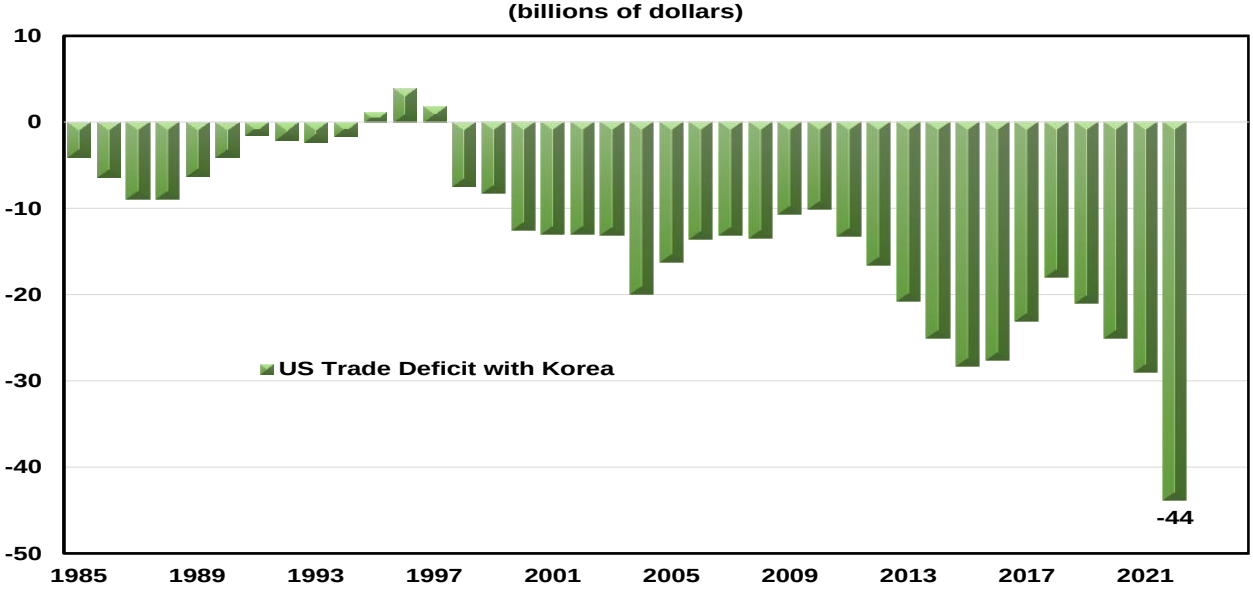
Source: BEA and Woods Center

Figure B2
...But Imports Have Risen Even More
(percent change since 2012)



Source: BEA and Woods Center

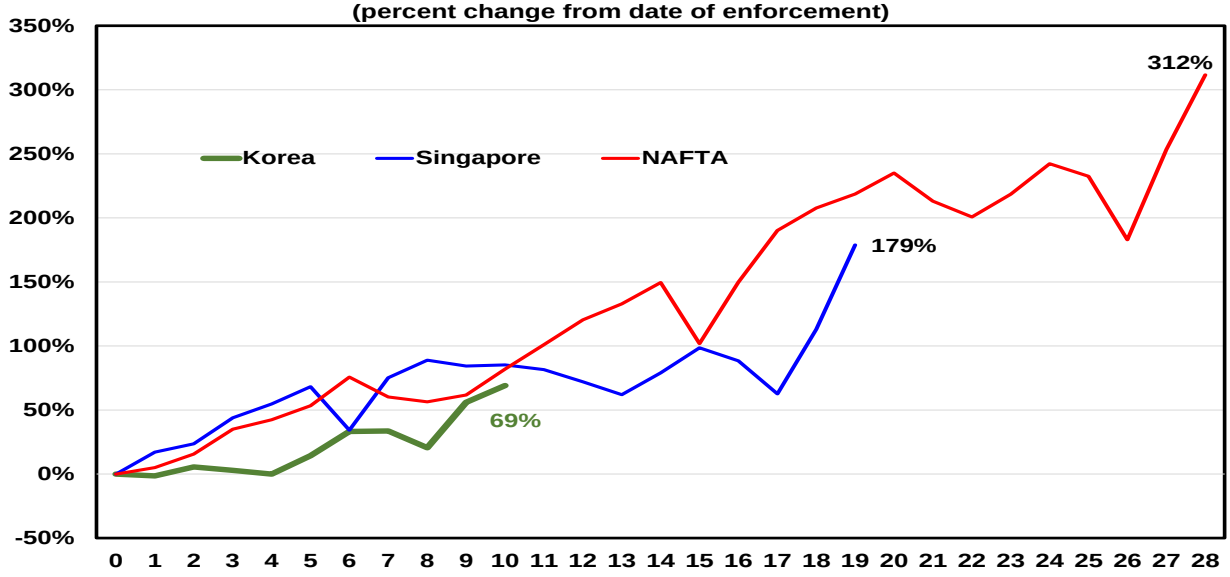
Figure B3
US Trade Deficit With Korea Widended Significantly in 2022
(billions of dollars)



Source: BEA and Woods Center

Nonetheless, trade between the two countries has generally lagged behind the usual jump seen after the implementation of other free trade agreements. For example, in the decade after NAFTA came into effect, U.S. exports to the region rose by 100%, while imports to the U.S. by 150%, higher than the 70% and 98% figures for the KORUS. Likewise, after the free trade agreement with Singapore (the third largest trade agreement), U.S. exports to the country rose by 85% in the following decade (Figure B4).

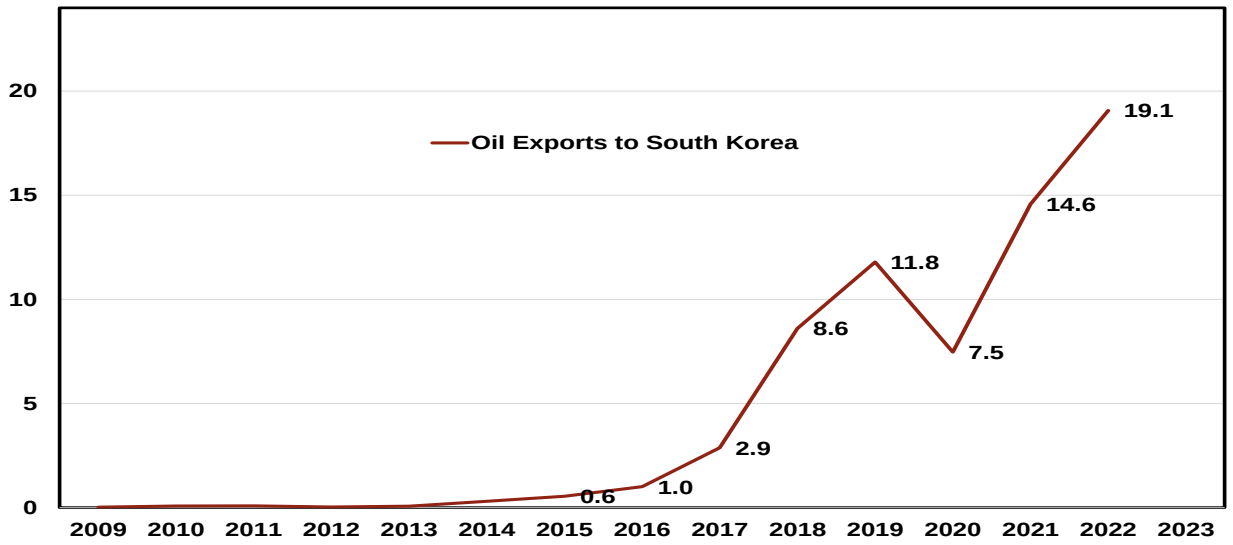
Figure B4
Evolution of Exports After Free Trade Agreements
(percent change from date of enforcement)



Source: Census Bureau and Woods Center

U.S. exports to South Korea would have grown even slower had it not been for the removal of the longstanding prohibition on export of crude oil in 2015. Both oil and gas have played an outsized role in the growth of U.S. exports to South Korea, with the exports from the category skyrocketing from $35 million in 2012 to $19 billion in 2022, a nearly 55,000% increase (Figure B5). Oil and gas exports to South Korea currently account for 26% of overall exports to the country. Other important exports are: Chemicals ($9.3 billion, 13% of exports), Machinery ($8.7 billion, 12% of total exports), Transportation Equipment ($7 billion, 9.6% of total exports), Computer and Electronic Products ($6 billion, 8.3% of total exports), and Processed Foods ($5.8 billion, 8.1% of total exports). Of these sectors, exports in Processed Foods have experienced the largest growth over the past ten years, almost doubling relative to their 2012 levels. Other exports have grown at a more subdued pace: Machinery exports by 45%, Transportation Equipment by 38%, and Chemicals at 35%. In contrast, exports from Computer and Electronic Products have actually shrunk by 13% over this period.

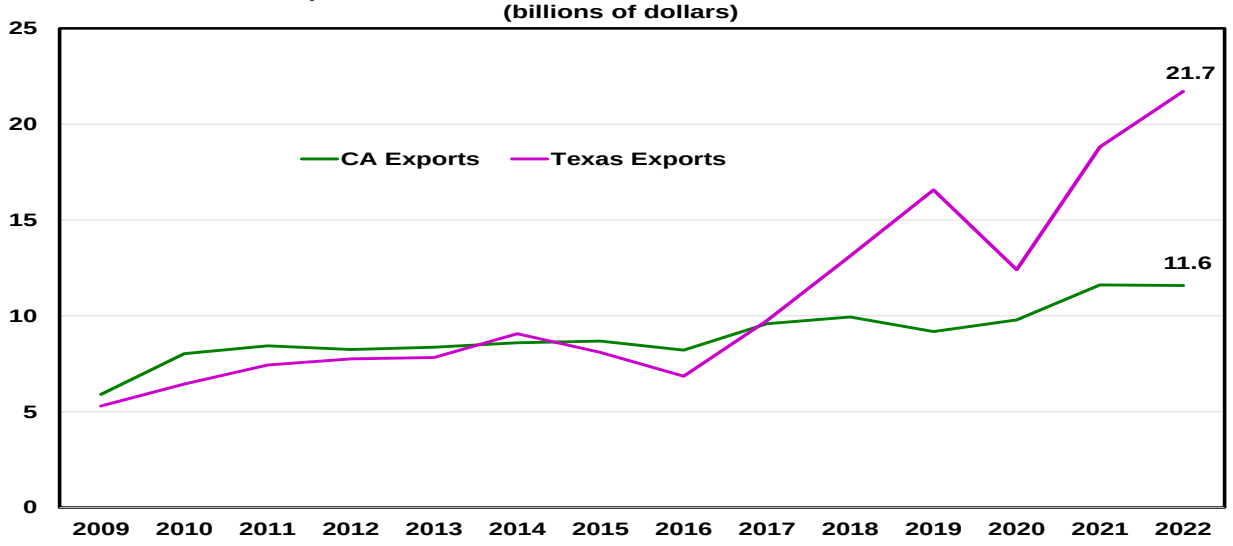
Figure B5
Oil Exports to South Korea Have Skyrocketed
(billions of dollars)



Source: International Trade Administration and Woods Center

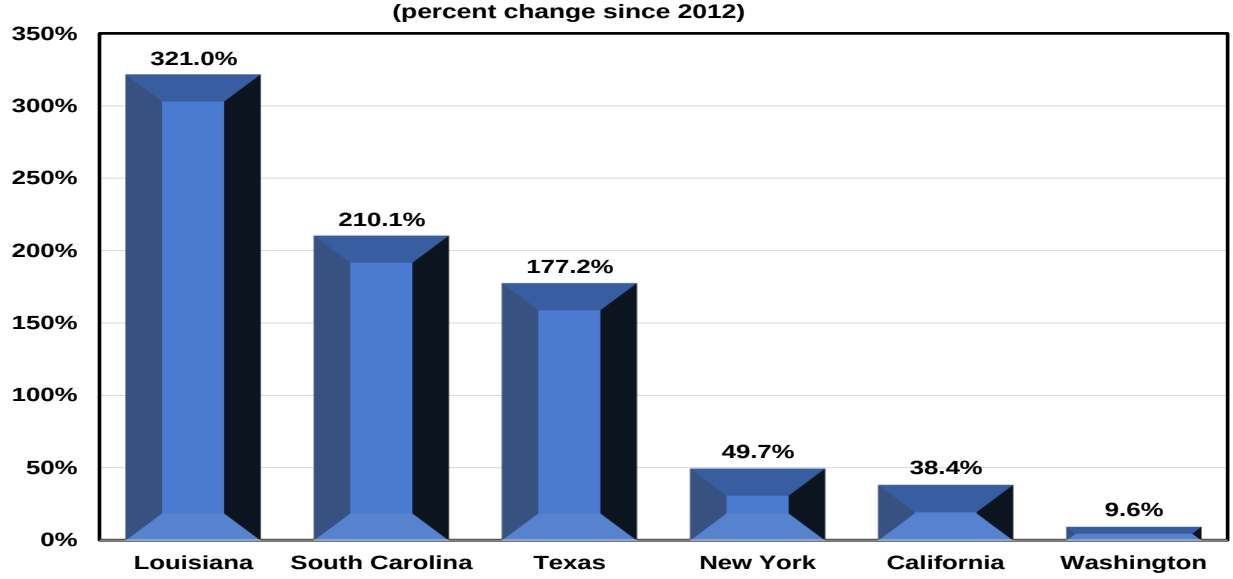
Texas exports the most to South Korea, with nearly $22 billion in export value in 2022 (30% of total U.S. exports). California is second, with $11 billion (16% of total exports) (Figure B6). Prior to the U.S. energy boom and up until 2014, California was the biggest exporter to South Korea. But while California exports have only risen by $3 billion since 2014, Texas exports have exploded by over $12 billion, thanks in large part to the oil and gas bonanza. Louisiana has seen a similar trajectory: up until 2016, prior to the energy boom, it was the fifth largest exporter to South Korea, ranking behind Washington and New York. It is now the third largest exporter with nearly $5 billion in export value in 2022 (Figure B7).

Figure B6
Texas Exports to S. Korea Have Risen Much Faster than California's
(billions of dollars)



Source: International Trade Administration and Woods Center

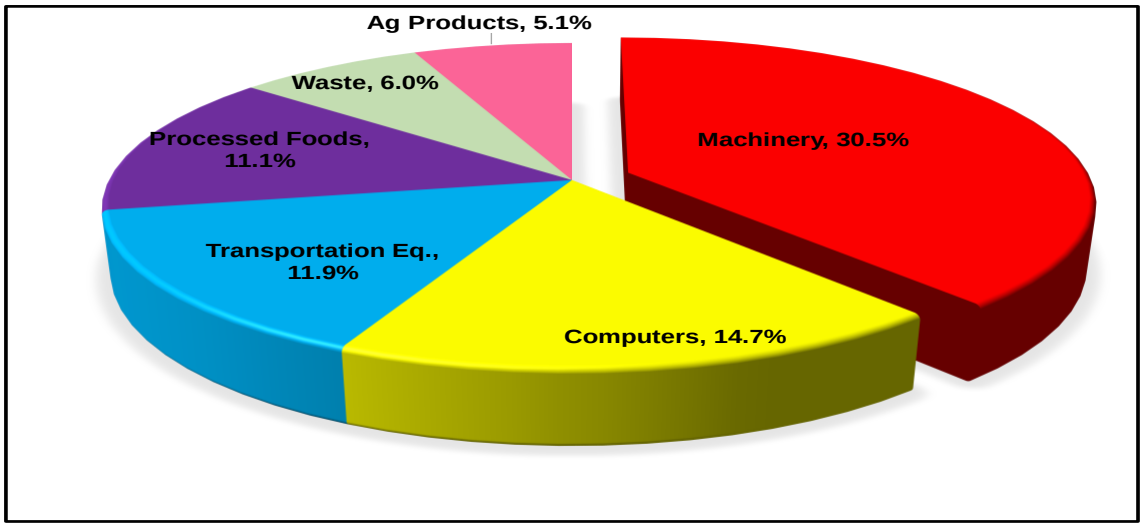
Figure B7
Top Export States to S. Korea: Export Growth Since FTA
(percent change since 2012)



Source: International Trade Administration and Woods Center

Of course, the main reason for such a dramatic increase of exports from Texas and Louisiana to South Korea has to do with energy exports. Oil and gas exports make up a full 75% of Louisiana exports to the country; for Texas, that figure is 62%. The second biggest category for both states are Chemicals, accounting for a full 10% of total exports. Instead, California's exports to South Korea are more diversified. Of the top six exported products, Machinery makes up 30.5% of total exports, followed by Computers and Electronic products (14.7%), Transportation Equipment (11.9%), Processed Foods (11.1%), Waste and Scrap (6%) and Agricultural Products (5.1%) (Figure B8). Since the implementation of the free trade agreement in 2012, the fastest growing exports from California have been Transportation Equipment (with a growth rate of 100%), followed by Processed Foods (90%) and Machinery (63%). Exports of Computer and Electronic Products grew at a more tepid pace during this period, rising by 35%. In contrast, exports of Waste and Scrap and Agricultural Products have shrunk, by -28% and -12%, respectively, during this period.

Figure B8
California Exports to S. Korea are Fairly Diverse
(percent of total exports)

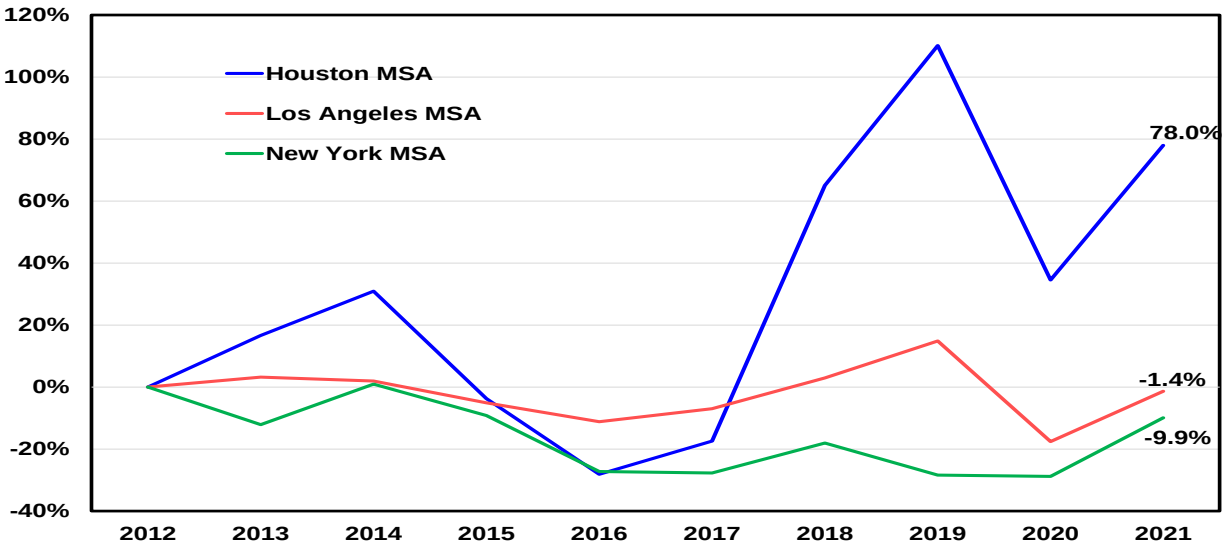


Source: International Trade Administration and Woods Center

The top 5 metropolitan areas exporting to South Korea as of 2021 (latest available data) are: Houston MSA (with $5.5 billion), San Francisco MSA ($4 billion), Los Angeles MSA ($3 billion), New York MSA ($2.3 billion), and Portland MSA ($1.6 billion). MSA exports are quite volatile, especially those that are largely comprised by energy exports or computer electronics. For example, exports from the San Francisco MSA, which consist mostly of computer and electronic products, fell by nearly $1 billion in 2019, rose slightly ($200 million) in 2020 and skyrocketed by $2.6 billion in 2021, catapulting the region from the fourth largest exporter to the second largest. Boom and busts in energy markets have also led to significant volatility in export flows from the Houston MSA area: exports fell by an astounding $2.3 billion in 2020 when the pandemic shut down the world, but rebounded by $1.4 billion in 2021. Despite a strong recovery in 2021, export values from the top two MSAs, Houston and Los Angeles, continue to remain below their pre-pandemic levels, by a full $1 billion for Houston, and by $0.5 billion for Los Angeles. We expect exports from the Houston MSA area to have fully recovered from them pre-pandemic levels in 2022, but as we show below, our estimates for the Los Angeles MSA exports remained below 2019 values by the end of 2022.

All told, the free trade agreement has not boosted MSA exports across the board. From 2012 to 2021 (latest available data), while exports from the Houston MSA area have grown by 77%, merchandise exports from the Los Angeles MSA remained relatively flat (-1.3%), while those from the New York MSA have declined by -10% (Figure B9). The main reason has to do with demand for U.S. exports: South Korean demand for U.S. goods has increasingly been reoriented away from Transportation Equipment and Machinery (top exporting products from New York and Los Angeles MSAs) towards energy and chemical imports, which tend to favor more the sub-industries housed within the Houston MSA region.

Figure B9
Growth in Top Three MSA Exports to South Korea
(percent change since 2012)

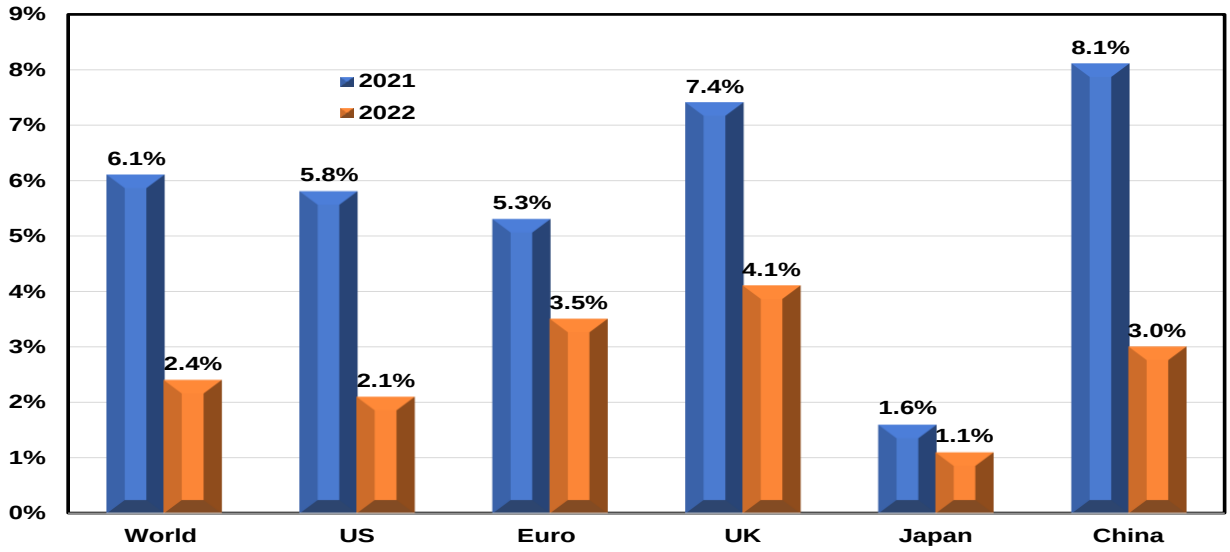


Source: International Trade Administration and Woods Center

C. ON THE BRINK: A CHALLENGING OUTLOOK FOR GLOBAL ECONOMY AND WORLD TRADE

2022 was a challenging year for the world economy. There was no shortage of drama: high inflation, rapid rate hikes across the world, the Russia-Ukraine war, commodity and energy shocks, and continued supply disruptions from China's draconian lockdowns. The U.S. economy posted two back-to-back negative real GDP quarters in the first half of the year. Though the second half of 2022 was much more encouraging, overall, the U.S. managed to eke out a meager real GDP growth of 2.1% for the year. China's economy was beset by more than a handful of problems. Its clinging to zero COVID policy pummeled economic activity, with growth coming in at an anemic 3% in 2022 — a calamitous figure by China's standards and far below the 8.1% rate set in 2021 (Figure C1). Europe experienced a full-blown energy crisis, living in the shadow of an energy blockade for the better part of 2022 as Russia repeatedly threatened to switch off the gas taps — a threat that became reality in September 2022. European gas prices skyrocketed, hitting an equivalent of around $400 for a barrel of oil. The UK economy also struggled. Despite two solid years of growth, the UK economy is still around -0.5% below pre-recession levels, performing worse than the U.S. (up 5.4%) and the Eurozone (up 2.6%). Recession fears were sky high across the globe.

Figure C1
Global Growth Slumped Last Year
(annual real GDP growth rate)

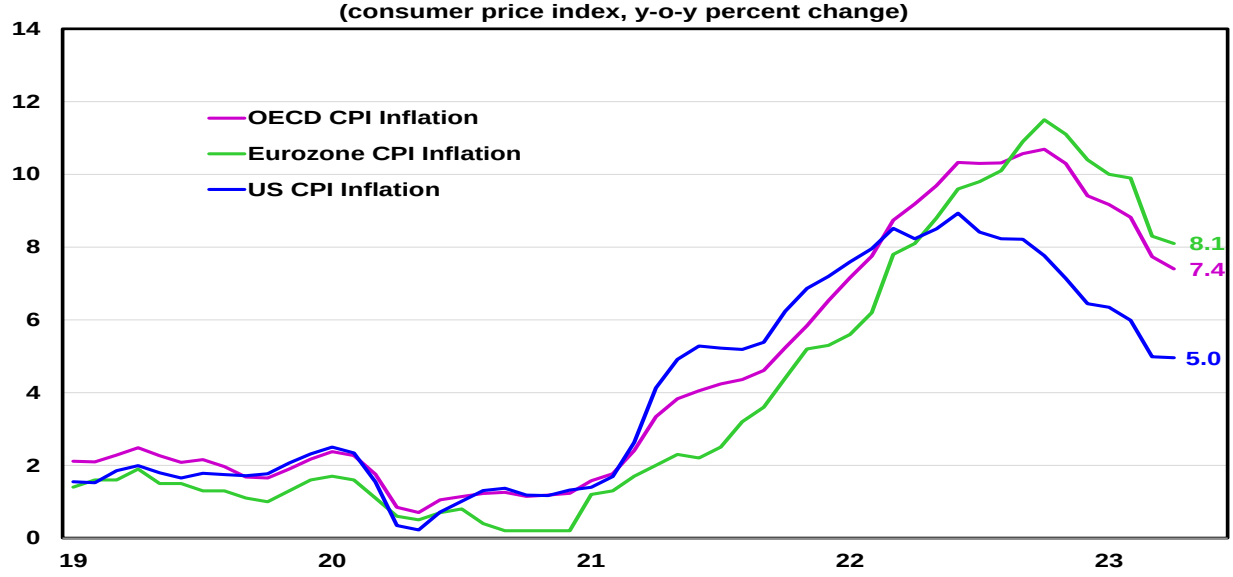


Source: IMF and Woods Center

Soaring inflation, which prompted a monetary tightening across the world, was the main culprit for stunted growth last year. Just about every country has had to grapple with alarmingly high inflation rates. The global rate of inflation finished the year at roughly 9%, the highest in four decades. In the U.S., average Consumer Price Inflation (CPI) for 2022 was 7%, the highest since 1982; in Germany the rate was closer to 10%, the highest since 1951 (Figure C2). The breadth of the increase was also quite astounding: food and energy prices (fueled further by the war in Ukraine) contributed to more than half of the jump in consumer prices. But prices for many consumer goods were already trending up at the start of 2022 because of the pandemic's lingering impact on supply chains. And robust consumer demand, buoyed primarily by lavish government handouts during the pandemic, further stoked inflationary pressures.

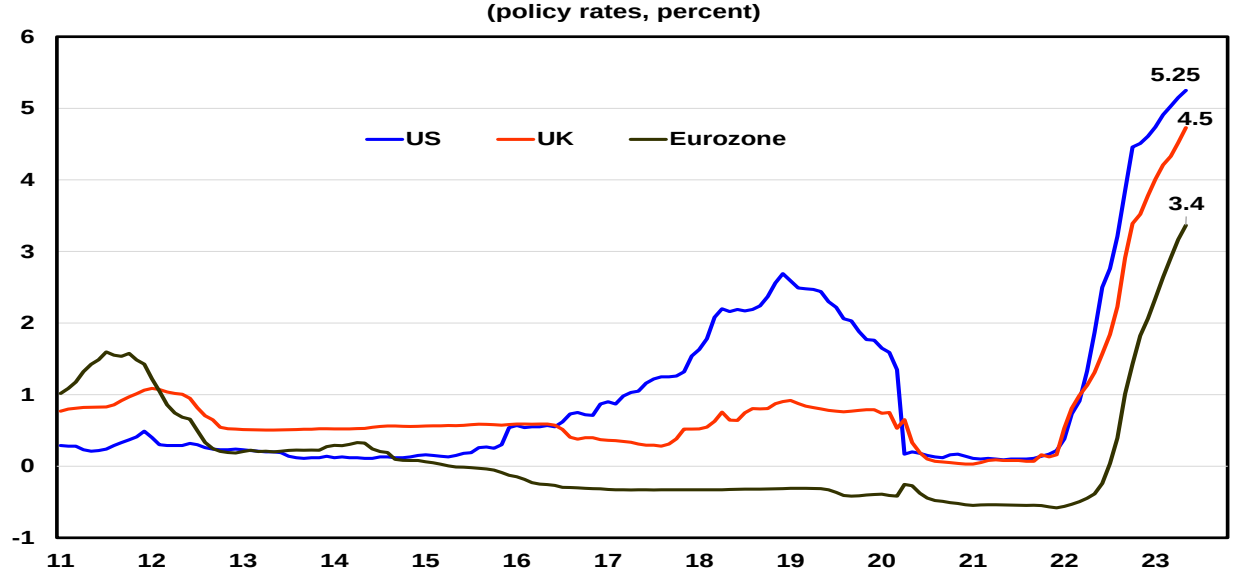
In an effort to combat multi-decade high inflation, central banks across the globe have delivered a relentless barrage of rate hikes. In the U.S., the Federal Reserve has raised interest rates in ten back-to-back meetings, with three of these hikes coming in at the jumbo-sized level of 75 basis points. In a span of a bit over one year, the federal funds rate went from zero to 5.25%, the highest in over 16 years (Figure C3). The Fed has signaled it will likely take a breather in June but strong employment data and still high inflation, may prompt it to tighten further this year. The ECB began its tightening cycle a bit after the Fed, in July 2022. Since then, it has raised its policy rate in seven consecutive meetings, bringing the policy rate up to 3.25%. The Bank of England raised interest rates for the twelfth time in May, with the policy rate now hovering at 4.5%, the highest since 2008, when the global economy was in the grip of the financial crisis.

Figure C2
The Scourge of 2022: High Inflation
(consumer price index, y-o-y percent change)



Source: OECD and Woods Center

Figure C3
Up and Away: Policy Rates at 16-year High
(policy rates, percent)

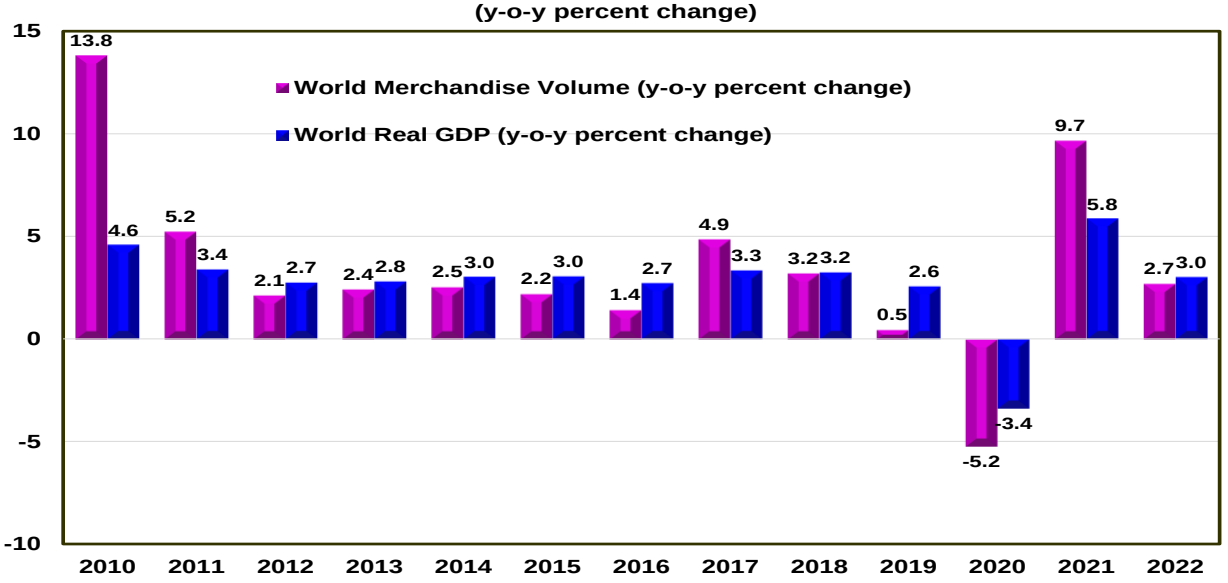


Source: OECD and Woods Center

Not surprisingly given these dynamics, global trade faltered in the second half of 2022. World exports rose by a staggering 27% in 2021 and by a sturdy 23% (on an annualized basis) during the first half of 2022. However, the second half told a very different story. World merchandise exports fell by -1.2% in the third quarter, and an additional -2.8% in the fourth quarter of last year. All told, growth in merchandise export value came at 11% in 2022, quite a respectable pace, but the slump in the second half does not bode well for the outlook. A similar story emerges when focusing on trade volumes: after growing at a 9.4% rate in 2021, the pace slumped to 2.7% in 2022, below real GDP

growth (which came at 3%) (Figure C4). The lost momentum came in the fourth quarter: after growing by an average pace of 4.2% in the first three quarters of 2022, the fourth quarter registered a 2.4% quarter-on-quarter decline in trade volumes.

Figure C4
World Merchandise Trade Faltered in Second Half of 2022
(y-o-y percent change)



Source: WTO and Woods Center

Things have gotten more complex early this year as fears of an impending banking crisis in the U.S. gripped global markets, reviving long-forgotten ghosts of the Lehman-era panic. Suddenly, everyone began pouring over banks' balance sheets, trying to assess wider systemic risks they thought long vanquished. The panic has so far claimed four banks – three regionally large U.S. banks and one international behemoth. The Fed and the Treasury rushed to collect a few bodies and stomp out a few fires, easing fraught nerves and soothing worries.

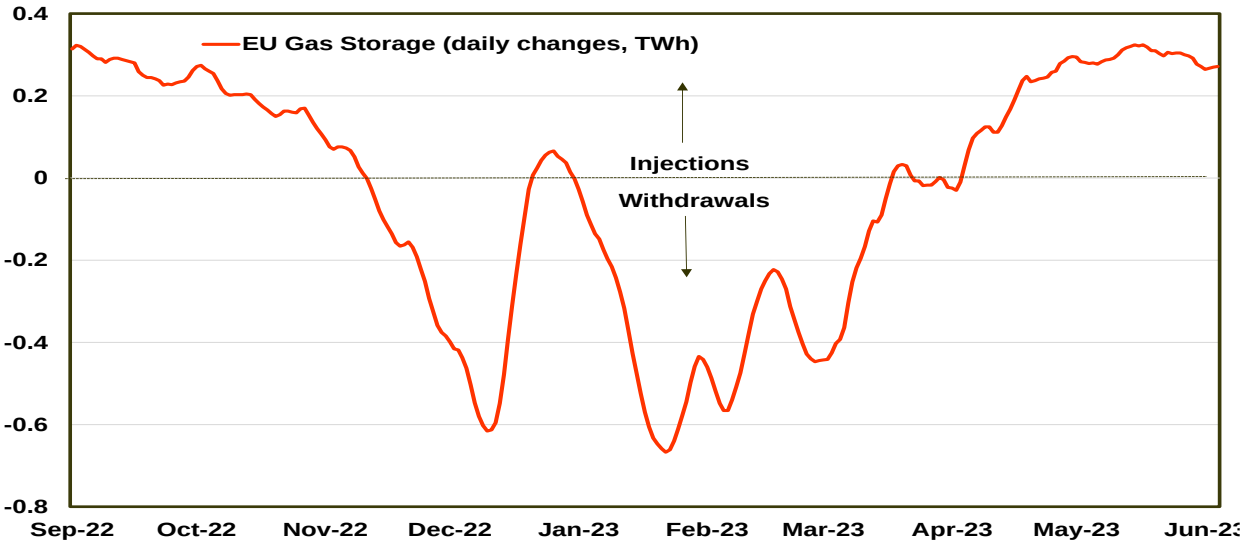
So far, those efforts appear to have worked. In fact, the consensus outlook is currently doused in a high dose of unnerving optimism. The U.S. and the world economy have proven quite resilient despite the many body-blows they have received over the past year. Global growth came at 3% in 2022 — 1.3 percentage points below what was expected back in December 2021 — but not a calamity either. The U.S. economy continues to remain robust: More than a year after the Fed's rate hikes, signs of recession remain elusive. Employment rolls are swelling, consumers continue to spend freely, and the housing market is stabilizing. After collapsing by -25%, the U.S. stock market has rallied since mid-October, by a total of 20%. Currently it stands only 10% below the all-time high set in early January 2022.

On the face of it, there are reasons for such optimism. In the U.S., CPI inflation, the scourge that haunted much of 2022, has come down from a 40-year dizzying height of 9.1% in June 2022 to a current 5%. The price index for personal consumption expenditures (PCE), a broader measure of a consumer basket, has stepped down from its peak of 7% to 4.4%. Much of this is due to a reversal in energy prices: The energy component of CPI grew by a staggering 42% on a year-over-year basis in

June 2022. The rate has now tumbled to negative territory, pulling down the overall index. The OECD inflation rate has also come down: from a peak of 10.6% to a current 7.3%. The same is true for the Eurozone, where inflation has declined from a peak of 11.5% to 8.1%. Importantly, the world seems to have made it past the point of greatest danger: Peak inflation appears to be behind us, at least as far as this cycle is concerned.

Elsewhere in the world, the news has been similarly heartening. Europe's winter of discontent never really materialized. Through astonishing good luck, the continent experienced one of the warmest winters (the second warmest) on record after also going through an uncommonly warm autumn. This is truly good news. The energy shock from gas shortages was supposed to rip the continent apart and plunge it into a deep recession. Instead, the opposite happened. Gas storages are filled to the brim as a warm autumn postponed the heating season and a mild winter allowed further replenishments (Figure C5). All told, Europe has used half of the gas resources of the previous two winters. Weather is also helping on the supply side: Wet and windy weather powered hydro and wind generators, bringing more supply to the grid. European gas prices tumbled from their summer Olympian heights of $339 per mgw to a current $48, the lowest since September 2021. Lavish government support also cushioned the blow of high energy prices on consumers and firms even when those prices were high. Overall, the EU has spent around $630 billion (4% of GDP) in various price and direct payment support. These help, but weather is unquestionably the biggest factor in Europe's turn of fortune. Never since the Middle Ages have the fortunes of an entire continent been so dependent on the weather.

Figure C5
Europe's Winter Never Materialized: Gas Supplies are Full
(injections and withdrawals, gas storage weekly, Twh)



Source: Gas Infrastructure Europe and Woods Center

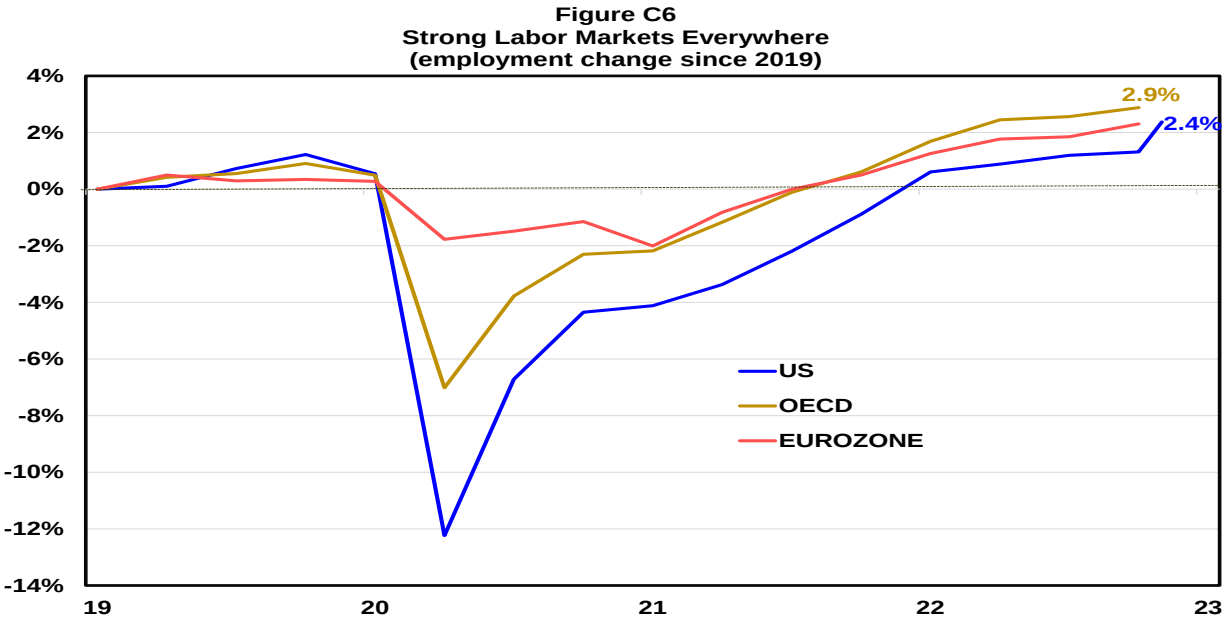
China's economy also started the year on a positive note after the country abandoned the last vestiges of its ill-designed and ill-implemented zero-COVID policy. Real GDP growth last year came at a dismal 3%, the lowest since the 1970s, save for 2020 when covid struck (growth then was 2.4%). For China, these are recession-like levels: in 2021, it boasted a growth rate of 8.1%. But this year brings different fortunes. The reopening started the year on the right foot: Domestic travel surged and wait lists at some restaurants were reportedly around 1,000 tables long. The property slump — a byproduct of an unprecedented crackdown by the authorities to break the country's addiction to debt-finance property — has begun to ease, thanks in large part to government efforts to revive the sector. Caps on borrowing for property developers have been suspended; banks are ordered to rescue unfinished projects; local governments are stepping up efforts to guarantee some loans to help developers complete projects. These measures have breathed new life into the beleaguered sector.

The American economy is one of the most pre-eminent examples of both resiliency and improved outlook. Despite a heavy-handed tightening by the Fed, the economy has refused to roll over. Consumer finances are better than originally envisioned. Real disposable income has grown for eight straight months, thanks to a strong labor market and incremental improvement on inflation. Household wealth even rose in the fourth quarter of 2022 after falling in the first three, as a rally in the stock market pushed up financial wealth. Wealth is still down 6% relative to all-time highs set in the fourth quarter of 2021, but a cool 25% ($27.5 trillion) above pre-pandemic levels.

The strength of the labor market has become the stuff of legends. At a current 3.7%, the U.S. unemployment rate is the lowest in over five decades. Similar numbers are reported for the rest of the world: at 4.8%, the unemployment rate in the OECD countries is the lowest in over a generation. In the U.S., the labor market has gone from strength to strength, adding 339,000 jobs in May even as the labor market was supposed to cool. All told, the U.S. economy has added 1.6 million jobs in the first five months of the year, a torrid pace, considering that this should be roughly the pace of job formation for an entire year given current demographic trends. Job growth has been strong elsewhere as well: The OECD and Eurozone labor markets fared better than the U.S. during the pandemic and have recovered strongly, rising by 2.8% and 2.3% above pre-pandemic levels, respectively (Figure C6).

This turn of fortunes has spurred hopes of a continued expansion where worse fears fail to materialize, and the economy flies high. This "no-landing" scenario is quite a new twist in the old debate between the "hard-landing" and "soft-landing" takes we have been subjected to for the better part of a year, since the Fed began raising rates. The soft-landing crowd expects a gentle easing of economic activity, one where growth slows but does not falter or go into reverse and where job losses are rare and concentrated only in a handful of vulnerable sectors (such as tech and housing). The hard-landers argue that the feat of bringing down inflation without spiking unemployment is not only elusive but most likely illusive, given the current macroeconomic conditions of decades-high inflation and excessively tight labor market. Strangely, despite appearances, the gulf between the two camps

is not as large as one would expect. Even the hard-landing gang expects the incoming recession to be short, mild, and rather inconsequential, a pinprick, so to speak.

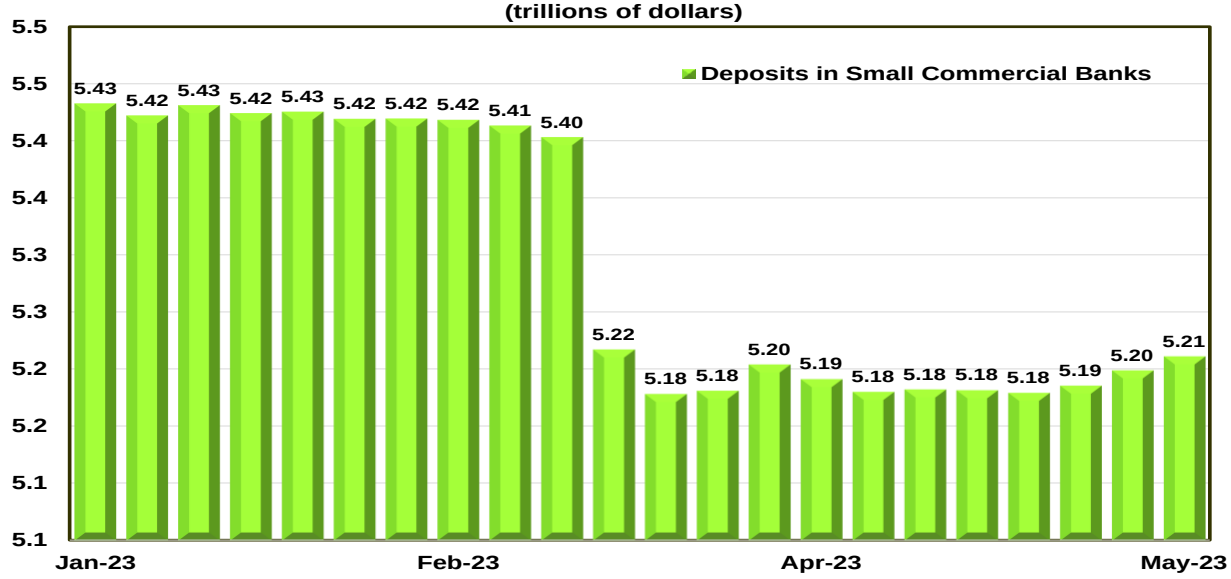


Source: OECD and Woods Center

Our outlook is a bit gloomier and a few shades darker than any of these scenarios. While the world economy is not about to plunge into the abyss of the Great Recession, it is also unlikely to skate as relatively unscathed as either of the three scenarios envision. In the U.S., high inflation, interest-rate hikes, a tech-sector crash, and looming troubles in commercial real estate, invoke echoes of every garden-variety recession we have witnessed since the 1980s, from stagflation of the1980s to the S&L crisis of the 1980s and 1990s to the bursting of the tech bubble early this century. As such, our outlook calls for a "normal recession," not the heart-stopping calamity of the financial crisis but a garden-variety kind akin to the early 1990s or 2000s. That's because underneath the hood, the U.S. economy (and in general, the world economy) is more fragile than originally meets the eye which means that even moderate shocks may deliver punches deadly enough to derail it.

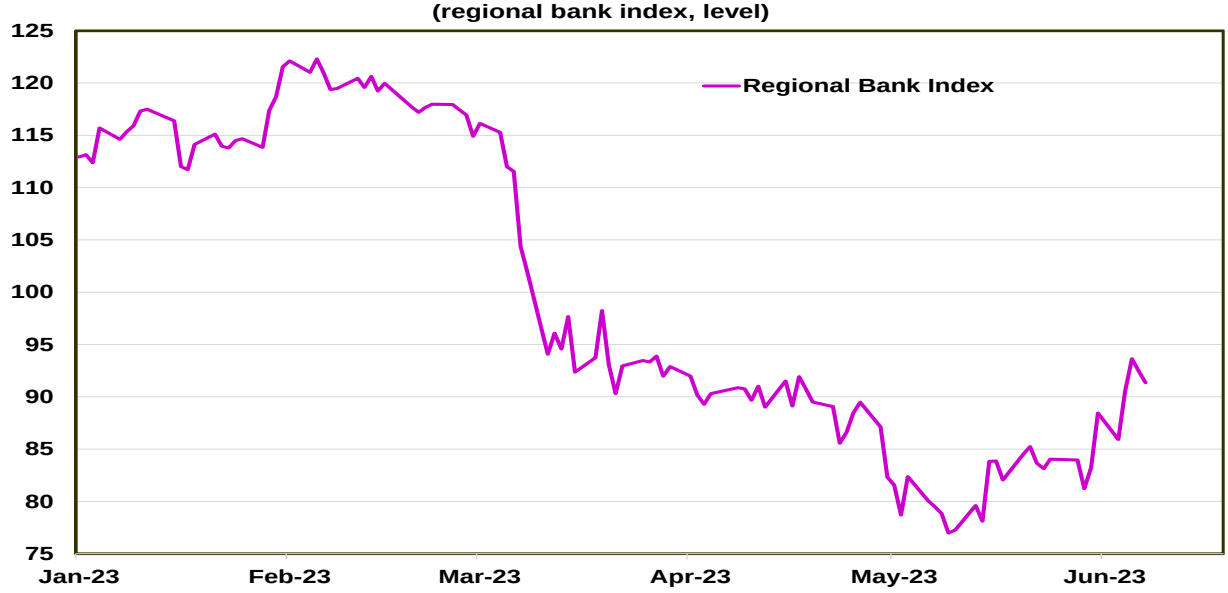
Take the banking system first. While a violent credit crunch may have been quashed, we remain unconvinced that the current banking episode is entirely behind us, in large part because the health of small/regional banks continues to be of grave concern. Deposits have fled. Depositors withdrew a staggering $210 billion from small banks since the collapse of the Silicon Valley Bank (SVB), the first bank to succumb (Figure C7). The market capitalization of small and medium sized banks, though improved from spring levels, is still around -22.3% below pre-March values, prior to the collapse of SVB (Figure C8). Worse, in the case of weaker regional banks, concerns about liquidity (interest-rate risk) may ultimately transform into solvency risk (credit risk) should loans in their balance sheet begin to sour due to tighter credit constraints.

Figure C7
Deposits in Small Commercial Banks Have Remained Low
(trillions of dollars)



Source: Federal Reserve Bank and Woods Center

Figure C8
Regional Banks Have Lost Nearly a Quarter of Market Value
(regional bank index, level)

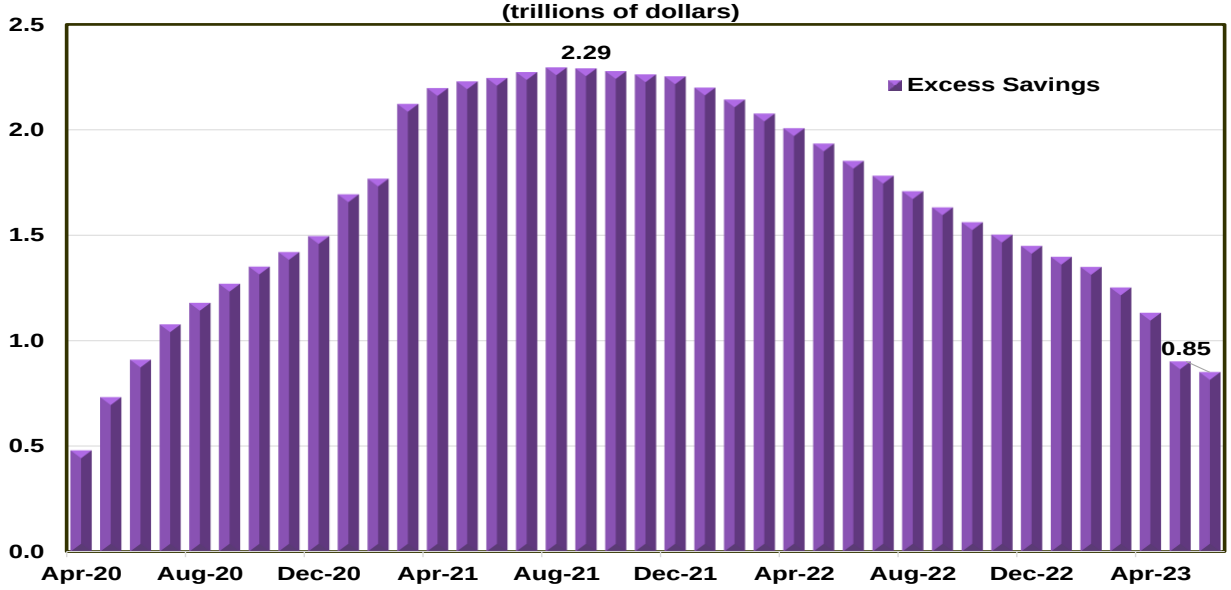


Source: Morningstar and Woods Center

Signs of trouble may already be brewing. Small banks finance around 80% of commercial real estate (CRE) loans, even as valuations are down nearly 10% on a year-over-year basis and a full $730 billion in CRE loans are due to mature this year. A large portion of this debt will need to be refinanced precisely when small banks tighten credit spigots — a sure recipe for default. To be sure, this is not a brutal credit crunch à la 2008-2009 but rather a low-grade simmering corrosion that plays out over weeks and months, collecting victims along the way. This means that the FDIC's meddling in the banking sector is far from over. When all is said and done, we expect it will likely be forced to orchestrate a few more weddings and preside over a few more funerals.

Cracks have also begun to appear in consumer balance sheets. Consumers are relying significantly more on credit card debt than in the past: The six largest jumps in consumer credit in the last 20 years have occurred over the past six months. Credit card debt grew by a jaw-dropping 16% in the second half of last year (latest available data). The cost of borrowing has also shot up. The interest rate on credit card balances has sky-rocketed to 19%, the highest since 1995 (the beginning of the data series). Though still relatively low by historical standards, defaults on credit card balances and auto loans have begun to edge up. And banks have tightened access to credit dramatically to levels consistent with recession. Excess savings — the cushion of extra deposits that consumers built up during the pandemic thanks to excessive government largesse and forced savings — have dwindled as inflation takes a hefty chunk and the government spigot is turned off. At its height, the fortress of America's extra cash pile reached $2.3 trillion. That figure currently stands at a much more modest $800 billion (Figure C9). Reduced savings and less access to credit will undoubtedly chip away at consumption over the forecast horizon.

Figure C9
US Excess Savings Are Dwindling
(trillions of dollars)

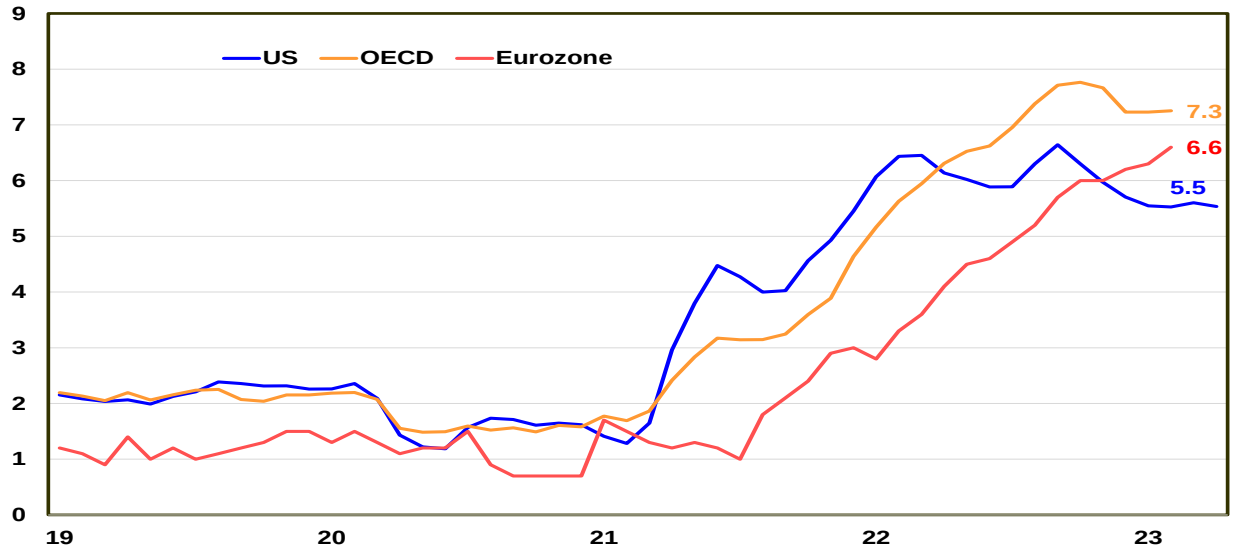


Source: US Department of Commerce and Woods Center

All this is happening in an environment where inflation is still stubbornly high. And while it is no longer raging as it did throughout last year, it continues to simmer. As we have argued for quite some time, though peak inflation is firmly behind us, conquering it will require a steely resolve from central banks across the world. That's because inflation is stickier, more stubborn, and harder to tame than most expect. Core inflation continues to be alarmingly high across advanced economies: in the U.S. it has only dropped marginally, from 6.6% to a current 5.5%, still far above the Fed's target of 2%. In the Eurozone it continues to set fresh new highs, reaching 6.6% in March 2023 (Figure C10). Inflation has also migrated from goods to services: U.S. core service inflation (stripped of energy) is running at 7.3% — the highest in over four decades. And service inflation is harder to slay because

it is driven by two factors: housing and wages. And while housing costs will likely put downward pressure on inflation starting this fall, wages will take a bit longer given a very tight labor market. This means that central banks around the world will likely keep interest rates higher for longer, putting additional pressure on economic activity and crimping growth.

Figure C10
Core Inflation Remains Stubbornly High
(y-o-y percent change)



Source: OECD and Woods Center

More worryingly, despite signs of a resilient economy, there is no denying that growth is slowing. U.S. Real GDP grew by nearly 3% in the second half of 2022, but real final sales to private domestic purchases — a more direct measure of private sector strength — rose by a paltry 1.1%. First quarter real GDP growth was rather anemic, at 1.3%. Corporate earnings tumbled by -4.7% in the fourth quarter of 2022 and by -6.4% in the first quarter of this year. Importantly, though the labor market has been quite strong, it is not a reliable indicator when gauging the stages of the business cycle. The unemployment rate and initial claims are the lowest in the cycle right before a recession strikes, as they are now. In contrast, leading indicators, such as the yield curve, residential investments, and durable consumer goods — which tend to be much more reliable guides — are all flashing red.

The news across the world is equally disheartening. The eurozone economy posted two back-to-back quarters of negative growth (Q4 2022 and Q1 2023) as the German economy shrunk, dragging the rest of the single market with it. This means the eurozone is technically in a recession. Much of this has to do with tepid consumer spending: While Americans are spending freely on activities they missed out during the pandemic, their European counterparts have had to cut spending in large part because of high energy and food prices. Europeans have also amassed fewer excess savings than U.S. consumers and have been unwilling to spend as liberally, in part because of uncertainties stemming from the Russia-Ukraine war.

China's economy is also not faring as well as hoped. Its post-covid recovery was supposed to be quite the event of the year. Instead, it is sputtering. After the initial release of pent-up demand as pandemic restrictions were lifted, recent data has faltered. Service output grew less than expected and manufacturing activity shrank for a second month in a row. Chinese exports stumbled in May, falling by 7.5% compared to a year earlier as the global trade activity continued to cool. Total debt as a share of GDP hit 295%, surpassing 257% in the U.S. and an average of 258% in the eurozone, BIS data show. The problem is not the central government (as in the case in advanced economies) but heavy debts by consumers, businesses, and local governments. After many years of frenzied borrowing, the deleveraging has begun, a long and arduous process that takes years and crimps growth. And unlike the West, which is facing stubborn high inflation, China is encountering the opposite issue, deflation, as factory prices tumbled at their steepest annual pace in seven years. The absence of inflationary pressures may lead to deflation — which throttles growth and may lead to a double-dip in economic activity.

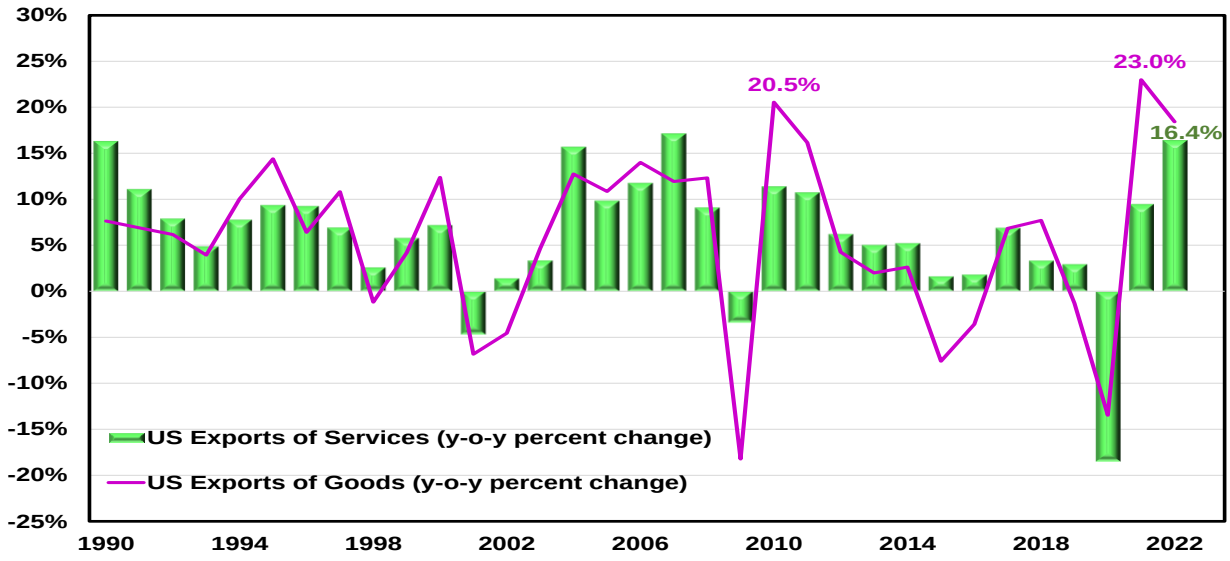
In the U.S., persistently high inflation, a slowing economy, a potential credit crunch, and a frayed banking system combine for a tough outlook ahead. We do not expect the disaster of 2008, but not every recession is 2008. Indeed, our gloomier-than-the-consensus garden-variety recession outlook owes much to the view that the Fed's ability to skirt a downturn has been severely diminished. Managing the un(holy) trinity of stubborn inflation, weak growth and a frazzled banking sector is an improbable (if not impossible) mission. And should the banking system prove to be more fragile than we expect, the Fed will (rightfully) prioritize high-octane financial issues over slow-burning macroeconomic ones such as inflation. This means that a recession with stagflationary dynamics is an entirely plausible outcome, one that undergirds a slightly more pessimistic version of our baseline scenario. Overall, we expect world GDP growth to come at 2.5% in 2023 and 2% in 2024. World merchandise export growth is expected to be 2.3% in 2023 and a more muted 1.9% in 2024.

D. U.S. EXPORTS: RECENT TREND AND OUTLOOK

U.S. merchandise exports have experienced a virtual renaissance after the pandemic. They rose by an astounding 23% in 2021, the fastest pace in over 30 years, and a robust 18.4% in 2022 (Figure D1). At $2.1 trillion as of the end of 2022, exports stand at a historical high. The pandemic proved to be far less disruptive to U.S. exports of goods than the Great Recession: exports fell by a 18.2% in 2009 at the height of the financial crisis, but only by 13% in 2020. The intervening years between the two recessions, saw a few other setbacks: merchandise exports fell by 7.6% in 2015 and an additional 3.6% in 2016 as oil prices collapsed, China wobbled, and the world economy slowed down. The escalation of trade wars in 2019 took another bite, with U.S. exports of goods declining by 1.5% that year. Nonetheless, the rebound from the pandemic has been so utterly spectacular that merchandise exports are expected to set new record highs over the next few years, albeit at a more rapid pace in 2022 than the following two years, given the projected global slowdown.

U.S. exports of services have experienced quite a different pattern from exports of goods over the past decade and a half. While service exports barely budged during the Great Recession, falling by a mere 3.4% in 2009, they outright collapsed by 18.5% in 2020 due to the severe impact of the pandemic on the service sector, by primarily shutting down travel and transportation (Figure D1). As expected, given the repeated waves of the pandemic, the rebound has also been more gradual than the recovery in goods exports, rising by 9.5% in 2021 and by a much healthier 16.4% in 2022. Had it not been for the pandemic disruptions, U.S. service exports would have continued to outperform goods exports. As argued above, prior to the pandemic, U.S. exports of services rose steadily and rapidly since the financial crisis, even as goods exports experienced repeated boom/bust periods.

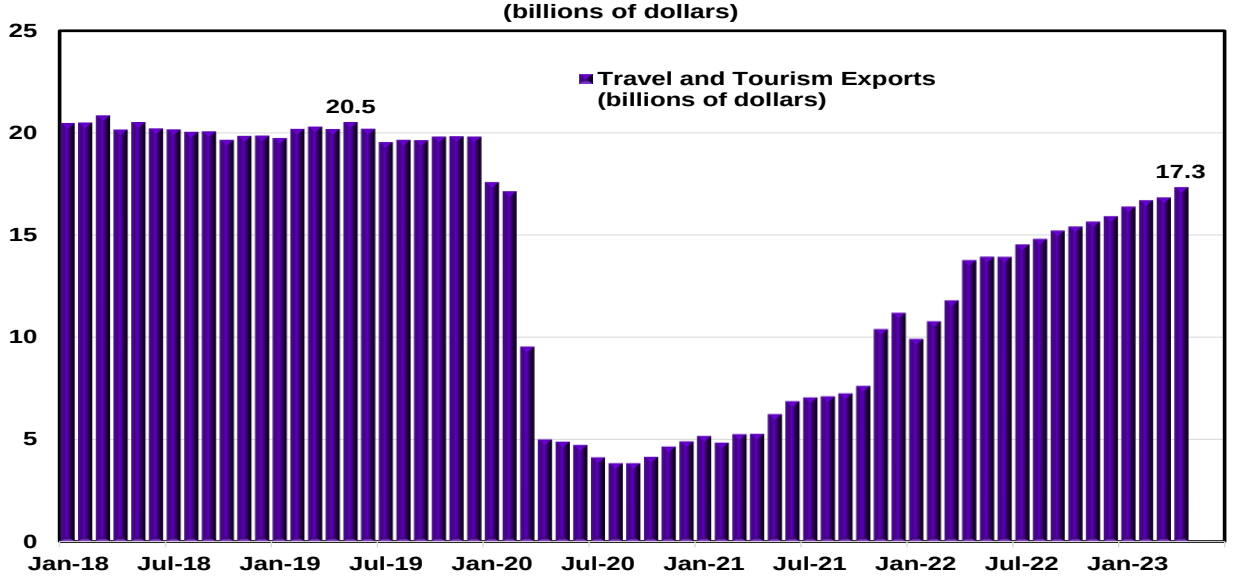
Figure D1
US Exports of Goods and Services
(y-o-y, percent change)



Source: International Trade Administration and Woods Center

As the world recovers from the pandemic, we expect service exports, and particularly travel and tourism to continue to grow at pre-pandemic trends. Recent developments are quite heartening: travel and tourism exports have risen steadily over the past year. In April 2023, they stood at $17 billion, around 12% below pre-pandemic levels but nearly four times higher than in 2020, when they fell below $4 billion per month (Figure D2). Travel and tourism exports over the first four months of this year were $67 billion, much higher than the $46 billion recorded over the same period a year ago. The figures are even higher than in the last four months of 2022, by around $5 billion, even though the economic outlook has darkened since then. This matters: Foreign travel/tourism exports averaged a hefty $250 billion per year prior to the pandemic, contributing significantly to economic growth. We expect this category to perform relatively well over the next couple of years, despite a more challenging macroeconomic outlook. The lifting of travel restrictions will also help. Starting in May 2023 foreign passengers no longer need to show proof of being fully vaccinated with an accepted COVID-19 vaccine to board a flight to the United States.

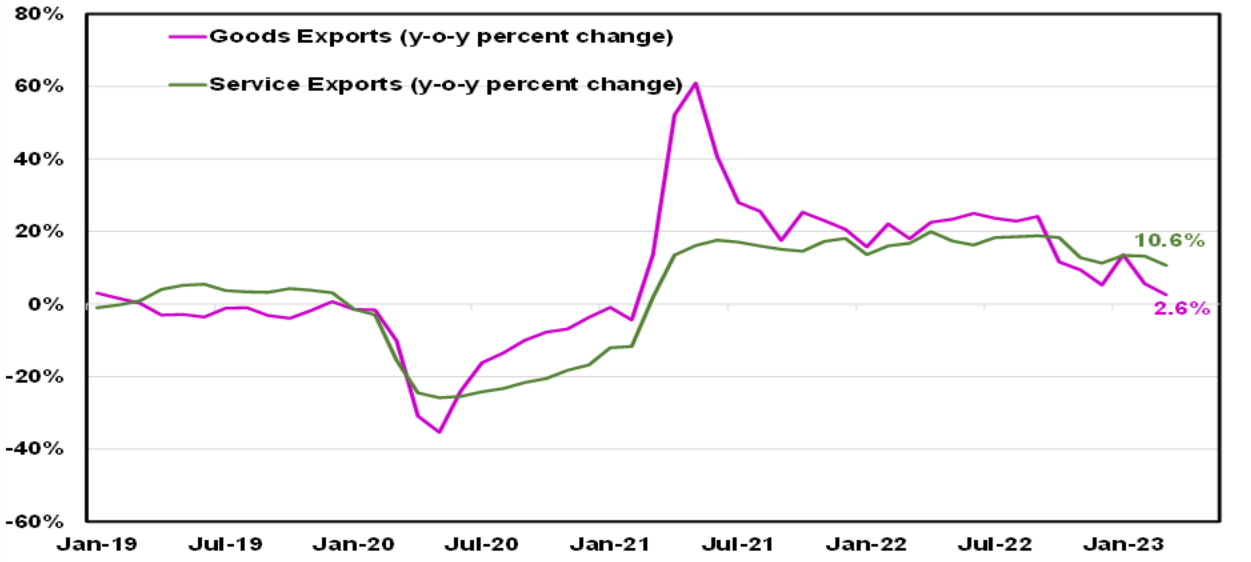
Figure D2
Exports of Travel and Tourism Have Picked Up Robustly
(billions of dollars)



Source: International Trade Administration and Woods Center

In fact, we expect growth in U.S. service exports to outperform goods exports over forecast horizon, as the global economy grapples with high interest rates, stubbornly high inflation, lower consumer income, and less government support. Recent trends indicate that the growth of merchandise exports has slowed down dramatically over the past few months: from a high of 26% in mid-2022, to a current 2.3% (Figure D3). In contrast, U.S. exports of services have held up better with growth slowing from 18% (in mid-2022) to a current 11%. With the cooling of the world economy projected in 2023 and further in 2024, we expect demand for U.S. merchandise exports to moderate further. We forecast U.S. merchandise exports to grow by 4.2% in 2023, much lower than the nearly 18% pace of 2022. Growth is projected to be even slower in 2024 when the U.S. and the world economy are expected to experience a recession, coming at 2.2%.

Figure D3
Export Growth Has Slowed But Services are Holding Up Better than Goods
(y-o-y percent change)

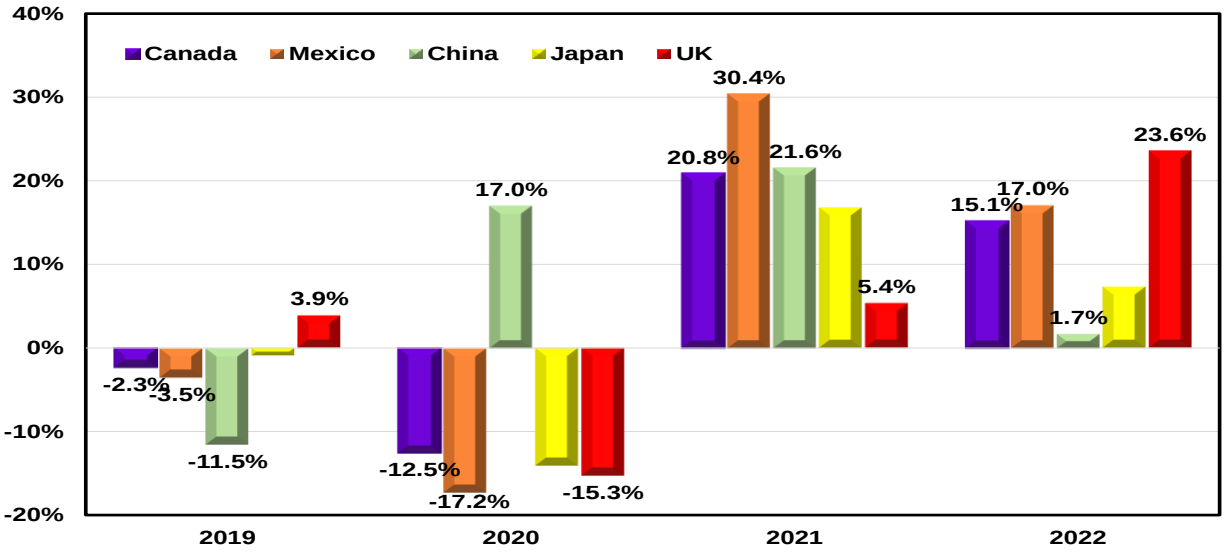


Source: International Trade Administration and Woods Center

The top five destinations for U.S. merchandise exports in 2022 were: Canada (with 17.2% of total goods exports), Mexico (15.7%), China (7.4%), Japan (3.9%) and the UK (3.7%). Exports rose across the board in 2022, mostly by double digits, except for China, where growth was a paltry 1.7%, and Japan where they grew by 7.2% (Figure D4). This does not come as a surprise: the Chinese economy spent the better part of last year in repeated lockdowns and the Japanese economy did not fully reopen from the pandemic until the second half of 2022. However, exports to China fared much better in the previous two years: U.S. exports to China were the only ones that grew at the height of the pandemic (in 2020), perhaps reflecting some commitment on the part of Chinese to stick with the "Phase-One" U.S.-China trade deal.

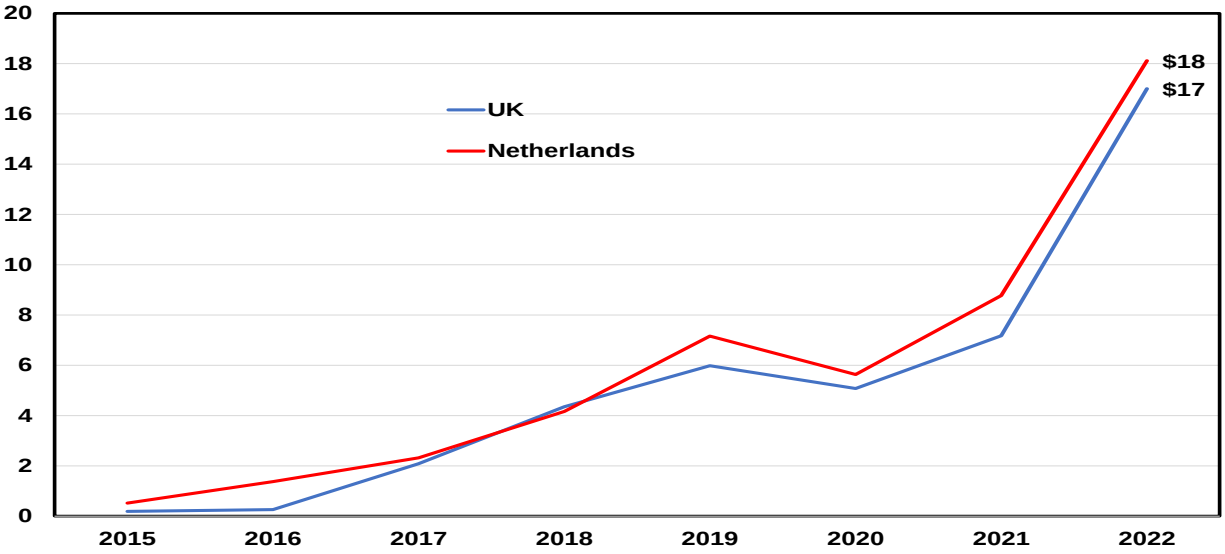
Exports to the EU rose significantly in 2022: by 23.6% to the U.K., by 37.6% to the Netherlands (the seventh largest trading partner), and by 11% to Germany. Most exports are energy related as the EU grappled with the energy crisis from the Russia-Ukraine war. Oil and gas exports to the U.K. rose from $7 billion in 2021 to $17 billion in 2022, a nearly 140% increase (Figure D5). Energy exports to the Netherlands went from $8 billion in 2021 to $18 billion in 2022, while Oil and Gas exports to Germany rose from $1.8 billion to over $4 billion. Oil and Gas exports are by far the largest export to the U.K. and the Netherlands, accounting for 22% of total exports to the U.K. and nearly a quarter of exports to the Netherlands.

Figure D4
US Export Growth: Top Countries
(y-o-y percent change)



Source: International Trade Administration and Woods Center

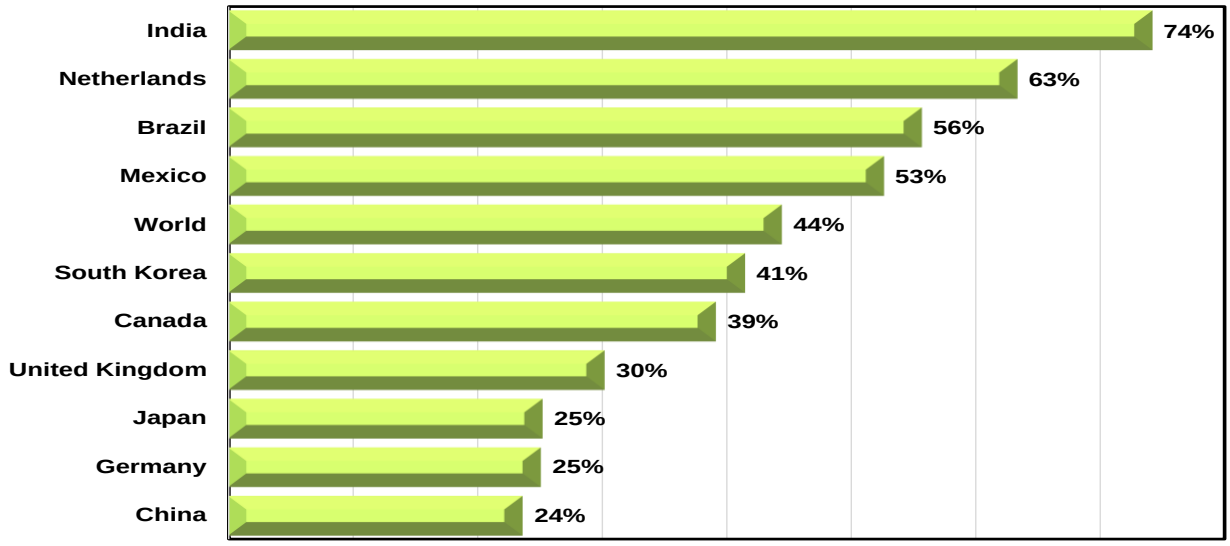
Figure D5
Energy Exports to Europe Have Skyrocketed
(billions of dollars)



Source: International Trade Administration and Woods Center

Exports to the two largest trading partners, Canada and Mexico, have also grown quite robustly over the past two years, reflecting a reshuffling of supply chains with a greater focus towards near-shoring. Mexico is a prime example of increased near-shoring activity, with export rising by a staggering 53% since the pandemic. But of the top ten export destinations, India has seen the largest growth over the past two years, with U.S. exports rising by 74%. The largest growth has come from energy exports: oil and gas exports to India have risen from a mere $0.5 billion in 2017, to $11.5 billion in 2022, a near twenty-fold increase (Figure D6).

Figure D6
Export Growth Over Past Two Years
(percent change from 2020)



Source: International Trade Administration and Woods Center

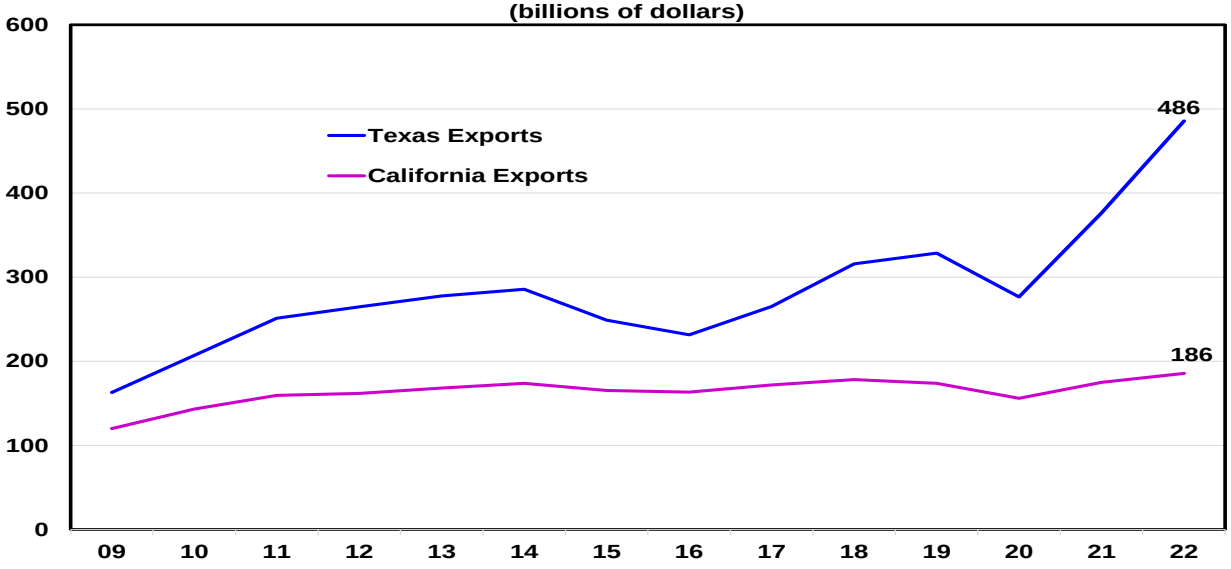
As the above discussion indicates, U.S. export growth over the past few years, particularly since the pandemic, can be attributed primarily to a staggering increase in U.S. energy exports. Oil and gas exports were the 12th largest sector in 2012, prior to the shale revolution, coming at a mere $11 billion, or 0.7% of total U.S. exports. The category has grown to $215 billion in 2022, accounting for more than 10% of total exports and ranking as the fourth largest export sector, behind Chemicals ($288 billion), Transportation equipment ($250 billion) and Computer & Electronics ($233 billion). This does not come as a surprise: the shale industry has made America the world's top producer of crude oil and the top producer of natural gas these past few years. As we argued in our previous report, the energy sector is not the only change in top export categories, though it is the most significant. For nearly a decade since the financial crisis the biggest export category was Transportation Equipment, accounting for nearly 17% of total exports. This has changed over the last two years, with Transportation Equipment's share of total exports dropping to 12.7% in 2021 and 12.1% in 2022. Chemicals have now claimed top spot, accounting for 14% of total exports, followed by Computer and Electronic Products (with a share of 12.7% of total exports).

E. CALIFORNIA EXPORTS: RECENT TRENDS AND OUTLOOK

The past fifteen years, since the end of the global financial crisis, have been decidedly unkind to California exports. Though it continues to rank second in the nation in merchandise exports (behind Texas), and despite the fact that it reached record-high levels of $185 billion in export value in 2022, its growth has been rather anemic, particularly when compared to other top exporting states. California merchandise exports rose by $65 billion over the 2009-2022 period, from $120 billion to $185 billion. This seems impressive but pales by comparison to export growth in Texas which went from $163 billion to $485 billion, a near threefold increase (Figure E1). Worse, the gap between the largest two exporting states has grown

dramatically over the past few years, with Texas now accounting for around one quarter of the nation's exports and California for less than one tenth.

FIgure E1
Up and Away: Texas Export Growth Far Higher than California's (billions of dollars)

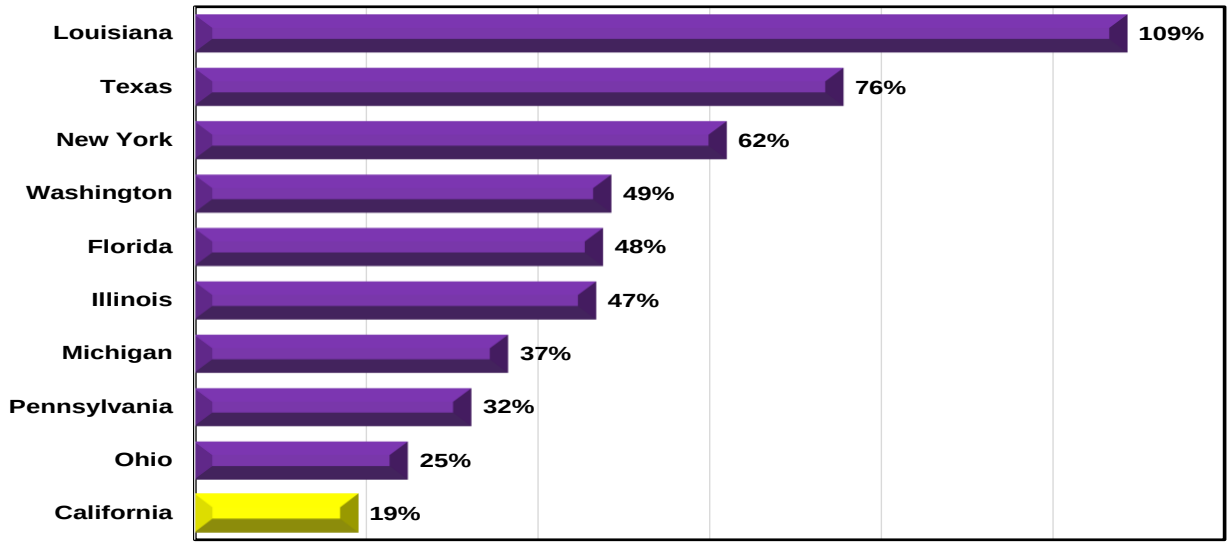


Source: International Trade Administration and Woods Center

California merchandise exports rose by a tepid 6.6% in 2022, the lowest amongst the top ten exporting states in the nation. Exports from Louisiana skyrocketed by 60%, the most from any state, followed by Texas with a near 30% growth (Figure E2). Both states owe much of their success to the energy sector. Indeed, Louisiana (with $122 billion in exports in 2022) is now ranked third in the nation in terms of merchandise exports, having edged out New York ($106 billion) for that spot. But the slower growth in California exports is not a new phenomenon and is not simply due to a challenging macroeconomic environment in 2022. California exports grew only by 18% since the pandemic, the weakest of all ten exporting states. Some of the slow rebound from the pandemic can be attributed to California's more stringent lockdown restrictions during the pandemic and a slower pace of normalization compared to other states. For example, when the first lockdown was implemented, California lost a full 16% of its workforce, while Florida and Texas lost around 14% and 12%, respectively. More importantly, California implemented more stringent criteria throughout the pandemic than other states, adopting a second lockdown in summer 2020 and a third one in the winter of 2020/2021.

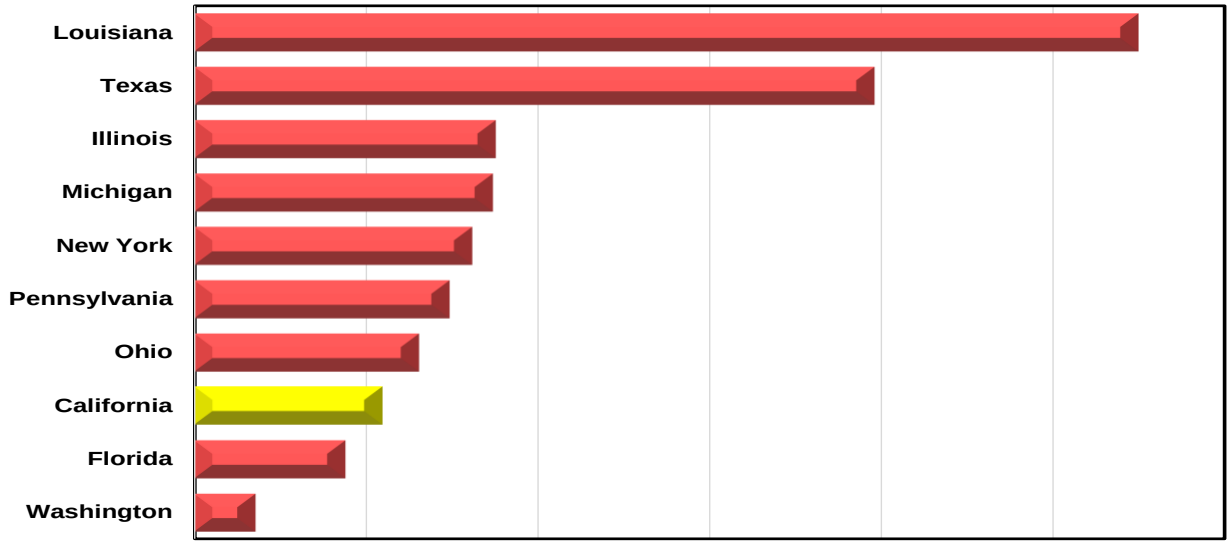
But California's lost edge in exports stretches further back to the post-financial crisis era. Exports from the state grew by 54% from 2009-2022, the third lowest of all top states, coming ahead of Washington (17% growth over this period) and Florida (with a 44% growth) (Figure E3). Though exports from the state of Washington grew by 31% in 2021, and another hefty 13% in 2022, they continue to remain 33% below record-high levels set in 2014. On the plus side, Washington is the only top ten state where exports are still below record-highs. For all other top ten exporting states, exports set historically high levels last year.

Figure E2
Export Growth Since the Pandemic: Top 10 Exporters
percent change 2020-2022)



Source: International Trade Administration and Woods Center

Figure E3
Export Growth Since the Financial Crisis: Top 10 Exporters
percent change 2009-2022)



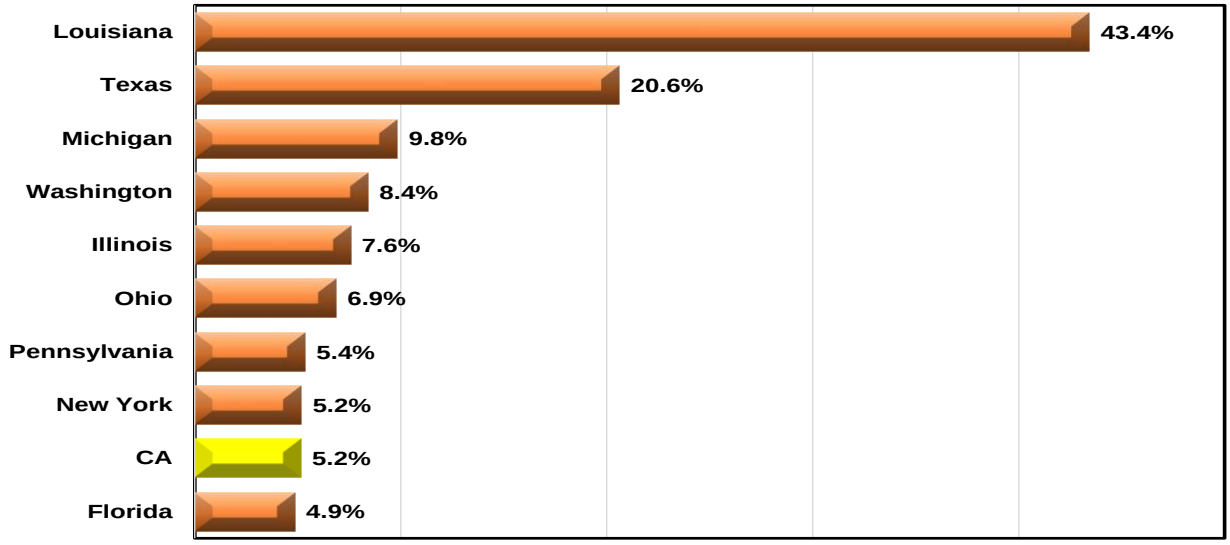
Source: International Trade Administration and Woods Center

The top export destinations for California are: Mexico (with $30.1 billion in 2022), Canada ($20.6 billion), China ($18.1 billion), Japan ($11.6 billion) and South Korea ($11.5 billion). With the exception of Japan, where exports are around $1.5 billion below 2018 values, exports to the rest of the top trading partners set fresh new highs in 2022. Exports to South Korea fell unexpectedly last year, but the drop was quite small (-0.3%) and we expect them to rebound in 2023 and over the forecast horizon. Since 2020, exports to the top three trading partners have exceeded the pace of overall exports, growing by 27% for Mexico, 28% for Canada, and 20% for China. In contrast, exports to South Korea and Japan have grown at below-trend levels, by 18% for South Korea and only by 10% for Japan, reflecting weaker growth and

lingering pandemic effects in these countries. We do expect this trend to reverse and for exports to South Korea to pick up more robustly over the forecast horizon.

Exports have never accounted for much of the state's GDP, unlike other top exporters, and with a tepid recovery from the recession, the share of merchandise exports in state's GDP has slid even further: Exports now account for 5.2% of California's GDP, down from 7.9% in 2011. This is far behind some of the top exporting states: exports account for jaw-dropping 44% of Louisiana's GDP, and 20% of Texas' GDP (Figure E4). This speaks to the diversity of the state's economy, which tends to insulate the state from the booms and busts of global trade. We expect California exports to grow by 5.6% in 2023, by 1.2% in 2024 and a more robust 8.2% in 2025.

Figure E4
State Exports as Share of State GDP
percent of GDP)



Source: International Trade Administration and Woods Center

F. REGIONAL EXPORTS: RECENT TRENDS AND FORECASTS

The Los Angeles MSA is a large economy with a gross metropolitan product of $1.1 trillion in 2021, the second largest behind the New York-Newark-Jersey City MSA. The Los Angeles MSA region, comprised of Los Angeles County and Orange County, suffered a decline in population in 2021, though continues to remain the second largest in the U.S. Much like the rest of the nation, the Los Angeles MSA has experienced quite a strong recovery since the pandemic with nonfarm employment growing by 3.3% in 2021 and a more robust 5.4% in 2022. As the labor market healed from the deep losses suffered during the pandemic, unemployment rates also fell, from a high of 19% at the height of the pandemic to 4.5% at the end of 2022 for Los Angeles County and from 15.1% to 2.7% for Orange County. Nonetheless, as the economy has softened unemployment rates have crept up this year, rising to over 5% for Los Angeles and to 3.3% for Orange County.

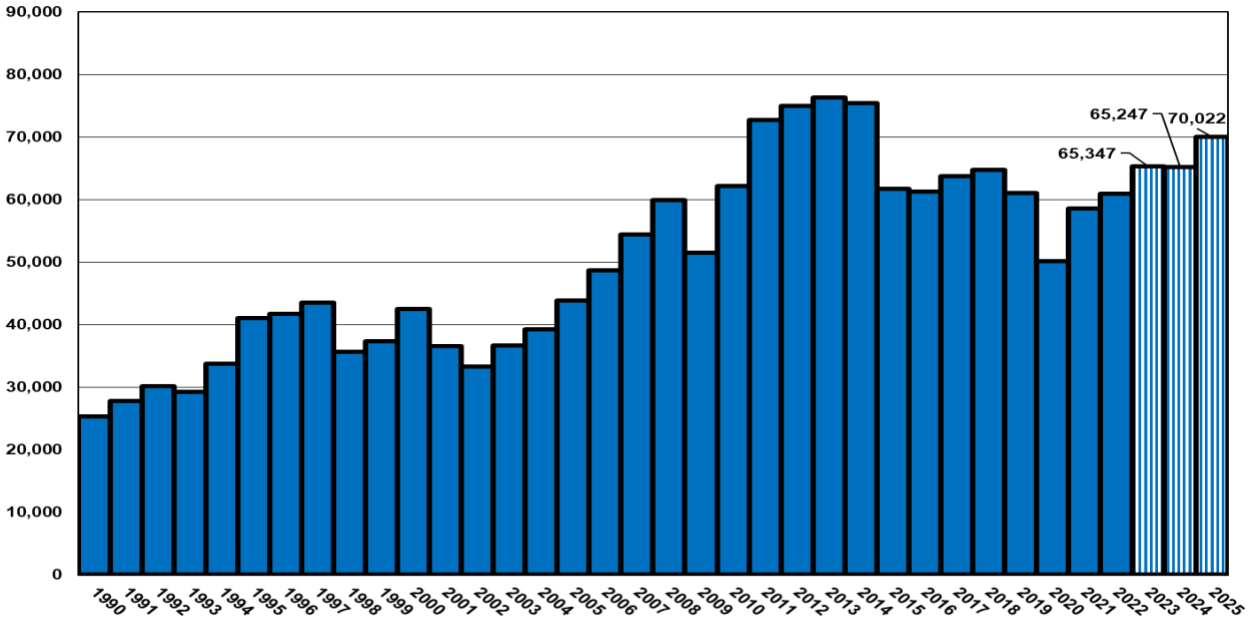
In 2021, merchandise exports from the Los Angeles MSA accounted for about 5.2% of the Los Angeles MSA Gross Metropolitan Product. A major advantage for the Los Angeles MSA is its direct access to the nation's two main ports, extensive infrastructure, strong manufacturing base, and massive distribution and warehousing centers. The next section analyzes Orange County separately even though it is part of the larger Los Angeles MSA and contributes significantly to the area's economic growth and development.

At the time of this report, data is available from the International Trade Administration (ITA) for total merchandise exports for the Los Angeles MSA only from 2005 through 2021. The U.S. Census Bureau provides total merchandise exports for the Los Angeles MSA for 2022. While the ITA provides the merchandise export data from 2005 through 2021 by region, country (top 50), and sector (top 30), considerably less details are available for 2005, 2006, and 2007 and 2022. No export data are available for the period preceding 2005. The Woods Center at California State University Fullerton provides historical estimates for years prior to 2005 (by country, regions, and sectors) and for 2022, which are derived from an econometric model that accounts for trends in regional, state, national and international trade patterns. These estimates are consistent with the new methodology adopted by the U.S. Census Bureau for tracking merchandise exports (see Appendix A2 and A3). Forecasts for 2023-2025 are based on statistical and econometric models using historical estimates for the region's exports, state and national export volumes, trade-weighted exchange rates, labor productivity in export-related industries, as well as U.S. and foreign real GDP growth rates.

F.1 Los Angeles MSA Merchandise Export

U.S. merchandise exports surged at a robust 17.6% in 2022 following an even more impressive 22.8% growth in 2021. While merchandise exports from the Los Angeles MSA increased considerably by 16.7% to $58.6 billion in 2021, they only increased by a modest 4.1% to $61.0 billion in 2022, just under the levels of 2015 and 2016 (see Figure F1 and Table 2). Even with these back-to-back increases, merchandise exports are $61.4 million below pre-pandemic levels. That's because the recovery for the region, especially for the Los Angeles County, has been much slower than for the nation, in part because the county locked down more tightly and maintained its restrictions in place longer than most other areas. Exports from the two-county region fell by -5.8% in 2019 – as trade wars ramped up – and by a massive -17.8% in 2020, as the world (and the region) shut down. And though the region's exports have recovered as the distance from the pandemic increases, as of the end of 2022 they remain $15.3 billion below the record high of $76.3 billion recorded in 2013.

Figure F1
Los Angeles MSA Total Merchandise Exports
(millions of dollars)



Source: Woods Center, California State University Fullerton and International Trade Administration

Merchandise exports from the Los Angeles MSA are projected to increase by 7.2% in 2023 to $65.3 billion. As the world goes through a mild recession in 2024, reduced demand from main trading partners (Canada, Japan, and the European Union) will result in merchandise exports from the Los Angeles MSA remaining relatively flat in 2024 with a projected decrease of -0.2%. Merchandise exports are forecasted to rebound in 2025, as the world reemerges from the slump, growing by 7.3% to reach $70.0 billion. By the end of the forecast horizon in 2025, merchandise exports from the Los Angeles MSA are projected to be $6.3 billion less than the record high of $76.3 billion in 2013.

Table 2
Los Angeles MSA Total Merchandise Exports
(millions of dollars)

Year	Total Export Volume	Growth Rate
1990	25,290	n/a
1991	27,824	10.0%
1992	30,208	8.6%
1993	29,229	-3.2%
1994	33,757	15.5%
1995	41,113	21.8%
1996	41,739	1.5%
1997	43,480	4.2%
1998	35,669	-18.0%
1999	37,372	4.8%
2000	42,573	13.9%
2001	36,538	-14.2%
2002	33,324	-8.8%
2003	36,725	10.2%
2004	39,279	7.0%
2005	43,814	11.5%
2006	48,718	11.2%
2007	54,433	11.7%
2008	59,986	10.2%
2009	51,528	-14.1%
2010	62,168	20.6%
2011	72,689	16.9%
2012	75,008	3.2%
2013	76,306	1.7%
2014	75,471	-1.1%
2015	61,759	-18.2%
2016	61,246	-0.8%
2017	63,753	4.1%
2018	64,815	1.7%
2019	61,041	-5.8%
2020	50,185	-17.8%
2021	58,588	16.7%
2022	60,980	4.1%
	Forecast	
2023	65,347	7.2%
2024	65,247	-0.2%
2025	70,022	7.3%

Source: *Woods Center, California State University Fullerton and International Trade Administration*

F.2 Los Angeles MSA Merchandise Exports by Country

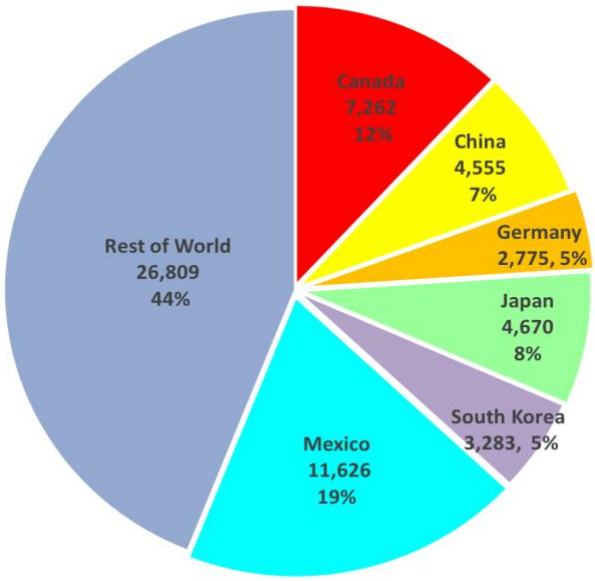
In 2022, the largest export destinations for Los Angeles MSA exports were: Mexico ($11.6 billion), Canada ($7.3 billion), China ($4.6 billion), Japan ($4.7 billion), South Korea ($3.3 billion), and Germany ($2.8 billion) as shown in Figure F2 and Table 3. In an interesting shift, Germany claimed fifth spot for exports from the region in two consecutive years: 2020 and 2021, rising by 3.6% in 2020 (when exports to most other countries fell) and by a staggering 30% in 2021. South Korea dropped to the 6th spot for those two years, experiencing a drop of -28.2% in 2020. This was partially reversed by a 19.3% rise in 2021, but even at $3 billion, they were still below the $3.5 billion recorded prior to the pandemic. Our projections show that South Korea has claimed 5th spot as export destination for the region. That's because the ITA data recently reported a substantial decrease in merchandise exports to Germany -18.0%, most of which we estimate to have come from the Southern California region. For 2022, we estimate that Los Angeles MSA merchandise exports to Germany will decrease by -21.3%, reducing the share of overall exports going to the country from a high of 6.0% in 2021 to 4.6% in 2022. In this trade report, we include projections for both Germany and South Korea.

Exports to Mexico have fared quite well. They fell only by -7.4% during the pandemic and rose by a staggering 22.3% in 2021 ($2 billion) and a more modest but still hefty 7.4% ($0.8 billion) in 2022. This is not a surprise given the focused efforts of nearshoring by main U.S. companies. Mexico is an ideal location for nearshoring supply chains. Mexico remains the leading country for Los Angeles MSA merchandise exports and 1.6 times ($4.4 billion) as large as Canada in 2022. Merchandise exports to Mexico reached $11.6 billion in 2022, higher than the pre-pandemic level in 2019.

Merchandise exports to Canada grew by a solid 13.9% ($0.8 billion) in 2021 and an additional 4.5% ($0.3 billion) in 2022, reaching same levels as during the pre-pandemic. Except for Germany, which experienced a large export increase in 2020-2021 as discussed previously, Mexico and Canada are the only destinations where exports from the region have reached pre-pandemic levels.

Japan is the third largest destination of merchandise exports from the Los Angeles MSA with an estimated $4.7 billion in 2022, just edging out fourth place China's $4.6 billion. Exports to Japan account for 7.7% of total exports from the region, while those to China make up 7.5% of total exports. Merchandise exports to the top three trading partners (Mexico, Canada, and Japan) accounted for an estimated 38.6% of total Los Angeles MSA merchandise exports in 2022.

Figure F2
Los Angeles MSA Exports by Country
(millions of dollars, 2022)



Merchandise exports are projected to rise for all top trading partners in 2022 but remain flat and decrease in some cases in 2024, as the world goes through a mild recession. Merchandise exports to the largest trading partner, Mexico, are projected to increase by 10.8% to $12.9 billion in 2023 followed by more muted growth of 4.7% ($13.5 billion) in 2024. Exports to Mexico are expected to rebound by a robust 11.3% to reach $15.0 billion in 2025, still $4.4 billion below the record high of $19.4 billion set in 2013. Exports to Mexico are projected to command a higher share of total exports from the region, rising from a current 19% to 21.4% by 2025. For Canada, merchandise exports are projected to increase by 5.7% in 2023 to $7.7 billion and decrease by -2.4% in 2024. We forecast merchandise exports to Canada to rise moderately, by 4.8% in 2025, reaching $7.9 billion, which is still below the record set back in 2008.

As discussed earlier in the report, China's growth is not expected to be as buoyant over the forecast horizon compared to historical standards. Merchandise exports to China are projected to increase by 8.5% to $4.9 billion in 2023 followed by a relatively low 1.2% growth rate in 2024, reaching $5.0 billion by the end of 2024. As the world economy, and China's economy, begin to recover in 2025, we forecast that merchandise exports from the region will grow by a robust 9.9% growth in 2025, still well below the record high of $7.9 billion in 2011. The share of China's merchandise exports is projected to rise slightly from 7.6% in 2023 to 7.9% in 2025. Exports to Japan are forecasted to increase of 5.8% in 2023, drop slightly (-0.6%) in 2024 and grow at a more moderate 4.9% pace in 2025. By then, exports to Japan are projected to reach $5.2 billion, considerably below the record high of $6.7 billion way back in 2000.

The Korea-U.S. Free Trade agreement, though off to a very slow start for the first 7 to 8 years

of its existence, will likely play a larger role over the forecast horizon. Merchandise exports from the Los Angeles MSA to South Korea are projected to grow at a robust 11.6% to $3.7 billion in 2023 followed by a 3.0% increase to $3.8 billion in 2024 and a strong 8.8% growth rate, reaching a record high of $4.1 billion in 2025. For Germany, merchandise exports are projected to grow by 8.9% in 2023, followed by a 3.5% increase in 2024, and another strong 8.2% rate in 2025, reaching $3.4 billion, just below the $3.5 billion record high of 2021.

Table 3
Los Angeles MSA Exports by Country
(millions of dollars)

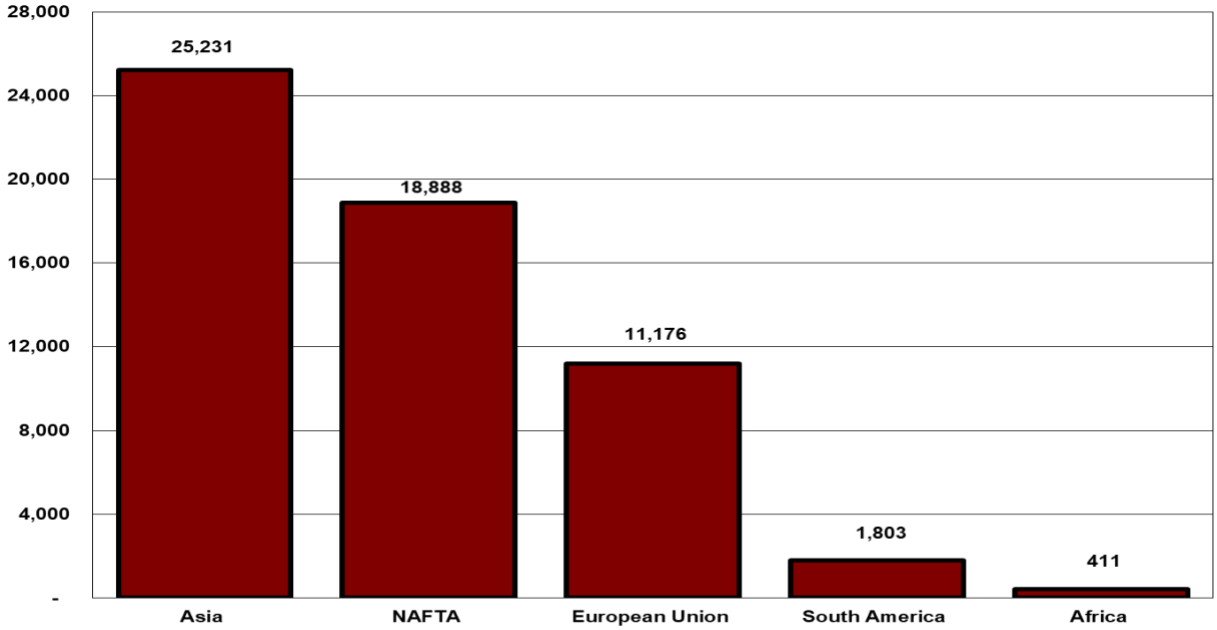
Year	Canada	China	Germany	Japan	South Korea	Mexico	Rest of World	Total Exports
1999	5,096	860	704	4,933	1,568	4,815	19,397	37,372
2000	5,949	1,322	755	6,700	2,293	6,196	19,359	42,573
2001	5,125	1,816	756	6,203	1,783	6,003	14,853	36,538
2002	4,323	1,814	745	4,414	1,586	5,934	14,509	33,324
2003	4,849	2,302	689	4,599	1,708	5,418	17,160	36,725
2004	5,600	3,041	749	5,452	2,186	5,970	16,281	39,279
2005	6,397	3,649	837	5,777	2,412	6,115	18,626	43,814
2006	6,895	5,068	1,039	5,791	2,577	7,847	19,500	48,718
2007	8,871	6,005	1,115	5,869	3,155	6,559	22,858	54,433
2008	9,246	5,988	1,639	6,070	3,436	7,945	25,661	59,986
2009	7,127	4,964	1,290	5,049	2,695	8,936	21,467	51,528
2010	8,061	6,506	1,458	5,558	3,038	14,205	23,342	62,168
2011	8,630	7,985	1,679	6,226	3,074	17,681	27,414	72,689
2012	8,904	7,244	1,594	5,970	3,089	18,340	29,867	75,008
2013	8,287	7,329	2,026	5,707	3,187	19,415	30,354	76,306
2014	8,251	7,221	1,885	5,580	3,149	16,845	32,540	75,471
2015	7,585	6,266	1,756	4,712	2,932	11,125	27,383	61,759
2016	7,121	5,507	1,925	5,126	2,745	9,881	28,940	61,246
2017	7,567	6,134	2,366	5,026	2,874	10,899	28,887	63,753
2018	7,774	5,866	2,661	5,621	3,181	11,853	27,860	64,815
2019	7,280	4,949	2,617	5,420	3,548	9,559	27,668	61,041
2020	6,101	4,134	2,711	4,332	2,546	8,853	21,508	50,185
2021	6,949	4,506	3,524	4,472	3,046	10,825	25,266	58,588
2022	7,262	4,555	2,775	4,670	3,283	11,626	26,809	60,980
				Forecast				
2023	7,679	4,941	3,021	4,942	3,663	12,882	28,219	65,347
2024	7,491	5,002	3,126	4,911	3,773	13,493	27,451	65,247
2025	7,854	5,497	3,383	5,153	4,106	15,016	29,013	70,022

Source: *Woods Center, California State University Fullerton and International Trade Administration*

F.3 Los Angeles MSA Merchandise Exports by Region

Asia ($25.2 billion or 41.4% of merchandise exports), NAFTA ($18.9 billion or 31.0% of merchandise exports), and the European Union ($11.2 billion or 18.3% of merchandise exports) were the three largest trading regions for the Los Angeles MSA in 2022 (see Figure F3 and Table 4). Merchandise exports to all five regions rose in 2022 but below the double-digit growth rates of 2021. For Asia, merchandise exports rose by 5.1% (to $25.2 billion). As of the end of 2022, merchandise exports to Asia are estimated to have remained a hair below pre-pandemic levels, and significantly below the record high of $29.8 billion in 2014. A similar story emerges for merchandise exports to NAFTA: in 2022, they grew by 6.3% to $18.9 billion, nearly $4 billion above the depth of pandemic levels (recorded in 2020), but still below their 2019 values (pre-pandemic) and significantly below the record level of $27.7 billion in 2013. Merchandise exports to Asia and NAFTA account for an estimated 72.4% of all of the merchandise exports in 2022. Merchandise exports to the European Union rose by 4.7% to $11.2 billion in 2022 equaling the record high of 2017.

Figure F3
Los Angeles MSA Exports by Region
(millions of dollars, 2022)



Source: *Woods Center California State University Fullerton and International Trade*

Merchandise exports to Asia are projected to increase by 6.0% in 2023, reaching $26.7 billion, followed by a small drop of (-0.6%) in 2024 and a healthier 7% increase in 2025. At the end of the forecast horizon (2025), exports to Asia are projected to reach $28.4 billion, which is a tad below the record high of $29.9 billion in 2024. Merchandise exports to NAFTA are projected to increase over the entire forecast horizon, rising by 8.9% (reaching $20.6 billion) in 2023, by 2.1% increase (reaching $21.0 billion) in 2024, and by a robust 9.0% (reaching $22.9 billion) in 2025. Despite this brighter outlook, exports to NAFTA will continue to remain significantly lower than the record high

of $27.7 billion recorded in 2013. For the European Union, merchandise exports are projected to grow by 7.3% in 2023 (reaching $12.0 billion), decline by -0.4% in 2024, and rise by a healthy 7.5% in 2025. EU is the only main region whose exports are expected to reach record high values by the end of the forecast horizon, reaching $12.8 billion in 2025.

Table 4
Los Angeles MSA Exports by Region
(millions of dollars)

Year	Africa	Asia	European Union	NAFTA	South America
1999	266	11,919	6,736	9,490	1,099
2000	233	16,035	8,137	11,886	1,054
2001	238	14,496	7,293	10,709	1,012
2002	238	12,002	5,900	9,691	722
2003	267	12,681	6,107	9,757	684
2004	352	16,052	7,351	11,439	1,013
2005	406	17,684	7,827	12,512	1,221
2006	520	19,508	8,049	14,742	1,477
2007	456	21,982	9,401	15,430	1,798
2008	617	22,727	10,226	17,191	2,434
2009	613	19,212	8,188	16,062	1,806
2010	511	22,803	8,234	22,266	2,274
2011	525	26,630	9,429	26,311	2,912
2012	641	25,169	9,771	27,244	3,055
2013	511	25,550	10,417	27,702	3,123
2014	432	29,763	11,122	25,096	3,392
2015	388	25,732	9,978	18,710	2,413
2016	421	26,857	10,316	17,002	2,118
2017	314	27,293	11,224	18,466	2,155
2018	401	27,528	10,907	19,626	2,021
2019	375	26,640	11,152	16,839	1,794
2020	322	20,913	9,279	14,954	1,420
2021	399	24,005	10,675	17,774	1,771
2022	411	25,231	11,176	18,888	1,803
			Forecasts		
2023	451	26,749	11,988	20,561	1,936
2024	458	26,580	11,938	20,983	1,936
2025	497	28,434	12,830	22,870	2,076

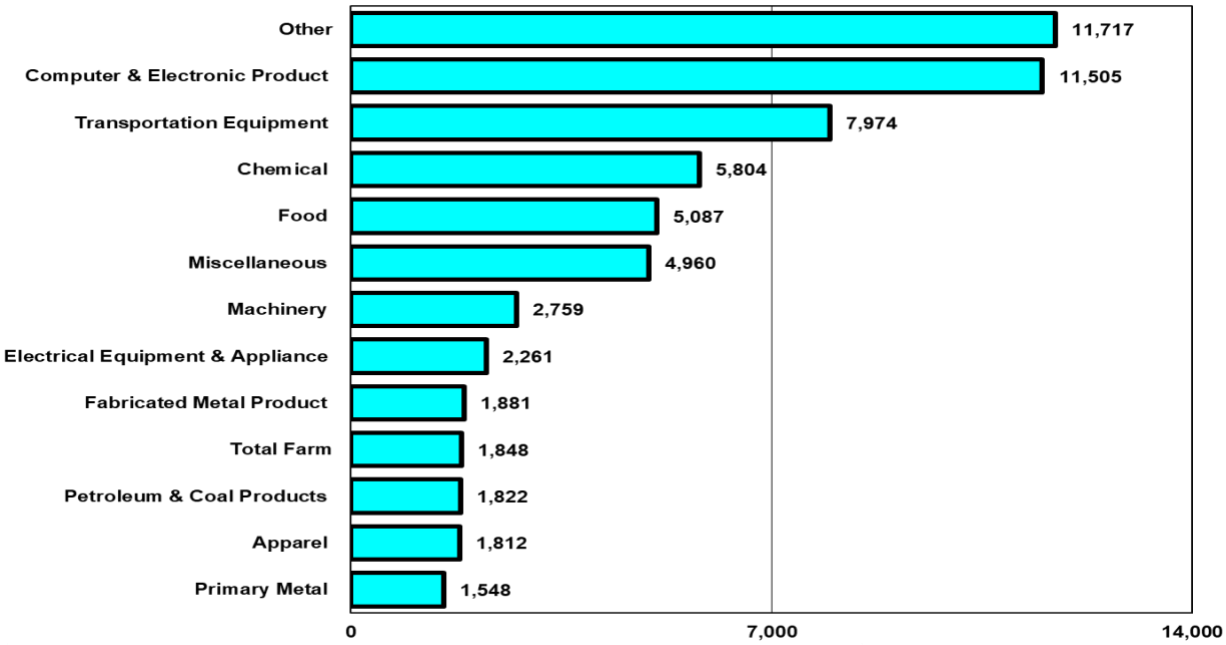
Source: *Woods Center, California State University Fullerton and International Trade Administration*

F.4 Los Angeles MSA Merchandise Exports by Sector

The largest exporting sectors of the Los Angeles MSA area continue to remain Computer & Electronic Products and Transportation Equipment. Exports for Transportation Equipment ($11.5 billion) exceeded Computer & Electronic Products ($8.0 billion) by $3.5 billion in 2022 (see Figure F4 and Table 5). These two industries were the destination of 31.9% ($19.5 billion combined) of all merchandise exports in 2022, an increase of $0.5 billion (2.8%) compared to 2021. Chemical Manufacturing with a share of 9.5% ($5.8 billion) is the third most important sector followed by Food

Manufacturing with a share of 8.3% ($5.1 billion). Food manufacturing has increased for an incredible seven consecutive years. The two categories of Chemical Manufacturing and Food Manufacturing amount to 17.9% ($10.9 billion) of merchandise exports in 2022. Miscellaneous Manufacturing accounted for $5.0 billion. Other important industries are Machinery, Petroleum & Coal Products, Electrical Equipment & Appliances, Fabricated Metal Products, Primary Metal, Petroleum & Coal Products, and Apparel, totaling for a combined $13.9 billion in merchandise exports from the region in 2022.

Figure F4
Los Angeles MSA Exports by Sector
(millions of dollars, 2022)



Source: Woods Center California State University Fullerton and International Trade

Exports of Computer & Electronic products of are projected to increase over the entire forecast horizon, although at a slower clip (1.5%) in 2024, reaching $13.7 billion by the end of 2025. This is still below record-high levels ($21.8 billion) in 2013. While merchandise exports for Transportation Equipment are forecasted to decrease -1.6% in 2024, they are projected to reach $9.4 billion by the end of 2025, still far below the record high of $15.5 billion in 2013. Chemical manufacturing is projected to grow relatively robustly, reaching a record high of $7.2 billion by 2025. Food Manufacturing merchandise exports have increased every year since 2017 and are projected to grow over the entire forecast horizon to reach a record high of $6.4 billion by 2025. Primary Metal, Apparel, Petroleum & Coal Products, Fabricated Metal Product, Electrical Equipment & Appliance, Machinery, and Miscellaneous Manufacturing merchandise exports are projected to total $19.6 billion by 2025.

Table 5
Los Angeles MSA Exports by Sector
(millions of dollars)

Year	Transportation Equipment	Computer& Electronic	Miscellaneous	Chemical	Machinery	Petroleum & Coal Products	Food
1998	7,911	8,873	1,542	1,640	1,836	470	1,091
1999	7,145	11,038	1,629	1,579	1,933	453	1,101
2000	6,689	13,725	1,826	1,923	3,116	610	1,232
2001	5,744	11,153	1,615	1,828	2,390	675	1,229
2002	4,976	9,657	1,633	1,805	1,962	544	1,312
2003	6,802	8,902	2,087	2,354	2,133	556	1,511
2004	8,314	9,740	2,116	2,515	2,343	575	1,495
2005	10,273	10,233	2,628	2,691	2,800	939	1,649
2006	10,049	11,714	3,119	3,056	2,895	1,038	1,864
2007	11,917	11,761	3,594	3,652	3,141	1,494	2,088
2008	13,465	11,653	4,186	4,068	3,638	3,141	2,552
2009	10,566	11,965	3,910	3,698	2,892	1,953	2,312
2010	11,064	17,946	4,325	4,268	3,208	2,094	2,911
2011	12,215	21,160	5,117	5,046	3,554	3,372	3,590
2012	14,109	21,561	5,662	4,954	3,707	2,790	3,600
2013	15,505	21,793	5,120	5,134	3,584	2,499	3,336
2014	15,305	18,562	5,396	5,635	3,432	2,843	3,449
2015	11,780	12,728	5,172	5,338	3,254	1,552	3,148
2016	12,776	11,825	6,007	4,807	2,833	1,117	3,455
2017	13,142	11,676	5,806	4,527	2,824	1,617	3,681
2018	11,903	12,099	6,556	4,553	2,868	2,300	3,717
2019	11,254	10,240	6,996	4,646	2,808	1,513	3,886
2020	7,426	10,103	4,053	4,542	2,307	915	3,961
2021	7,685	11,256	4,500	5,635	2,715	1,547	4,662
2022	7,974	11,505	4,960	5,804	2,759	1,822	5,087
			Forecast				
2023	8,742	12,448	5,247	6,414	2,941	2,092	5,724
2024	8,606	12,633	5,120	6,609	2,960	2,235	5,858
2025	9,449	13,697	5,302	7,199	3,196	2,439	6,400

Los Angeles MSA Exports by Sector (continued)

Year	Fabricated Metal Product	Electrical Equipment	Apparel	Total Farm	Primary Metal	Other Sectors	Total Export
1998	1,098	1,037	837	536	607	8,192	35,669
1999	962	1,056	825	431	439	8,782	37,372
2000	1,065	1,454	949	572	598	8,815	42,573
2001	1,050	1,270	979	560	549	7,497	36,538
2002	1,041	1,156	977	487	497	7,277	33,324
2003	1,192	1,130	893	814	554	7,797	36,725
2004	1,307	1,309	892	859	621	7,193	39,279
2005	1,535	1,395	1,052	987	744	6,886	43,814
2006	1,791	1,706	1,092	1,061	878	8,454	48,718
2007	1,818	1,799	1,074	1,082	922	10,091	54,433
2008	1,764	1,640	1,199	1,159	1,081	10,438	59,986
2009	1,544	1,375	1,208	1,055	829	8,222	51,528
2010	1,768	1,519	1,349	1,031	1,012	9,673	62,168
2011	1,762	1,671	1,383	1,367	1,259	11,191	72,689
2012	1,839	1,825	1,433	1,447	1,344	10,736	75,008
2013	2,079	1,943	1,436	1,552	1,482	10,844	76,306
2014	2,039	2,530	1,507	1,503	1,577	11,692	75,471
2015	1,944	2,492	1,449	1,330	1,431	10,140	61,759
2016	1,885	2,370	1,225	1,597	1,906	9,441	61,246
2017	2,011	2,549	1,260	1,528	2,442	10,689	63,753
2018	2,070	2,544	1,456	1,529	1,916	11,304	64,815
2019	2,136	2,554	1,339	1,642	1,636	10,390	61,041
2020	1,632	1,995	1,053	1,698	1,092	9,409	50,185
2021	1,789	2,183	1,645	1,731	1,392	11,849	58,588
2022	1,881	2,261	1,812	1,848	1,548	11,717	60,980
				Forecast			
2023	2,045	2,436	1,987	2,110	1,589	11,573	65,347
2024	2,038	2,403	2,155	2,242	1,441	10,946	65,247
2025	2,175	2,546	2,505	2,580	1,480	11,053	70,022

Source: Woods Center, California State University Fullerton and International Trade Administration

ORANGE COUNTY EXPORTS

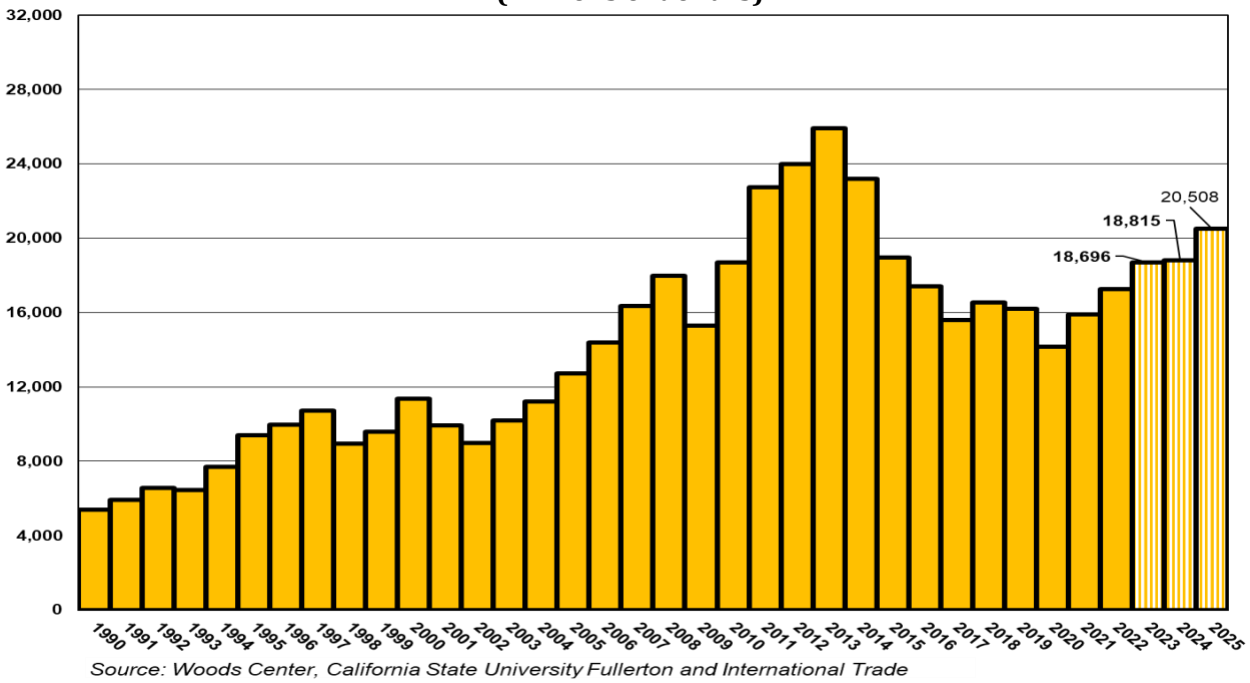
Orange County continues to recover from the pandemic, with the county's Gross County Product in 2021 reaching $288.5 billion. In the labor market, nonfarm employment grew by 3.6% in 2021 followed by a jaw-dropping 5.1% increase in 2022. The annual unemployment rate in Orange County has plummeted falling from a high of 15.1% recorded in May 2020 to 2.7% in December 2022. Nonetheless, as the economic outlook has weakened, the unemployment rate in the county rose to 3.4% early in 2023. Merchandise exports make up a relatively small portion of the county's diverse economy, accounting for 5.5% of Gross County Product in 2021. Merchandise exports from Orange County totaled $15.9 billion in 2021 (latest available data provided by the ITA), which is smaller than Minneapolis-St. Paul-Bloomington, MN-WI and San Diego-Carlsbad MSA but exceeds the volumes from Greenville-Anderson-Mauldin, San Juan-Bayamon-Caguas, Salt Lake City, UT, and Washington-Arlington-Alexandria.

The International Trade Administration has recently begun to report total merchandise exports for Orange County for a short period: from 2012 through 2021. At the time of our report, no data for Orange County total merchandise exports were available for 2022. The ITA does not provide any data for Orange County exports by region, country or sector. The Woods Center at California State University Fullerton provides historical estimates and projections for Orange County merchandise exports by volume, region, country, and sector, which are derived from an econometric model that accounts for trends in regional, state, national and international trade patterns.

F.5 Orange County Merchandise Exports

Merchandise exports from Orange County rose in both 2021 and 2022, by 12.2% in 2021 (reaching $15.9 billion) and by an additional 8.7% in 2022 (reaching $17.3 billion) (see Figure F5 and Table 6). Indeed, the county has outperformed the broader region: while merchandise exports for the Los Angeles MSA continue to remain below pre-pandemic levels, at the end of 2022, Orange County's exports are estimated to be $1.1 billion higher than their 2019 values. Despite this hefty growth, exports from Orange County remain a staggering $8.6 billion below the record high of $25.9 billion reached in 2013. Though the 8.7% growth of 2022 exceeds the broader region (where growth came at a much more anemic 4.1% pace), it is way below the 17.6% increase experienced by the U.S.

Figure F5
OC Total Merchandise Exports
(millions of dollars)



Source: Woods Center, California State University Fullerton and International Trade

Merchandise exports from Orange County are projected to rise by 8.3% in 2023, remain relatively flat (0.6% growth) in 2024 as the world economy goes through a soft patch, and rise by a more robust 9% in 2025. At the end of the forecast horizon, merchandise exports for the county are still projected to remain $5.4 billion below the record high of $25.9 billion recorded in 2013.

Table 6
OC Total Merchandise Exports
(millions of dollars)

Year	Total Export Volume	Growth Rate
1990	5,385	n/a
1991	5,923	10.0%
1992	6,568	10.9%
1993	6,457	-1.7%
1994	7,688	19.1%
1995	9,401	22.3%
1996	9,973	6.1%
1997	10,717	7.5%
1998	8,932	-16.7%
1999	9,597	7.5%
2000	11,353	18.3%
2001	9,910	-12.7%
2002	8,973	-9.5%
2003	10,192	13.6%
2004	11,212	10.0%
2005	12,707	13.3%
2006	14,381	13.2%
2007	16,360	13.8%
2008	17,979	9.9%
2009	15,302	-14.9%
2010	18,694	22.2%
2011	22,746	21.7%
2012	23,995	5.5%
2013	25,902	7.9%
2014	23,208	-10.4%
2015	18,948	-18.4%
2016	17,418	-8.1%
2017	15,588	-10.5%
2018	16,554	6.2%
2019	16,205	-2.1%
2020	14,159	-12.6%
2021	15,888	12.2%
2022	17,265	8.7%
	Forecast	
2023	18,696	8.3%
2024	18,815	0.6%
2025	20,508	9.0%

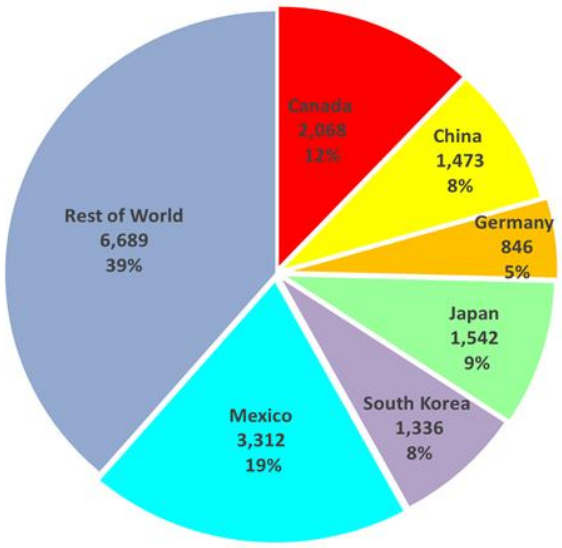
Source: *Woods Center, California State University Fullerton and International Trade Administration*

F.6 Orange County Merchandise Exports by Country

Orange County's largest trading partners in 2022 were: Mexico ($3.3 billion), Canada ($2.1 billion), China ($1.5 billion), Japan ($1.5 billion), South Korea ($1.2 billion), and Germany ($0.8 billion) as shown in Figure F6 and Table 7. Merchandise exports to these six largest trading partners increased by $0.7 billion (7.1%) in 2022 compared to the previous year, though the overall share of exports going to the top six destinations fell from 62.1% in 2021 to 61.3% in 2022. This means that exports to other countries grew even faster.

Mexico remains the leading country for merchandise exports, accounting for 19.2% of total exports in 2022. Nonetheless, merchandise exports to Mexico (much like overall merchandise exports from the county) have been on a secular downtrend since 2013. Exports to Mexico are estimated to have reached $3.3 billion in 2022, less than half of the $7.2 billion recorded in 2013. Mexico and Canada together account 31.2% ($5.4 billion) of Orange County's merchandise exports in 2022. Merchandise exports to China reached $1.5 billion in 2022 close to 2018 level, before the onset of trade wars, but well below the record high of $2.7 billion in 2011. For Japan, merchandise exports increased by 8.4% to $1.5 billion, still below the record high of $2.1 billion set in 2011. Merchandise exports to South Korea increased for the fifth successive year to reach a record high of $1.3 billion in 2022. While merchandise exports from Orange County to Germany increased by 23.4% to $1.0 billion in 2021, we estimate a drop of -13.2% in 2022, bringing merchandise exports from Orange County to Germany down to $0.8 billion 2022. Germany became a top-six country for merchandise exports in 2021 for the Los Angeles MSA and in Orange Country.

Figure F6
OC Merchandise Exports by Country
(millions of dollars, 2022)



Merchandise exports from Orange County to Mexico are projected to increase by a robust 11.5% to $3.7 billion in 2023, a smaller (0.6% increase) in 2024, and another robust 10.1% in 2025. Merchandise exports to Mexico are projected to reach $4.1 billion in 2025 but remain still below the record high of $7.2 billion in 2013. Mexico will account for around 20.0% of all merchandise exports from Orange County by 2025. Exports to Canada are also projected to grow over the forecast horizon: by 7.5% (to $2.2 billion) in 2023, by a 1.9% (to $2.3 billion) in 2023, and by 10.3% (to $2.5 billion) in 2025. By the end of 2025, merchandise exports to Canada will remain around $0.5 billion below the record high of $3.1 billion in 2012. Merchandise exports to Canada amount to around 12% of all merchandise exports from Orange County.

Merchandise exports to China are projected to increase by 4.9% in 2023, followed by a -1.6% decrease in 2024, and a strong rebound of 8.4% in 2025, reaching $1.6 billion at the end of the forecast horizon. This is still below the record high of $2.7 billion in 2011. Exports to Japan are projected to rise by $1.5 billion in 2022 to $1.8 billion by 2025, an increase of nearly 19% over the forecast horizon, though remain below the record high of $2.1 billion in 2011. Merchandise exports to Japan are projected to continue to exceed those to China. Exports to South Korea are expected to rise the most over the forecast horizon, by a total of 25.8%, reaching a record high of $1.7 billion in 2025. Exports from Orange County to Germany are projected to reach $0.9 billion in 2025, close to the record high of $1.0 billion in 2021.

Table 7
OC Merchandise Exports by Country
(millions of dollars)

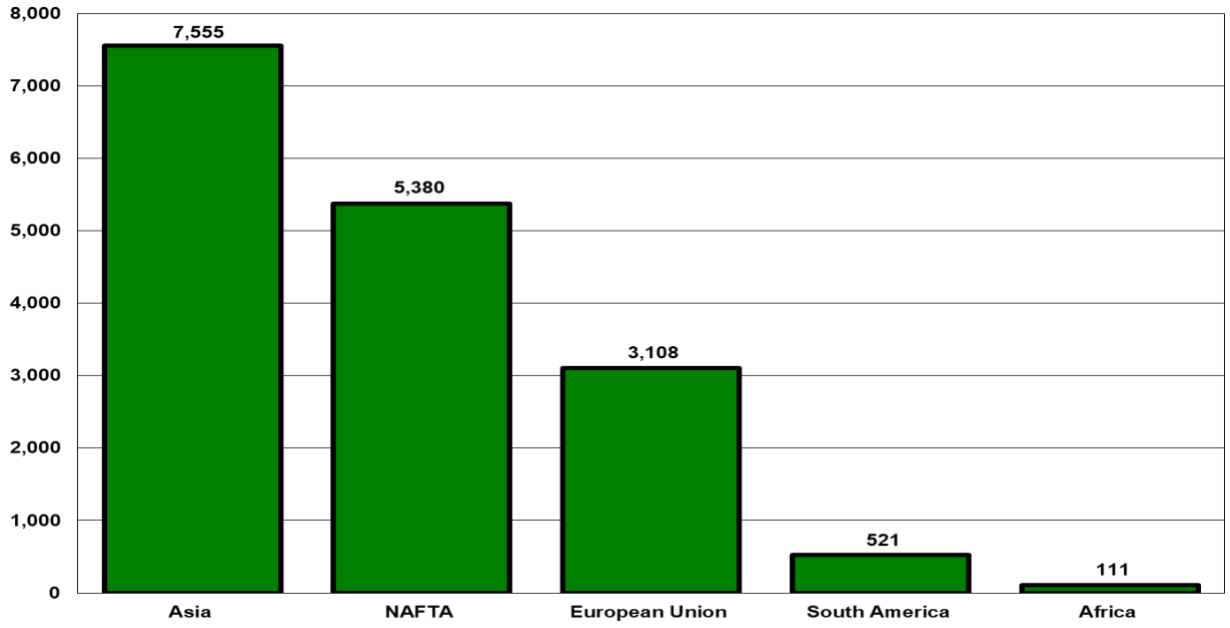
Year	Canada	China	Germany	Japan	South Korea	Mexico	Rest of World	Total Exports
1999	1,496	264	188	1,448	481	1,484	4,237	9,597
2000	1,657	368	210	1,867	639	1,726	4,886	11,353
2001	1,452	515	214	1,758	505	1,701	3,765	9,910
2002	1,212	508	209	1,237	445	1,663	3,699	8,973
2003	1,403	666	199	1,331	494	1,568	4,530	10,192
2004	1,675	909	224	1,630	654	1,785	4,335	11,212
2005	1,945	1,110	255	1,757	734	1,860	5,047	12,707
2006	2,146	1,578	323	1,803	802	2,443	5,286	14,381
2007	2,838	1,921	357	1,878	1,009	2,098	6,258	16,360
2008	2,957	1,915	524	1,941	1,099	2,541	7,001	17,979
2009	2,264	1,577	410	1,604	856	2,839	5,750	15,302
2010	2,601	2,099	471	1,793	980	4,583	6,168	18,694
2011	2,931	2,712	570	2,115	1,044	6,005	7,369	22,746
2012	3,111	2,531	557	2,086	1,079	6,408	8,223	23,995
2013	3,059	2,705	748	2,107	1,176	7,166	8,941	25,902
2014	2,763	2,418	631	1,868	1,054	5,640	8,833	23,208
2015	2,529	2,089	585	1,571	978	3,709	7,486	18,948
2016	2,215	1,713	599	1,595	899	3,074	7,323	17,418
2017	1,935	1,569	605	1,285	846	2,787	6,560	15,588
2018	2,042	1,541	699	1,477	910	3,114	6,770	16,554
2019	1,981	1,346	712	1,475	965	2,601	7,125	16,205
2020	1,778	1,205	790	1,263	1,027	2,581	5,515	14,159
2021	1,922	1,386	975	1,423	1,146	3,020	6,016	15,888
2022	2,068	1,473	846	1,542	1,336	3,312	6,689	17,265
				Forecast				
2023	2,224	1,546	862	1,683	1,501	3,751	7,129	18,696
2024	2,268	1,521	873	1,699	1,541	3,915	6,999	18,815
2025	2,501	1,649	947	1,833	1,722	4,398	7,458	20,508

Source: *Woods Center, California State University Fullerton & International Trade Administration*

F.7 Orange County Merchandise Exports by Region

Merchandise exports to the leading region of Asia grew by 8.5% to $7.6 in 2022. Merchandise exports to the region accounted for 43.8% of Orange County's total exports in 2022 (see Figure F7 and Table 8). As the region has recovered from the pandemic shutdown, exports from Orange County have exceeded 2019 levels, though they remain below the record high of $9.5 billion recorded in 2013. Merchandise exports to NAFTA increased by 8.8% to $5.4 billion in 2022, with the region accounting for 31% of county's exports. Asia and NAFTA together account for $12.9 billion, a 74.9% share of merchandise exports in 2022. Merchandise exports to the European Union were 18.0% ($3.1 billion) of total exports in 2022. Merchandise exports to Africa and South America total $0.6 billion in 2022.

Figure F7
OC Merchandise Exports by Region
(millions of dollars, 2022)



Source: Woods Center, California State University Fullerton

Table 8
OC Exports by Region
(millions of dollars)

Year	Africa	Asia	European Union	NAFTA	South America
1999	71	3,183	1,799	2,647	294
2000	65	4,473	2,270	3,388	294
2001	67	4,115	2,070	3,159	287
2002	67	3,370	1,656	2,880	203
2003	77	3,676	1,770	2,976	198
2004	105	4,810	2,203	3,467	304
2005	124	5,392	2,387	3,815	372
2006	162	6,090	2,513	4,602	461
2007	146	7,058	3,018	4,954	577
2008	198	7,299	3,284	5,521	782
2009	196	6,133	2,614	5,127	577
2010	166	7,396	2,671	7,221	738
2011	179	9,099	3,222	8,991	995
2012	225	8,853	3,437	9,583	1,075
2013	190	9,496	3,872	10,296	1,161
2014	145	9,190	3,637	8,458	1,143
2015	130	7,977	3,051	6,277	810
2016	138	7,826	3,084	5,289	658
2017	80	6,980	2,871	4,723	551
2018	105	7,233	2,866	5,157	531
2019	102	7,248	3,034	4,582	488
2020	94	6,096	2,705	4,359	414
2021	102	6,963	2,920	4,943	484
2022	111	7,555	3,108	5,380	521
			Forecasts		
2023	121	8,077	3,345	5,976	562
2024	122	8,090	3,311	6,182	567
2025	133	8,839	3,486	6,899	618

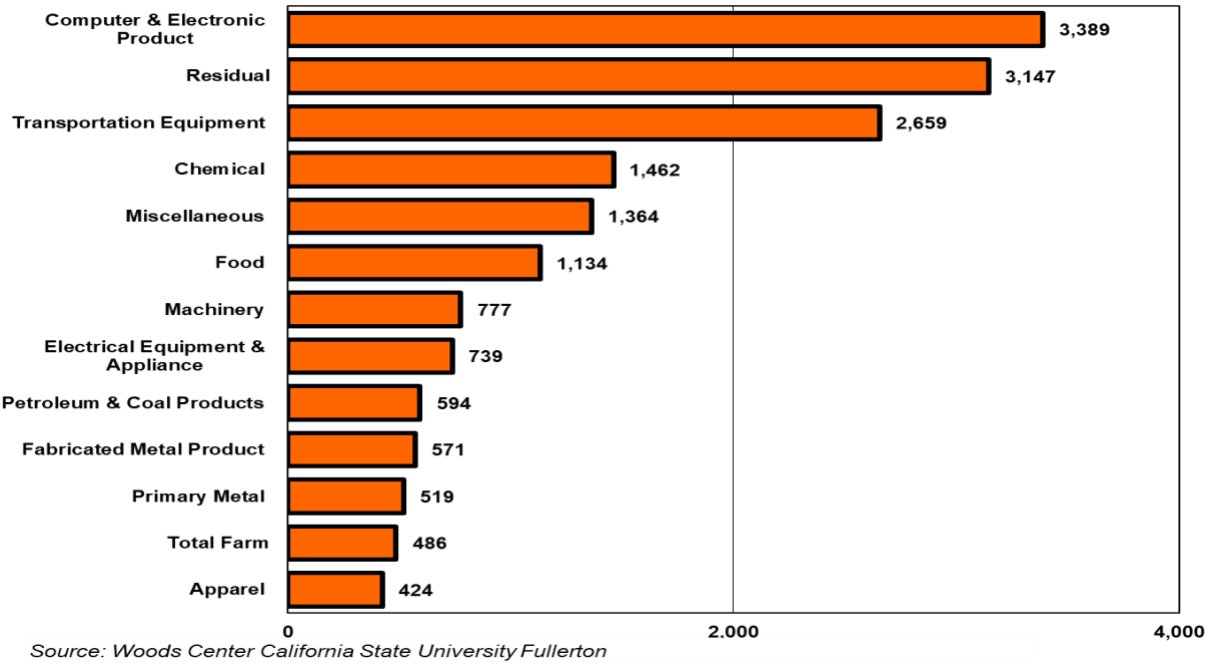
Source: *Woods Center, California State University Fullerton*

Merchandise exports to Asia are projected to increase over the entire forecast horizon, rising by 6.9% to $8.1 billion in 2023, remaining relatively flat (with a projected 0.2% growth) in 2024, followed by a solid 9.3% growth to $8.8 billion in 2025. For Asia, merchandise exports are still projected to remain below the record high levels of $9.5 billion in 2013. Merchandise exports to NAFTA are forecasted to grow considerably by 11.1% (to $6.0 billion) in 2023, by 3.5% (to $6.1 billion) in 2024, and by another robust 11.6% (to $6.9 billion) in 2025. Merchandise exports to the European Union are forecasted to grow by 7.6% in 2023, decrease slightly (by -1%) in 2024, and rise again by 5.3% in 2025. For the European Union, merchandise exports are projected to reach $3.5 billion by the end of 2025, which is close to the record high of $3.9 billion in 2013.

F.8 Orange County Merchandise Exports by Sector

High-tech sectors have a significant presence in Orange County accounting for a considerable amount of merchandise exports from the county (see Figure F8 and Table 9). The two main sectors, Computer & Electronic Products and Transportation Equipment, accounted for a combined $6.0 billion (35.0%) of merchandise exports out of Orange County in 2022. Computers & Electronic Products made up 19.6% ($3.4 billion), which is well below the high of $7.2 billion in 2013. The second most important sector of Transportation Equipment has a share of 13.8% ($2.7 billion) of the county's total merchandise exports in 2022, less than the high in 2013 of $5.3 billion. Chemical, Miscellaneous, and Food manufacturing industries in 2022 combine for $4.0 billion (22.9%) of total merchandise exports. Another 21.0% ($3.6 billion) of Orange County merchandise exports are from Machinery, Petroleum & Coal Products, Fabricated Metal Product, Electrical Equipment & Appliance, and Primary Metal.

Figure F8
OC Merchandise Exports by Sector
(millions of dollars, 2022)



Source: Woods Center California State University Fullerton

Merchandise exports for the largest sector, Computer and Electronics, are projected to increase by a hefty 26.9% to $4.3 billion in 2023 but remain relatively flat with a 0.2% growth rate in 2024. They are then projected to rise by a robust 9.9% to $4.7 billion 2025. Despite this, from this sector will remain far lower than the $7.2 billion high in 2012, even at the end of the forecast horizon. Transportation Equipment merchandise exports are projected to increase by a robust 9.0% to $2.9 billion in 2023, drop by -1.3% in 2024, and then grow by 12.6% to $3.2 billion 2025, remaining below the 2013 high of $5.2 billion. Forecasts for the other sectors are as follows: Chemical exports are projected to reach $1.7 billion by end-2025, Miscellaneous Manufacturing $1.6 billion, and Food Manufacturing $1.4 billion. Merchandise exports of Machinery, Petroleum & Coal Products, Fabricated Metal Product, Electrical Equipment & Appliance, and

Primary Metal are projected to increase by 33.5% compared to 2022 and reach a total of $4.8 by the end of 2025. Orange County remains well equipped to take advantage of an expected increase in the demand for high-technology and capital-intensive products.

Table 9
OC Merchandise Exports by Sector
(millions of dollars)

Year	Transportation Equipment	Computer& Electronic	Miscellaneous	Chemical	Machinery	Petroleum & Coal Products	Food
1998	1,737	2,474	383	391	470	120	258
1999	1,914	2,877	408	405	466	124	276
2000	2,097	3,440	481	499	754	171	318
2001	1,557	3,054	426	445	664	163	295
2002	1,383	2,526	429	377	588	157	274
2003	1,669	2,993	469	429	613	152	320
2004	1,882	3,022	491	520	751	175	417
2005	2,378	3,347	598	694	867	229	464
2006	2,826	3,610	829	888	870	318	546
2007	3,440	3,955	955	1,130	930	415	613
2008	3,788	4,387	1,149	1,156	1,061	440	748
2009	3,049	3,336	992	1,081	892	493	638
2010	4,061	4,764	1,220	1,274	1,000	585	875
2011	4,889	6,191	1,653	1,533	1,064	836	1,105
2012	5,157	6,696	1,739	1,555	1,178	807	1,171
2013	5,685	7,212	1,711	1,739	1,323	879	1,168
2014	5,155	6,069	1,519	1,703	1,104	846	1,058
2015	4,172	4,605	1,205	1,354	838	697	849
2016	3,908	3,924	1,083	1,273	766	593	772
2017	3,352	3,113	1,104	1,138	680	586	798
2018	3,305	3,467	1,334	1,265	721	607	819
2019	3,113	2,981	1,526	1,312	687	599	910
2020	2,191	2,837	1,038	1,166	635	411	962
2021	2,337	3,251	1,148	1,441	758	591	1,157
2022	2,659	3,389	1,364	1,462	777	594	1,134
			Forecast				
2023	2,898	4,300	1,496	1,571	841	627	1,287
2024	2,860	4,309	1,505	1,627	854	659	1,300
2025	3,220	4,737	1,620	1,758	950	756	1,403

OC Merchandise Exports by Sector (continued)

Year	Fabricated Metal Product	Electrical Equipment	Apparel	Total Farm	Primary Metal	Other Sectors	Total Export
1998	276	257	212	115	156	2,085	8,932
1999	248	274	219	120	116	2,152	9,597
2000	276	387	252	151	157	2,372	11,353
2001	292	314	287	159	145	2,110	9,910
2002	246	308	276	167	133	2,109	8,973
2003	335	311	251	216	154	2,280	10,192
2004	389	373	257	227	173	2,534	11,212
2005	440	419	313	242	222	2,496	12,707
2006	524	494	329	284	260	2,605	14,381
2007	562	513	331	307	281	2,928	16,360
2008	539	505	351	348	328	3,179	17,979
2009	463	411	371	291	263	3,023	15,302
2010	549	470	400	371	329	2,798	18,694
2011	647	589	441	431	409	2,957	22,746
2012	665	624	477	441	409	3,077	23,995
2013	748	769	535	554	543	3,037	25,902
2014	637	811	482	471	507	2,846	23,208
2015	495	678	369	377	421	2,888	18,948
2016	470	643	343	343	413	2,886	17,418
2017	449	604	356	331	414	2,664	15,588
2018	503	671	391	376	406	2,689	16,554
2019	556	718	376	393	430	2,604	16,205
2020	461	624	340	438	436	2,620	14,159
2021	515	637	421	467	523	2,643	15,888
2022	571	739	424	486	519	3,147	17,265
			Forecast				
2023	617	801	467	550	584	2,658	18,696
2024	612	795	476	566	591	2,661	18,815
2025	684	873	544	619	650	2,694	20,508

Source: Woods Center, California State University Fullerton

G. CONCLUSION

The Woods Center at California State University Fullerton provides a unique and detailed analysis, estimates, and forecasts for merchandise exports from Orange County and the broader region of Los Angeles-Long Beach-Anaheim MSA (which includes Orange County). Merchandise exports have the potential to play a large role in the Southern California region, but limited data exists. The International Trade Administration provides some details on merchandise exports for the broader Los Angeles-Long Beach-Anaheim MSA and for Orange County (from 2012 to 2022). Nonetheless, the data for Orange County is limited to total volumes and does not offer a breakdown across countries, regions, or sectors. Exports for MSAs, but not counties, are available from the U.S. Census Bureau for 2022. This report is important because it is the only available source that fills in this gap by providing detailed historical data through 2022 and forecasts over the period from 2023 through 2025 for merchandise exports from Orange County and the broader Los Angeles-Long Beach-Anaheim MSA.

Merchandise exports from Orange County and the broader Los Angeles-Long Beach-Anaheim Metropolitan Statistical Area continued to increase since the pandemic and are projected to rise moderately in 2023. The projected demand for merchandise exports is mixed over the three-year forecast horizon with relatively flat growth in 2024, as the global economy slows down, sandwiched between two years of moderate growth.

Merchandise exports from the Los Angeles-Long Beach-Anaheim MSA are projected to reach $70.0 billion by the end of 2025, which is below the record high of $76.3 billion in 2013. Merchandise exports to regions are projected to reach the following levels by the end of the forecast horizon: Asia ($28.4 billion), NAFTA ($22.9 billion) and the European Union ($12.8 billion). The two largest exporting sectors, Computer & Electronic Products and Transportation Equipment, are projected to reach $13.7 billion and $9.4 billion, respectively, by 2025.

For Orange County, merchandise exports are forecasted to increase from $17.2 billion in 2022 to $20.5 billion in 2025, which is still below the record high of $25.9 billion in 2013. Orange County's six largest trading partners in 2022 were: Mexico ($3.3 billion), Canada ($2.1 billion), China ($1.5 billion), Japan ($1.5 billion), South Korea ($1.2 billion), and Germany ($0.8 billion). By 2025, merchandise exports are projected to reach: Mexico ($4.1 billion), Canada ($2.5 billion), China ($1.5 billion), Japan ($1.6 billion), South Korea ($1.7 billion), and Germany ($0.9 billion). By 2025, merchandise exports to Asia are projected to reach $8.8 billion, to NAFTA $6.9 billion and to the European Union $3.5 billion. The two largest exporting sectors, Computer & Electronic Products and Transportation Equipment, are projected to reach $4.7 billion and $3.2 billion, respectively, by 2025.

H. APPENDIX
A1. Data Sources
A2. Export Data
A3. Methodology
A4. Export Regions
A5. Orange County Exports Detailed Statistics
A6. Los Angeles-Long Beach-Anaheim Exports Detailed Statistics

APPENDIX
A1. DATA SOURCES

"Annual Survey of Manufactures: Geographic Area Statistics," *U.S. Census Bureau*, http://www.census.gov/prod/www/abs/manu-asm-geo.

"California International Trade Register," *Database Publishing Company*, (1992), out-of-print.

"Census Bureau," www.census.gov.

"Current Establishment Survey," *Bureau of Labor Statistics, http://www.bls.gov*.

"Exchange Rates," Wharton Research Data Services database, http://wrds.wharton.upenn.edu, 2016-2022.

"Exports from U.S. Metropolitan Areas," *International Trade Administration*, http://www.trade.gov/mas/ian/Metro/index.html, 2016-2022.

"Foreign Trade Statistics," *U.S. Census Bureau*, http://www.census.gov/foreign-trade.

"International Financial Statistics," International Monetary Fund, 1990-date, www.imfstatistics.org/imf/

"Labor Market Information," *State of California, Employment Development Department,* http://www.edd.ca.gov.

"Metro Business Patterns," *U.S. Census Bureau,* http://www.census.gov/econ/cbp/index.html.

"National Income and Products Account," *Bureau of Economic Analysis*, http://www.bea.gov.

"Orange County and Regional Economic Outlook," *Center for Economic Analysis and Forecasting*, *California State University Fullerton*, 1999-2022.

"Regional Multipliers," *Bureau of Economic Analysis*, http://www.bea.gov, 1997-2022.

"State and regional exports of merchandise," *International Trade Administration*, http://tse.export.gov, 2016-2022.

"State export data series," *WISERtrade*, http://www.wisertrade.org, 2012-2016.

"Statistical Abstract, Foreign Commerce & Aid," *U.S. Census Bureau*, http://www.census.gov/prod/www/abs/statab.htmlhttp://www.census.gov/foreign-trade.

"Trade Statistics," *International Trade Administration,* http://www.ita.doc.gov/, 2016-2022.

"U.S. merchandise exports," *International Trade Administration*, http://tse.export.gov, 2016-2022.

"U.S. District and Port Exports," *WISERtrade*, http://www.wisertrade.org, 2016.

"World Economic Outlook Database," *International Monetary Fund*, http://www.imf.org, 2016-2022.

APPENDIX
A2. EXPORT DATA

The following is a summary of the export data sources. Parts of the summary are cited directly from the respective data source.

National Trade Data

TradeStats Express, International Trade Administration, U.S. Department of Commerce

The *International Trade Administration*, U.S. Department of Commerce, provides trade data for merchandise exports for the nation. This data is currently available annually (total for the year) from 1989 through 2021. Data are available for individual countries, trade/economic groups, and geographic regions by product type and industry. The data are available in the three product classification systems: North American Industry Classification System (NAICS) up to the four-digit level, Harmonized System (HS) at two- and four-digit levels, or Standard International Trade Classification (SITC) up to the three-digit level.

State Export Data

TradeStats Express, International Trade Administration, U.S. Department of Commerce

State export data are available annually (total for the year) from 1999 through 2022. Data are available for individual countries, trade/economic groups, and geographic regions by product type and industry. The data are available by NAICS product classification (up to the three-digit level). The data captures origin-of-movement (OM) based on Origin State which differs from an earlier series based on Exporter Location (EL) (1993-2002). The OM series provides export statistics based on the state from which the merchandise starts its journey to the port of export. In contrast, the EL series was based on the zip code of the exporter and unlike the OM series it tended to capture company headquarters, wholesalers, brokers, and freight forwarders. Although OM data are not defined as the state of production origin, it is the closest approximation to state of production for manufactured goods for which it may also capture the state of consolidation or the state of a broker or wholesaler.

U.S. Metropolitan Areas Export Data

International Trade Administration, U.S. Department of Commerce

The U.S. Metro Area Export data are available annually (total for the year) from 2006-2021 and are updated semi-annually from the International Trade Administration. Total export volumes for some metros, including the Los Angeles MSA Merchandise Exports, are available for 2022 from the Census Bureau. The top five export product profiles to a selected market are available for 2008 and 2021 and are limited to only the top 5 countries for the top 50 metropolitan areas. The export series for Metro Areas are computed by matching the five-digit zip codes entered on U.S. export declarations with the five-digit zip codes specified for each metropolitan area using concordance files from the Census Bureau's Geography Division and the U.S. Postal Service. The metropolitan export data series measures only the dollar value of merchandise exports (goods that can physically be transported across the border) and does not include exports of services. The metropolitan export data are only available in nominal U.S. dollars and are not adjusted for inflation or any other factors. Metropolitan areas referenced in the 2005 to 2022 data are based on the 2000 Census.

The export series for Metro Areas is based on the origin of movement by the zip code of the U.S. Principle Party of Interest (USPPI) of record. In 2004 the zip code of the USPPI, the party in the United States that receives the primary benefit (monetary or otherwise) from the shipment, was redefined to indicate the origin of movement of goods. Initially it did not necessarily represent the location of the USPPI. However, due to increased electronic reporting in the Automated Export System (AES), the validity of the reported ZIP Code has improved significantly since 2004. The USPPI of record is not necessarily the entity that produced the merchandise; hence, the series does not furnish complete and reliable data on the production origin of U.S. exports.

The existing Metro Area Export data differs from an earlier series produced by the U.S. International Trade Administration which were available from 1993-2002. The earlier series were based on the Exporter Location (EL) Series collected by the Census Bureau from shipper's export declarations. With the introduction of the Automated Export System (AES) by the U.S. Customs Bureau and the Census Bureau, the accuracy of the Exporter Location Series became, according to the U.S. Census Bureau, highly suspect, and the series was discontinued. Measurement of exports by metropolitan area was not reported until the introduction of the zip-based Origin of Movement series in 2005. The Census Bureau states that the 2001 and 2005 export series cannot be compared because the 2001 data are based on Exporter Location Series and the 2005 data are based on the Origin of Movement (OM) series.

The OM zip-code series used to measure metropolitan exports differs from the OM data based on origin-state used for state exports. The OM series based on origin of state provides export statistics based on the state from which merchandise began its journey (as listed on the shipper's export declaration). The OM zip-code based series captures the origin of movement by the zip code of the U.S Principle Party of Interest. The collection of this new zip-based series makes it possible to determine exports by metropolitan area. The metropolitan series should only be compared to other sources that also use the Origin of Movement zip code based series and cannot be compared to other data sources that provide state exports (such as TradeStats and USA Trade Online) which publish their export data on an Origin of Movement state-basis.

Customs District Data

U.S. Census Bureau

Customs District and port data measure goods that leave out of a particular district or port (regardless of where the good originated in the United States). The metropolitan export data differs from the Customs District or port data. Since the metropolitan export data are based on the Origin of Movement series, this data attempts to track the export back to its origin of export, regardless of where the good actually leaves the country.

APPENDIX

A3. METHODOLOGY

Estimation of Exports for the Los Angeles – Long Beach – Anaheim Region

Total export volume before year 2005 for the Los Angeles–Long Beach–Anaheim Region (LA-LB-SA) was extrapolated from regional, state, national and international trade trends as well as estimates from an econometric model. To estimate the historical data, regional, state, national and international merchandise exports volumes were used in conjunction with exchange rates, labor productivity in export industries, U.S. and foreign growth measured by real gross domestic product and exports by industry. Forecasts for year 2023 onwards are based on statistical and econometric modeling methodology.

Estimation of Orange County Exports

Orange County's total export volume was extrapolated from regional, state, national and international trade trends as well as estimates from an econometric model. An annual survey, the *California International Trade Register* from Database Publishing Company was also used to estimate historical export volume for Orange County using 401 companies involved in export activities from Orange County. However, this publication is no longer available. The original estimated exports for Orange County have been revised because the newly released 2005-2021 MSA export data has some new important differences concerning the various sectors and export-tracking based on zip-codes. To estimate the historical data, regional, state, national and international merchandise exports volumes were used in conjunction with exchange rates, labor productivity in export industries, and U.S. and foreign growth measured by real gross domestic product. Historical estimates for Orange County exports are also based on exports from the LA-LB-SA region because Orange County is part of the region. Forecasts are based on statistical and econometric modeling methodology.

APPENDIX
A4. EXPORT REGIONS

Africa

Algeria, Angola, Benin, Botswana, British Indian Ocean Territories, Burkina, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo (Brazzaville), Congo (Kinshasa), Cote d'Ivoire, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, French Southern and Antarctic Lands, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mayotte, Morocco, Mozambique, Namibia, Niger, Nigeria, Reunion, Rwanda, St. Helena, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Tunisia, Uganda, Western Sahara, Zambia, Zimbabwe.

Asia

Afghanistan, Bangladesh, Bhutan, Brunei, Burma, Cambodia, China, East Timor, Hong Kong, India, Indonesia, Japan, Laos, Macau, Malaysia, Maldives, Mongolia, Nepal, North Korea, Pakistan, Philippines, Singapore, South Korea, Sri Lanka, Taiwan, Thailand, Vietnam.

European Union

Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Federal Republic of Germany, Finland, France, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

North American Free Trade Agreement (NAFTA)

United States, Canada, Mexico

South America

Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Falkland Islands, French Guaina, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela

Source: *U.S. Census Bureau, Foreign Trade Statistics*

A5. LOS ANGELES–LONG BEACH -ANAHEIM EXPORTS

Table A1
Los Angeles MSA Exports by Country: Growth Rate

Year	Canada	China	Germany	Japan	South Korea	Mexico	Rest of World	Total Exports
2000	16.7%	53.7%	7.3%	35.8%	46.3%	28.7%	-0.2%	13.9%
2001	-13.9%	37.4%	0.1%	-7.4%	-22.2%	-3.1%	-23.3%	-14.2%
2002	-15.7%	-0.1%	-1.4%	-28.8%	-11.0%	-1.1%	-2.3%	-8.8%
2003	12.2%	26.9%	-7.5%	4.2%	7.7%	-8.7%	18.3%	10.2%
2004	15.5%	32.1%	8.6%	18.6%	28.0%	10.2%	-5.1%	7.0%
2005	14.2%	20.0%	11.9%	6.0%	10.3%	2.4%	14.4%	11.5%
2006	7.8%	38.9%	24.1%	0.2%	6.8%	28.3%	4.7%	11.2%
2007	28.7%	18.5%	7.3%	1.3%	22.4%	-16.4%	17.2%	11.7%
2008	4.2%	-0.3%	46.9%	3.4%	8.9%	21.1%	12.3%	10.2%
2009	-22.9%	-17.1%	-21.3%	-16.8%	-21.6%	12.5%	-16.3%	-14.1%
2010	13.1%	31.1%	13.0%	10.1%	12.7%	59.0%	8.7%	20.6%
2011	7.1%	22.7%	15.1%	12.0%	1.2%	24.5%	17.4%	16.9%
2012	3.2%	-9.3%	-5.1%	-4.1%	0.5%	3.7%	8.9%	3.2%
2013	-6.9%	1.2%	27.1%	-4.4%	3.2%	5.9%	1.6%	1.7%
2014	-0.4%	-1.5%	-7.0%	-2.2%	-1.2%	-13.2%	7.2%	-1.1%
2015	-8.1%	-13.2%	-6.9%	-15.6%	-6.9%	-34.0%	-15.8%	-18.2%
2016	-6.1%	-12.1%	9.7%	8.8%	-6.4%	-11.2%	5.7%	-0.8%
2017	6.3%	11.4%	22.9%	-1.9%	4.7%	10.3%	-0.2%	4.1%
2018	2.7%	-4.4%	12.5%	11.8%	10.7%	8.8%	-3.6%	1.7%
2019	-6.3%	-15.6%	-1.7%	-3.6%	11.5%	-19.4%	-0.7%	-5.8%
2020	-16.2%	-16.5%	3.6%	-20.1%	-28.2%	-7.4%	-22.3%	-17.8%
2021	13.9%	9.0%	30.0%	3.2%	19.6%	22.3%	17.5%	16.7%
2022	4.5%	1.1%	-21.3%	4.4%	7.8%	7.4%	6.1%	4.1%
				Forecasts				
2023	5.7%	8.5%	8.9%	5.8%	11.6%	10.8%	5.3%	7.2%
2024	-2.4%	1.2%	3.5%	-0.6%	3.0%	4.7%	-2.7%	-0.2%
2025	4.8%	9.9%	8.2%	4.9%	8.8%	11.3%	5.7%	7.3%

Source: *Woods Center, California State University Fullerton and International Trade Administration*

Table A2
Los Angeles MSA Exports by Country: Shares of Total Volume

Year	Canada	China	Germany	Japan	South Korea	Mexico	Rest of World
1999	13.6%	2.3%	1.9%	13.2%	4.2%	12.9%	51.9%
2000	14.0%	3.1%	1.8%	15.7%	5.4%	14.6%	45.5%
2001	14.0%	5.0%	2.1%	17.0%	4.9%	16.4%	40.6%
2002	13.0%	5.4%	2.2%	13.2%	4.8%	17.8%	43.5%
2003	13.2%	6.3%	1.9%	12.5%	4.6%	14.8%	46.7%
2004	14.3%	7.7%	1.9%	13.9%	5.6%	15.2%	41.5%
2005	14.6%	8.3%	1.9%	13.2%	5.5%	14.0%	42.5%
2006	14.2%	10.4%	2.1%	11.9%	5.3%	16.1%	40.0%
2007	16.3%	11.0%	2.0%	10.8%	5.8%	12.1%	42.0%
2008	15.4%	10.0%	2.7%	10.1%	5.7%	13.2%	42.8%
2009	13.8%	9.6%	2.5%	9.8%	5.2%	17.3%	41.7%
2010	13.0%	10.5%	2.3%	8.9%	4.9%	22.8%	37.5%
2011	11.9%	11.0%	2.3%	8.6%	4.2%	24.3%	37.7%
2012	11.9%	9.7%	2.1%	8.0%	4.1%	24.5%	39.8%
2013	10.9%	9.6%	2.7%	7.5%	4.2%	25.4%	39.8%
2014	10.9%	9.6%	2.5%	7.4%	4.2%	22.3%	43.1%
2015	12.3%	10.1%	2.8%	7.6%	4.7%	18.0%	44.3%
2016	11.6%	9.0%	3.1%	8.4%	4.5%	16.1%	47.3%
2017	11.9%	9.6%	3.7%	7.9%	4.5%	17.1%	45.3%
2018	12.0%	9.1%	4.1%	8.7%	4.9%	18.3%	43.0%
2019	11.9%	8.1%	4.3%	8.9%	5.8%	15.7%	45.3%
2020	12.2%	8.2%	5.4%	8.6%	5.1%	17.6%	42.9%
2021	11.9%	7.7%	6.0%	7.6%	5.2%	18.5%	43.1%
2022	11.9%	7.5%	4.6%	7.7%	5.4%	19.1%	44.0%
			Forecasts				
2023	11.8%	7.6%	4.6%	7.6%	5.6%	19.7%	43.2%
2024	11.5%	7.7%	4.8%	7.5%	5.8%	20.7%	42.1%
2025	11.2%	7.9%	4.8%	7.4%	5.9%	21.4%	41.4%

Source: *Woods Center, California State University Fullerton and International Trade Administration*

Table A3
Los Angeles MSA Exports by Region: Growth Rate

Year	Africa	Asia	European Union	NAFTA	South America
2000	-12.3%	34.5%	20.8%	25.2%	-4.1%
2001	2.0%	-9.6%	-10.4%	-9.9%	-4.0%
2002	-0.1%	-17.2%	-19.1%	-9.5%	-28.6%
2003	12.3%	5.7%	3.5%	0.7%	-5.3%
2004	32.0%	26.6%	20.4%	17.2%	48.1%
2005	15.2%	10.2%	6.5%	9.4%	20.5%
2006	28.1%	10.3%	2.8%	17.8%	21.0%
2007	-12.2%	12.7%	16.8%	4.7%	21.7%
2008	35.3%	3.4%	8.8%	11.4%	35.4%
2009	-0.7%	-15.5%	-19.9%	-6.6%	-25.8%
2010	-16.6%	18.7%	0.6%	38.6%	25.9%
2011	2.7%	16.8%	14.5%	18.2%	28.0%
2012	22.0%	-5.5%	3.6%	3.5%	4.9%
2013	-20.2%	1.5%	6.6%	1.7%	2.2%
2014	-15.5%	16.5%	6.8%	-9.4%	8.6%
2015	-10.1%	-13.5%	-10.3%	-25.4%	-28.9%
2016	8.3%	4.4%	3.4%	-9.1%	-12.2%
2017	-25.2%	1.6%	8.8%	8.6%	1.7%
2018	27.5%	0.9%	-2.8%	6.3%	-6.2%
2019	-6.3%	-3.2%	2.3%	-14.2%	-11.2%
2020	-14.3%	-21.5%	-16.8%	-11.2%	-20.9%
2021	24.2%	14.8%	15.0%	18.9%	24.7%
2022	3.0%	5.1%	4.7%	6.3%	1.8%
			Forecasts		
2023	9.5%	6.0%	7.3%	8.9%	7.4%
2024	1.6%	-0.6%	-0.4%	2.1%	0.0%
2025	8.5%	7.0%	7.5%	9.0%	7.2%

Source: Woods Center, California State University Fullerton and International Trade Administration

Table A4
Los Angeles MSA Exports by Sector: Growth Rates

Industry	Transportation Equipment	Computer Electronic Product	Miscellaneous	Chemical	Machinery	Petroleum & Coal Products	Food
1999	-9.7%	24.4%	5.6%	-3.7%	5.3%	-3.5%	0.9%
2000	-6.4%	24.3%	12.1%	21.8%	61.2%	34.6%	12.0%
2001	-14.1%	-18.7%	-11.6%	-5.0%	-23.3%	10.7%	-0.3%
2002	-13.4%	-13.4%	1.1%	-1.3%	-17.9%	-19.5%	6.8%
2003	36.7%	-7.8%	27.8%	30.4%	8.7%	2.3%	15.2%
2004	22.2%	9.4%	1.4%	6.9%	9.9%	3.4%	-1.1%
2005	23.6%	5.1%	24.2%	7.0%	19.5%	63.4%	10.3%
2006	-2.2%	14.5%	18.7%	13.5%	3.4%	10.5%	13.0%
2007	18.6%	0.4%	15.2%	19.5%	8.5%	43.9%	12.0%
2008	13.0%	-0.9%	16.5%	11.4%	15.8%	110.3%	22.3%
2009	-21.5%	2.7%	-6.6%	-9.1%	-20.5%	-37.8%	-9.4%
2010	4.7%	50.0%	10.6%	15.4%	10.9%	7.2%	25.9%
2011	10.4%	17.9%	18.3%	18.2%	10.8%	61.1%	23.3%
2012	15.5%	1.9%	10.6%	-1.8%	4.3%	-17.3%	0.3%
2013	9.9%	1.1%	-9.6%	3.6%	-3.3%	-10.4%	-7.3%
2014	-1.3%	-14.8%	5.4%	9.8%	-4.3%	13.8%	3.4%
2015	-23.0%	-31.4%	-4.1%	-5.3%	-5.2%	-45.4%	-8.7%
2016	8.5%	-7.1%	16.1%	-9.9%	-12.9%	-28.0%	9.8%
2017	2.9%	-1.3%	-3.3%	-5.8%	-0.3%	44.7%	6.5%
2018	-9.4%	3.6%	12.9%	0.6%	1.6%	42.2%	1.0%
2019	-5.5%	-15.4%	6.7%	2.0%	-2.1%	-34.2%	4.6%
2020	-34.0%	-1.3%	-42.1%	-2.2%	-17.9%	-39.5%	1.9%
2021	3.5%	11.4%	11.0%	24.1%	17.7%	68.9%	17.7%
2022	3.8%	2.2%	10.2%	3.0%	1.6%	17.8%	9.1%
			Forecasts				
2023	9.6%	8.2%	5.8%	10.5%	6.6%	14.8%	12.5%
2024	-1.6%	1.5%	-2.4%	3.0%	0.6%	6.9%	2.3%
2025	9.8%	8.4%	3.6%	8.9%	8.0%	9.1%	9.2%

Source: *Woods Center, California State University Fullerton and International Trade Administration*

Los Angeles MSA Exports by Sector: Growth Rates (continued)

Industry	Fabricated Metal Product	Electrical Equipment Appliance	Apparel	Total Farm	Primary Metal	Other Sectors	Total Export Volume
1999	-12.4%	1.8%	-1.4%	-19.6%	-27.7%	7.2%	4.8%
2000	10.7%	37.6%	15.1%	32.8%	36.3%	0.4%	13.9%
2001	-1.4%	-12.7%	3.1%	-2.0%	-8.1%	-15.0%	-14.2%
2002	-0.9%	-8.9%	-0.2%	-13.0%	-9.5%	-2.9%	-8.8%
2003	14.5%	-2.3%	-8.5%	67.1%	11.4%	7.1%	10.2%
2004	9.7%	15.8%	-0.2%	5.5%	12.0%	-7.8%	7.0%
2005	17.4%	6.6%	18.0%	14.9%	19.9%	-4.3%	11.5%
2006	16.7%	22.3%	3.8%	7.4%	18.0%	22.8%	11.2%
2007	1.5%	5.4%	-1.7%	2.1%	4.9%	19.4%	11.7%
2008	-3.0%	-8.8%	11.6%	7.1%	17.3%	3.4%	10.2%
2009	-12.5%	-16.2%	0.8%	-9.0%	-23.3%	-21.2%	-14.1%
2010	14.5%	10.5%	11.6%	-2.2%	22.1%	17.6%	20.6%
2011	-0.3%	10.0%	2.6%	32.6%	24.4%	15.7%	16.9%
2012	4.4%	9.2%	3.6%	5.9%	6.7%	-4.1%	3.2%
2013	13.0%	6.4%	0.2%	7.2%	10.3%	1.0%	1.7%
2014	-1.9%	30.3%	4.9%	-3.2%	6.4%	7.8%	-1.1%
2015	-4.7%	-1.5%	-3.9%	-11.5%	-9.3%	-13.3%	-18.2%
2016	-3.0%	-4.9%	-15.5%	20.1%	33.2%	-6.9%	-0.8%
2017	6.7%	7.5%	2.9%	-4.3%	28.1%	13.2%	4.1%
2018	2.9%	-0.2%	15.6%	0.1%	-21.6%	5.8%	1.7%
2019	3.2%	0.4%	-8.0%	7.4%	-14.6%	-8.1%	-5.8%
2020	-23.6%	-21.9%	-21.3%	3.4%	-33.3%	-9.4%	-17.8%
2021	9.6%	9.4%	56.2%	2.0%	27.4%	25.9%	16.7%
2022	5.1%	3.6%	10.2%	6.8%	11.2%	-1.1%	4.1%
			Forecasts				
2023	8.7%	7.7%	9.7%	14.2%	2.7%	-1.2%	7.2%
2024	-0.3%	-1.3%	8.4%	6.3%	-9.3%	-5.4%	-0.2%
2025	6.7%	6.0%	16.2%	15.1%	2.7%	1.0%	7.3%

Source: *Woods Center, California State University Fullerton and International Trade Administration*

Table A5
Los Angeles MSA Exports by Sector: Shares of Total Volume

Industry	Transportation Equipment	Computer & Electronic	Miscellaneous	Chemical	Machinery	Petroleum & Coal	Food
1998	22.2%	24.9%	4.3%	4.6%	5.1%	1.3%	3.1%
1999	19.1%	29.5%	4.4%	4.2%	5.2%	1.2%	2.9%
2000	15.7%	32.2%	4.3%	4.5%	7.3%	1.4%	2.9%
2001	15.7%	30.5%	4.4%	5.0%	6.5%	1.8%	3.4%
2002	14.9%	29.0%	4.9%	5.4%	5.9%	1.6%	3.9%
2003	18.5%	24.2%	5.7%	6.4%	5.8%	1.5%	4.1%
2004	21.2%	24.8%	5.4%	6.4%	6.0%	1.5%	3.8%
2005	23.4%	23.4%	6.0%	6.1%	6.4%	2.1%	3.8%
2006	20.6%	24.0%	6.4%	6.3%	5.9%	2.1%	3.8%
2007	21.9%	21.6%	6.6%	6.7%	5.8%	2.7%	3.8%
2008	22.4%	19.4%	7.0%	6.8%	6.1%	5.2%	4.3%
2009	20.5%	23.2%	7.6%	7.2%	5.6%	3.8%	4.5%
2010	17.8%	28.9%	7.0%	6.9%	5.2%	3.4%	4.7%
2011	16.8%	29.1%	7.0%	6.9%	4.9%	4.6%	4.9%
2012	18.8%	28.7%	7.5%	6.6%	4.9%	3.7%	4.8%
2013	20.3%	28.6%	6.7%	6.7%	4.7%	3.3%	4.4%
2014	20.3%	24.6%	7.1%	7.5%	4.5%	3.8%	4.6%
2015	19.1%	20.6%	8.4%	8.6%	5.3%	2.5%	5.1%
2016	20.9%	19.3%	9.8%	7.8%	4.6%	1.8%	5.6%
2017	20.6%	18.3%	9.1%	7.1%	4.4%	2.5%	5.8%
2018	18.4%	18.7%	10.1%	7.0%	4.4%	3.5%	5.7%
2019	18.4%	16.8%	11.5%	7.6%	4.6%	2.5%	6.4%
2020	14.8%	20.1%	8.1%	9.1%	4.6%	1.8%	7.9%
2021	13.1%	19.2%	7.7%	9.6%	4.6%	2.6%	8.0%
2022	13.1%	18.9%	8.1%	9.5%	4.5%	3.0%	8.3%
			Forecasts				
2023	13.4%	19.0%	8.0%	9.8%	4.5%	3.2%	8.8%
2024	13.2%	19.4%	7.8%	10.1%	4.5%	3.4%	9.0%
2025	13.5%	19.6%	7.6%	10.3%	4.6%	3.5%	9.1%

Source: *Woods Center, California State University Fullerton and International Trade Administration*

Los Angeles MSA Exports by Sector: Shares of Total Volume (continued)

Industry	Fabricated Metal	Electrical Equipment	Apparel	Total Farm	Primary Metal	Other Sectors
1998	3.1%	2.9%	2.3%	1.5%	1.7%	23.0%
1999	2.6%	2.8%	2.2%	1.2%	1.2%	23.5%
2000	2.5%	3.4%	2.2%	1.3%	1.4%	20.7%
2001	2.9%	3.5%	2.7%	1.5%	1.5%	20.5%
2002	3.1%	3.5%	2.9%	1.5%	1.5%	21.8%
2003	3.2%	3.1%	2.4%	2.2%	1.5%	21.2%
2004	3.3%	3.3%	2.3%	2.2%	1.6%	18.3%
2005	3.5%	3.2%	2.4%	2.3%	1.7%	15.7%
2006	3.7%	3.5%	2.2%	2.2%	1.8%	17.4%
2007	3.3%	3.3%	2.0%	2.0%	1.7%	18.5%
2008	2.9%	2.7%	2.0%	1.9%	1.8%	17.4%
2009	3.0%	2.7%	2.3%	2.0%	1.6%	16.0%
2010	2.8%	2.4%	2.2%	1.7%	1.6%	15.6%
2011	2.4%	2.3%	1.9%	1.9%	1.7%	15.4%
2012	2.5%	2.4%	1.9%	1.9%	1.8%	14.3%
2013	2.7%	2.5%	1.9%	2.0%	1.9%	14.2%
2014	2.7%	3.4%	2.0%	2.0%	2.1%	15.5%
2015	3.1%	4.0%	2.3%	2.2%	2.3%	16.4%
2016	3.1%	3.9%	2.0%	2.6%	3.1%	15.4%
2017	3.2%	4.0%	2.0%	2.4%	3.8%	16.8%
2018	3.2%	3.9%	2.2%	2.4%	3.0%	17.4%
2019	3.5%	4.2%	2.2%	2.7%	2.7%	17.0%
2020	3.3%	4.0%	2.1%	3.4%	2.2%	18.7%
2021	3.1%	3.7%	2.8%	3.0%	2.4%	20.2%
2022	3.1%	3.7%	3.0%	3.0%	2.5%	19.2%
			Forecast			
2023	3.1%	3.7%	3.0%	3.2%	2.4%	17.7%
2024	3.1%	3.7%	3.3%	3.4%	2.2%	16.8%
2025	3.1%	3.6%	3.6%	3.7%	2.1%	15.8%

Source: *Woods Center, California State University Fullerton and International Trade Administration*

A6. ORANGE COUNTY EXPORTS

Table A6
OC Exports by Country: Growth

Year	Canada	China	Germany	Japan	South Korea	Mexico	Rest of World
2000	10.8%	39.6%	12.0%	28.9%	32.8%	16.3%	15.3%
2001	-12.4%	39.8%	1.8%	-5.8%	-20.9%	-1.5%	-22.9%
2002	-16.6%	-1.2%	-2.5%	-29.6%	-12.0%	-2.2%	-1.7%
2003	15.8%	31.1%	-4.5%	7.6%	11.2%	-5.7%	22.5%
2004	19.3%	36.5%	12.3%	22.5%	32.3%	13.9%	-4.3%
2005	16.2%	22.0%	13.8%	7.7%	12.2%	4.2%	16.4%
2006	10.3%	42.2%	27.0%	2.6%	9.4%	31.4%	4.7%
2007	32.2%	21.8%	10.3%	4.1%	25.8%	-14.1%	18.4%
2008	4.2%	-0.3%	46.9%	3.4%	8.9%	21.1%	11.9%
2009	-23.4%	-17.6%	-21.8%	-17.4%	-22.1%	11.7%	-17.9%
2010	14.8%	33.1%	14.8%	11.8%	14.4%	61.4%	7.3%
2011	12.7%	29.2%	21.2%	17.9%	6.5%	31.0%	19.5%
2012	6.1%	-6.7%	-2.3%	-1.4%	3.4%	6.7%	11.6%
2013	-1.7%	6.9%	34.3%	1.0%	9.0%	11.8%	8.7%
2014	-9.7%	-10.6%	-15.6%	-11.3%	-10.4%	-21.3%	-1.2%
2015	-8.5%	-13.6%	-7.3%	-15.9%	-7.3%	-34.2%	-15.2%
2016	-12.4%	-18.0%	2.3%	1.5%	-8.1%	-17.1%	-2.2%
2017	-12.6%	-8.4%	1.0%	-19.4%	-5.9%	-9.3%	-10.4%
2018	5.5%	-1.8%	15.6%	14.9%	7.6%	11.7%	3.2%
2019	-3.0%	-12.6%	1.8%	-0.1%	6.1%	-16.5%	5.2%
2020	-10.2%	-10.5%	11.0%	-14.4%	6.4%	-0.8%	-22.6%
2021	8.1%	15.0%	23.4%	12.7%	11.7%	17.0%	9.1%
2022	7.6%	6.3%	-13.2%	8.4%	16.5%	9.6%	11.2%
			Forecasts				
2023	7.5%	4.9%	1.9%	9.2%	12.4%	11.5%	7.4%
2024	1.9%	-1.6%	1.2%	0.9%	2.6%	0.6%	0.1%
2025	10.3%	8.4%	8.5%	7.9%	9.0%	10.1%	8.5%

Source: *Woods Center, California State University Fullerton*

Table A7
OC Exports by Country: Shares of Total Volumes

Year	Canada	China	Germany	Japan	South Korea	Mexico	Rest of World
1999	15.6%	2.7%	2.0%	15.1%	5.0%	15.5%	44.1%
2000	14.6%	3.2%	1.9%	16.4%	5.6%	15.2%	43.0%
2001	14.7%	5.2%	2.2%	17.7%	5.1%	17.2%	38.0%
2002	13.5%	5.7%	2.3%	13.8%	5.0%	18.5%	41.2%
2003	13.8%	6.5%	2.0%	13.1%	4.8%	15.4%	44.4%
2004	14.9%	8.1%	2.0%	14.5%	5.8%	15.9%	38.7%
2005	15.3%	8.7%	2.0%	13.8%	5.8%	14.6%	39.7%
2006	14.9%	11.0%	2.2%	12.5%	5.6%	17.0%	36.8%
2007	17.3%	11.7%	2.2%	11.5%	6.2%	12.8%	38.3%
2008	16.4%	10.7%	2.9%	10.8%	6.1%	14.1%	38.9%
2009	14.8%	10.3%	2.7%	10.5%	5.6%	18.6%	37.6%
2010	13.9%	11.2%	2.5%	9.6%	5.2%	24.5%	33.0%
2011	12.9%	11.9%	2.5%	9.3%	4.6%	26.4%	32.4%
2012	13.0%	10.5%	2.3%	8.7%	4.5%	26.7%	34.3%
2013	11.8%	10.4%	2.9%	8.1%	4.5%	27.7%	34.5%
2014	11.9%	10.4%	2.7%	8.1%	4.5%	24.3%	38.1%
2015	13.3%	11.0%	3.1%	8.3%	5.2%	19.6%	39.5%
2016	12.7%	9.8%	3.4%	9.2%	5.2%	17.6%	42.0%
2017	12.4%	10.1%	3.9%	8.2%	5.4%	17.9%	42.1%
2018	12.3%	9.3%	4.2%	8.9%	5.5%	18.8%	40.9%
2019	12.2%	8.3%	4.4%	9.1%	6.0%	16.0%	44.0%
2020	12.6%	8.5%	5.6%	8.9%	7.3%	18.2%	39.0%
2021	12.1%	8.7%	6.1%	9.0%	7.2%	19.0%	37.9%
2022	12.0%	8.5%	4.9%	8.9%	7.7%	19.2%	38.7%
			Forecasts				
2023	11.9%	8.3%	4.6%	9.0%	8.0%	19.8%	38.4%
2024	12.1%	8.1%	4.6%	9.0%	8.2%	19.8%	38.2%
2025	12.2%	8.0%	4.6%	8.9%	8.2%	20.0%	38.1%

Source: *Woods Center, California State University Fullerton*

Table A8
OC Exports by Region: Growth Rate

Year	Africa	Asia	European Union	NAFTA	South America
2000	-8.5%	40.5%	26.2%	28.0%	0.2%
2001	3.8%	-8.0%	-8.8%	-6.8%	-2.3%
2002	-1.2%	-18.1%	-20.0%	-8.8%	-29.4%
2003	15.9%	9.1%	6.9%	3.4%	-2.2%
2004	36.5%	30.8%	24.4%	16.5%	53.1%
2005	17.3%	12.1%	8.4%	10.1%	22.6%
2006	31.2%	12.9%	5.3%	20.6%	23.8%
2007	-9.8%	15.9%	20.1%	7.6%	25.2%
2008	35.4%	3.4%	8.8%	11.4%	35.4%
2009	-1.3%	-16.0%	-20.4%	-7.1%	-26.2%
2010	-15.3%	20.6%	2.2%	40.8%	27.9%
2011	8.2%	23.0%	20.6%	24.5%	34.9%
2012	25.6%	-2.7%	6.7%	6.6%	8.0%
2013	-15.7%	7.3%	12.6%	7.4%	8.0%
2014	-23.4%	-3.2%	-6.1%	-17.9%	-1.5%
2015	-10.5%	-13.2%	-16.1%	-25.8%	-29.2%
2016	5.6%	-1.9%	1.1%	-15.7%	-18.7%
2017	-41.5%	-10.8%	-6.9%	-10.7%	-16.2%
2018	30.9%	3.6%	-0.2%	9.2%	-3.6%
2019	-3.0%	0.2%	5.9%	-11.2%	-8.1%
2020	-8.2%	-15.9%	-10.9%	-4.9%	-15.2%
2021	8.9%	14.2%	8.0%	13.4%	17.0%
2022	9.1%	8.5%	6.4%	8.8%	7.6%
			Forecasts		
2023	8.5%	6.9%	7.6%	11.1%	7.9%
2024	0.7%	0.2%	-1.0%	3.5%	0.7%
2025	8.8%	9.3%	5.3%	11.6%	9.2%

Source: *Woods Center, California State University Fullerton*

Table A9
OC Exports by Sector: Growth Rate

Industry	Transportation Equipment	Computer Electronic Product	Miscellaneous	Chemical	Machinery	Petroleum & Coal Products	Food
2000	9.6%	19.6%	17.9%	23.3%	61.8%	37.6%	15.2%
2001	-25.7%	-11.2%	-11.4%	-10.8%	-11.9%	-4.2%	-7.1%
2002	-11.2%	-17.3%	0.8%	-15.3%	-11.5%	-3.8%	-7.1%
2003	20.7%	18.5%	9.3%	13.8%	4.2%	-3.4%	16.9%
2004	12.7%	1.0%	4.7%	21.1%	22.5%	15.1%	30.3%
2005	26.4%	10.7%	21.7%	33.4%	15.5%	30.8%	11.2%
2006	18.8%	7.9%	38.7%	28.0%	0.4%	39.0%	17.6%
2007	21.7%	9.6%	15.2%	27.3%	6.8%	30.6%	12.4%
2008	10.1%	10.9%	20.4%	2.4%	14.1%	5.9%	22.0%
2009	-19.5%	-24.0%	-13.7%	-6.5%	-15.9%	12.3%	-14.7%
2010	33.2%	42.8%	23.0%	17.9%	12.1%	18.5%	37.2%
2011	20.4%	29.9%	35.5%	20.3%	6.5%	43.0%	26.3%
2012	5.5%	8.2%	5.2%	1.4%	10.7%	-3.4%	6.0%
2013	10.2%	7.7%	-1.6%	11.8%	12.2%	8.9%	-0.3%
2014	-9.3%	-15.8%	-11.2%	-2.1%	-16.5%	-3.8%	-9.4%
2015	-19.1%	-24.1%	-20.7%	-20.5%	-24.1%	-17.6%	-19.7%
2016	-6.3%	-14.8%	-10.1%	-5.9%	-8.6%	-15.0%	-9.2%
2017	-14.2%	-20.7%	1.9%	-10.6%	-11.3%	-1.1%	3.4%
2018	-1.4%	11.4%	20.8%	11.2%	6.0%	3.6%	2.6%
2019	-5.8%	-14.0%	14.4%	3.7%	-4.7%	-1.4%	11.2%
2020	-29.6%	-4.8%	-32.0%	-11.1%	-7.6%	-31.3%	5.7%
2021	6.6%	14.6%	10.6%	23.6%	19.4%	43.6%	20.2%
2022	13.8%	4.2%	18.8%	1.4%	2.4%	0.5%	-2.0%
			Forecasts				
2023	9.0%	26.9%	9.7%	7.4%	8.3%	5.6%	13.5%
2024	-1.3%	0.2%	0.6%	3.6%	1.6%	5.1%	1.0%
2025	12.6%	9.9%	7.6%	8.0%	11.2%	14.7%	7.9%

Source: *Woods Center, California State University Fullerton*

OC Exports by Sector: Growth Rate (continued)

Industry	Fabricated Metal Product	Electrical Equipment Appliance	Apparel	Total Farm	Primary Metal	Other Sectors	Total Exports
2000	11.2%	41.3%	15.1%	25.3%	36.1%	10.2%	18.3%
2001	5.7%	-18.8%	13.8%	5.4%	-7.9%	-11.1%	-12.7%
2002	-15.8%	-2.1%	-3.9%	5.1%	-7.9%	0.0%	-9.5%
2003	36.5%	1.1%	-9.1%	29.3%	15.2%	8.1%	13.6%
2004	16.2%	19.9%	2.5%	5.3%	13.0%	11.2%	10.0%
2005	13.0%	12.2%	21.7%	6.3%	28.0%	-1.5%	13.3%
2006	19.2%	17.9%	5.4%	17.3%	16.9%	4.3%	13.2%
2007	7.1%	3.9%	0.6%	8.2%	8.4%	12.4%	13.8%
2008	-4.1%	-1.6%	5.9%	13.6%	16.7%	8.6%	9.9%
2009	-14.1%	-18.7%	5.7%	-16.6%	-19.9%	-4.9%	-14.9%
2010	18.7%	14.4%	7.7%	27.5%	25.0%	-7.5%	22.2%
2011	17.8%	25.3%	10.4%	16.4%	24.5%	5.7%	21.7%
2012	2.7%	6.0%	8.0%	2.2%	-0.1%	4.1%	5.5%
2013	12.6%	23.3%	12.2%	25.6%	32.7%	-1.3%	7.9%
2014	-14.9%	5.4%	-9.9%	-15.1%	-6.6%	-6.3%	-10.4%
2015	-22.2%	-16.4%	-23.3%	-19.9%	-17.0%	1.4%	-18.4%
2016	-5.0%	-5.1%	-7.1%	-8.9%	-1.9%	0.0%	-8.1%
2017	-4.6%	-6.1%	3.9%	-3.6%	0.4%	-7.7%	-10.5%
2018	12.2%	11.1%	9.6%	13.6%	-2.0%	0.9%	6.2%
2019	10.4%	7.1%	-3.8%	4.5%	5.9%	-3.2%	-2.1%
2020	-17.0%	-13.1%	-9.6%	11.5%	1.2%	0.6%	-12.6%
2021	11.6%	2.0%	23.9%	6.7%	20.0%	0.9%	12.2%
2022	11.0%	16.1%	0.7%	4.2%	-0.7%	19.0%	8.7%
			Forecasts				
2023	8.1%	8.4%	10.1%	13.0%	12.5%	-15.5%	8.3%
2024	-0.9%	-0.8%	2.0%	2.9%	1.1%	0.1%	0.6%
2025	11.8%	9.8%	14.2%	9.5%	10.0%	1.2%	9.0%

Source: *Woods Center, California State University Fullerton*

Table A10
OC Exports by Sector: Shares of Total Volume

Industry	Transportation Equipment	Computer & Electronic	Miscellaneous	Chemical	Machinery	Petroleum & Coal	Food
1999	19.9%	30.0%	4.2%	4.2%	4.9%	1.3%	2.9%
2000	18.5%	30.3%	4.2%	4.4%	6.6%	1.5%	2.8%
2001	15.7%	30.8%	4.3%	4.5%	6.7%	1.6%	3.0%
2002	15.4%	28.2%	4.8%	4.2%	6.6%	1.8%	3.1%
2003	16.4%	29.4%	4.6%	4.2%	6.0%	1.5%	3.1%
2004	16.8%	27.0%	4.4%	4.6%	6.7%	1.6%	3.7%
2005	18.7%	26.3%	4.7%	5.5%	6.8%	1.8%	3.7%
2006	19.6%	25.1%	5.8%	6.2%	6.1%	2.2%	3.8%
2007	21.0%	24.2%	5.8%	6.9%	5.7%	2.5%	3.7%
2008	21.1%	24.4%	6.4%	6.4%	5.9%	2.4%	4.2%
2009	19.9%	21.8%	6.5%	7.1%	5.8%	3.2%	4.2%
2010	21.7%	25.5%	6.5%	6.8%	5.3%	3.1%	4.7%
2011	21.5%	27.2%	7.3%	6.7%	4.7%	3.7%	4.9%
2012	21.5%	27.9%	7.2%	6.5%	4.9%	3.4%	4.9%
2013	21.9%	27.8%	6.6%	6.7%	5.1%	3.4%	4.5%
2014	22.2%	26.2%	6.5%	7.3%	4.8%	3.6%	4.6%
2015	22.0%	24.3%	6.4%	7.1%	4.4%	3.7%	4.5%
2016	22.4%	22.5%	6.2%	7.3%	4.4%	3.4%	4.4%
2017	21.5%	20.0%	7.1%	7.3%	4.4%	3.8%	5.1%
2018	20.0%	20.9%	8.1%	7.6%	4.4%	3.7%	4.9%
2019	19.2%	18.4%	9.4%	8.1%	4.2%	3.7%	5.6%
2020	15.5%	20.0%	7.3%	8.2%	4.5%	2.9%	6.8%
2021	14.7%	20.5%	7.2%	9.1%	4.8%	3.7%	7.3%
2022	15.4%	19.6%	7.9%	8.5%	4.5%	3.4%	6.6%
			Forecasts				
2023	15.5%	23.0%	8.0%	8.4%	4.5%	3.4%	6.9%
2024	15.2%	22.9%	8.0%	8.6%	4.5%	3.5%	6.9%
2025	15.7%	23.1%	7.9%	8.6%	4.6%	3.7%	6.8%

Source: *Woods Center, California State University Fullerton*

OC Exports by Sector: Shares of Total Volume (continued)						
Industry	**Fabricated Metal**	**Electrical Equipment**	**Apparel**	**Total Farm**	**Primary Metal**	**Other Sectors**
1999	2.6%	2.9%	2.3%	1.3%	1.2%	22.4%
2000	2.4%	3.4%	2.2%	1.3%	1.4%	20.9%
2001	2.9%	3.2%	2.9%	1.6%	1.5%	21.3%
2002	2.7%	3.4%	3.1%	1.9%	1.5%	23.5%
2003	3.3%	3.1%	2.5%	2.1%	1.5%	22.4%
2004	3.5%	3.3%	2.3%	2.0%	1.5%	22.6%
2005	3.5%	3.3%	2.5%	1.9%	1.7%	19.6%
2006	3.6%	3.4%	2.3%	2.0%	1.8%	18.1%
2007	3.4%	3.1%	2.0%	1.9%	1.7%	17.9%
2008	3.0%	2.8%	2.0%	1.9%	1.8%	17.7%
2009	3.0%	2.7%	2.4%	1.9%	1.7%	19.8%
2010	2.9%	2.5%	2.1%	2.0%	1.8%	15.0%
2011	2.8%	2.6%	1.9%	1.9%	1.8%	13.0%
2012	2.8%	2.6%	2.0%	1.8%	1.7%	12.8%
2013	2.9%	3.0%	2.1%	2.1%	2.1%	11.7%
2014	2.7%	3.5%	2.1%	2.0%	2.2%	12.3%
2015	2.6%	3.6%	1.9%	2.0%	2.2%	15.2%
2016	2.7%	3.7%	2.0%	2.0%	2.4%	16.6%
2017	2.9%	3.9%	2.3%	2.1%	2.7%	17.1%
2018	3.0%	4.1%	2.4%	2.3%	2.5%	16.2%
2019	3.4%	4.4%	2.3%	2.4%	2.7%	16.1%
2020	3.3%	4.4%	2.4%	3.1%	3.1%	18.5%
2021	3.2%	4.0%	2.7%	2.9%	3.3%	16.6%
2022	3.3%	4.3%	2.5%	2.8%	3.0%	17.1%
Forecast						
2023	3.3%	4.3%	2.5%	2.9%	3.1%	18.6%
2024	3.3%	4.2%	2.5%	3.0%	3.1%	19.0%
2025	3.3%	4.3%	2.7%	3.0%	3.2%	19.0%

Source: *Woods Center, California State University Fullerton*

International Trade Forecasts

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